

BULLETIN

OF THE

**Texas Archeological and
Paleontological Society**

**VOLUMES 19&20
1948-49**

TEXAS
ARCHEOLOGICAL
SOCIETY

2009

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Foreword

The society was organized and chartered in pursuit of a literary and scientific undertaking; for the study of the history, pre-history and the major artifacts of man and the fossils representing the past floras and faunas of Texas; for the encouragement of the proper collection and preservation of such artifacts and fossils in museums and their study and classification and the publication of the results of the researches incident thereto.

The BULLETIN is published annually for distribution to members of the society. Opinions expressed herein are those of the writers, and do not necessarily represent views of the society or the editorial staff.

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THE MERRELL SITE:
ARCHAEOLOGICAL REMAINS ASSOCIATED
WITH ALLUVIAL TERRACE DEPOSITS
IN CENTRAL TEXAS

T. N. CAMPBELL

Introduction

This brief report is placed on record because the Merrell site has attracted attention, chiefly through preliminary notices,² in connection with the problem of early man in America,³ and also because it shows both natural and cultural stratigraphy—a situation not too commonly reported in the archeology of central Texas. Although the evidence as outlined in this paper does not support any claims of special antiquity, the stratigraphic data furnished by the Merrell site have a direct bearing on the interpretation of prehistoric cultural developments in the central Texas area.

The Merrell site⁴ consists of midden materials included in alluvial terrace deposits on the north side of Brushy Creek, one quarter mile northeast of the town of Round Rock, Williamson County, Texas. This locality is 18 miles north of Austin. Brushy Creek is a small spring-fed stream which heads in the low hills of the eroded Balcones Escarpment⁵ just west of Round Rock and flows in a northeasterly direction, its water eventually reaching the Brazos River in Milam County by way of the San Gabriel and Little Rivers.

Prior to excavation by archeologists, the Brushy Creek terrace deposits were commercially excavated for gravel over a period of years, and it was because of these operations that the site was discovered in 1934 by A. M. Wilson of Austin.

1 This article is the revised and expanded version of a paper presented before the Texas Archeological and Paleontological Society at its Twelfth Annual Meeting in Abilene, October 26, 1940.

2 Anonymous, 1935a-d.

3 Bryan, 1935, p. 7, 1936b, p. 1363; Kelley, Campbell and Lehmer, 1940, p. 133; Leighton 1936, p. vii; Mason, 1936, p. 56; Sellards, 1936, 1940, p. 494.

4 The site is named for J. E. Merrell, landowner at the time of excavation by the University of Texas.

5 The Balcones Escarpment forms the eastern and southern boundary of the Edwards Plateau.

Wilson reported the site to the late J. E. Pearce of the University of Texas, who made arrangements for excavation by the University. The field work was directed by Jack T. Laughlin, an anthropology student, under the personal supervision of Pearce. Since student labor was used,⁶ excavation was confined to week-ends. This work began on October 18, 1934, and ended on January 13, 1935. Additional testing, with results largely of a negative nature, was done in June, 1940, by J. Charles Kelley with a small crew of laborers supplied by the Works Progress Administration.

Pearce was impressed by the fact that flint artifacts and flakes were exposed in a vertical bank of the terrace at depths ranging from the surface to eighteen feet below, and he believed that the site might throw light on the problem of the antiquity of man in America. Since the problem was essentially a geological problem, Pearce persuaded Dr. E. H. Sellards, Director of the Bureau of Economic Geology, University of Texas, to study the geology of the Merrell locality. The results of their joint activities were summarized and issued through Science Service in January and February, 1935.⁷

Geology of the Site⁸

The alluvial deposits of Brushy Creek rest on Cretaceous limestones and shales. The hills on either side of the stream (Plate 1, A) are of Buda limestone. Immediately below the Buda limestone in the Merrell locality lies the Del Rio clay formation, and it is upon this shale formation that the Brushy Creek alluvial deposits rest. The Georgetown limestone, a formation which normally underlies the Del Rio clay, appears west of a fault that crosses Brushy Creek just below the dam shown in Plate 1, A. The fault trends northeast and is downthrown to the southeast, bringing the Georgetown limestone and the Del Rio clay into vertical

⁶ This labor was provided by the Federal Emergency Relief Administration.

⁷ The four notices, given in footnote 2 above, were all derived from the original report submitted to Science Service.

⁸ The geological aspects of the Merrell site have been discussed by Sellards (1936). Plate 1, A, and the details given in this section are drawn from his report. Inasmuch as Sellards gives views of the locality where excavation took place (his Fig. 2 and Fig. 3), similar illustrations are omitted from this paper.

contact in the stream bed. A part of the Balcones fault system, this local fault has caused the formation of springs in the stream bed and thus provides a locally abundant water supply.

The terraces are easily recognized in Brushy Creek valley (Plate 1, A). The lower and younger terrace covers the southern half of the valley. It lies 10 to 13 feet above the present stream level and is covered during flood stage. The second and older terrace covers the northern half of the valley and is approximately twice the height of the lower terrace, rising to 20 or 25 feet above stream level. The deposits of this older terrace extend across the fault described above. A large part of this terrace has been removed for gravel, leaving a peninsula of terrace deposits in whose vertical south bank artifacts and midden materials were observed by Wilson. This peninsula is some 400 feet from the stream and at the present time is being removed for its gravel content.

Stratigraphy

The strata of the second terrace, observable for several hundred yards downstream, are fairly uniform. At the scene of archeological excavation the strata are easily distinguished, and the two localities where digging took place (see Plate 1, A, Localities 1 and 2) can be correlated.

A complete cross section was obtained at Locality 1, where the strata appear as follows:

	Approximate thickness in feet
Burnt rock midden	3/4
Heavy rock and gravel, hearth at base.....	6
Silt, some gravel	7
Clean, stream-laid gravel.....	4
Del Rio clay (bedrock)	

Essentially the same sequence appears at Locality 2, except that here a complete section was not obtained. Excavation was carried down only to the top of the silt stratum; the

deposit below was obscured by talus materials. The column at Locality 2 is given below:

	Approximate thickness in feet
Burnt rock midden	2
Gravel, some silt	4½
Burnt rock midden	2
Silt (penetrated to depth of 2 feet)	

A correlation of these two localities is not difficult (Plate 1, B). The sequences are almost identical and only 60 feet separates the two columns. The upper layers can be traced from one locality to the other. An additional element at Locality 2, the lower burnt rock midden, seems to correlate with the hearth at the top of the silt layer at Locality 1.

Excavation

Excavation at the Merrell site was conducted in the two localities referred to above. These are situated on the southern edge of the older terrace remnant. Much less excavation was done at Locality 1 than at Locality 2.

At Locality 1 a trench 14 feet wide was begun at the base of the talus slope and was carried downward until bedrock (Del Rio clay) was reached at a depth of 18 feet below the surface of the terrace. The trench was then carried forward into the bank until a perpendicular face was attained. For this reason the trench was very short, its north-south length being approximately 5 feet. Since the bluff sloped backward considerably, very little material was removed from the upper strata, most of it being from the silt and lower gravel layers. The artifacts taken from this locality were very meager in quantity, the series numbering only 18 specimens.

At Locality 2 excavation was more extensive. Instead of

PLATE 1

- A. Map showing vicinity of Merrell site. Localities where excavation took place may be seen at 1 and 2.
B. Chart illustrating correlation of Localities 1 and 2 at Merrell site.

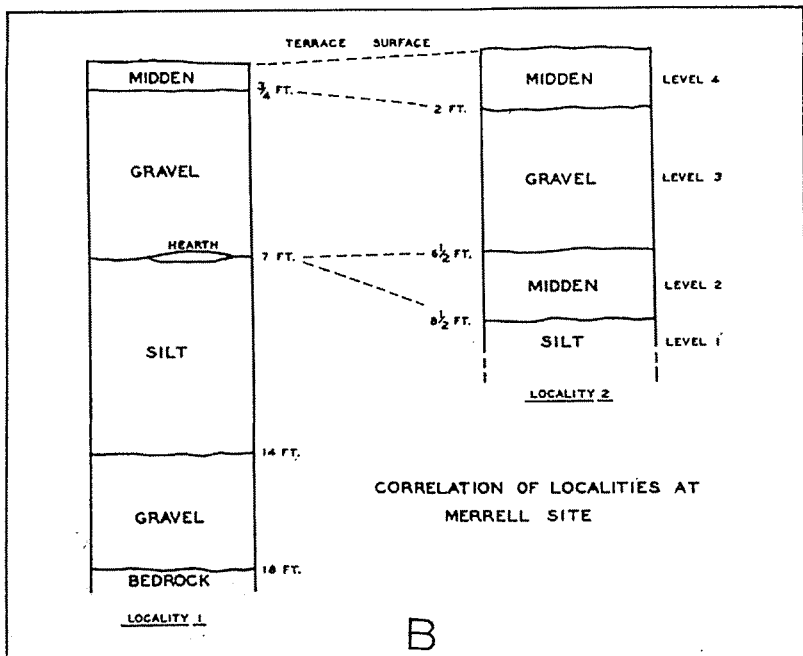
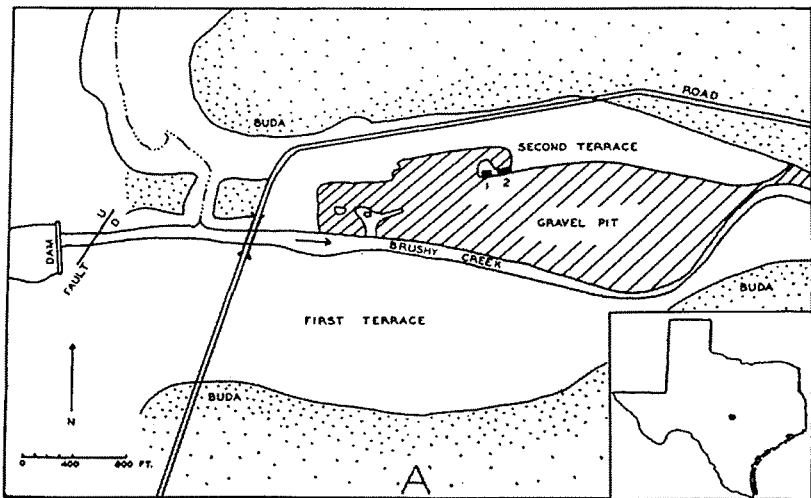


Plate 1

working inward from the face of the bluff, as at Locality 1, excavation began at the surface and was carried downward. At this locality a small neck of terrace deposit connected two larger remnants (see Plate 1, A). At the top this neck was 10 feet in width, but since each side sloped outward toward the base, the width of the excavated area increased to some 20 feet before work was terminated. The area excavated was approximately 50 feet in length, but in only one spot was it carried down into the silt stratum. Here a small test pit penetrated the silt stratum to a depth of 2 feet, giving a column of 11 feet that was sampled. The specimens taken from Locality 2 totaled 197.

The strata and their associated artifacts will be considered in the following sections. Beginning at the bottom of the terrace deposit and proceeding upward, the following designations will be used (see Plate 1, B): Lower Gravel Stratum (no artifacts), Merrell 1 (Silt Stratum), Merrell 2 (Lower Midden), Merrell 3 (Upper Gravel), and Merrell 4 (Upper Midden).

Lower Gravel Stratum

This layer was exposed at Locality 1 (see Plate 1, B), where it appears as a 4-foot stratum of coarse gravel lying upon Del Rio clay (bedrock). This clean gravel was evidently deposited by a clear running stream. According to the early notices, artifacts were taken from this stratum; and the field notes refer to "crude scrapers, fist axes, and spokeshaves." In the writer's opinion, none of the specimens collected from this stratum can be identified as artifacts. Instead they appear to be stream-rolled flint fragments derived from flint nodules in the old stream bed. Some fragments may be primary flakes detached by human hand, but this is questionable. The secondary chipping on these fragments is irregular and haphazard, which is precisely what might be expected in stream-rolled flints. Since the evidence is inconclusive, no emphasis is here placed on the "artifacts" obtained from the lower gravel stratum. This

makes it necessary to revise the earlier statements⁹ that artifacts were found to depths of 18 feet below the terrace surface. The maximum depth at which definite artifacts were found is approximately 14 feet. While this correction has no particular significance, it is made in order to set the record straight.

Merrell 1 (Silt Stratum)

Lying above the coarse gravel at Locality 1 is a thick layer (7 to 7½ feet) of light brown silt which includes small amounts of gravel. The evidence from this layer clearly indicates that Brushy Creek valley was occupied by man during the period when this silt was being deposited. One small hearth, some 3 feet in diameter and 2 to 3 inches thick, was noted in the lower part of the layer. This hearth was made up of charcoal, ashes, and numerous snail shells. In addition, snail shells, bits of charcoal (occasionally forming lenses), 14 artifacts, and numerous flint flakes were distributed throughout the block of silt excavated.

Representative artifacts¹⁰ from the silt stratum at Locality 1 are shown in Plate 2, A. Only one projectile point came from this layer (Plate 2, A, 1); this form persisted through the various layers above and became one of the dominant forms in Merrell 4. Four knives, representing at least two different types, were found. One type (Plate 2, A, 2), represented by a single basal fragment, is long and slender and has a straight base; the other (Plate 2, A, 4), represented by the three remaining specimens, is broadly triangular in outline and has a base which varies from straight to broadly convex. Similar in outline to this second type of knife are two thick, crudely made blades.¹¹ Five side-scrapers are made from flakes that are retouched along one edge, some-

⁹ Anonymous, 1935a-d.

¹⁰ Most of the artifacts from the Merrell site are made of flint. In the artifact descriptions which follow, it is to be understood that flint is the material used unless some other material is specifically mentioned. Flint is very abundant in central Texas, occurring as lenses or nodules in certain limestone formations of the Edwards Plateau, and it has been widely distributed in pebble form by the streams which flow southeastward from this plateau. The central Texas flint is usually gray in color, ranging from very light gray to black, and much of it is of high quality.

¹¹ The thinner, well-chipped specimens are designated as knives; the thicker, heavier, more crudely fashioned ones are called blades.

times along two parallel edges (Plate 2, A, 5), and there is one very crude end-scraper. One graver appears in this series (Plate 2, A, 3); it is made from a small but rather thick flake and has two beak-like points on one edge. Between the two points is a steeply retouched concavity.

At Locality 2 only four artifacts were obtained from the silt stratum. These include a projectile point, a gouge, a handstone fragment, and a heavy blade fragment. The projectile point is similar to the point illustrated in Plate 3, A, 8. The gouge belongs to the type that has been described as the Clear Fork planer-gouge.¹² It is plano-convex in cross section, only the convex face exhibiting flake scars, and it is similar in outline to the gouge illustrated in Plate 3, B, 3, from Merrell 3. The handstone fragment is made of granite and shows flat grinding facets on both surfaces; its original outline cannot be determined. Because of its fragmentary nature, little can be said about the blade.

Merrell 2 (Lower Midden)

This layer is represented only at Locality 2, where it consists of some 2 feet of burnt rock midden deposit resting on the silt stratum. The densely packed hearthstone fragments (burnt rock) in this layer may be seen in Plate 2, B, 1 (between feet and knees of man). The soil filling the interstices between the stones is not so dark in color as that in the upper midden, probably because of a greater amount of leaching.

The artifacts from the lower midden are few in number: three projectile points, a thick oval blade, and two side-scrappers. The two forms of projectile points represented are shown in Plate 2, B. The form shown at 3 is represented by two specimens, that shown at 2 by one specimen. The latter may well be a drill fashioned from a discarded projectile point.

At Locality 1 the hearth lying between the silt stratum and the upper gravel has been correlated with the lower

¹² Ray, 1933, p. 198 and Plate 24, Fig. 2.

midden at Locality 2. This hearth, composed principally of fire-cracked limestone, was about 6 inches thick and had a diameter of approximately 2 feet. The correlation of this hearth with the lower midden at Locality 2 is based on identical stratigraphic positions in duplicating series. No artifacts accompanied the hearth.

Merrell 3 (Upper Gravel)

Above the silt stratum at Locality 1, and above the lower midden at Locality 2, lies a clearly marked layer of gravel (see Plate 2, B, 1). The uppermost part of this layer contains numerous limestone slabs which appear to have been deposited by strong fluvial action. The remainder of the layer at both localities consists of gravel with some silt and traces of ash. At Locality 2, which is farther downstream, ash and bits of charcoal were well distributed throughout the layer. Artifacts and animal bones, chiefly deer and bison, occurred in this layer at both localities; but because of the small amount of excavation in the layer at Locality 1 only a few artifacts were found there. It is apparent that much of the cultural material in this layer has been washed into place. Judging from the presence of ash, charcoal, and the number of artifacts in the stratum at Locality 2, the source of the cultural material could not have been very far away. This source was not located.

From the upper gravel at Locality 1 came only four artifacts: a projectile point, two knives, and one drill. The projectile point (Plate 3, A, 10) is quite unlike any other point from the Merrell site. It is somewhat leaf-shaped, the base is concave, and there are two additional features worthy of special comment: oblique flake scars and ground edges near the base. The outline, chipping, and ground edges near the base place it within the range of the type formerly desig-

PLATE 2

- A. Artifacts from silt stratum, Locality 1, Merrell site. 1, projectile point; 2, 4, knives; 3, graver; 4, sidescraper.
- B. View at Locality 2 and artifacts from the lower midden, Locality 2, Merrell site. 1, view of terrace deposit at Locality 2, showing silt stratum, lower midden, upper gravel, and upper midden; 2-3, projectile points from lower midden, Locality 2.

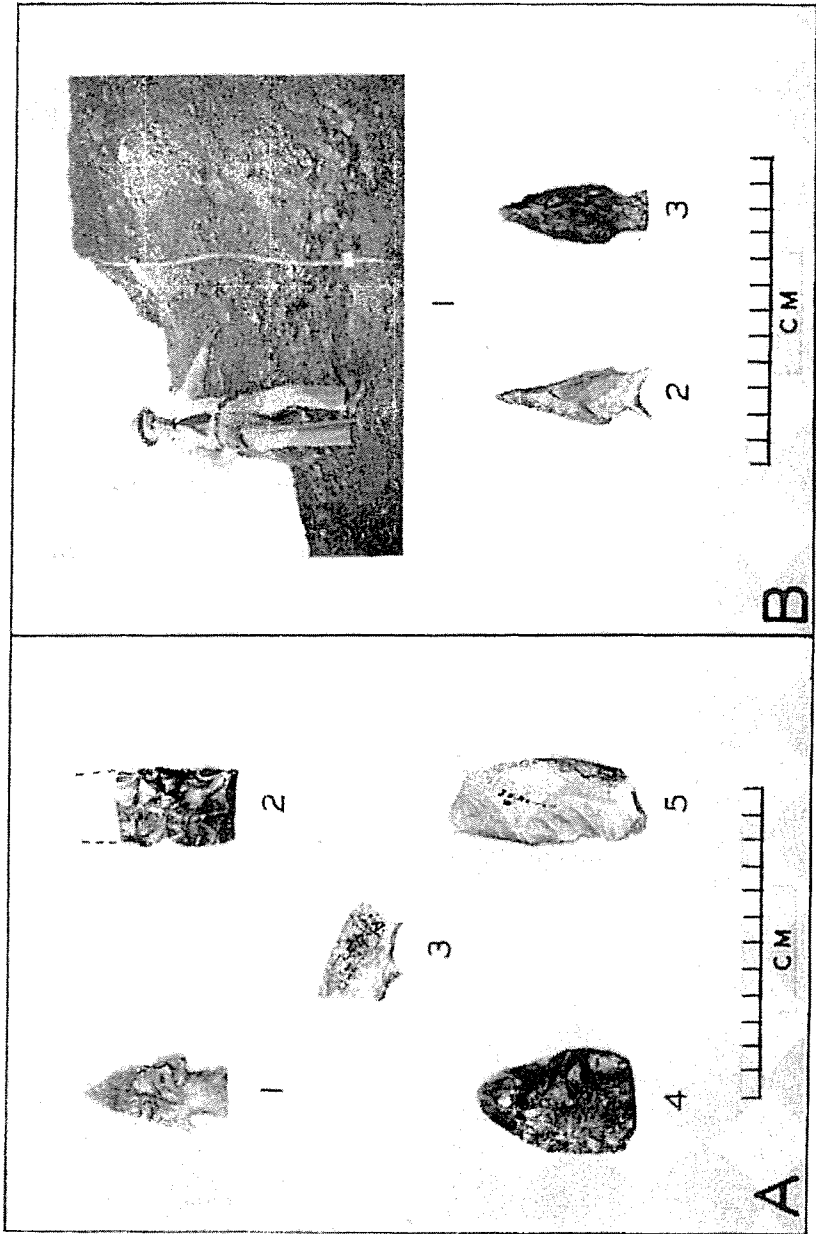


Plate 2

nated as Oblique Yuma. The two knives are quite dissimilar; one is oval in outline, and the other is triangular with a concave base. The drill (Plate 3, B, 5) has a flaring, slightly concave base.

The series of artifacts from the gravel stratum at Locality 2 is comparatively large, totaling 80 specimens, all made of stone except one, which is of mussel shell. These are described under special headings below.

Projectile Points. Representative projectile points are illustrated in Plate 3. The series is made up of 40 points, and it is immediately apparent that a variety of types is present. The dominant forms are shown in Plate 3, A, 1-2, 7-9. The forms illustrated at 1 and 2 occur eight times each; those at 7 and 9 five times each. The form at 8, which is probably related to that at 9, occurs twice. Another fairly common type is that illustrated in Plate 3, B, 4 and 6, which has recently been named Taylor Thinned Base.¹³ Five of these are present, four having alternately beveled lateral edges.

The remainder of the projectile point forms occur with lower frequency. The square-based forms at Plate 3, B, 4 and 5, are represented by three and two examples respectively. They appear to be variations of the same type, one having a blade that is notably broad. The projectile point forms shown in Plate 3, A, 3 and 6, are represented by one example each. The former (3) is probably a variant of the Pedernales Indented Base type.¹⁴

Knives. From Merrell 3 came 20 artifacts which are placed in this category. They vary considerably in size, shape, and technique of manufacture. Three forms are discernible. Thirteen are triangular with straight or slightly convex bases, the lateral edges showing varying degrees of convexity (Plate 3, B, 7). Five are ovoid or leaf-shaped, with strongly convex bases (Plate 3, B, 8), and two are lanceolate, being pointed at both ends.

¹³ Kelley, 1947, p. 97 and Plate X, b. This has been referred to by Ray as Clear Fork Dart 4 (Ray, 1938, pp. 199-200 and Plate 25, Fig. 1).

¹⁴ Kelley, 1947, p. 99 and Plate X, c.

Blades. Seven crude blades are included in this series. These tend to be roughly oval or triangular in outline and differ from the larger knives only in thickness and crudeness of flaking.

Scrapers. Only four scrapers are present here. Three of these are side-scrapers made from flakes and are retouched along one edge; the fourth is a small plano-convex end-scrapers (Plate 3, B, 9).

Gouges. Five gouges are associated with this stratum at Locality 2. All are of the Clear Fork planer-gouge type, having plano-convex cross sections (Plate 3, B, 1 and 3).

Handstones. One handstone fragment, made of conglomerate, indicates the presence of a broadly oval form of handstone, the edges shaped by pecking and both surfaces showing wear.

Pitted Stones. One object, made of granite (Plate 3, B, 10), superficially resembles a handstone, but no grinding facets are discernible. Each flat face bears one small circular depression or pit.

Pendants. One specimen consists of approximately half of a freshwater mussel shell that has been perforated near the margin, presumably for suspension.

Drills. The object illustrated at Plate 3, B, 2, is the only perforating tool in the series. This stemmed drill looks like a reworked projectile point.

Merrell 4 (Upper Midden)

At Locality 2 no excavation was done in the very thin midden deposit at the top of the column. All of the artifacts described below are from the upper midden at Locality 2. This midden layer ranged from 1½ to 2 feet in thickness and is a good example of the typical burnt rock surface midden of central Texas.¹⁵ The matrix consists of dark, greasy soil which includes numerous angular fragments of limestone, all showing unmistakable evidences of having been in the fire

¹⁵ Kelley and Campbell, 1942.

(hearthstone fragments). Also included are deer and bison bones, 107 stone artifacts, and many flint flakes. The areal extent of this midden could not be ascertained because commercial excavation had removed so much of the terrace deposit. Assuming that the upper midden deposit of Localities 1 and 2 were at one time continuous, as seems quite likely, it may be conjectured that the midden once had a minimum east-west diameter of 90 feet. The midden deposit showed no internal stratigraphic color variations. In all probability it represents either a continuous or closely intermittent occupation over a comparatively short span of time.

Projectile Points. A total of 56 projectile points appears in the series of artifacts from Merrell 4. The points shown in Plate 4, A, 1-5, seem to be variants of one square-stemmed type, for the only notable differences are in shoulder treatment. This is the dominant type in the upper midden. The form at 1 occurs eight times, that at 2 eleven times, that at 3 four times, that at 4 eight times, and that at 5 two times, making a total of thirty-three projectile points in this group. The point at 6, represented by three specimens, may also be another variant, but it differs by having a slightly flaring stem. The point at 7 is an example of the Nolan Beveled Stem type,¹⁶ and five examples of this type are present. The points at 8 and 11 are variants of the Pedernales Indented Base type; four examples of this type are present. The large, stemmed form at 10, which may be a stemmed knife, appears four times in the series. At 9 is a long slender point that is unique at the site and probably represents an intrusion from some adjacent area. Two examples of the Baird Beveled Blade type¹⁷ occur, and there are two points with indented bases like that shown in Plate 3, A, 9. Two additional forms, represented by one specimen each, are not illustrated, but similar forms may be seen at Plate 3, A, 1 and 7.

Knives. The 17 knives from this stratum may be divided into two groups on the basis of their outlines. Ten are tri-

¹⁶ Kelley, 1947, p. 99 and Plate X, d. This is Ray's Clear Fork Dart 2 (Ray, 1938, p. 199 and Plate 25, Fig. 1).

¹⁷ Kelley, 1947, p. 97 and Plate X, a. Ray has referred to this as Clear Fork Dart 3 (Ray, 1938, p. 199 and Plate 25, Fig. 1).

angular, having straight bases and lateral edges that are only slightly convex (Plate 4, B, 1). The remaining seven are more or less ovoid and have strongly convex bases (Plate 4, B, 2). There is considerable variation in these knives with respect to size, thickness, and quality of chipping.

Blades. Nine chipped stone objects are classified as blades. These are very roughly chipped by percussion flaking and are ovoid in outline.

Picks. Two long, narrow chipped stone objects are called picks. One has a length of 13.9 centimeters; it is triangular in cross section, one face being flatly convex, the other rising to a high keel. One end of this tool is pointed, but the other is truncated.

Gouges. Three gouges occur, two being Clear Fork planer-gouges, but the third is quadrangular in outline and shows chipping on both faces (Plate 4, B, 3).

Gravers. Two gravers appear in Merrell 4 and are shown in Plate 4, B, 5 and 6. Both are made from flakes which have been retouched on one face only. The graver shown at 5 has a definite beak-like point; that shown at 6 has a chisel-like point. Both gravers have edges suitable for scraping and cutting purposes and are evidently tools which were used for more than one purpose.

Drills. One drill (Plate 4, B, 4) is present. This has a circular base that is well chipped on both faces; the tip of the pointed end is missing.

Scrapers. Eight scrapers occur in the series from this upper midden layer at Locality 2. One is an elongated flake with three well-chipped concavities on its margins. The remaining specimens in this category are side-scrapers that

PLATE 3

A. Projectile points from the upper gravel layer, Localities 1 and 2, Merrell site.

B. Artifacts from the upper gravel layer, Localities 1 and 2, Merrell site. 1, 3, Clear Fork planer-gouges; 2, 5, drills; 4, 6, projectile points; 7-8, knives, end-scraper; 10, pitted stone.

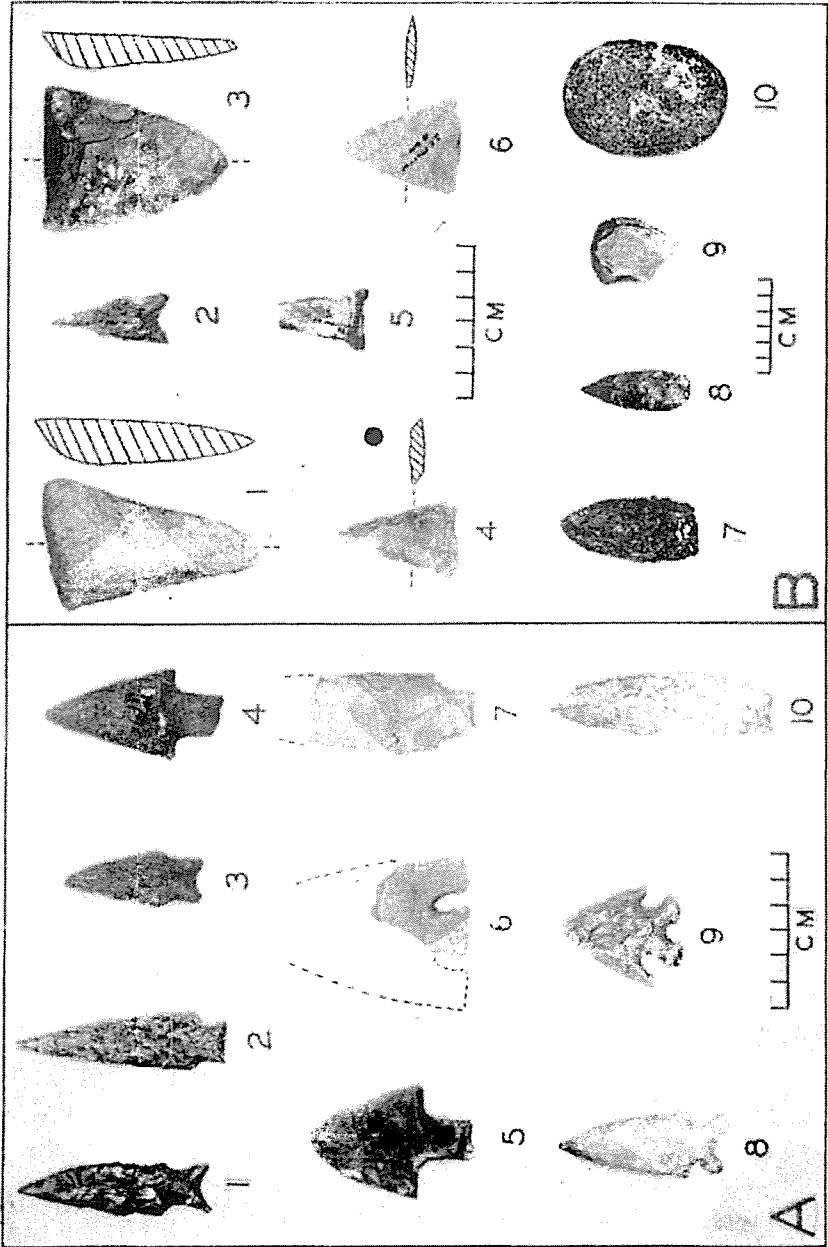


Plate 3

have been fashioned from fairly large oval flakes. Most of these have only one retouched edge (Plate 4, B, 7).

Hand Axes. Only one artifact belongs to this class (Plate 4, B, 8). It is made from a large, rather thick primary flake, with a portion of the margin neatly chipped to a broad, rounded cutting edge. The butt is formed by the striking platform of the original primary flake.

Choppers. Five objects have been placed in this category. In general shape they resemble the hand axe described above, but they are very roughly finished.

Handstones. Two handstones were found, one of which is shown in Plate 4, B, 9. This is made of rather soft sandstone; it has been pecked into shape and both faces are quite flat from heavy wear. The second specimen is an oval quartzite stream-bed cobble which shows abrasion on two faces.

Pigment. A small rectangular piece of hematite contains an oval depression on one flat surface. On this surface, both in the depression and surrounding it, are numerous striations indicating use as a source of pigment.

Surface Collection

From the Merrell site a total of 195 artifacts and artifact fragments were collected from the surface. These include essentially the same categories of artifacts that were taken from the two excavated localities. The series consists of 36 projectile points, 65 knives, 20 blades, 3 gouges, 1 graver, 20 scrapers, 1 hand axe, 1 pick, 2 hammerstones, 4 handstones, 1 small abrading stone, and numerous reject pieces.

The projectile points number 36, but sixteen of these are too fragmentary for purposes of classification. The forms duplicate those obtained from the excavation. They include one Taylor Thinned Base, two Nolan Beveled Stem, four Pedernales Indented Base, four points similar to the points shown in Plate 4, A, 4 and 5, two almost identical with that shown at Plate 3, A, 2, one like that at Plate 3, A, 1, and one similar to that at Plate 3, A, 8.

Of the 65 knives and knife fragments it is possible to classify fourteen as triangular, five as oval, one as lanceolate, four as stemmed (broad, square base and poorly defined shoulders), and three as flake knives. Similar forms appear in the 20 blades. Eight of these are triangular with a straight base, nine are ovoid, and one is lanceolate. The remainder of the knives and blades are too fragmentary for classification.

The gouges include one Clear Fork gouge¹⁸ with a biconvex cross section and two Clear Fork planer-gouges. The graver consists of a thick flake with one small beak-like point.

The scrapers include three concave-scrapers, one very large plano-convex end-scrapers, and sixteen side-scrapers. The hand axe is heavy, with a narrow, thick butt and a pointed blade; the choppers have broad, roughly chipped cutting edges. The pick is similar to those described from Merrell 4. The hammerstones include one flint core and one quartzite pebble, both specimens showing heavy battering. Among the handstones, one quartzite specimen has a broadly oval outline and pecked edges, and there are two rectangular quartzite pebbles showing grinding facets. All of these handstones exhibit only one abraded face.

The single abrading stone is made from a small, thin piece of black schist, each face showing a shallow basin formed by wear.

Cultural Identification of Merrell Site

It is clear that the artifacts from each of the strata at the Merrell site belong to the same basic culture. The same categories of artifacts appear in each of the layers, the most notable differences consisting of variations in projectile points. The trait list for the site as a whole indicates a nomadic hunting and food-gathering people with a predominantly lithic industry. This list includes the following general traits: stone-lined hearths, the discarded fragments of fire-cracked stone leading to the development of burnt

¹⁸ Ray, 1938, pp. 197-198 and Plate 24, Fig. 2.

rock middens; a variety of dart points; triangular, ovoid, and lanceolate knives and blades; Clear Fork types of gouges; side-, end-, and concave-scrappers; hand axes, crude choppers, and pick-like tools; gravers and drills; handstones and grinding slabs, the latter by implication only; pitted stones; mussel shell pendants; and the use of red pigment.

The absence of certain associations places the Merrell site in a definite horizon in the known archeology of the surrounding area. The absence of fossil mammals and demonstrably early types of projectile points¹⁹ makes it possible to exclude this site from the early American hunting horizon. Likewise, the absence of pottery and arrowpoints eliminates the possibility of placement in the late protohistoric and historic horizon, represented by the Austin²⁰ and Toyah²¹ foci in this area. The culture represented may thus be placed in an intermediate horizon. The traits listed above permit its placement in the Balcones phase which Kelley²² has defined as including the archaic (pre-ceramic) cultures of central, southern, and southwestern Texas and the adjoining portions of northeastern Mexico. Furthermore it can be placed in the Edwards Plateau aspect²³ of the Balcones phase, but the question as to whether it can be classified as a component of the Clear Fork, the Round Rock, or some other unnamed focus of this aspect cannot be answered on the basis of data available at present. Distinctive traits of both the Clear Fork and the Round Rock foci—shown by Kelley to be contemporaneous in the Colorado River valley near Austin—are present in the Merrell site. For example, in Merrell 1 one Clear Fork planer-gouge occurs; in Merrell 3 Taylor Thinned Base projectile points and Clear Fork planer-gouges occur along with a variant of the Pedernales

19 One exception to this statement will doubtless be noted, namely the presence of what formerly would have been called an Oblique Yuma type of point in Merrell 3. It is difficult to explain the presence of this type at the Merrell site. A common explanation for similar occurrences is that occasionally points from an earlier horizon were picked up and used by later people. This could be true here, but it is also possible that the people who left archaeological materials in Merrell 3 were contemporaneous with a group who still made "Oblique Yuma" points. A question is raised here which cannot be settled at present.

20 Kelley, 1947, p. 103; Krieger, 1946, pp. 165-168.

21 Kelley, 1947, p. 103.

22 *Ibid.*, pp. 99, 194.

23 *Ibid.*, p. 99 and Fig. 2, A.

Indented Base projectile point; and in Merrell 4 Nolan Beveled Stem points, Baird Beveled Blade points, and Clear Fork gouges are associated with Pedernales Indented Base points. Kelley has stated that "pure" components of Clear Fork and Round Rock foci are rare in a large part of central Texas and that traits of the two foci are commonly mixed in the same site.²⁴ The precise taxonomic position of the Merrell site cannot be determined until a number of detailed site reports are published from the central Texas area. For the present it is sufficient to assign the Merrell site to the Edwards Plateau aspect of the widespread Balcones phase of culture.

In view of the fact that my colleague, J. Charles Kelley, is now making a comparative study of central Texas archeology, no attempt will be made here to discuss the relationship of the Merrell site to other published sites of the Edwards Plateau aspect. Excavated sites of this aspect have been reported by Jackson²⁵ and Woolsey.²⁶

Age of the Merrell Site

The preliminary notices suggest a relatively early date for the Merrell site. They include such statements as the following:

The recent discovery at Round Rock by Mr. Pearce and similar discoveries elsewhere are tending to place the time of the appearance of man on this continent from 10,000 to 20,000 years earlier.²⁷

It is probable that all the deposits were laid down after the Pleistocene (Ice Age), or in early geologically Recent times. . . . On the other hand, they may go back into late Pleistocene.²⁸

²⁴ *Ibid.*, p. 100.

²⁵ Jackson, 1938, 1939.

²⁶ Woolsey, 1938.

²⁷ Anonymous, 1935a.

²⁸ Anonymous, 1935b.

PLATE 4

- A. Projectile points from upper midden, Locality 1, Merrell site.
 B. Artifacts from upper midden, Locality 1, Merrell site. 1-2, knives; 3, gouge; 4 drill; 5-6 graters; 7, side scraper; 8, hand axe; 9, handstone.

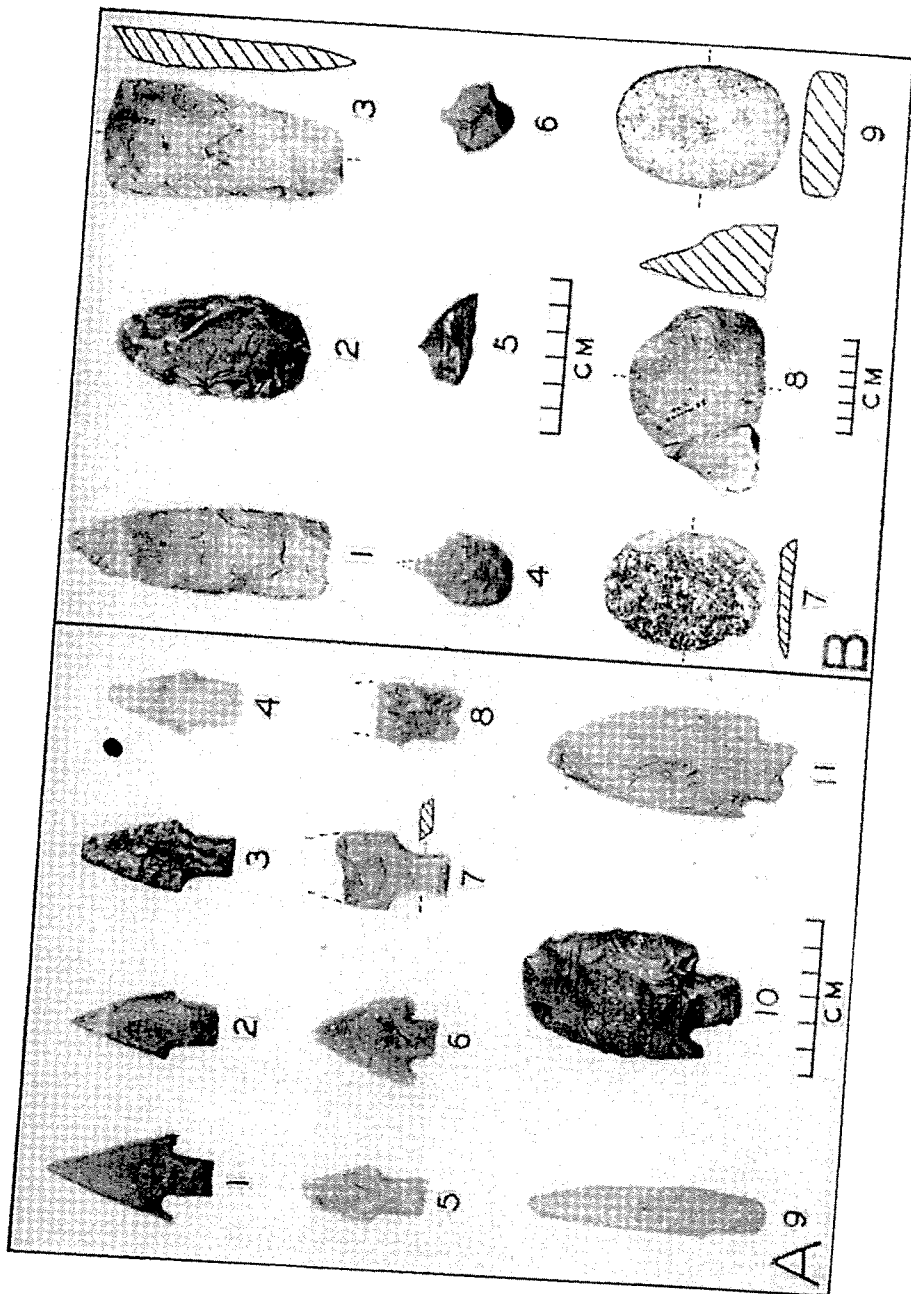


Plate 4

The basis for this dating, according to the notices, is the presence of archeological materials in the older of the two terraces in Brushy Creek valley. This proves that man was living in the valley during a period when the stream was first filling its previously cut valley. To indicate that this period must be early, it is stated that elephant and mastodon bones have been found in Texas "in terraces of similar position and height above stream level as this terrace at Round Rock."²⁹

Later, in his report on the geology of the Merrell site and its environs, Sellards³⁰ does not claim any great age for the upper terrace deposit. He points out that no vertebrate fossils were found and that the included snails and clams were of no aid in determining the age of the terrace. However, he stresses the fact that a considerable period of time is represented by the upper terrace deposits, and he suggests that these deposits reflect a set of conditions which must have been present in other stream valleys of Texas. The low position of the terrace, in his view, indicates a relatively late date, but he concludes with the statement that the age of the deposit is undetermined.

Today the best approach to the dating of the Merrell site is through a comparison with similar sites in the Colorado River valley which have been reported by Jackson³¹ and Kelley.³² In the Colorado River valley just northwest of Austin archeological materials assignable to the Edwards Plateau aspect have been found *in situ* in both the 20- and 40-foot terraces. Neither terrace has yielded vertebrate fossils in association with archeological materials. These are the two lowest terraces present in that valley, and they occupy the same relative positions as the 10- and 20-foot terraces of Brushy Creek. On the basis of identical physiographic positions and the inclusion of archeological remains referable to the same culture, it is suggested that the 20-foot

²⁹ Anonymous, 1935b.

³⁰ Sellards, 1936.

³¹ Jackson, 1939.

³² Kelley, 1947, pp. 100-103. See Kelley and Campbell, 1942, for cross section of the Colorado River valley.

terrace of Brushy Creek and the 40-foot terrace of the Colorado River are of the same age.³³

Kelley³⁴ has presented evidence which indicates that the Clear Fork and Round Rock foci of the Edwards Plateau aspect were in existence in the Austin area shortly after 4,000 or 2,000 B. C. and lasted until about 1500 A. D. A period of 3,000 to 5,000 years does not seem excessive for the formation of the two lowest terraces of the Colorado River and the two corresponding terraces of Brushy Creek. This confirms Sellards' view that the 20-foot terrace of Brushy Creek is relatively recent in date, but that a considerable span of time is necessary to account for its deposition, the subsequent channeling of the valley fill, and the formation of the 10-foot terrace.

The archeological materials of Merrell 1, 2, and 3 are incorporated in the deposits of the 20-foot terrace, but Merrell 4, the upper midden, rests on the terrace surface and could have been laid down at any time following the building of the terrace. The notable differences in projectile point forms between Merrell 3 and 4 suggest that an appreciable time interval may separate the two occupations. The inclusion of Merrell 1, 2, and 3 in the deposits of the 20-foot terrace places those occupations early in the time period indicated for the Edwards Plateau aspect. Merrell 4 is probably much later, but certainly not later than 1500 A. D.

Conclusions

The Merrell site has yielded archeological materials which indicate intermittent occupation over a long period of time by a relatively early nomadic and food-gathering population. The culture represented is a facies of the Edwards Plateau aspect of the Balcones phase and includes elements of both Clear Fork and Round Rock foci. Three of the four culture-bearing strata are included in the 20-foot terrace of Brushy

³³ Brushy Creek, it may be recalled, is a part of the Brazos River drainage system. If terraces of the Colorado River can be correlated with terraces of the Brazos River, it should be possible to give broad period dates to certain archaeological sites reported in the Waco area. See Bryan, 1935, p. 7, 1936a, 1936b, pp. 1361-1366; Mason, 1936, 1937.

³⁴ Kelley, 1947, pp. 105-106.

Creek, and this terrace is correlated with the 40-foot terrace of the Colorado River, which also includes archeological materials referable to the Clear Fork and Round Rock foci. These two foci are thought to fall within the period of 4,000 or 2,000 B. C.-1,500 A. D. The three strata included in the 20-foot terrace at the Merrell site are interpreted as belonging to the first part of this period, but the fourth stratum rests on the terrace surface and is probably much later in date. Occupation of the Merrell site ceased sometime prior to 1500 A. D.

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SURVEY OF TWENTY COKE COUNTY SITES

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At some period of the past the river and creek valleys of Central West Texas were scoured out to depths much greater than exist today, and at a subsequent period all of these valleys were filled to a considerable depth with a thick stratum of coarse gravel which contained many water worn stones of larger size. These stones are of various sizes and kinds, conglomerates and hard quartzites of several colors are common, but small rounded limestones seem to be the most numerous variety, and these are often mixed with quartz sand. In many localities rising moisture has left soluble lime salts in the form of caliche cement which has converted the beds of gravel and sand into beds of conglomerate and soft sandstone, but in other cases they remain only as compact gravel. At most localities these deposits are devoid of the fossils by means of which one might determine the period of their deposition, but in some sites scattered throughout the whole region fossil bones and teeth of the Columbian Mammoth have been found imbedded in these gravel beds, and this would seem to indicate that this deposition occurred during the Pleistocene. Evidently the present highland area between the drainages of the Clear Fork of the Brazos, and of the Colorado River, situated in Taylor, Nolan and Coke Counties, had a much greater altitude then than at present, and the valleys below were filled with the products of its erosion. In the time subsequent to the deposition of this uniform sheet of gravel over all the valleys on both sides of the central plateau, a different thing seems to have happened to this thick gravel sheet in the valleys of the north and northeast slopes in Taylor, Nolan, Fisher and Jones Counties from what happened in the valleys of the south to southwest mountain slopes in Runnels and Coke Counties.

For many miles on the north side of the mountains, and up to and including the mountain valleys and ravines opening

out on their northern slopes comparatively few remnants of this gravel sheet remain, but occasionally one sees small areas of consolidated remnants of this gravel in the form of conglomerate beds. These Hawley gravel and conglomerate beds only occasionally occur on the north side of the mountains, and then usually are down near the bottoms of the high river banks.¹ In places these sites occur along the course of the Clear Fork of the Brazos River, but throughout most of the area the gravel has been entirely removed by erosion and the same space in the river valleys has subsequently been entirely filled with seven regularly deposited Nugent and Clear Fork silts to a depth of thirty or more feet.²

On the southwest side of the highlands only a comparatively small area of mountain valleys in northeast Coke County, and on the extreme northern edge of Runnels County, contain deposits of Nugent and Clear Fork silts like those to be found in the valleys on the north side of the mountains. In Coke County the Pleistocene gravel deposits which fill the valley of the Colorado River and the valleys of its larger tributaries on both sides seem to have remained in almost undisturbed thickness at most of the places examined by the writer. In a few stream banks where the gravel does not exist, or possibly where the gravel has been eroded away, the river banks are filled in with a deposit which evidently is quite recent and probably is comparable with if not identical with the Fort Griffin silt. In a general survey of the high banks of the streams of Coke County the writer has found little evidence of very ancient inhabitation except in a small area in the northeast corner of the county where Clear Fork sites occur in the same type of formation that they do north of the mountains. In Coke County no sites buried as much as a foot in depth were found more than two miles west and the same distance south of the Kickapoo Mountains, which lie a few miles to the southwest of Fort Chadbourne Station. From the region of old Fort Chad-

1 Ray, Cyrus N., Stream Bank Silts of the Abilene Region, Bulletin of The Texas Archaeological and Paleontological Society Vol. 16, 1944-45.

2 Ray, Cyrus N. The Facts Concerning The Clear Fork Culture. American Antiquity Vol. 13, No. 4, April 1948.

bourne west to new Fort Chadbourne Station, and for a mile north of there, and for a distance of three or four miles southwest of that railroad Station, the mountain valleys have been filled with the Nugent and Clear Fork silts, and the Clear Fork silts there contain the same types of Clear Fork, Yuma, and Folsom artifacts, as are to be found in the same formations on the north side of the mountains. A site situated about a mile across the valley west of Nipple Peak, which is one of the Kickapoo mountains, is the farthest west location of any definite Clear Fork site found in Coke County. One Clear Fork gouge was found in a red deposit about one mile west of that site at the base of a mountain, but in all the rest of the county west and south of there nothing resembling either a Clear Fork, a Folsom or a Yuma dart head was found, nor was there any evidence of the Clear Fork silts in the stream banks, and nothing which could be classed as Nugent silts except at one Kickapoo Creek bank situated a short distance east of Bronte where the bank was topped by two bands of silt similar in color to Nugent Silts 4 and 5, but there were no evidences of middens or hearth stones in them. Evidently, the dryer climate, and perhaps the uncertainty of a good water supply farther west, caused early man to choose sites farther east.

Site (1)

Site (I) is a rock shelter in the east bank of Oak Creek situated near the Highway 158 bridge over that creek. A panel of peculiar criss-cross rock carvings extends across the roof of this rock shelter. This site was discovered and described in the 1930 Bulletin of The Society by Mr. E. B. Sayles, and he then stated that "four strata of charcoal³ and other evidences of occupation were encountered, each separated by a stratum of sterile silt and clay." Part of the site had been disturbed by treasure hunters prior to the excavation by Sayles and his findings of artifacts in place in the cave were too few on which to make a determination of the stone cultures. This rock shelter or shallow cave is now

³ Sayles, E. B. A Rock Shelter in Coke County, Bulletin of the Texas Archaeological and Paleontological Society. Vol. 2, 1930, pp. 33-40, Plates 4, 5, and 6.

devoid of any earth filling and the site has been worked over for twenty years by treasure hunters attracted by the ruins of Fort Chadbourne, which lie a short distance to the south of it. A historic Indian's grave formerly was on the top of a small hillock a short distance to the north of the shelter, and blue and white glass beads are still occasionally found there. The form of criss-cross petroglyph decoration of rock shelter wall panels shown there has only been found at two other sites, one in a cave shelter on the north slope of Blow-out Mountain in Taylor County, and the other on the south face of the cap rock of Turner Mountain, situated about two miles southwest of Fort Chadbourne Station in Coke County.⁴

Site (2)

Site (2) is situated about a mile north of new Fort Chadbourne Station, here a lane follows the Santa Fe railroad north on its west side, and the site lies west of the lane where a small dry branch of Oak Creek crosses the road. Here a gentle slope down toward the south is covered with a gravel layer, and old hearths are eroding from gullies in this gravel, and also from the underlying red silt, and from gravel hillocks nearer to the creek. Farther northwest and up the creek's course the small now dry creek bed is bounded by higher banks where it goes through higher ground, and the tops of these banks are composed of a shallow deposit of tan colored silt which is underlaid with several feet of dark red Lower Clear Fork silt and gravel, and hearths are eroding from these old red deposits on the sides of the creek banks. This site was found about ten years ago, and has been inspected at intervals since then, and in it all of the early types of implements of the Clear Fork culture have been found such as flint gouges, spokeshaves, side scrapers, disks, gravers, abrading stones, recessed based knives, punches or awls, and some round manos of the type which have one edge worn down thin, while the opposite edge remains thick. The darts were of Clear Fork classes one and two which probably are the oldest dart head forms of that culture, as

⁴ Kirkland, Forrest, *Petroglyphs of the Abilene District*. Bulletin of the Texas Archeological and Paleontological Society. Vol. 13, 1941. Plates 11 and 12.

these types occur buried in old red silt in the lower lying river and creek valley's high creek banks, at depths below the present soil surface of twenty-four feet.⁵ A few ancient end scrapers of large size were found in this site, and Mr. Joe Ben Wheat, while on a visit to the site in 1940, found a crystal quartz scraper. Also the writer has found in this site several fine recessed based, but not channelled blades which could be classified as Yuma points. Most of the different types of Clear Fork gouges were found there also. On a somewhat higher shelf just west of the creek branch is a considerable area of land covered with very large, highly polished conglomerate boulders.⁶ A number of ancient sites have been found in that region which were located adjacent to such accumulations of polished boulders, and such boulders seem to have held an attraction for men of the Clear Fork culture period especially, and perhaps so for some others. The small branch of Oak Creek which winds through this site is now dry, except immediately after rains, but it must have held water when the site was occupied, as there is no other apparent source in that locality.

Site (3)

Site (3) is located about one and one-half miles south and one and one-half miles west of Fort Chadbourne Station and on the north side of a small lane. The site covers a large area around, and north and east of a steep rocky escarpment, which lies in an east and west direction close beside the road. On the north side of the escarpment is a high nearly level shelf, which was once occupied, and hearths are eroding from shallow gullies in its rocky surface, and from this area a low rocky ridge winds off to the northeast to a high rocky conical shaped mountain, and the land on the north sides of these elevations slopes gradually off to the northeast toward a small dry creek which traverses a narrow valley, which opens out between the mountains still farther north. This creek branch drains

5 Ray, Cyrus N., The Clear Fork Culture Complex, Bulletin of the Texas Archaeological and Paleontological Society, Vol. 10, 1938, Plates 24 and 25.

6 Ray, Cyrus N., Permian Polished Boulders of Texas, Bulletin of Texas Archaeological and Paleontological Society, Vol. 17, 1946. Plates 14, 16, and 17.

southeastward into the middle fork of Kickapoo Creek. Gullies on the mesquite filled north slope of the ridge between the two mountains are filled with hearth debris. The banks of the small dry creek branch were occupied for a distance of more than a mile to the north during Clear Fork time, and the old hearths are eroding from Lower Clear Fork red silt and gravel at depths of two to three feet beneath the present soil surface all along its course back into the mountain valley. All of the components of the Clear Fork Culture have been found there. In one place five round mano stones were found embedded in a circle in ancient red Lower Clear Fork Silt, and these manos were in various stages of being ground down in the manner which wears down one edge thin and leaves the opposite edge with almost if not quite its original thickness. It is evident such a worn mano was held by one edge and the implement rotated in such manner as to wear it away only on one edge. The only whole metate found was large, round, and thick, and had two relatively small, round holes worn down in it close to the middle, this type has been found also in a Clear Fork site in Taylor County north of the Edwards Plateau. One rare gouge with curved cutting edges at both ends was found, and portions of two different Folsom points were found on the high terrace on the north side of the roadside escarpment. The largest concentration of hearths is more than a mile north of the roadside escarpment, and situated above two earthen water reservoirs. Here Clear Fork darts 1, 2, and 3, fish tail darts, and many other ancient types of darts were found, as well as most of the types of gouges. Near the east base of the roadside escarpment and also on the flat between that and the conical mountain to the northeast are a number of half embedded large boulders of San Angelo conglomerate, which have a glass-like polish over most of their surfaces. Ancient artifacts erode from the roadside ditches, and also from a dry gully which runs south just east of the polished boulders. There artifacts are buried two or three feet deep in dark red silt.

On the top of the roadside escarpment is a cap-rock about twenty feet in thickness, which faces the south and over-

hangs for a considerable distance in an east to west direction, and on this sheltered hard sandstone ledge is the largest number of the peculiar criss-cross petroglyphs ever found. These carvings seem to be in good condition except where they have been blasted off by ignorant treasure hunters or at the east end where rain has gotten to them and has eroded the hard sandstone away to a considerable depth. There also are a few petroglyphs on a group of large boulders down near the base of the escarpment near its west end. At an estimated distance of about one-fourth mile northeast of the roadside escarpment lies a round mountain which stands out away from the others and at the southwest base of this is a rocky shelf, and below this there are two rock shelter overhangs, which probably were occupied in ancient times, as much broken flint lies below them. The shelter to the south has a panel of eroded criss-cross petroglyphs on its walls inside the cave, and another panel is down near the floor, and some more higher up, and there are several more on the edge of a large boulder which lies just outside the cave and north of the overhang. The stone inside the shelter here does not seem to be as hard as that on the roadside escarpment, and has flaked off to some extent, and the carvings are not preserved in as good condition as on the mountain to the southwest. The gullies which erode the north side of this round mountain contain artifacts which erode from dark red silt and gravel, and a gravel strewn slope above a small earthen water reservoir also contains hearths and artifacts. The hummocks of valley gravel deposit above the creek branch northeast of the water reservoir have been much eroded, and show about fifteen inches of tan sandy Nugent silts on top, with twelve or fifteen inches of dark Clear Fork silts beneath them, and the latter lies on top of a layer of gravel. The numerous hearths and artifacts are eroding from the bottom of the dark red silt layer and the gravel under it. Of the three sites found which contain the peculiar criss-cross petroglyphs two were surrounded by very large Clear Fork Culture campsites, and people of that culture had lived near to all three, but there also were some indications of later occupations of all of these sites, so one cannot

identify the petroglyphs as the work of any particular culture type of man. A small elevated sandy shelf just west of the main escarpment was covered with unpatinated flints, end scrapers and other signs of a small later encampment. Several hundred yards west of the roadside escarpment a dry branch from the north crosses the road, and this has cut down through the silts of the flat valley floor to a depth of about twenty feet, and in the bottom has cut across a gravel deposit which contains several forms of large patinated dart heads.

Site (4)

At a distance of about three miles south of Fort Chadbourne Station, on a lane which parallels the Santa Fe railroad, a small dry branch of the middle section of Kickapoo Creek runs south between the lane and the railroad, and on the east side of this creek two or three feet of its silt banks have been eroded into gullies down to a hard caliche base. Here a few hearths were embedded in the silt at different depths but most seemed to be of intermediate age. There were eight large partly patinated end scrapers, mostly roughly finished except on the cutting edges, two partly patinated side scrapers, one knife, one graver, and one long stemmed and barbed dart head of intermediate age were found. One handaxe, two graters, two side scrapers, and a two-edged pointed side scraper, of patinated older types were found, which perhaps may be of Clear Fork culture.

Site (5)

Site (5) is located one mile south of the north section of a lane which makes a circuit around the Kickapoo mountains and is about three and one-half miles southwest of Site (3) and one and one-fourth miles southwest of Nipple Peak. Just north of this site is a small rocky escarpment and there is an earthen water reservoir near its base. A short distance below the face of the escarpment north and west dry branches of West Kickapoo Creek join to form that creek, and around this juncture is a considerable area of gravel deposit, and also of Lower Clear Fork Silt. Most of the later

deposits have been removed by erosion from above the Clear Fork deposits here.

In these gravel and dark red silt deposits numerous old hearths are embedded for a considerable distance both south and north of the juncture of the creek branches. Most of the artifacts found are of the Clear Fork culture, are heavily patinated and are definitely eroding from the old red silts and gravel along with the hearths around which they lie. Apparently this site had been searched rather completely for dart and spear heads, and with the exception of one No. 2 Clear Fork dart head and one rough leaf shaped blade the others found were broken, of these three bases of the broad fish tail shaped dart head were found. This type of heavily patinated fish tail shaped dart head, is often found in Clear Fork sites, and it is probable that the ancient fish tail type may also be a component of that culture. Darts with divided bases of many types were used throughout a long period of time, and there are several different types of bifurcated based dart heads which flare outward at the ends, and these should not be mistaken for the broad and more crudely made outward flared bases of a late unpatinated type of dart of the same region. The type from Clear Fork sites is thick, broad and always heavily patinated, it is wide in the middle, barbed and sharply recessed in the middle of the base from which point the base ends flare outward in the shape of the tail of a fish. These points have been found in greater or lesser numbers in all Clear Fork sites. Two plain shouldered and recessed thick dart bases were found, two broken drills, and one whole one, and each was of a different shape, one had a chisel shaped base and two had flat flake bases, one broken No. 2 Clear Fork dart head was found. Seven complete heavy knives or picks, four hand axes, ten gouges, fourteen side scrapers, seven large thick end scrapers, and nine large knife fragments were found. Five of the knife bases were of the recessed type. Three Clear Fork triangular flake points, one graver and one spokeshave were found. In addition to the above list some unpatinated artifacts were also found in a gully in a later silt deposit near the southeast end of the site.

Site (6)

Site (6) is located about one-half mile southeast of Site (5) and on the same west branch of Kickapoo Creek where it flows southward closely past the base of a conical mountain which stands out in the middle of the flat valley, about one and one-half miles from the Kickapoo Mountains which lie northeast of it, and farther away from the mountains to the northwest. At the north foot of the mountain is an eroded slope in dark red silt which contains many hearths and quantities of broken up flint which is mostly unpatinated. Above the camp deposit is the debris of a white man's house of about thirty years ago. Someone has completely removed the artifacts from the Indian site, and the house also is gone. Considerable flaked flint occurs on the lower lying terrace above the creek at the west base of the mountain, but the principal occupation of the site was at the south base of the mountain on a red gravelly stream terrace, and here are many hearths and piles of flint flakes of two different periods of occupation. The older flints were mostly patinated, and of these there were ten side scrapers, five rough rounded scrapers, two spokeshaves, and two triangular flake points of Clear Fork type. In addition there were seven unpatinated end scrapers, one oval mano, and two late small dart heads, and one large barbed spear head with ends broken. In addition were two large square based barbed dart bases. On the plain near the creek are scattered recent hearths, surrounded by unpatinated end scrapers, and these occur in groups at intervals on the flood plain, all the way north up the creek from Site (6) to the south edge of Site (5), and probably are remains of a rather late occupation. Site (6) probably was occupied at least three or more different times, judging from the accumulation of artifacts of at least three different stages of patination and types of workmanship. It is probable that Clear Fork men, men of the intermediate ages, and then men who used the very latest unpatinated forms of end scrapers and oval manos inhabited the site. The writer knows of no instance where a conical shaped mountain which sets off at some distance in a valley or plain, separated from the other mountains of a region, where there

are any signs of even a dry stream or a weak spring ever having been nearby that does not have a camp site near its base. Apparently the round mountains which stand off away from the others served as outlook places where Indians could survey activities in large areas of surrounding lowlands and also as landmarks by means of which one could locate the villages at their bases from distances of many miles across the plains. In many cases the bed rock stones on the summits are still reddened from ancient signal fires.

Site (7)

Site (7) is located on East Kickapoo Creek one mile north and one mile east of the town of Bronte, here the creek crosses an east and west lane, and the site is south of both the road and the creek. A steep lone mountain rises not far south of the lane, on top of which is a monument of the U. S. Geodetic Survey. A large area near the stream is covered with hearths and piles of unpatinated flint flakes and fragments, which probably were left by the latest stone age occupants of the site. The vertical creek banks here show no signs of other than surface, or near surface hearths. A mammoth's tooth had eroded from the gravel stratum at the bottom of the bank here, but this was far below any signs of human activity. South of the main creek some deep gullies cut into a gravel covered slope which is studded with large rounded off, and polished, San Angelo conglomerate boulders. There are many hearths embedded in the top of the gravel there and these hearths are surrounded by much man fractured and flaked flint, which is mostly patinated. This site is large in area but it evidently has been so thoroughly searched for artifacts by successive generations of boys from the nearby town that one now is unable to get enough fragments of implements with which to identify the culture types used there. A few unpatinated end scrapers were found in the latest occupied portion of the site, a small area close to the creek on the west end. The polished conglomerate boulders here had the shining appearance of being sleet

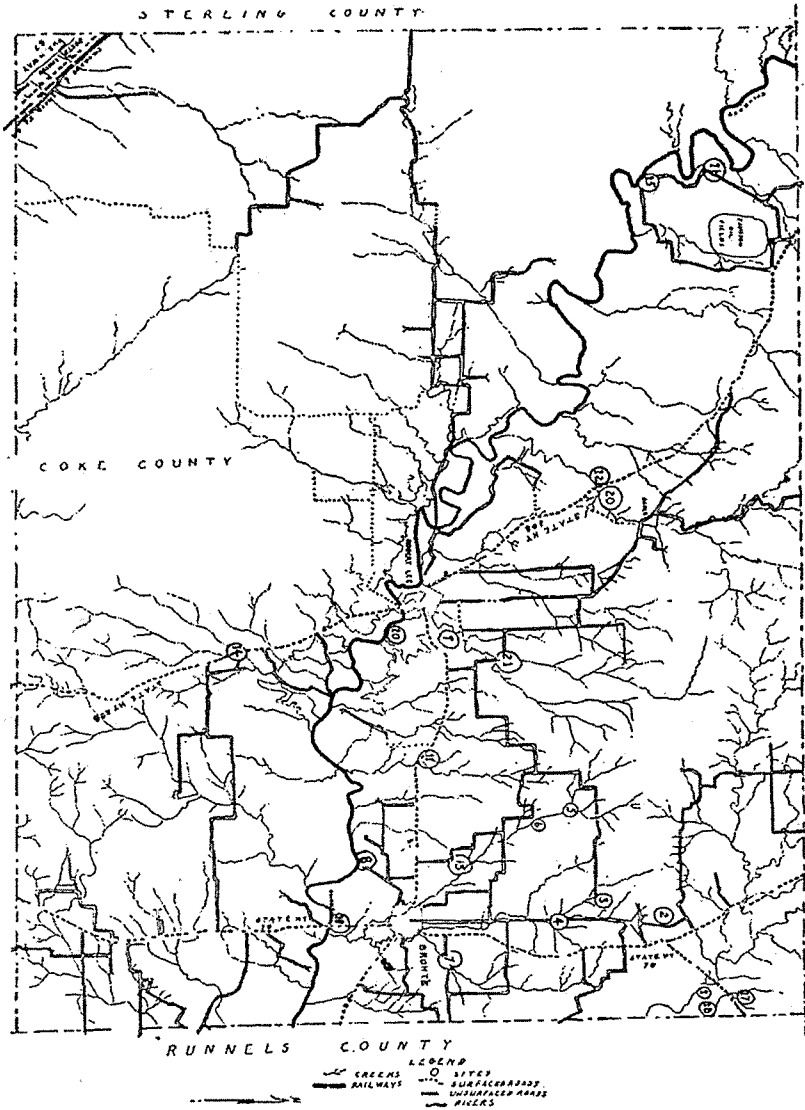


Plate 5

Location of twenty archeological sites in Coke County.

covered when the writer first saw them on a cold day. The flint debris and hearths on the slope below these polished boulders have some appearance of age in their white patination, but it would be necessary to excavate to be able to find enough artifacts to make any estimates relating to the flint cultures. It would seem that these shining boulders were an attraction to stone age man wherever they occurred, as in every place where they have been found a camp site either surrounds them, or is very close to them.

Site (8)

Site (8) is located three miles southwest of Bronte where a high rocky escarpment known as Cedar Mountain rises close beside the Colorado River, on its north bank. A small dry creek cuts into the south base of Cedar Mountain as the creek enters the Colorado River and a small camp is located on a shelf at the southwest base of the mountain and on the east bank of the creek. Here are piles of broken flint and many burnt rock hearths, which are embedded either in the surface or just beneath it. Several unpatinated end and side scrapers and half of a shallow rounded metate were found. This metate shows the fine peck marks of the sharpening of its shallow basin, and of the rounding off of its edges by the same peck method. Here also the nearness to a town probably explains the absence of projectile points. This small site was thickly covered with the recent burnt rock mound deposits of the Colorado River region, which evidently are of no great age, and have no cultural or time connections with the ancient burnt rock deposits associated with the Clear Fork Culture. Only in two sites were any artifacts found which resemble Clear Fork Culture types in Coke County outside of the mountain valleys on the head waters of Kickapoo Creek in the northeast corner of Coke County. No sites which contained Clear Fork darts and gouges were found in the rest of Coke County.

Site (9)

Site (9) is located on Mountain Creek at a distance of about one mile northeast of the town of Robert Lee. Mountain Creek is a large creek which flows in from the north

through Robert Lee to there join the Colorado River. Here there are numerous surface hearths of large rounded stones on top of the high east side creek banks and much hearth debris is also on a flood plain at a much lower level on the west side in an old cultivated field. The site is located where a natural sandstone dyke crosses the stream from east to west. The rounded stone hearths on top of the bluff on the east side were surrounded by much broken flint and an unpatinated hand axe made similarly to those of the ancient Clear Fork Culture, a large oval mano stone and some unpatinated end scrapers were found. This mano had been worn down into wedge shape, but despite this form of wear, which seems to have been an ancient method of use, the writer does not think that this surface site is a very old one. In the flood plain field on the east side two large oval mano stones and another unpatinated hand axe were found but the site had been almost completely denuded of projectile points, probably by boys from the nearby town. One thick barbed and stemmed point with a recessed base was found.

Site (10)

Site (10) is located about one and one-half miles south of Highway 158 as it nears the town of Robert Lee and is a small site in a cultivated field about one-half mile southwest of the air beacon which is east of Robert Lee. Here there is an area covered with considerable burnt rock debris and flint and in it were found one square ended oval mano stone, two flint ball hammerstones, two square based flint knives, one unpatinated dart head had an expanded convex base, and was stemmed and shouldered, and another dart head must have been of an earlier type picked up and brought into the site as it was patinated and had a bifurcated base of long mammalate shape similar to the Folsom types. There also were two side scrapers. Most of the flint was unpatinated, one hammerstone was patinated and the other not.

Site (11)

Site (11) is located on Cow Creek, which crosses Highway 158 between Bronte and Robert Lee. On the north side of the road a small creek branch enters Cow Creek from the

northwest and hearths project from the soil surface along both banks of Cow Creek for a considerable distance north, and also between it and the small creek branch. On the south side of the highway hearths are scattered along both creek banks for about one-half mile south, to where ruins of an old bridge cross Cow Creek. On the south side a large, thick and round mano stone was exposed on the creek bank margin by recent erosion where it had been covered about six inches in depth. Six unpatinated end scrapers were found around hearths, and four patinated side scrapers similar to the diverse forms and thick shapes found most often in Clear Fork sites. Also one of the flake points of the type where two widely separated flaked edges come to a point, these also usually are found most frequently in Clear Fork Culture sites, however neither darts, nor gouges of that culture were found. A square based knife and a long fish tail shaped dart of gray patination were found there. The hearths in this site are embedded in unbroken sod and have the appearance of recentness, although some of the artifacts from a gravelly slope do not. It is evident that several occupations must have occurred, and the older artifacts have been eroded out onto the later occupation levels. A hearth showed an almost round ring of rounded stones with earth in the center, forty inches in diameter. On digging out the earth filled center, a flat rock lined round basin was revealed, and the reddened stones and traces of charcoal showed that it had been used as a fire pit. In this area some sandstone boulders and ledges in the creek have produced water holes behind them, and it is evident that the area has been occupied at several different times, but most of the camp debris seems to be not more than half covered with soil. Considering that so large an area was covered with surface hearths there were relatively few artifacts to be found.

Site (12)

Site (12) is located on Highway 208 about seven miles northwest of the town of Robert Lee, and on the west side of the road. After crossing Yellow Wolf Creek a clump of very tall pecan trees may be seen several hundred yards north-

west of the bridge, the site is north of the grove on a small rise of land above a bend in the creek. Here is a group of the tallest and largest pecan trees the writer ever saw, the largest was four feet and seven inches in diameter and about one hundred feet tall, and was one of four large trees in three quarters of a ring, as though these giant trees had sprouted around the stump of a much larger tree. Evidently this site had been located because of the pecan grove in a region where there are very few large trees. The site is composed of surface hearth rings of large rounded stones which project half way out of the soil, like most other Coke County sites. Here several unpatinated end scrapers were found. Across south from the pecan grove is a vertical creek bank about forty or fifty feet high, and which extends for a considerable distance around a creek bend, and the length of this was examined from the dry creek bed below, and there were no signs of middens or hearths anywhere. This high bank seems to be of the gravel and rounded boulder composition, probably pleistocene, which is so characteristic of Coke County valleys, and this formation occupies the space up from the original Permian nearly to the present soil surface. On examination of the top of this high bank a few hearth rings were seen embedded in the unbroken soil surface grass roots.

Site (20)

Site (20) is located several hundred yards from the road up Yellow Wolf Creek, but on the east side of the highway, northeast of the same creek bridge and about opposite to Site (12). Here a very long high bank on the north side of the creek is visible from the road. An examination of this bank from the dry creek bed below showed about the same construction as on the west side of the highway downstream and there was no visible evidence of human occupation in this long section of high bank. Return to the road was made along the bluff tops until a draw was crossed which opened into the creek from the north. Here the creek bank is not so high as farther east but was thirty or more feet high and vertical in most places. On the west side of the draw a gen-

tle slope draws down from the hill above to the bluff edge. In this space were a number of hearths embedded in the grass and these were composed of small rings of large water rounded stones from the stream bed. Here no scrapers were found, but two unpatinated dart heads were, one was plain leaf shaped and one had the latest used form of bifurcated dart base found in Texas. The end of the base of such a point is recessed and the forked processes are spreading, rather than dependent as most of the early forms are, with the exception of the ancient spreading fish-tail type. Two side scrapers and the base of a large rough knife were found. The side scrapers were the only patinated artifacts and may belong to an earlier occupation of the site. A portion of the site was on an eroded slope, but most of the hearths of the area were half embedded in grass roots, and did not have any appearance of age. Half of a rounded edged oval mano stone, which had been used on both faces was found beside one of the hearths. The hearths were scattered for some distance back up the slope from above the edge of the creek bank, and on down to the very edge of the top of the vertical creek bank, and some of the hearth stones hung loosely out of the edges of the hearths so that when dislodged they fell straight down into the creek bed. Such hearths must have been some distance back of the brink when used, and this shows that several feet of very firm bank underlaid about half the way up by a sandstone ledge must have caved off since the hearths were made, and yet the hearths farther back up the slope stuck half way out of the grass roots.

Site (13)

Site (13) is on the main western branch of Kickapoo Creek down stream below sites (5) and (6), and this site lies over two miles northwest of the town of Bronte, and almost south of the Kickapoo Mountains. At this place on the creek below a corner in a country lane a natural conglomerate stone dyke crosses the creek and impounds a hole of water above it. The creek banks along both sides were strewn with hearths which had diameters of three or four feet, and were composed of the usual water rounded hearth

stones of Coke County which are larger than those so used farther east. There were many man made flint flakes scattered around but very few formed artifacts were found. One late form, unpatinated, spreading bifurcated based, dart head was found, and no scrapers. The absence of scrapers seems strange as most sites in the Abilene region have been picked rather clean of dart heads and knives, but one usually can still find from two to three to a dozen or more end scrapers in even the smaller late sites of that region, but this is not true of Coke County sites and this leads one to wonder if scrapers ever were found there in any considerable numbers, and if not so why not, since the area must have been well within the range of the bison where usually large unpatinated end scrapers are abundant. Some of these hearths with no surrounding artifacts might have been used by the historic Kickapoo Indians who are said to have hunted over the region about the time Fort Chadbourne was built, and to have camped on and given the creek its name.

Site (14)

Site (14) is situated on Valley View Creek about six miles south of the town of Robert Lee. Here the creek crosses Highway 208 from the west, and there are collections of hearths on the eroded edges of the tops of the banks on both sides of the road. The hearths on the south side contained no artifacts except one late type bifurcated dart head, but a collection of hearths on the north side, located farther from the road, were surrounded by much flint and a few artifacts which seemed older than most of those usually found in the region, as all but two of eight found were patinated. These were one large rough oval shaped blade, one large end and side scraper, one long side scraper similar to a Clear Fork type, two oval rough knives, one heavy end scraper, a section of a large twisted shaft knife, and one complete unpatinated blade of long triangular shape, which has widely bevelled edges and a nearly square base, and is nearly six-eighths of an inch in thickness in the center, although well made.

Sites (15) and (16)

In the northwest portion of Coke County a country lane makes a large oval circuit from the highway at Silver, around the Jameson Oil Field over to the high banks of the Colorado River, and then back to the highway farther north. At the end farthest from the paved highway the lane winds around northward on top of the highest terrace above the Colorado River. In making the circuit south from Silver the debris of an Indian camp site is seen in the road when one first makes a near approach to the river banks, and as the road winds around the circuit and starts to turn northward again at a place above a bend in the Colorado many hearths and much debris of a site may be seen in and beside the lane, and in the eroded hillsides below the lane at this place. On both visits approaching thunder storms drove the writer back to the paved road before a complete search could be made, but no artifacts were found in either of these areas although there was much broken flint.

Site (18)

This site is located on the eroded east terrace of a branch of Oak Creek which flows south about one-half mile east of old Fort Chadbourne on the Wylie Ranch and is definitely a Clear Fork Culture site. A number of Clear Fork gouges were found there on the first examination of the site about four years ago, and on a recent visit the artifacts found were three gouges, one flint punch, one round thick scraper, one spokeshave, one large flake base-graver, one combination side and end scraper, and two dart heads. One dart head was of broad fish tail type and one was shouldered and stemmed, and also the base of a square based knife. A Pinto Point was also found in this site.

Site (19)

Site (19) is on the west side of Highway 70 just north of the Colorado River bridge south of the town of Bronte. On

the high river terrace several hundred yards west of the bridge the hearth debris of an Indian camp site is scattered over an eroded area. Much broken flint and mussel shells, and fire reddened hearth stones are exposed there, but the artifacts have been removed. One long narrow flake scraper was all that was found, this was made by flaking a long narrow sliver off of a rounded flint nodule and then running a minute retouch along one edge and up around one end to a point. The original crust was left all over the rest except for the flat face left when the flake was made.

Conclusions

Nearly all of the sites in Coke County with the exception of those in the northeast corner of the County have an appearance of having been made not very long ago, a few hundreds of years at most, but surprisingly no arrowheads of the small late pottery types were found with the exception of a very few found in the older occupied region near Fort Chadbourne, and none was found in the plains region where the large stones of the hearths protrude from the grass roots as though placed there quite recently. Also not one potsherd was found in any campsite in Coke County, although potsherds have been reported from both east and west of Coke County. The great scarcity of both the large and small forms of end scrapers is also surprising in that the area evidently was within the bison range.

Whenever high vertical banks of either creeks, or of the Colorado River were seen, an examination was made of them from below by walking down the dry beds of the streams, and this was made uncommonly easy by a nearly rainless season. In all of the area no hearths were to be seen below grass roots depth except in the mountain valleys of the Clear Fork Culture area in the northeast corner of Coke County.

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ARCHAEOLOGICAL SURVEY OF MCGEE BEND RESERVOIR: A PRELIMINARY REPORT¹

ROBERT L. STEPHENSON

Introduction

Preliminary plans having been completed, a large dam and reservoir is proposed for construction on the Angelina River in East Texas. This dam, known as McGee Bend Dam and Reservoir, will be a concrete and earth fill structure 130 feet high with 1,000 feet of concrete fill and 10,920 feet of earth fill. The normal pool level will be 173 feet above sea level and the maximum flood pool will be 187.4 feet above sea level. This dam is to be constructed primarily as a power plant and secondarily as a flood control and water conservation measure.

The dam itself is located on the Angelina River in northern Jasper County 25 miles upstream from the junction of the Angelina and Neches Rivers. The reservoir will flood some 90 river miles up the Angelina, as well as 45 miles up the Attoyac River, 45 miles up Ayish Bayou and 20 miles up Bear Creek. The latter are all tributaries of the Angelina River. Along the Angelina River the maximum width of the reservoir will be nearly 9 miles. This will form one of the largest reservoirs in Texas, and will extend from Jasper County into Sabine, San Augustine, Angelina and Nacogdoches Counties.

The Angelina River, a tributary of the Neches River, flows southeast through the central part of East Texas. Several major tributaries enter the Angelina from the north; none from the south. This area lies in the physiographic province of the coastal plains and is known as the eastern timbers area of that province.² The dam is located at the southern edge of a geographic rise in the general terrain. South of

¹ This report is preliminary and based on surface findings only. When recommended excavation of selected sites in this area is completed, a final report will be made.

² Data based on Erwin Raiz *Map of the Landforms of the United States*. Wallace Atwood, Ginn & Co., 1939.

the dam the average elevation above sea level is around 85 feet to 100 feet. North of the dam the terrain is considerably more hilly and the average elevation is about 150 feet higher, rising and becoming more hilly to the north. The soil throughout the area is extremely sandy with many deposits of a very red clay. This red clay becomes more dominant toward the northern end of the reservoir. Ferruginous sandstones, brown and tan sandstones, chert, jasper, hematite, limonite and petrified woods (mostly hardwoods and palms) are the common native rocks.

The rivers in this area have shallow basins with only one terrace in evidence in most sections. The present floodplains are wide and become inundated by periodic floods every third year.³ These floods are often quite severe and the Angelina has been known to rise as much as 10 feet over night. The climate is very humid with 60 inches of average annual rainfall. Consequently, the river bottoms are covered with a dense, swampy vegetation of hardwoods, palmettoes and other temperate zone mesophytic jungle flora. The areas away from the river bottoms are covered with a heavy growth of pine forests.⁴ Wild game is extremely abundant over most of the area at the present time.

Archaeological Survey

Under the direction of Dr. Frank H. H. Roberts, Jr., Director of the River Basin Surveys, the author made an archaeological survey of the areas to be flooded by this reservoir. This project is a part of the River Basin Surveys, a cooperative program of archaeological salvage between the Corps of Engineers, Dept. of the U. S. Army, and the National Park Service, and is under the direction and supervision of the Smithsonian Institution.⁵

In the winter of 1939-40, The University of Texas-W.P.A. program undertook a similar survey of this section of East

³ Data from Hydrographs—Dam "B," U. S. Engineer Office, Galveston, Texas, 1938.

⁴ Parks, H. B., Corey, V. L., et al., 1938.

⁵ The permission of the Smithsonian Institution for publication of this article has been kindly granted the author by Dr. Frank H. H. Roberts, Jr.

Texas. Field work was accomplished by Mr. Gus E. Arnold, and over 200 sites were located in 15 counties. Of these sites, 23 are located in the area covered by the present survey. Arnold's unpublished report was used as a base from which to start the present survey and proved to be very accurate and informative. The artifacts collected by Arnold from the 23 sites in this area were re-examined and included in the study of the artifacts from the present survey.⁶

The McGee Bend survey was begun in early January, 1948, and carried to completion on April 10, 1948. The 23 sites reported by Arnold were revisited and an additional 57 sites were located, making a total of 80 sites in all. Of these, one is an artificial mound with a large accompanying village; one is probably a small, artificial mound; and two others are possibly very large, artificial mounds. The nature of the latter three is not yet definitely known. Extensive test trenching will be required to determine this point. The remaining 76 sites are all open, occupational areas of varying sizes and intensities of occupation. Many of these are small, temporary camp sites from which little information can be gained. Others appear to have been large villages and extensive excavation has been recommended at these sites.

Acknowledgments

To the Corps of Engineers, Dept. of the U. S. Army, and to the National Park Service is due sincere gratitude for providing funds to make this survey possible. During the course of the survey, the District Office of the Corps of Engineers in Galveston, under the direction of Col. B. L. Robinson, was very cooperative and helpful as were the Resident Engineer, Mr. Fred Johnson, and his assistant, Mr. Tom Porter, at the Jasper Field Office. Sincere thanks is expressed to the many informants and landowners throughout the reservoir area who provided much valuable information in locating sites. Also, during and subsequent to the survey, the Dept. of Anthropology of The University of Texas, under the chairman-

⁶ Information and material from Arnold's survey is on file at the Dept. of Anthropology, University of Texas, Austin, Texas.

ship of Dr. T. N. Campbell, extended its complete facilities to the survey. The Dept. provided file information and laboratory and storage space. Dr. Campbell and Mr. Alex Krieger of that department gave unstintingly of their time and valuable technical advice and criticism. Mr. Krieger was especially helpful in the classification of pottery types. Grateful acknowledgment is made to all these people.

*Site Analysis*⁷

41-42D6-10* is a large, Alto Focus village site located on Bear Creek. Pottery is dominantly clay tempered and of Dunkin Incised and Pennington Punctate Incised types.⁸ An arrow point, an abrader and several Bosque Stemmed dart points were also found.

41-42D6-9* is a small, artificial (?) mound on Bear Creek near the above site. It is 4½ feet high and 30 feet in diameter. No artifacts were found here.

41-43C4-6* is a large, village site on Bear Creek near the above two sites. Pottery is dominantly clay tempered and of Dunkin Incised, Pease Brushed-Incised, plain, Davis Incised, Pennington Punctate-Incised, and Belcher Ridged types. Perdiz Pointed Stemmed arrowpoints, metates, and flake scrapers were also found. The site shows Alto Focus occupation with a secondary occupation in Bossier Focus times.

41-43C4-3 is a small, Alto Focus campsite on Bear Creek. Pottery is dominantly clay tempered and of Dunkin Incised, Pennington Punctate-Incised and plain types.

41-43C4-1* is a large, Alto Focus village site on Bear Creek. Pottery is dominantly clay tempered and of Dunkin Incised, plain, and Belcher Ridged types. Two sherds of Marksville Incised and one each of Poynor Engraved and Patton Engraved also occurred. Other artifacts found are: pitted

⁷ Those sites indicated by an asterisk have been recommended for further excavation.

⁸ In all cases the pottery types are listed in order of their dominance in the site.

manos, a scraper, a hammerstone and a Perdiz Pointed Stemmed arrowpoint.

41-43C7-1 is a small, Alto Focus campsite on a tributary of Bear Creek. Pottery is dominantly clay tempered and the few identifiable sherds are Davis Incised type.

41-43C7-5 is a small campsite on a tributary of Bear Creek. No artifacts were found here.

41-43C7-2 is a small campsite on a tributary of Bear Creek. Pottery is all plain, sand tempered. An abrader and a projectile point were also found.

41-42D9-1 is a small, Alto Focus campsite on a tributary of Bear Creek. Pottery is dominantly plain, sand tempered, but Dunkin Incised and Davis Incised wares also occurred. Other artifacts found are an abrader, a scraper and two arrowpoints.

41-42D9-2* is a large, Alto Focus village site on Bear Creek. Pottery is dominantly clay tempered and of plain, and Dunkin Incised types. A scraper and two Bosque Stemmed dart points were also found.

41-42D9-3 is a small campsite on Bear Creek. Pottery is dominantly sand tempered but the only identifiable sherd is Taylor Engraved.

41-42D9-4 is a small campsite of indeterminate cultural affiliation, located on Bear Creek.

41-42D9-6 is reported to be an old Indian cemetery, but no graves nor artifacts were found here.

41-42D9-7* is a small, Alto Focus campsite on Ayish Bayou. The few pot-sherds recovered are dominantly bone tempered and of Dunkin Incised type.

41-42D9-8 is a small campsite overlooking Ayish Bayou near the above site. No artifacts were recovered here.

41-42D9-9 is a natural salt lick around which artifacts are reputed to have been found. Possibly this was an aboriginal salt supply.

41-42D6-11 is a small campsite on Ayish Bayou. No artifacts were recovered here.

41-42D6-12 is a small, non-pottery campsite on Ayish Bayou. Several scrapers, two Ellis Stemmed dart points and one triangular dart point were found here.

41-42D6-1* is a large village site on the east bank of Ayish Bayou. Alto Focus occupation is dominant here with a later occupation by Frankston Focus and/or Bossier Focus people. Pottery is dominantly clay tempered with Dunkin Incised, Pennington Punctate-Incised, Davis Incised, plain, Hickory Fine Engraved, Weches Fingernail Impressed, Holly Fine Engraved and Harrison Bayou Incised types occurring. Killough Pinched and Belcher Ridged types were found in relatively small percentages. All projectile points were indeterminate in type.

41-42D6-2* is a large village site on the west bank of Ayish Bayou. In all respects it is very similar to the above site and possibly is a part of it.

41-42D9-5* is an artificial mound site with a large accompanying village. It is located on the Angelina River in the southern corner of San Augustine County. The mound is 100 feet in diameter, circular, truncated, with top diameter of 50 feet. It is now about 12 feet high, but has been higher in the past. The fill is composed of yellow and gray sand with some pockets of yellow clay. The village area is ten or more acres in area, and occupation extends to a depth of over two feet. Pottery is dominantly clay tempered and of Dunkin Incised and plain types. An abrader, several scrapers, a chopper, a small drill, and two arrow points were also found. Alto Focus occupation is implied. This is the most important site in the area for further excavation due to its similarity and probable relationship to the Davis Mound Site.⁹

41-42D9-11 is a small campsite on the south side of the

⁹ Newell, H. P. and Krieger, A. D., *The George C. Davis Site, Cherokee County, East Texas*, manuscript in preparation.

Angelina River opposite the above site. Very little material was found here and the cultural affiliation is unknown.

41-42D9-10 is a small, Alto Focus campsite on the Angelina River. Pottery is dominantly clay tempered with Dunkin Incised and Pennington Punctate-Incised sherds occurring. Two scrapers and an arrow point were also found.

41-42D8-1 is a campsite on the Angelina River. No material was collected here, but a private collection from the site was observed. All projectile points are of the large, dart point type and the owner stated that no pottery had ever been found here. Apparently this is a non-pottery site.

41-42D8-2,3,4, and 5 are small, indeterminate campsites on the Angelina River.

41-42D8-6* is a small village site 2 miles south of the Angelina River. All sherds are sand tempered and the land-owner reports a boatstone having been found here some years ago.

41-42D8-7 and 41-42D5-12 are small, indeterminate campsites on the Angelina River.

41-42D5-10* and 11 are small, Bossier Focus village sites on the Angelina River. Pottery is dominantly clay tempered and of Pease Brushed-Incised type.

41-42D5-6, 7, and 18 are small, indeterminate campsites on the Angelina River.

41-42D4-6 is a small, Alto Focus campsite on the Angelina River. Pottery is dominantly clay tempered and of Dunkin Incised type.

41-42D4-5 is a small, non-pottery campsite on the Angelina River. Scrapers and Sterrett Stemmed dart points were found here.

41-42D4-4* is a small, Bossier Focus village site 2 miles west of the Angelina River. Pease Brushed Incised ware is dominant here.

41-42D4-7 is reputed to be the historic camp of a group of Indians led by "Chief Popher." No material was recovered here.

41-42D5-13 is a small, indeterminate campsite on the Angelina River.

41-42D5-9* is a large village site of Alto Focus occupation with a later occupation by Bossier Focus people. Pottery is dominantly clay tempered and of Dunkin Incised, Maddox Band Engraved and plain types. Scrapers, a large blade, two Alba Barbed arrow points and one Cuney Stemmed arrow point were also found.

41-42D5-8* is a small village site on Harvey Creek, a small tributary of the Angelina River. Alto Focus and Frankston Focus occupation both seem to be indicated. The pottery is dominantly both clay and sand tempered. The few identifiable sherds are plain ware and Maydelle Incised. A pitted mano, several scrapers, a triangular dart point and two abraders were also found. This site, the above site, and the following six sites, all on or near Harvey Creek, represent a relatively small area with a heavy concentration of aboriginal population. Apparently this concentration of sites took place over a long period of time from early pre-pottery times to the historic period.

41-42D5-1* is a large village site on Harvey Creek. Alto and Bossier Foci are both represented here in Dunkin Incised, Pennington Punctate-Incised, Weches Fingernail Impressed and Pease Brushed-Incised wares. Four sherds of Patton Engraved ware may indicate historic Allen Focus influence. Alba Barbed arrow points, Ellis Stemmed dart points, several scrapers, a polished celt, an abrader, a metate and several pitted manos were also found here. There is some indication here of a sectional differentiation of artifacts within the site.

41-42D5-4* and 5* are two nearly adjoining sites on Harvey Creek, each representing a large non-pottery village. The potsherds are almost entirely sand tempered and are very rare. On the other hand, large, heavy projectile points

(Ellis Stemmed, Bosque Stemmed and Sterrett Stemmed) manos, metates, scrapers, etc., recovered are almost all of early types. Apparently a pre-pottery culture is represented here, or at least a very early pottery culture.

41-42D5-2* and 3* are two related sites on Harvey Creek representing large, Alto Focus villages with later Bossier Focus occupation. Pottery is dominantly clay tempered and of Pease Brushed-Incised, Maddox Band Engraved, Dunkin Incised, Pennington Punctate-Incised, Harrison Bayou Incised types. Frankston Focus is also represented in a minor way here by Poynor Engraved, Bullard Brushed, Maydelle Incised, and Killough Pinched sherds. The land-owner reports that during a heavy flood here some years ago 25 or 30 whole vessels were washed out of this site. A metate, an abradar, several scrapers, and several Perdiz Pointed Stemmed arrow points were also found here.

41-42D5-14 is a small, indeterminate campsite on Harvey Creek. Bone tempered sherds were found.

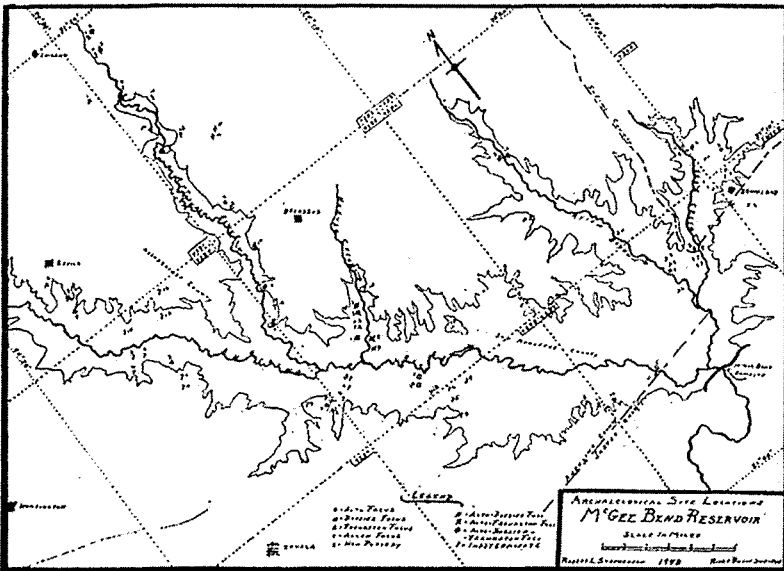


Plate 6
Sites of the McGee Ben Reservoir Area.

41-42D4-1 and 11 are small, indeterminate campsites on the south side of the Angelina River. Probably Alto Focus is represented here.

41-42D4-3 is a small, Frankston Focus campsite on the Angelina River. Clay tempered sherds of Bullard Brushed ware were found here.

41-42D4-2,9,10, and 12 are small, indeterminate campsites on the Angelina River.

41-42D4-13* and 14* may be large, artificial mound sites within the floodplain of the north side of the Angelina River. Here, on otherwise level terrain and separated from the foothills, are two large, elliptical knolls or "mounds." Each is around 70 feet high and 500 feet in diameter with a terrace about half way up the sides of each. Artifacts are reported from here, but none were found. Only extensive test trenching will determine whether or not these are artificial mounds.

41-42D1-4 is a small, Frankston Focus village site on the Angelina River. Pottery is dominantly bone tempered and of Bullard Brushed type.

41-42D1-2* and 3 are non-pottery village sites on the north side of the Angelina River. Artifacts recovered here are Gary Stemmed, Ellis Stemmed, Bosque Stemmed, and Sterrett Stemmed dart points, scrapers, a pitted stone, and a drill.

41-42D1-1 is a small, non-pottery site on the west side of the Attoyac River. Artifacts found were crude and indeterminate in type.

41-42D2-2* is a small, Bossier Focus campsite on the upper Attoyac River. Pottery is dominantly sand tempered yet Pease Brushed-Incised and Maddox Band Engraved sherds were identified. Also 3 Marksville Incised sherds were found here.

41-42D2-1* is a small, historic, Allen Focus site on the upper Attoyac River. Bone tempered pottery is dominant here and Patton Engraved sherds were identified.

41-42D2-3 is a small, Alto Focus village site on the upper Attoyac River. A later Bossier Focus occupation is apparent. Pottery is dominantly clay tempered and of Pease Brushed-Incised, Maddox Band Engraved, Dunkin Incised and Davis Incised wares.

41-42D2-4,6,7,13,14, and 15* are small, indeterminate campsites on the Attoyac River.

41-42D2-12* is a large, Alto Focus village site on Attoyac River. Pottery is dominantly clay tempered and of plain, Dunkin Incised, Pennington Punctate-Incised and Weches Fingernail Impressed types. Trade sherds are of Harrison Bayou Incised type. Scrapers, large blades, Ellis Stemmed, Bosque Stemmed dart points, pitted and unpitted manos and an abrader were also found. A short, broad, fluted point was also found here that is not identifiable with any of the "early man types" but may be similar to the San Patrice point of northern Louisiana.¹⁰

41-42D2-10* and 11* are two components of a single, large, Alto and Bossier Focus village site near the Attoyac River. The former is the occupational area; the latter is probably the agricultural area. Evidence of pre-white field clearing is apparent here. In the occupational area, pottery is dominantly clay tempered, and Dunkin Incised, Harrison Bayou Incised, Pease Brushed-Incised and a plain ware were identified.

41-42D2-8 and 9 are small, Alto Focus campsites on the Attoyac River. The few identifiable sherds are of Dunkin Incised type.

41-42D5-17* is a large, Alto and Bossier Focus village site on the Attoyac River. Pottery is dominantly clay tempered and Dunkin Incised, Pease Brushed-Incised, Harrison Bayou Incised, plain, Maddox Band Engraved, Pennington

¹⁰ Webb, C. H., 1946.

Punctate-Incised, Crockett Curvilinear-Incised and Taylor Engraved wares were identified. Pitted and unpitted manos, scrapers, Ellis Stemmed, Bosque Stemmed and Sterrett Stemmed triangular dart points, a polished celt and a hammerstone were also found.

41-42D5-15* is a large, Alto Focus village site on the Attoyac River. Very little material was present on the surface, but a large amount of material was recovered from a test pit. Pottery is dominantly clay tempered and Pennington Punctate-Incised, Davis Incised and plain wares were identified. Scrapers and an abrader were also found.

41-42D5-16 is a small, indeterminate campsite on the Attoyac River.

41-42D4-8* is a large village site on the east bank of the Attoyac River 3 miles north of the junction of that river with the Angelina. Informants state that an "old Indian trail" from Louisiana to central Texas crossed the Attoyac near this site, and it is very possible that this was the crossing used by the Spanish under Moscoso in 1542." Pottery is dominantly clay tempered and Dunkin Incised, plain, Harrison Bayou Incised, Maddox Band Engraved, and Pease Brushed-Incised wares were identified. Unpitted manos, scrapers, large blades and several dart points were also found. Alto Focus occupation is represented here with a later occupation by Bossier Focus peoples.

Summary and Conclusions

The present archaeological survey of McGee Bend Reservoir has provided only a tantalizing glimpse of what is to be found in this area by further work and intensive excavation at selected sites. This excavation has been recommended and plans are now under way for securing the means of accomplishing it. In summary several interesting points may be made.

The historic Indian cultures of this region are a part of the Southeastern Culture Province and are largely ascribed

to the Hasinai groups. The Eyish, Nacogdoches, Nacau, Nasoni, Anadarko, Nacachau, Naconish, Hainai, Nacono, Nechaui, and Nabadachi tribes are reported to have inhabited the area circa 1650. Most of these groups were located just slightly to the north and west of the McGee Bend area but still within the general vicinity. The Eyish were reportedly living within the reservoir area from 1542 to 1801, and concentrated on the Ayish Bayou. Early records state that they differed considerably from the other Hasinai tribes. The Cherokee are reported to have been in the area from 1828-1839.¹²

The archaeological results of this survey show occupation of this area by at least five separate cultural groups. There is indication of a non-pottery (if not a truly pre-pottery) focus in at least 8 sites. The Gibson Aspect of early pottery cultures is represented in 34 sites of Alto Focus affiliation. In these sites Dunkin Incised, Pennington Punctate-Incised, Davis Incised, Weches Fingernail Impressed, Holly Fine-Engraved, Hickory Fine-Engraved and Crockett Curvilinear-Incised wares occurred. The Fulton Aspect of later pottery cultures is represented in 22 sites of Bossier and Frankston Foci affiliation. The Bossier Focus is indicated in 15 of these by Pease Brushed-Incised, Maddox Band Engraved, Belcher Ridged, and Taylor Engraved wares. Frankston Focus is indicated in 10 sites by Bullard Brushed, Killough Pinched, Poynor Engraved, and Maydelle Incised wares. The historic Allen Focus is represented by Patton Engraved ware in 3 sites, only one of which provided more than one sherd. None of these foci are concentrated in any particular geographic section of the McGee Bend Reservoir area.

Combinations of the above foci occurred in at least 12 sites. Alto and Bossier Foci are indicated in the same site in 9 instances; Alto and Frankston Foci in 1; Alto, Bossier and Frankston Foci in 2; Alto Focus alone in 17; Bossier Focus alone in 4; Frankston Focus alone in 2; Allen Focus alone in 1. Eight appear to be non-pottery sites, and 36 are of indeterminate cultural affiliation. Trade sherds of Har-

12 Swanton, J. R., 1946.

rison Bayou Incised, Bowles Creek Plain, Wilkinson Punctate and Marksville Incised wares occurred in 12 of the above sites. Five of these are of Alto Focus; 3 are of Alto-Bossier Foci; 2 are of Alto-Frankston Foci; and 2 are of Alto Bossier-Frankston Foci. The sites in which Frankston Focus and Allen Focus materials are represented produced only a small number of definitive sherds. They probably do not represent occupations by these people, but rather indicate trade with them.

The cultural affiliations implied are largely determinable on the basis of potsherd types. In the entire survey no artifacts of bone, shell or other materials than stone and pottery were recovered. No influence from the Gulf Coast was found but extensive influence from the pottery cultures of Louisiana, including Marksville, appeared. Some influence from Central Texas was found in the lithic artifacts made of gray flint from that area. The dominant pottery type, both in absolute numbers and in representation in numbers of sites is Dunkin Incised ware. This and other Alto Focus wares comprise over half of all identifiable sherds. Bossier Focus wares are second in quantitative significance. Other wares are only present in very minor percentages. A plain type of pottery is found in a large number of sites and is here called "sand tempered." It is actually composed almost entirely of sand with only enough clay included to hold the sand together. This is considered to be a very old type of pottery and at the Davis Site (Alto Mound) was found only in the very earliest levels.¹³ This type also occurs in some of the earliest pottery sites throughout the southeast. It is not presumed that this implies influence from any specific areas of the southeast, but rather is a widespread type of very early pottery and is included in this western extremity of the Southeastern Culture Province.

The cultural sequences, as shown by this survey, indicate that the area of the McGee Bend Reservoir was occupied at some time or times by a non-pottery people; that the major

¹³ Newell, H. P. and Krieger, A. D., *The George C. Davis Site, Cherokee County, East Texas*. Manuscript in preparation.

occupation of the area was by Alto Focus peoples between the 11th and 14th centuries A. D.; and that later some of these same villages, as well as some new ones, were occupied by Bossier Focus peoples between the 14th and 16th centuries A. D. The latter were in contact with the Frankston Focus people and also, to a minor extent, with other groups to the east. This latter contact to the east may have existed also in Alto Focus times. Whether Alto Focus developed into Bossier Focus or was replaced by it is a matter for speculation. At least it can be said that a very large number of Alto Focus sites also show Bossier Focus occupation and there is certainly some implication of gradual development from the one to the other.

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AN ARCHAEOLOGICAL RECONNAISSANCE IN NORTHERN COAHUILA

HERBERT C. TAYLOR, JR.

If one places the point of a compass at the confluence of the Pecos and Rio Grande, then sets a thirty mile radius upon the instrument and draws a circle, one has achieved a crude circumscription of the known boundaries of the Pecos River Focus pictograph area. Deform the circle to the eastward by blunting it to follow the west bank of the Devil's River and place a question mark in all that circumscribed area which lies south of the Rio Grande.¹ These are roughly, the accepted limits of the pictograph area of the Pecos River Focus² and it is with the question mark that this paper is concerned.

A coherent discussion of this archaeological reconnaissance cannot, however, be developed without a brief statement concerning the geography, chronology, and cultural characteristics of the Pecos River Focus, per se.

The area about the mouth of the Pecos is notably arid and is slashed by deep arroyos eroding the Cretaceous limestone which is the underlying rock formation. The walls of these canyons are spotted with overhanging rocks or indentations which form rock shelters—the homes of the Pecos River Cave Dwellers.

From various indications it is believed that this culture flourished during the period which immediately preceded

¹ Dr. Walt Taylor of the Smithsonian Institution has done extensive work on the southern periphery of the area and although he has not yet published on this reconnaissance, conversations reveal the possibility that the Pecos River Focus extends at least sixty miles south of the Rio Grande.

² E. B. Sayles originally gave the name Pecos River Cave Dweller to this culture in his *An Archaeological Survey of Texas*. The Witte Museum customarily refers to the culture as Basket Maker in publications. The University of Texas has employed the term Pecos River Focus which will be adhered to in this paper.

The limits of the Pecos River Focus Pictograph Area are, north of the Rio Grande, the equivalent of Sayles' Pecos River Cave Dweller area. However, Kelley, Campbell and Lehmer in their *The Association of Archaeological Materials of Geological Deposits in the Big Bend Region of Texas* have established the Pecos River culture far into the Big Bend. No diagnostic pictographs of this Focus are found, however, beyond Sayles' delineation, except the area with which this paper is concerned.

the Kokernot, a wet period dated at from 800-1000 years from the present.³ This would place the terminal chronological date at about 1000 years from the present.

Both climatically and topographically the land was perhaps a little less forbidding. The annual precipitation would seem to have been higher lending a more verdant aspect to the area, and the erosion cycle had not advanced quite so far, although, certainly there was no significant difference in the major geographical features.

The Pecos River Focus was first defined as a cultural entity by E. B. Sayles in his monumental *Survey of Texas Archaeology*.⁴ He classified this culture as an early food-

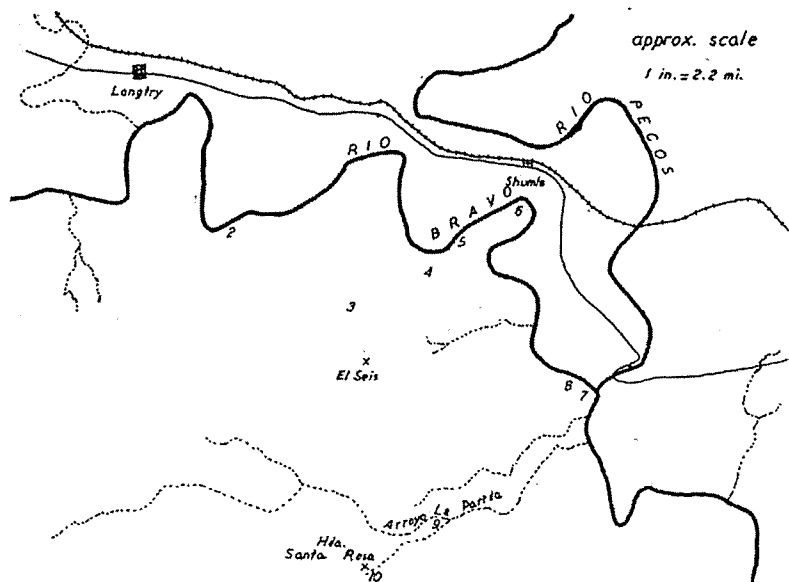


PLATE 7

Numerals indicate sites as follows: 1, La Elephante; 2, San Martin; 3, El Seis Pictograph Site; 4, El Seis Rock Shelter; 5, La Angelita Rock Shelter; 6, Coahuilan-Shumla Rock Shelter; 7, Coahuilan Pecos I; 8, Coahuilan Pecos II; 9, Burnt Rock Mound; 10, Santa Rosa Rock Shelter.

³ Kelley, J. Charles, T. N. Campbell and Donald J. Lehmer, *The Association of Archeological Materials and Geological Deposits in the Big Bend Region of Texas*, Sul Ross State Teachers College Bulletin, Vol. XXI, No. 3, Sept. 1940. Plate XIX.

⁴ Sayles, E. B., *An Archeological Survey of Texas*, Medallion Papers, Gila Pueblo, Globe, Arizona, May 1936.

gathering group and defined its geographical limitations approximately as those given earlier in this paper. Sayles postulated the continuation of the Pecos River tradition into the late pre-historic period which he refers to as food-gathering and early agricultural groups.⁵ He recorded several distinctive or diagnostic characteristics for this culture. Among these were: flake knives retouched along a straight or slightly curving edge; projectile points which were thin with fine points, long stemmed, squareshouldered, and broad bladed; ornaments of snail shell, conch and fresh water gorgets, and olivella shells; and painted pebbles.

Site types of the Pecos Cave Dweller, according to Sayles⁶ and J. Charles Kelley,⁷ were of two types: rock shelters and sotol pits.⁸

Dr. J. Charles Kelley of the University of Texas lists several other diagnostic criteria: square or round toed sandals, two rod and a bundle coiled basketry. Langtry-Stemmed projectile points,⁹ and as a negative characteristic, he stipulates lack of agriculture.

Perhaps the most distinctive trait of the Pecos River Focus are the remarkable pictographs. These cannot be mentioned under the heading of diagnostic criteria because they have a much smaller distribution than does the Focus proper.

Thus it may be seen that we are dealing probably with a discrete group of ancient gathering horizon peoples who

⁵ It must be remembered that Mr. Sayles was conducting an initial survey of Texas archeology as he has frequently emphasized. Present day evidence would seem to indicate that the Pecos River Focus came to an end at the beginning of the Korkernot and that there is no evidence of agriculture in this culture.

⁶ Op. cit., Sayles, Table 6.

⁷ Op. cit., Kelley, Campbell and Lehmer, p. 24.

⁸ So-called "sotol pits" are found both in the caves and at considerable distances from them. Mr. Arnold D. Peterson and the writer trenched one near Langtry in June of this year. It contained quantities of small shell; no bone or fiber. There were no artifacts. In this connection it might be mentioned that Mera (Mera, H. P., *Reconnaissance and Excavation in Southeastern New Mexico*, *Memoirs of the American Anthropological Association*, Vol. 51, 1933, pp. 15-17) who excavated mounds of marked similarity in southeastern New Mexico cast doubt upon the aptness of the traditional term "sotol pits" and employs the term midden-circles.

Because, in the area under discussion, no artifacts have been found in these "sotol pits" and because amateur archaeologists with great experience in the area such as Guy and Jack Skiles and E. L. Rhodes state that these pits are usually artifact sterile, the writer does not believe it possible to postulate, at this time, the culture to which these mounds belong.

⁹ Op. cit., Kelley, Campbell and Lehmer, pp. 24, 25.

existed in the general area of the mouth of the Pecos and to an indeterminate distance southeast and northwest along the Rio Grande.

All that was known of the Pecos River Focus lay in the area north of the Rio Grande. It seemed probable that the culture extended into Mexico. To determine the veracity of this presumption, and if true, to determine the extent of the Pecos River Focus south of the Rio Grande, and in hope of obtaining suitable sites for excavation and study at some future date, the writer carried on an archaeological reconnaissance in northern Coahuila in August of this year.¹⁰

Headquarters for the reconnaissance was established at the Hacienda Santa Rosa. Rancho Santa Rosa extends from a point east and south of the mouth of the Pecos to some distance beyond Langtry on the Mexican side and includes nearly all of the area covered in the reconnaissance.

A crow would find the distance between these two points about twenty miles, but following the tortuous writhings of the Rio Grande makes the distance nearly fifty miles. The country is drained by three major arroyos, La Zorra enters the Rio Grande about twenty miles east of the mouth of the Pecos; approximately half a mile further west is Arroyo El Caballo. Arroyo El Salado joins the Rio Grande about eighteen miles west of the mouth of the Pecos. Approximately in the center of this area lies a smaller, but relatively large, canyon, La Parida, which enters the river just east of the Pecos. In addition the country is characteristically criss-crossed with smaller arroyos and washes. In the main, the sites described herein, it will be noted, lie on

¹⁰ To say that the author carried on an archaeological reconnaissance carries an inaccurate connotation, for the reconnaissance is largely the work of many others.

What the author knows of trans-Pecos archaeology is but a reflection of knowledge of J. Charles Kelley of the University of Texas; it is his research, his ideas, his works that is largely recorded here. The author is under obligation for aid in field work to A. D. Peterson, student, Pennsylvania State College and William Nelms, student, University of Texas, Miss Ruby Oncken, Assistant Curator of the Museum of Anthropology, University of Texas, for aid in research, and to Mrs. Frank L. Stevens, for stenographic work. The field work was financed by Mr. and Mrs. H. C. Taylor, of Houston, Texas. Primary thanks for whatever success this reconnaissance may have enjoyed is due to Don Valeriano Diego and his sons of Hacienda Santa Rosa, Coahuila. Ramon Diego-Riza, in particular, was the author's frequent companion in the field and a quite capable guide with an intelligent interest in archaeology. Every courtesy and consideration was shown the writer during his stay on their Hacienda.

or near the Rio Grande. However, the region was covered to a maximum of twelve miles inland. Depending upon the terrain, reconnaissance was done by truck, horseback, and foot. The map is not entirely accurate and in the case of one site, La Elephante, it may be off more than a mile.

Rather than attempt a synthesis of the information gleaned, it will be better to describe the sites briefly as they are recorded in the field notes, present a short summary, and to postpone conclusions until further study and some excavation may be done in the area.

San Martin

San Martin is a relatively small and short arroyo which joins the Rio Grande at a point approximately five miles downstream from Langtry. Up the canyon, about five hundred yards south of this confluence there is a stream cut back forming a rock overhang along the western wall of the arroyo.¹¹ For about one hundred and twenty feet along this natural gallery the wall is covered with paintings, most of which seem to be of the Pecos River style.¹² Some of the paintings along the roof of the overhang seem to be more recent in origin. In contrast to the polychrome, highly conventionalized paintings of the presumed Pecos Focus pictographs, these latter are crude, naturalistic representations of men invariably done in bright red.

At this site the Pecos style paintings are done in bright and dark red and black. (The writer does not wish to leave the unequivocal impression that all polychrome paintings at this site are, per se, Pecos Focus. His knowledge of the subject is too slight to allow such an assertion and, in his opinion, some of the black on bright red pictographs seem open to question as to origin. Spalling has partially obliterated some of the paintings and doubtless has removed others).

¹¹ See Plate 7.

¹² See Plate 8.

La Elephante

Some two miles upstream at La Elephante there is another arroyo which contains two galleries of paintings similar to those of San Martin. Perhaps it should be pointed out here that La Elephante is not actually an arroyo, but a series of washes fronting upon the Rio Grande, which to someone's fertile imagination suggested a pachyderm and, thus, garnered the site's distinctive name.

Here again, the paintings are mostly Pecos River Focus polychrome,¹³ but several paintings are bright red, in some cases superimposed upon the polychrome paintings, and clearly more recent in origin. In this case these latter paintings would seem to extend into the historic period. (For example, one of these paintings portrays a woman wearing a skirt and balancing a pot upon her head. Occasionally, in the Pecos River area one finds painting depicting bows and

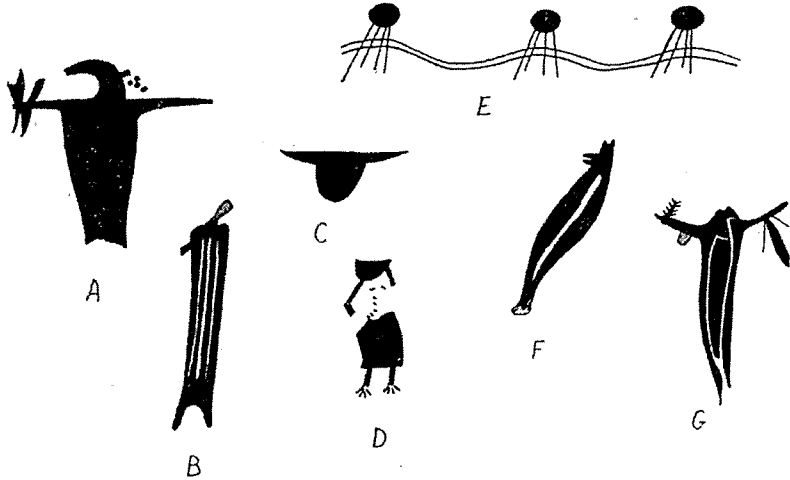


PLATE 8

- A. Pictograph from San Martin (probably Pecos River Focus).
- B. Pictograph from San Martin (probably Pecos River Focus).
- C. Pictograph from Coahuilan-Shumla (probably recent).
- D. Pictograph from La Elephante (probably recent).
- E. Pictograph from Coahuilan-Shumla (probably Pecos River Focus).
- F. Pictograph from La Elephante (probably Pecos River Focus).
- G. Pictograph from El Seis Pictograph Site (probably Pecos River Focus)

13 See Plate 8.

arrows, crosses and saints, always crudely done in bright red).

There were no midden deposits or burnt rock mounds in the area and only a few flint chips and nodules were in evidence.

El Seis Pictograph Site

About one and three-quarter miles north of El Seis wind-mill and about six miles southwest of the San Martin site, is a pictograph site which is very similar to that at San Martin. On the east bank, in a relatively small, nameless canyon, is a rock-overhang on which are paintings for a distance of about 100 feet.

The paintings are well-nigh obliterated but enough may be seen to assure that they are indubitably Pecos River Focus in origin.

All of those which are still discernible depict Pecos conventionalized men.

On the wall of a ledge some twenty feet up the arroyo and about twentyfive feet above the bed of the stream are faint remnants of paintings. Their depictions are no longer apparent.

El Seis Rock Shelter

About one and three-quarter miles north of El Seis pictograph site and approximately one-third of a mile south of the Rio Grande immediately to the west of Shumla Bend is El Seis Rock Shelter (a name arbitrarily bestowed). This shelter is narrow in depth extending for perhaps seventy feet just under the rim of the canyon wall. The canyon, a small and nameless arroyo, proceeds northeast into the Rio Grande.

The shelter measures less than ten feet from floor to roof at its center and is less than the height of a man at either end. The walls are heavily fire-blackened at both ends and sporadically elsewhere in the shelter. There is a midden deposit of indeterminate depth on the floor of the cave.

Some chipped flint and a few side scrapers were found on the precipitous talus slope immediately beyond the lip of the cave.

La Angelita Rock Shelter

La Angelita is located about two miles southeast of the town of Shumla, Texas, and about one-half a mile north-northeast of El Seis pictograph site. It fronts directly upon the Rio Grande about 120 feet above the stream.

The shelter is long but extremely shallow, having an entrance approximately 120 feet wide and averaging perhaps twenty feet in depth. There are no pictographs, but spalling is proceeding apace and there well may have been in some places. Fire-blackening is present throughout the cave wherever recent spalling is not apparent.

Surface finds included two Paisano indented base, one Langtry Stemmed, one Shumla serrate, one Juno broad base, and one uncertain (being broken on both base and edge).

Two enormous boulders occupy the central portion of the cave. Toward the western end of the cave, at a point where the limestone has begun to slope upward to form the wall, there is a stone shelf and in it are a number of deep, smooth, rounded holes (a typical one is one and one-third feet deep with a diameter of approximately eight inches). About these holes are pitted more than a score of smaller pits.

Coahuilan Shumla Rock Shelter¹⁴

Coahuilan Shumla Rock Shelter is located on Arroyo Seis (which has its origin near Santa Rosa windmill six). It is nearly due south from Shumla, Texas, and about one mile south of the Rio Grande.

According to Ramon Diego-Riza this cave had numerous paintings and some smoke-stains. About a year ago brush was piled in the cave and fired in order to kill parasites which were infesting the sheep that lived, seasonally, in the

¹⁴ The term "Coahuilan" is here used in order to differentiate this site from Shumla Cave on the American side. A similar terminology is employed in reference to the Pecos sites.

shelter. In the process nearly all paintings were obliterated. Surviving are two red ochre paintings of "cowheads."¹⁵

A remnant of a painting resembling one found in Seminole Canyon, near Comstock, is also discernible. Jackson employed the term sun-brusts to describe this type of painting.¹⁶ Round blobs with lines depending downward and with a broad, intersecting, wavy, line near the bottom comprise the painting.

This cave had been slightly pitted by haphazard digging. Autographs of several individuals and some crude Western European drawings were present on the walls.

Near the western entrance there was a patch of glossy limestone with several indentations or scratches on the surface.

Coahuilan Shumla rock shelter has a huge midden deposit and a steep talus slope. It measures about forty feet across the entrance, tapering toward the rear. It is about one hundred feet in depth.

Coahuilan Pecos I Rock Shelter

There are two rock shelters near the confluence of the Pecos and Rio Grande.

Coahuilan Pecos I is the smaller and is located almost immediately south of the mouth¹⁷ of the Pecos, high on the south bank of the Rio Grande. The shelter is approximately forty feet across the mouth and possibly fifty feet in depth at the center.

Chipped flint, pestles and matting are scattered about the surface of the midden, which is evidently rather deep. Projectile points found are tentatively identified as variant Shumla serrate. Deep rounded mortar holes, such as those described for La Angelita are found at the west front. Metates are located at the east rear.

¹⁵ See Plate 8.

¹⁶ Jackson, A. T., *Field Notes, Fate Bell Rock Shelter* (Unpublished), University of Texas.

¹⁷ See Plate 7.

Coahuilan Pecos II

This rock shelter is located some four hundred yards upstream from the previously described site. Coahuilan Pecos II is high on a canyon wall with an extremely precipitous talus slope.

The cave measures some three hundred feet across at the mouth but only twenty-five feet in depth at the maximum. There is a large and apparently deep midden deposit. At the west entrance are some fifty deep rounded mortar holes, with one at the front center. At the eastern and near the front there are numerous metates in the cave wall and, here, the stone is worn or polished to gleaming, white, slippery smoothness. In this area are numerous grooves or indentations such as described for Coahuilan-Shumla Rock Shelter.¹⁸ The only projectile point found was Langtry-Stemmed.

La Parida Mound Site

A glance at the map will show that La Parida Arroyo is formed by two intersecting canyons some six miles below the Rio Grande. At this juncture there was a burnt rock mound which has been washed considerably, but would seem to have been of the same type as the "sotol pits" found in the Pecos River area. There were no artifacts and no chipped flint in the vicinity of the mound. Burnt rock was scattered for a considerable distance downstream.

Santa Rosa Rock Shelter

Located on the eastern branch of La Parida Canyon some seven miles below its confluence with the Rio Grande is Hacienda Santa Rosa, headquarters for the Santa Rosa rancho. On the opposite and eastern canyon wall is a small rock shelter which has suffered enormous rock falls almost

¹⁸ In conversation Dr. Walt Taylor described similar glossy, scratched patches of cave wall in rock shelters some sixty miles to the south and west. Dr. Taylor stated that the nature of the indentations suggested that they were not used for shapening artifacts but that he could not venture an opinion as to the significance of these phenomena. Dr. Kelley stated that he has found similar indented, glossy stone patches above the Rio Grande in the Big Bend Area and that he has not determined their usage.

obliterating the shelter. On one spalled piece of limestone in the rear of what remains of the shelter were found two parallel bars of red ochre paint. Some chipped flint was found but no artifacts were present on the talus slope beyond the lip of the shelter.

Summary

Pecos River Focus sites are to be found south of the Rio Grande near the mouth of the Pecos in virtually the same locations and numbers in which they occur north of the border. As on the American side, typically the sites are located on or near the Rio Grande. In this, the Pecos River Focus pictograph area differs from the culture per se. Pecos sites are to be found well into the interior of the Big Bend but no Pecos Focus pictograph site was located at a greater distance than ten miles from the Rio Grande or from the Pecos.¹⁹

Projectile points and other flint artifacts found in surface collections²⁰ indicate Pecos River Focus and possibly Chisos Focus²¹ cultures.

Pictographs are typically of two discrete types: Pecos River Focus and a distinctly cruder and more recent type of pictograph which has been tied to no culture.

¹⁹ It should be noted here that no Pecos Focus Pictograph Site is known to exist more than ten miles from either the Pecos or the Rio Grande River.

²⁰ The writer did not have permission from the Mexican government to excavate.

²¹ In conversation Dr. Kelley has indicated that he regards the Paisano indented base, not as a cultural intrusive from the Chisos Focus in this area, but rather as a typical point of the Pecos Focus. Whether there is a chronological overlap and thus material culture borrowing between these foci, or whether Pecos River Focus points have a cultural continuum into the Chisos Focus period, is not known. In any case projectile points commonly regarded as diagnostic of the Chisos Focus occur virtually everywhere in Pecos Focus sites in association with the Langtry-stemmed projectile points.

PLATE 9

- A. Western edge of entrance to Coahuilan Pecos II, Ramon Diego-Riza on ledge.
- B. Coahuilan Pecos I from interior of cave. Note U. S. Highway No. 90 in upper right hand corner of photograph.
- C. View Coahuilan-Shumla entrance.
- D. From left to right, bottom row, Langtry-Stemmed, Variant Shumla-Stemmed, uncertain, Shumla-Stemmed.
From left to right, top row, Langtry-Stemmed, Variant Shumla-Stemmed, Juno Broad Base, and Paisano Indented Base.



A



B



C



D

Plate 9

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VERTEBRATE PALEONTOLOGICAL FIELD TECHNIQUE AND ITS APPLICATION TO ARCHAEOLOGICAL COLLECTING

WANN LANGSTON, JR.

Introduction

It has frequently occurred to the writer during cursory inspections of archaeological collections in various North American museums that certain collecting practices developed in the field of vertebrate paleontology might be applied advantageously to various phases of archaeological collecting. That the preservation of *in situ* relationships in certain specimens, both archaeological and paleontological, is of paramount importance cannot be questioned, but such associations are all too frequently destroyed by improper collecting methods. In areas where great interest in the association of human artifacts with fossil mammal bones obtains it is most desirable that any such associations be preserved intact and undisturbed. Although field notes and photographs play an integral part in presenting evidence of such associations their value as substantiating media may decrease with time. Actual preservation to the contrary can seldom be challenged.

The field methods outlined below have been long established in the field of vertebrate paleontology and have proved invaluable by permitting the removal of very large and fragile skeletons and masses of bones in such a manner that all anatomical evidence afforded by the natural association of the various skeletal elements has been preserved intact. Any skeleton can be removed from its place of burial and transported to the laboratory in exactly the same condition in which it was found.

Editor's Note: Professional archaeologists may find little new in Mr. Langston's article, but many amateurs will find it a useful manual for field work. Inasmuch as one of the basic reasons for the existence of the Texas Archaeological and Paleontological Society is to encourage the serious amateur and furnish an outlet for his reports, we feel that this paper is a valuable contribution.

It must be remembered that these are the methods of the paleontologist developed by him to meet problems peculiar to his particular science. It appears probable, however, that with certain modifications, best suggested by the archaeologist himself, this technique can be adapted to the collecting of human skeletal material and associated artifacts as well as to fossil mammal remains which may be encountered during the excavation of archaeological sites. It is conceivable that they may even be employed satisfactorily in collecting badly broken and crushed pottery and fragmentary basketry. They have already been utilized in modified forms in the removal of ancient friezes and wall sculpture.

Tools and Equipment

A complete listing of tools and equipment required in archaeological collecting is scarcely necessary in the present paper. However, certain materials the uses of which will be described below are listed briefly in the following paragraphs.

Shellac: A good grade of white or clear shellac should be used (orange or brown varieties will result in an undesirable discoloration of the specimen). A fifty percent dilution with alcohol is nearly always necessary and further thinning may prove desirable. A thick coating of undiluted shellac will form a gummy surface over the specimen which may prove difficult to remove when preparation is begun.

Glue: Various types of binding agents may be used in addition to shellac. For paleontological purposes a cellulose acetate glue or commercial "Duco" has proved most satisfactory. This can be made by dissolving clear celluloid in acetone until the desired thickness is obtained. Other binding agents such as "Ambroid" and "Alvar" may also be used, but furniture glue and other water-soluble cements should never be employed.

Paper: Any type of tissue paper with good absorbent qualities may be used, but a rough-surfaced toilet tissue is most easily applied. Rice paper has been employed for

many years, but it is now obtainable only with difficulty and at some expense. Paper towels are too thick and stiff, and facial tissues are too fragile for most work. Either should be used only as a last resort.

Plaster: Plaster of Paris is an indispensable agent in collecting. Moulding plaster No. 1 is an excellent quick-setting utility product which can be obtained readily and at little expense at almost any lumber yard or hardware store. There is no necessity to purchase expensive dental plaster or other specially refined products. Great care must be taken in the handling of plaster of Paris. It should never be exposed to water and even moisture in the air may reduce the "setting" ability once the plaster has been opened. Before using each broken or old sack, the plaster should be tested for rapid setting qualities. Dead plaster when used in a cast must be removed before applying another jacket and such treatment cannot be expected to have a favorable effect on the specimen.

Burlap: Burlap bags may be obtained from any feed store or from local farmers at moderate expense. Potato sacks should be of the coarse or loose-woven variety and patched bags are usually as satisfactory as new sacks.

Water: Sufficient water should be available to mix the required amount of plaster and to soak the burlap bandages before application.

Buckets: At least two galvanized pails should be carried; one for mixing plaster and one for soaking the burlap. The plaster bucket should be cleaned after each mixing since hardened plaster has a tendency to destroy the setting ability of later batches.

Excavation

The various excavation methods employed by the archaeologist have been long established and it is assumed that the reader is familiar with them. Paleontological technique, however, will be discussed in some detail for the benefit of those who have had little experience in this type of collecting.

The first stage in collecting a vertebrate skeleton is one with which the archaeologist is thoroughly familiar: the removal of overburden from the specimen. Heavy tools (picks, shovels, and even slips and small freznos) may be used for this purpose, but care must be exercised in approaching the level of the specimen. Generally heavy work should be discontinued at least six inches above the suspected position of the bones. From this point small tools (ice picks, awls, sacking needles, whisk brooms, and paint brushes) should be used to remove the remaining overburden. The ever-present tendency toward digging straight down to the specimen must be avoided and removal of the matrix should be accomplished by working back from the exposure in a horizontal rather than in a vertical direction.

In exposing the bones, only enough matrix is removed to permit accurate outlining of the specimen; no attempt should be made to prepare the specimen in the field. The enclosing material will serve to hold the broken elements together and will offer some degree of support and protection to the specimen during transportation. In no case should the bones be undermined during this stage in the operations.

As each new area of bone is exposed it should be carefully brushed to remove all loose matrix. After brushing, the bone is shellacked thoroughly. Brushing-on of the shellac is not always desirable since the bone may be badly broken and thoroughly rotten. In such cases the first coat may be applied by dripping very thin shellac from the end of a brush or, in extreme instances, by spraying the bone with shellac or cellulose acetate cement. An ordinary insect spray-gun will prove entirely satisfactory for this purpose. The shellac should be allowed to soak into the surface of the bone and application should continue at short intervals until absorption ceases. A thick outer coating of shellac or glue is usually undesirable inasmuch as it must be removed during preparation.

Shellac and "Duco" must never be applied to a moist surface. Water prevents penetration of the binding agent and a useless or even harmful coating will accumulate on the

bone. Shellac should be permitted to dry thoroughly before any further work is undertaken in the vicinity of its application.

If the containing matrix is loose and unconsolidated, a strong tendency toward slumping may be evidenced. In this eventuality it will be necessary to indurate the matrix with shellac, but under ordinary circumstances this expedient is not recommended.

When outlining has been completed the specimen should be photographed and careful notes concerning the mode of occurrence should be recorded. If the specimen is to be removed in more than one block each section must be carefully plotted on an excavation chart so that adjacent blocks may be reassembled in the laboratory.

Blocking Out the Specimen

After the upper side of the specimen has been completely exposed a surrounding trench must be dug in such a way that the bones will be supported by a pedestal of undisturbed matrix. This trench should be of such proportions that the excavator may work underneath the pedestal and somewhat below the lowest *possible* level of the bones. Digging should commence at some distance from the specimen and should be continued toward it with a view toward reducing the size of the pedestal and of the final block.

PLATE 10

- A. View of bone quarry near Agate, Nebraska, illustrating the degree to which it may be necessary to remove the overburden from a specimen. The skeleton for which this excavation was made lies near the feet of the worker.
- B. View of mammoth excavation after removal of bones has begun. The scapula, center foreground, has been cast on the upper surface and is here shown resting upon a pedestal of undisturbed matrix. A tunnel has been cut through the base of the pedestal to permit partial bandaging and strengthening of the under side before inverting the block. Casts in the upper left background have been turned over and casting of the underside before inverting the block. Casts in the upper left background have been turned over and casting of the undersides is about to begin.
- C. View of mammoth humerus showing method of trenching and the pedestal of undisturbed matrix.
- D. Skull, humerus, and scapulae of mammoth partially exposed and shellacked.
- E. View of a large deposit of mammoth bones found near Levelland, Texas. Most of the bones have been exposed and some are blocked out preparatory to casting.



A



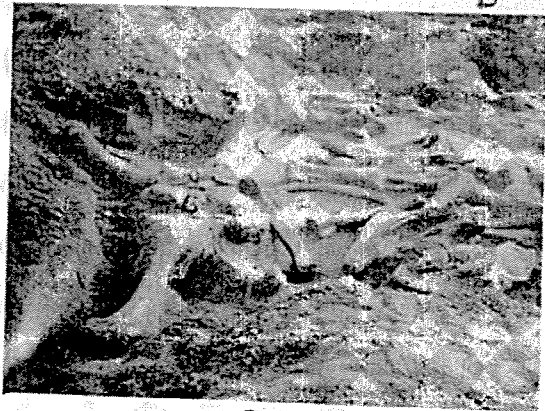
B



C



D



E

When the entire specimen has been blocked out, serious consideration should be given to the problem of transportation. Large blocks of bones with their enclosing matrix are extremely difficult to handle. The majority of such blocks, however, can be divided or sectioned into several smaller pieces. In such an undertaking any apparent areas of weakness are the obvious points for separation. Cutting or breaking a specimen for purposes of separation is not to be desired, but when necessary, it can be done with a minimum of damage to the specimen. When the areas through which the block is to be cut have been located, trenching may proceed through them thus dividing the original large pedestal into several smaller ones.

The edges of the pedestals must now be undermined. The extent to which this is necessary or possible can be determined only through experience, but it should never be produced so far as to result in caving or slumping of the bones or upper edges of the block. Undercutting should begin near the base of the pedestal and proceed upward to within a short distance of the lowest possible bone level.

Casting

Casting or jacketing should be undertaken as soon as possible after the completion of the blocking-out process outlined above. All necessary equipment should be available before this stage is begun.

Bandages must be prepared by cutting burlap bags into strips of varying dimensions. The majority of such bandages will probably range from six to twelve inches in length and from four to eight inches in width, but larger or smaller sizes may be indicated in certain instances. The strips must be thoroughly dampened before using since dry burlap will tend to remove the moisture from the plaster thus reducing its setting ability.

In order to prevent the plaster from adhering to the bone surfaces tissue paper can be applied to all exposed areas. A small amount of water may be splashed onto the bones in order to hold the paper in position during application. If

toilet tissue is used it may be rolled onto the exposed surfaces very easily. All paper should be tamped down with a wet brush in order that any overhangs which may be present can be detected before the cast is applied. When such overhangs are located they must be eliminated by wadding tissue paper into them or by filling them with mud. If catches or overhangs are allowed to go into a cast without proper preventive measures, great difficulty may be experienced in the removal of the cast in the laboratory. In most specimens two or three thicknesses of paper will prove adequate, but greater thicknesses may be used if desired.

In preparing the block to receive the jacket the entire pedestal should be moistened. Failure to do this will result in a poor purchase for the plaster bandages and much inconvenience may result.

Plaster and water must now be mixed thoroughly until a mixture approaching the consistency of thick cream is obtained. One or two previously moistened bandages are dipped into the plaster and manipulated until they become well impregnated. Generally such a bandage will contain far too much plaster, but the excess may be removed by running the strip between the thumb and index finger. The bandages are applied to the block until the entire upper and lateral surfaces are completely covered. If the bandages fail to adhere to the overhang around the edges of the block they should be held in place or tamped in around it until setting has begun. It is imperative that this part of the cast be of the greatest possible strength in order to prevent the block from falling out of the jacket when the specimen is turned over. If desired, greater strength may be obtained by wrapping a collar composed of several long pieces of bandage around the base of the entire pedestal.

The most desirable thickness for the jacket will be determined by the individual collector only after considerable experience in casting. Except in very small blocks, at least two thicknesses of bandage should probably be used and in specimens weighing several hundred pounds casts of an inch or more in thickness may be advisable. It must be remem-

bered, however, that the thicker the cast the more difficult will be the task of opening the specimen once it has been received in the laboratory.

Casting of the upper side of each block should be accomplished in a single operation wherever possible since later bandages will adhere with difficulty to those in which the plaster has already hardened. If this process cannot be completed in one operation, the dry plaster bandages already applied must be thoroughly moistened before new bandages are laid upon them. Failure to clean the plaster bucket before each new mixing may result in the complete failure of the new batch of plaster.

Large or irregular blocks may require additional strengthening. Such strength may be provided through the use of wooden or metal splints which can be cut or bent to shape and bandaged onto the exterior of the block.

When the plaster jacket has hardened the block must be separated from the lower part of the pedestal. This is done by cutting away the base of the pedestal a small section at a time until the block can be turned over from a pivotal position. In small or moderate sized blocks this can usually be accomplished in a single operation, but in larger blocks containing unconsolidated matrices it may be necessary to undermine a small area at a time supporting each new undercut with plaster bandages as it is developed.

When overturning the block a lever should be inserted beneath it and no great pressure should be applied to the cast itself since at this stage there is usually only a narrow "lip" of retaining bandages around the under edges of the block and the danger of slipping the cast off of the top of the block may be very great. Whenever possible the block should be turned over in a single coordinated operation. Once the operation has begun, hesitancy on the part of the collector may prove fatal insofar as the specimen is concerned.

Once inverted the reduction of the block may be completed. The amount of matrix that can be removed from

the open side of the block will be determined largely by the method of preparation to be employed in the laboratory, the available means of transportation, and the overall strength of the block itself.

The rough and jagged edges of the plaster cast should be cut away and the open side of the block bandaged in the manner described above. To facilitate the opening of the block in the laboratory, some collectors do not allow the new cast to overlap or adhere to the other half, but prefer to wind a long strip of bandage around the line of separation of the two half-casts. This method cannot be recommended for use in large blocks where strength of the cast is the paramount concern.

Applications in Archaeological Collecting

The method described in the preceding paragraphs presupposes that the subject is a skeleton or a mass of bones. It can therefore be applied with little modification to the collecting of human skeletal material and associated artifacts and burial regalia. The entire mass may later be prepared as a panel or slab mount without the necessity of rearranging any of the specimens concerned. In most instances, human bones will be found enclosed in unconsolidated and poorly compacted matrices and the bones themselves may exhibit a strong tendency toward crumbling. Special precautions will probably be necessary to prevent undue damage to the specimen. Very little of the entombing matrix should be removed from the upper surface of the skeleton and the entire specimen should then be collected in a single block still embedded in as much of the surrounding matrix as possible. Caution should be exercised in casting a large block of unconsolidated material to assure that no free space occurs between the block and any part of the enclosing cast. The smallest void can easily become a focal point for crumbling and the ultimate disintegration of the entire block. The cast must be strengthened by the use of splints and in some instances it may be desirable to construct a crate or box over the block before it is inverted.

In collecting masses of fossil bones in which primitive spear points have been located, the artifacts should be well padded and their position plainly marked on the exterior of the plaster jacket.

It seems probable that this technique may also be adapted to the collecting of badly broken or crushed pottery vessels. Excavation should proceed as outlined, followed by blocking out and casting. The use of shellac, however, is not recommended. The surfaces of the pottery will not require hardening and some other material which can be readily removed in the laboratory may be used for the purpose of holding the broken fragments in their relative positions. Commercial Gum Arabic is here suggested as a satisfactory substitute for shellac. The dry powder can be mixed with water until a liquid gum solution is obtained. The pottery surface may then be coated with gum-soaked pieces of tissue paper or surgical bandage. Removal of the gum may be accomplished in the laboratory simply by dissolving it in warm water.

The laboratory technician may open the cast with all the broken pieces still retained in their original positions. No longer must he be confronted with a great mass of small fragments, the piecing together of which often becomes a tedious and exasperating process.

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CADDOAN PREHISTORY: THE BOSSIER FOCUS

CLARENCE H. WEBB

Bossier Focus is the name which Krieger and the author have given to an archaeological unit of the Caddoan area which appears on a number of sites in Northwest Louisiana, East Texas and possibly Southwest Arkansas. This cultural assemblage has never been described and has been mentioned only occasionally in discussions of prehistory of the four-state Caddoan area. This neglect is occasioned by the unspectacular nature of the sites and artifacts, the occurrence of the sites away from the major river valleys and the rarity of mound building—for these reasons Moore's survey of the Red, Ouachita and D'Arbonne (1,2,3) valleys apparently missed Bossier sites completely. In Ford's analysis (4) of site collections, he describes and illustrates sherds collected by E. F. Neild which represent several Bossier pottery types. However, no intensive study of Caddoan potteries and culture periods had been made and these sherds, as well as others now recognized as relating to several cultural entities, were lumped together as "Caddoan." Harrington (5) illustrates one or two vessels of Bossier types from Southwest Arkansas. These are probably intrusive, as none of the sites described by him have cultural entities which could be interpreted as Bossier Focus components.

It now appears that a study of the Bossier Focus may cast considerable light on culture developments in the Caddoan area, particularly with regard to origin and transmission of certain pottery types or decorative elements. There is increasing evidence that Krieger's (6) separation of culture complexes in the Caddoan area into Gibson (earlier) and Fulton (later) Aspects, which through much of the area are so sharply differentiated as to suggest cultural discontinuity, must be interpreted differently in certain developmental centers. In the Spiro area and along the middle Red River area of Arkansas and Louisiana there are indications of a

sequential development from the earliest Gibson period through intermediate or transitional cultures to the proto-historic and historic Caddoan groups. In the Red River center, which is also the historic and traditional center of the southern Caddos, the Haley, Bossier, McCurtain and Belcher Foci show varying evidences of this culture transition.

Bossier Focus Sites

Surface collections indicate that this focus is represented at some 40 to 50 sites in Northwest Louisiana, especially in Bossier, Caddo and DeSoto parishes. Typical sites from which we have an adequate collection to assure more than accidental Bossier sherds include High Island, Sinner, Pease and Maddox Places and Vanceville Mound in Bossier Parish; Marston Place and Gahagan Mound in Red River Parish; Gilmer Bayou, Margetich, Huckabay, Mooringsport, Swanson's Landing, Wallace Lake, Belcher II and Mounds Plantation in Caddo Parish; Smithport Landing, Chamarre, East Smithport, Williams Point, Keatchie and Thigpen sites in DeSoto Parish; Colbert and Greer Places in Bienville Parish; Wilkinson and Allen in Natchitoches Parish; Smith Place in Lincoln Parish; and Harrison Bayou site in Harrison County, Texas. The University of Texas' collections indicate components on sites in a number of counties of central East Texas, adjoining the Louisiana line. A recent survey of the McGee Bend Reservoir (7) in Jasper, Sabine, San Augustine, Angelina and Nacogdoches Counties, Texas, shows Bossier Focus sherds from 16 sites. This indicates that the Focus occurs in an area from the Angelina River in Texas almost to the Ouachita River in Louisiana.

Community Plan

Nearly all of the sites are outside of the major river valleys, usually located on a small stream or lake. Many of the larger sites are on hills fronting the valley, where tributaries break through these hills. Only the four mound sites, Mounds Plantation, Belcher, Gahagan and Vanceville, and one non-mound site, Marston Place, are on the valley floor of the Red River—contrasting with the Belcher Focus, which

seems to be considerably riverine and mound using. At four of the Bossier Focus sites, small conical sand mounds were placed on hills overlooking the valley, on or near the village sites. Their purpose or provenience have never been established. All have been dug into and a burial was reported in one instance. Two beautifully symmetrical quartz lance points were stated to have been the only artifacts with this burial.

Village sites are usually compact, from a very small area to 10 acres in size, and the communities seem to have been sedentary in most instances, with evidence of prolonged habitation. Krieger (8) has emphasized the contrast between the large, widely separated centers of economic and ceremonial activity during the Gibson Period and the numerous small villages of the Fulton Period. This change seems to have been in progress during the Alto-Bossier transition, to be discussed later. Nearly all of the Bossier sites have artifacts suggesting several occupation periods, ranging at various sites from late Archaic to Glendora Focus sherds and glass trade beads. European trade material has never been found on Bossier sites unless Glendora pottery is represented. In a recent article (9) it was noted that artifacts which have been related elsewhere to the late Archaic occur in Northwest Louisiana on non-pottery sites and also on sites where Bossier and Alto sherds were found. One to three Marksville or Troyville Stamped sherds have been found on four Bossier sites and numerous multiple notched large projectile points, similar to those reported from Marksville sites, occur at the Sinner Place. Eight sites show marker Pottery types of the Coles Creek-Plaquemine periods, in four instances to the extent of 4 to 5 per cent of decorated sherds (Table 1). Certain incised and brushed wares of Plaquemine types in central Louisiana appear to be identical or very similar to Bossier types in this area, suggesting contemporaneity of these two cultures.

Subsistence and Commerce

No direct evidence of agriculture has appeared, probably due to very limited testing. It can only be inferred by the

location of the sites near streams, the presence of rough metates and manos, and the general prevalence of agriculture during the indicated time period. Animal and fish bones in village middens indicate hunting and fishing as important in the economy. Gathering of nuts and shellfish is suggested by the frequency of pitted stones or "nut stones" and presence of shells in midden material. There is no indication of widespread commerce, most of the artifacts being made of local materials. The absence of esoteric ceremonial objects from burials also denotes a comparatively simple, locally self-sufficient subsistence.

Architecture

Inadequate data are available to warrant definite conclusions concerning house types. At the Belcher Mound site, the second occupation period of Mound B (Belcher II) appears from the sherd collection to relate to Bossier Focus peoples. No burials, whole vessels or artifacts other than sherds were found. The initial Belcher I (Haley Focus) pre-mound structure had been covered by 2 feet of fill, producing a small, circular, flat topped mound which was capped completely with charcoal-streaked red clay. Through this cap there were two irregular ovals of post molds (10), the inner oval 13 by 15 feet in diameter, formed by 5 to 8 inch molds, 2 feet in depth. The outer oval, from the same surface, was 20 by 22 feet in diameter, formed of 3 to 4 inch molds, not over 1 foot in depth. Both ovals were interrupted by burial pits from higher levels, possibly obscuring entranceways. No charred materials were found, differing from structures at other levels in the mound. Internal post molds formed no definite pattern. There was no ashbed within the smaller structure but one was present between it and the larger oval. If the ovals represented two different buildings, the ashbed must have related to the larger, as it lay outside of and too near the inner oval of molds for safety.

At the Greer Place in Bienville Parish, a mixed Coles Creek-Alto-Bossier site, numerous post molds (10) were found extending through a layer of white and yellow sand, about 8 inches beneath the plowed surface. Molds were so

numerous that no definite house outlines could be distinguished, although some suggestion of two irregularly oval structures with one or two possible projecting entranceways could be imagined. Three small cache pits contained sherds, shells and animal bones. Three firebeds were within the area outlined by the special sand, one large firebed being of especial interest because it overlay a cache pit, 2½ feet in diameter, which had been dug into the hard clay subsoil to a depth of 4 feet. It contained only a few pottery sherds. Although two burials nearby had Coles Creek pottery in association, no Coles Creek sherds were on or above the house floor, whereas most of the 172 decorated sherds from the cache pits, the house floor or the overlying soil were of recognizable Bossier types. This led us to believe that the structure or structures could safely be related to the Bossier Focus.

Burial Customs

Only a few burials have been found or reported which we can relate specifically to the Bossier Focus. In every instance the burials were in small, shallow pits, not over 2 feet in depth from the present surface, and scattered on the village site. No large cemeteries have been located and no burial mounds are indicated, unless the small sand mounds previously mentioned prove to be such. No good evidence on this point is available. There is no indication of special preparation of the pits or pit floors. Skeletons were fully extended, supine, with placement of one to three pottery vessels above or near the head. With exception of one pottery pipe, no artifacts other than pottery have accompanied the burials, and the pottery is not a specialized burial ware.

At the Pease Place, one adult burial was exposed by plowing in recent years. Fragments of an engraved bowl were secured at the time and later we found the body of a bottle beside the skull. Both vessels were of the type Maddox Band Engraved (Plate 11, Nos. 1 and 2). Mr. Pease states that other burials have been plowed up in the past, scattered over the site, and he has not observed objects other than oc-

casional pottery with them. The head of the above burial was directed toward the north.

Several burials have been plowed up or eroded out at the nearby Sinner site, but no artifacts to our knowledge have been found. At the Marston site, a flood cut through the village, washing out bones and large pottery sherds of Bossier types. We found the remaining portion of one burial, without artifacts, apparently extended, supine and the head directed toward the east or northeast. A pipe (Plate 14, No. 1) had been found nearby.

In construction of a road at Williams Point the burial of an adult was exposed, from which a pottery pipe was secured. We were unable to locate this pipe, but discarded sherds also found with the burial were assembled to reconstruct a jar of type Pease Brushed-Incised. Both of these artifacts were stated to have been near the skull.

Mr. Brock Smith, of Dubach, Lincoln Parish, found several burials on the Smith place near D'Arbonne Creek, a tributary of the Ouachita River. We were privileged to see two of these burials with the artifacts, which had been removed (Plate 17, Nos. 1 through 5) and are now at Louisiana State University. The burials were adults, extended, supine and single, about 1½ to 2 feet beneath the present surface. The vessels were stated to have been above or near the skulls, intact, and no other artifacts were found.

Burials have been found at other sites where Bossier Focus is represented, but apparently the burials related to other culture periods. At the Greer and Colbert Places, several single burials were found; in two instances (Greer) Coles Creek pottery was present. Other burials found by ourselves and others were adults, fully extended and without artifacts. This is not infrequent in Coles Creek sites and we presumed that these were Coles Creek and not Bossier burials.

At Smithport Landing, Monroe Dodd located a small cemetery which contained 12 burials. Associated pottery was of the late Alto types or plain, and in one instance included a

total of 9 vessels. Ford found Alto type pottery with burials at Allen and Wilkinson sites and also illustrates a vessel (4) of Natchitoches Engraved (Glendora Focus) from the latter site. At the same site, we found the burial of a child which had no accompanying artifacts. The skeleton was fully extended, with the head directed toward the east. Despite the regular admixture of Alto and Bossier pottery sherds on the sites, in no instance to my knowledge have vessels of the two types been found with the same burial.

Ceramics

Discussion of pottery types of the Bossier Focus is limited to some degree because it must be based largely on sherd collections. However, we have more than 8,000 decorated sherds from Bossier sites in Louisiana and Texas, in addition to whole vessels or photographs of vessels bearing typical decoration of six of the seven pottery types attributed to Bossier potteries.

The vessels generally are small to average in size, seldom exceeding 7 to 8 inches in height or diameter. The characteristic vessel shape for the five rough or utility types is the jar with ovoid body and everted rim, 5 to 8 inches in height, with circular flat base. In the engraved types, the bowl and bottle are characteristic forms, with cups, vases and jars infrequent. The pottery is unspectacular in comparison with the highly decorated wares of the Haley, Belcher, Texarkana and Glendora Foci in this same general area. Rough utility wares decorated with incised, punctated, ridged and brushed elements predominate and, even in the engraved types, complicated or curvilinear designs are less frequent than straight line, band or geometric designs. However, the percentage of decorated sherds is comparatively high and plain vessels seem to be infrequent. Red filming or inser-

PLATE 11

Pottery types of Bossier Focus. Nos. 1 and 2, Maddox Band Engraved. Nos. 3-5, Taylor Engraved (Nos. 3 and 4 from Krieger (6); No. 5 from Belcher Site). No. 6 Pease Brushed-Incised; Nos. 7 and 8, Belcher Ridged; No. 9, Sinner Linear Punctated (Harrington (5), Washington Site, Plate LVII). Nos. 10-12, Dunkin Incised, late variant, (No. 12 from East Mound, courtesy of Dr. and Mrs. T. L. Hodges and Alex Krieger). Vessels x 1-6.

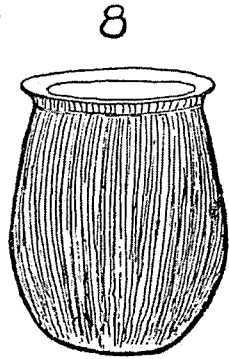
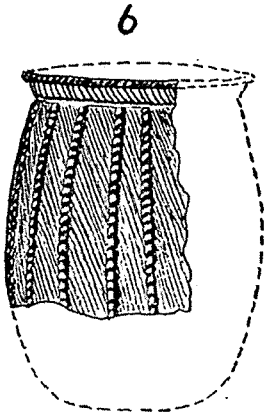
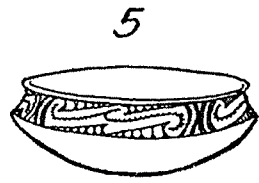
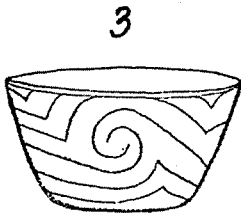
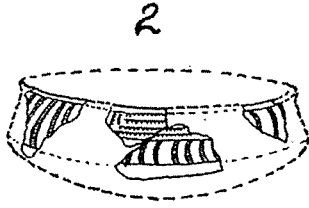
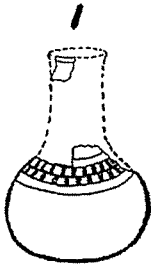


Plate 11

tion of pigment into engraved lines is rare; compound or effigy vessels and even effigy appendages have not been found. Occasional highly polished sherds with engraved decoration are found, but generally even the engraved wares were smoothed but unpolished. Spurred or ticked lines, negative discs and scrolls occur chiefly (or exclusively?) on Taylor Engraved vessels which may not be indigenous to Bossier Focus potteries. Rattle vessels, sun and swastika symbols have not been found.

Vessels were made by coiling. The paste is generally firm, of good texture, with hardness of 2.5 to 3. Clay tempering predominates, with occasional bone or tufa tempering in the rougher wares. Shell temper is absent at every site except Belcher II, where sherds of two Belcher Ridged and one brushed vessel were tempered with shell. It may be added that at Belcher II level, 703 sherds were found, of which 627 could be typed reliably. Of the latter, although 80 per cent were of Bossier types, 13 per cent were from recognizable Belcher and Texarkana pottery types. Evidently the Bossier occupation period at the Belcher site was comparatively late, with introduction of Belcher Focus wares which occurred in subsequent periods at this site; in fact, it is a reasonable supposition that the three shell tempered vessels at this level were Belcher Focus vessels, as Belcher Ridged and brushed types are found in both Belcher and Bossier Foci. It may be stated, therefore, that shell temper is absent from Bossier Focus potteries.

Pottery Types

I. *Maddox Band Engraved*. Vessel forms in this type include bowls, bottles and small jars. (Plate 11, Nos. 1,2). Bottles are small, with flat circular bases, globular or ovoid bodies and slightly tapering spouts which usually flare moderately at the rim. Bowls generally are 6 to 9 inches in diameter, with rounded bottoms, vertical or slightly inverted rims and rolled or notched, slightly thickened lips. The paste is homogeneous, usually clay tempered (rarely bone or tufa). Thickness averages $\frac{1}{8}$ to $\frac{1}{4}$ inch. Surfaces are smoothed, occasionally polished; the surface color ranges from buff to

reddish brown, but a moderate number of sherds are black. The decoration features hatched or cross hatched bands (Plate 12, Nos, 1-6), usually narrow, rather carefully engraved. Less frequently plain bands or zones are outlined by hachured areas. The designs are usually simple with rectangular or occasionally curvilinear vertical and horizontal patterns. Bottles often have combined engraved lines and bands or stepped patterns encircling the shoulder and lines may encircle the spout near the lip. (Plate 17, No. 1). Bottles with this kind of decoration and with tapering spouts may readily have been derived from Hickory engraved bottles of Alto focus pottery. Notched lips are not infrequent in all vessel forms of Maddox Band engraved type, including bottle spouts if they do not have flaring rims. (Plate 17, No. 1).

In Ford's analysis of site collections (4) sherds of Maddox Band engraved are illustrated in Fig. 16c and 18b.

II. *Taylor Engraved*. Vessel forms include bowls, bottles, vases and jars, although the first two predominate. The variety of forms is much more limited than seen in this type as it appears in Titus and Belcher potteries. Bottle shapes are not definite, although probably similar to the bottle of Maddox Band Engraved. Bowls are round bottomed (hemispherical) with inward slanting rims which are often curved sharply to produce a more acute angle at the shoulder than is usual with Maddox bowls (Plate 11, No. 5). The paste, surface finish and colors are similar to Maddox Band Engraved. Notched rims are absent or rare. Decoration features curvilinear lines, spurred lines, scrolls, bisected bands (usually curving and bisected by spurred line), and negative discs (Plate 12, Nos. 7-10). Interlocking scrolls are very frequent. A few red filmed sherds have been found. Differing from Taylor Engraved bowls in the Belcher and Titus pottery, the bowl sherds from Bossier sites never show decorations on the bottoms. In our original description of Belcher pottery (11) vessels which we now classify as Taylor Engraved are described under Belcher Engraved, subtypes d, f, k and e and illustrated in Plate 15, Nos. 3 and 5 and Plate 16, Nos. 1-3.

It is difficult to decide whether Taylor Engraved should be included as an integral type of Bossier Focus potteries, as it occurs regularly in Titus and Belcher ceramics, from which it could possibly have been intrusive into the Bossier Focus during its later stages. However, there are good evidences that Bossier Focus was generally earlier than Titus and Belcher Foci and Taylor Engraved sherds are found on the majority of Bossier sites in quantities not greatly inferior to Maddox Engraved. One may therefore infer that Taylor Engraved was an integral type in Bossier pottery, probably spreading from there to Belcher and Titus Foci, where it was elaborated.

III. *Pease Brushed-Incised*. (Plate 11, No. 6; Plate 12, Nos. 12-19; Plate 17, Nos. 4-5). Vessel forms include jars and pots, predominantly ovoid jars with everted rims. Temper is almost invariably clay or mixed clay and grit, rarely bone or tufa (accidental?), never shell. The color is buff to mottled grayish-black, often variable due to irregular firing. Surfaces are rough and irregular. Bases are flat and circular. The bodies are usually wider in their lower segments, curving inward toward the neck, and the diameter at the lip is generally less than the maximum diameter of the body.

The rims are usually narrow, flaring, often with rolled or thickened lips, the latter frequently notched. An occasional vessel has a tall, everted rim. The outer surface of the rim is usually roughened by brushing, scoring or incising, which may be vertical, diagonal or, rarely, horizontal. The body is covered over its entire outer surface with panels which are also roughened by brushing or incising (diagonal, vertical, herringbone) and the panels are separated by vertical notched ridges, nodes or deep punctates. In the typical vessel, the panels are $\frac{1}{2}$ to $1\frac{1}{2}$ inches in width, varying from 10 to 30 in number around the body. The inside of the vessel is well smoothed, often showing tool marks.

This pottery type is undoubtedly related to, and may be directly descendant from, the type Haley Complicated Incised (6) of the Haley Focus (Gibson Aspect). In the latter type fields of vigorous incising are outlined by applique

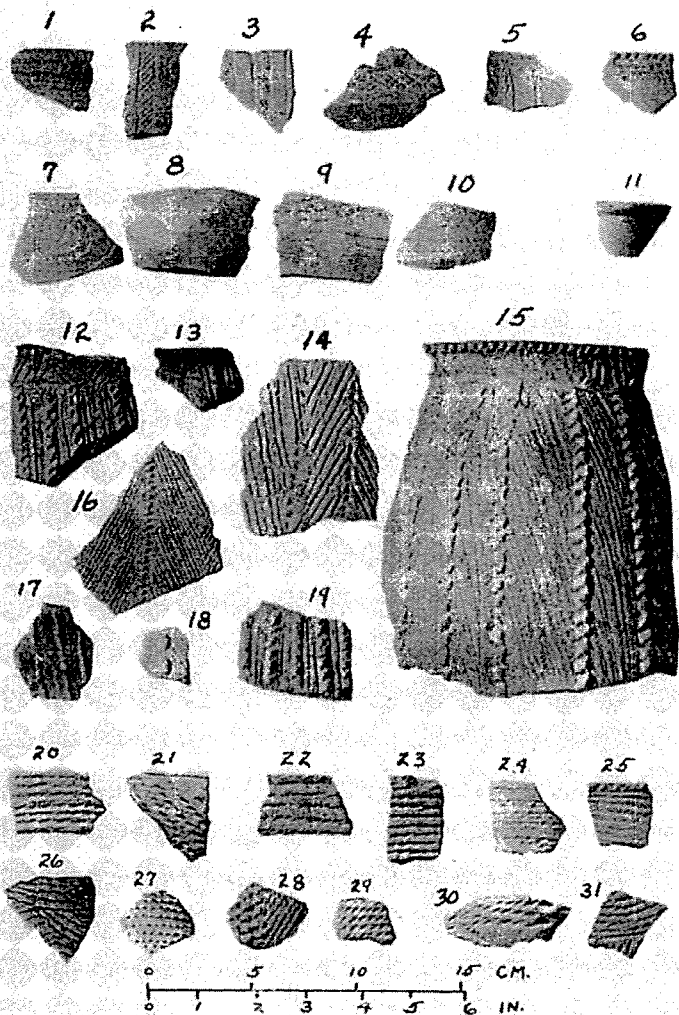


PLATE 12

Sherds of Bossier Focus pottery types. Maddox Band Engraved (Nos. 1-6), Taylor Engraved (Nos. 7-11), Pease Brushed-Incised (Nos. 12-19) and Sinner Linear Punctated (Nos. 20-31).

notched ridges and punctates, usually applied in diagonal or curvilinear patterns. Vessel forms are similar to Pease type, but tend to be larger, with tall everted rims. During the latter stages of the Haley period there is a tendency toward vertical fields separated by widely spaced nodes, ridges or punctates, and roughened either by incising or brushing (brushing never appears in the early pottery of any of the Gibson Foci). Rims are still high, but the general appearance of the vessels and their decoration is shifting toward the Pease type.

Pottery from the East Mound, a Haley Focus site on Antoine River in southern Arkansas, includes a number of vessels which have shapes similar to Pease vessels and decoration consisting of incised fields, often herringbone, separated by incisions, nodes or lines of punctates. Some of the fields are vertical, others horizontal. This pottery is illustrated by Krieger (8) in the forthcoming *Alto Focus* volume. Ford (4) illustrates sherds of Pease Brushed-Incised from the Wilkinson and Harrison Bayou sites in Figs. 16h and 18d, f, g.

IV. *Belcher Ridged*. (Plate 11, Nos. 7, 8; Plate 13, Nos. 1-5; Plate 14, No. 5). This type was originally described by the author and Dodd (12) in discussing pottery types from the Belcher Mound. Belcher Ridged sherds or vessels were abundant in the last three of the four occupation levels of Mound B, and the type is found at all Bossier and Belcher Focus sites.

As the type appears in Bossier Focus, vessel forms include urns or jars, pots and cups. The jars average 7 to 10 inches in height, 3/16 to 5/16 inch in thickness of walls. Temper is usually clay or grit, occasionally bone or tufa; the paste is firm and durable. External color ranges from tan to black, although tan to reddish brown predominates. Bases are flat discs, bodies ovate, rims everted or rolled outward. Rolled rims are undecorated; everted rims are 1 to 1½ inches in height and decorated on the outer surface with vertical or horizontal incising (rarely brushing). Bodies have vertical, closely placed (1/8 to 3/8 in.) narrow ridges formed by vertical

tooling and extending from neck to base on practically every vessel.

Although this type is common to Bossier and Belcher Foci potteries, certain differences appear. At Belcher Focus sites, Belcher ridged is often shell tempered; the color is more frequently dark brown to black; rims are more often rolled and, if flaring, not as tall as in Bossier; the ridges are more closely placed and uniform; vessel walls are thinner and vessel shapes more symmetrical.

In addition to its presence in Bossier and Belcher Foci, Belcher Ridged is stated by Krieger (13) to be intrusive in Texarkana Focus sites, apparently from Belcher Focus pottery since it is accompanied by the type Belcher Engraved. Ford and Willey (14) illustrate one sherd of Belcher Ridged, which they tentatively called Maddox Finger Brushed, from the late occupation of the Crooks Mound Site. Ford (4) illustrates other sherds of this type from Northwest Louisiana sites (Fig. 16 j; 18 i), describing it under the formula 63; 42. As was pointed out in the Belcher report (11), we cannot agree that the ridging was always formed by finger brushing, having found tool scratches or marks on many vessels, hence prefer to designate the type as *Ridged* without reference to method of producing the ridges.

V. *Sinner Linear Punctate*. (Plate 11, No. 9; Plate 12, Nos. 20-31; Plate 14, Nos. 3, 4). Vessel shapes include jars, cups (compound in one instance) and globular pots. The vessels are usually smaller than Belcher Ridged or Pease Brushed-Incised vessels, but wall thickness is comparable. The paste is firm, tempered with clay or clay and grit, rarely bone. External colors range from buff to mottled gray-black (differential firing). Bases are flat discs; jar bodies are ovate, cups and pots globular; rims are everted and often notched at the lip. The bodies and often the external surface of the rims are decorated with lines formed by closely placed tool punctations which are so regular as often to give the suggestion of heavily cord marked decoration. Less often the linear punctations are made by finger nail impressions. The lines are often arranged in fields with alternating direction

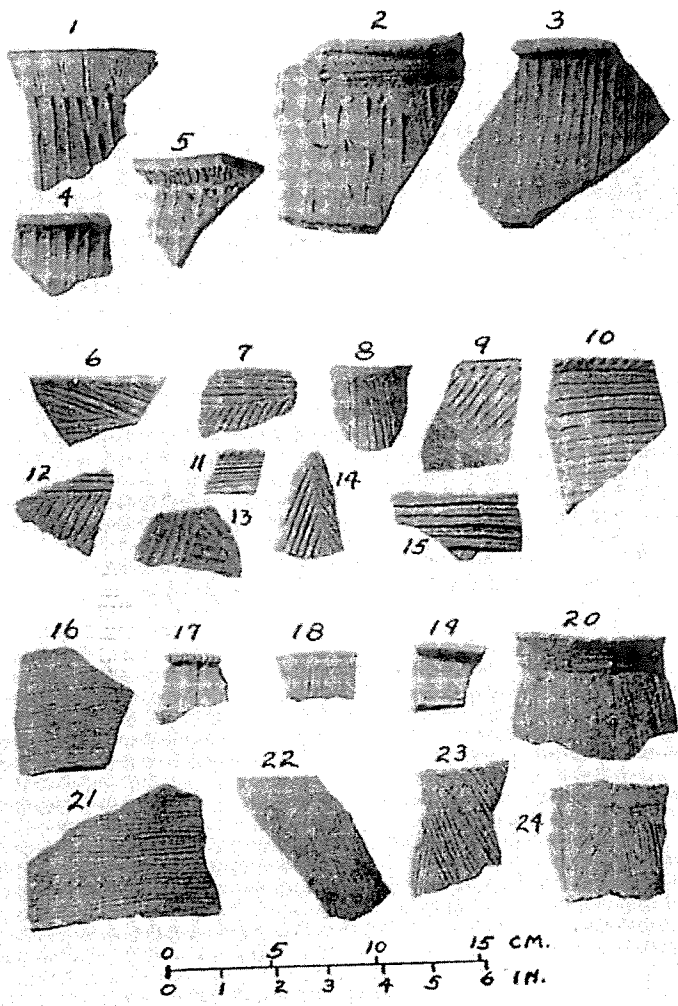


PLATE 13

Sherds of Bossier Focus pottery types, Belcher Ridged (Nos. 1-5) Dunkin Incised, late variant, (Nos. 6-15) and Maddox Brushed (Nos. 16-24).

of diagonally placed lines; vertical rows of nodes at times quadrate the body surface (Plate 11, No. 9) and occasionally the decorative technics of Sinner Linear Punctated and Pease Brushed-Incised are combined, with regular vertical fields roughened by linear punctations, separated by nodes, applique ridges or heavy punctations.

Although never a frequent type at any site, Sinner Linear Punctated is rather widespread. Moore (2) illustrated a pot with this decoration (Fig. 96, page 95) from the Keller Place, a mound site on the Ouachita River in Calhoun County, Ark. The vessel has a notched rim and 5 vertical rows of applique nodes separate the fields of punctations. Moore noted that the tool punctated lines produce an effect similar to cord marking. Harrington (5) illustrated two vessels of this type, a pot in Plate LVII and conjoined cups in Plate XCVI, a, from the Washington site in Arkansas. Dr. and Mrs. Hodges of Bismark, Ark., include in their collection of 1,000 vessels from the Mid-Ouachita area seven vessels of Sinner Linear Punctate type (Plate 14, Nos. 3, 4); no other Bossier Focus types are represented, although many of the Belcher and Glendora Foci types are included.

Lake Borne Incised type in the Tchefuncte period (15), the earliest known pottery in the lower Mississippi valley, features linear punctations in closely placed parallel lines, arranged in herringbone, triangles, squares, diamonds and a key design. Indeed, there is a startling similarity of decoration technique and design arrangement between Lake Borne Incised and Sinner Linear Punctated, considering the fact that intervening cultures—Marksville, Troyville and Coles Creek—lack this incising technique. The nearest approaches are the drag and punch technique of Weeden Island Incised, the linear stamping of Deptford and Troyville potteries and occasional linear arrangement of fingernail or tool punctations in Coles Creek and Plaquemine potteries. In none of these are the linear punctations closely placed to cover the entire vessel surface, nor do the punctated lines have the same similarity to cord marking seen in Sinner Linear Punctated.

In the Crooks site report (14) Ford and Willey illustrate linear punctated sherds, one type, LaSalle Punctated, attributed to the late horizon. A second group of 4 sherds in Fig. 19 includes one (No. d) which has the appearance of Sinner Linear Punctated.

VI. *Dunkin Incised, Late Variant.** (Plate 11, Nos. 10-12; Plate 13, Nos. 6-15). Vessel forms include jars, vases, pots and cups. The paste is homogeneous, clay, clay and grit, rarely bone or tufa tempered. Hardness ranges from 2 to 3. Inner surfaces are smoothed, tool marked; outer surfaces rough to slightly smoothed. Surface colors are characteristically tan to brown, a few reddish tan or dark brown.

Bottoms are flat discs, bodies seldom tall; rims may be tall, generally slanting outward or curving outward, rarely incurving. Notches are often present on the lip, which may be direct or slightly thickened and nearly always rounded. Thickness varies from 3/16 to 5/16 inch; average 1/4 inch.

Decoration consists of parallel, roughly incised lines, typically horizontal but sometimes diagonal or vertical, applied over the entire body in most instances, at other times only the rim or upper portion of the vessel. Where diagonal incisions are present, fields of nested triangles, diamonds, squares or herringbone arrangements are noted. Incised lines are closely placed, usually bold, although gradations from deep trailing to light scoring are to be found.

This type seems to be a continuation of the parallel incising technique which is found in all potteries of the lower Mississippi Valley and most of the Caddo area, from Tche-

*In Plaquemine pottery, vessels with parallel horizontal incised lines around the rims, cruder and apparently degenerated from Coles Creek Incised, were called Hardy Incised by Ford and coworkers. Catahoula Incised, Sanson Incised, Harrison Bayou Incised and Pocahontas Diagonal Incised seem to be variants of the same time period, with diagonal, vertical and cross incising. In Krieger's earlier publication (6), vessels from Alto Focus having horizontal parallel incising around the rims and plain or nail punctated bodies were referred to and illustrated as Hardy Incised; those with diagonal incising as Dunkin Incised. During the Alto Phase 3--Bossier transition, numerous variations in placement and execution of incised lines appear, so that needless multiplicity of types would result if separate names were given to each variant. By mutual agreement, the Type Dunkin Incised refers to pottery of the earlier Alto periods with firm, smooth ware; straight-sided beaker, vase and bowl forms and firm, smooth incising. Dunkin Incised, late variant, refers to the Phase 3--Bossier and late Haley incised pottery as described above. See Krieger "The Alto Focus" (8).

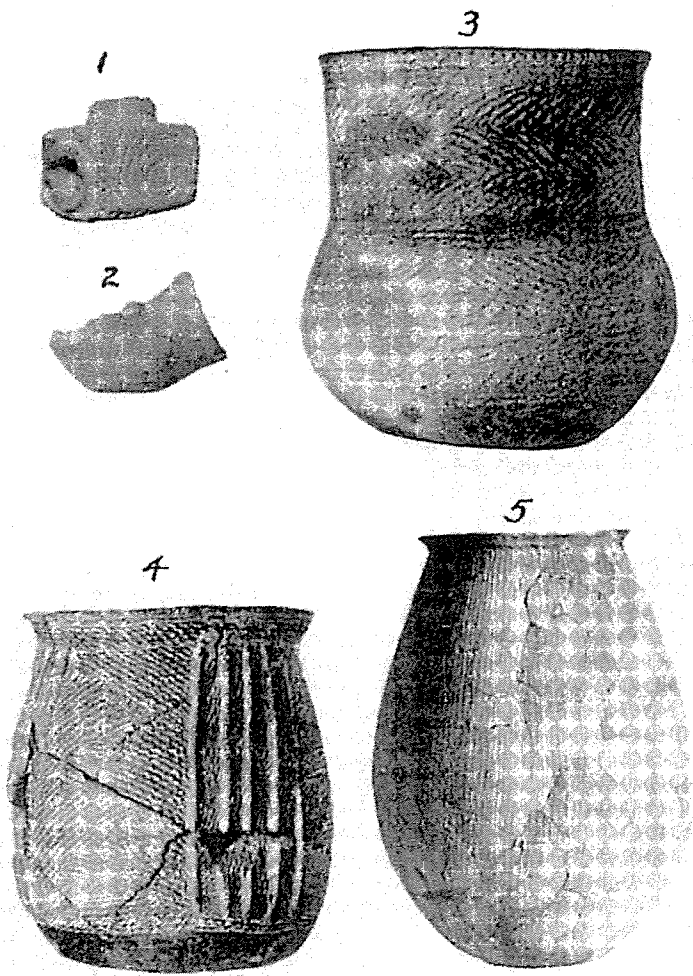


PLATE 14

Pottery pipes, No. 1 from Marston Place, No. 2 from Pease Place, Sinner Linear Punctated pottery, Nos. 3 and 4 (Mid-Ouachita Area, courtesy Dr. and Mrs. T. L. Hodges, photographs by Alex Krieger). Belcher Ridged pottery, No. 5, from Belcher Mound. Nos. 1 thru 4, x 1-2; No. 5, x 1-3.

functae to historic Glendora. Its immediate predecessors appear to be Coles Creek, Mazique and Chase Incised of the Coles Creek period; Davis and Dunkin Incised of the Alto potteries.

Dunkin Incised, late variant, is generally cruder than these, with sloppy or irregular application of incisions and the development of everted rims, whereas most incised vessels of the earlier periods mentioned above have no definite shoulders and rims. Dunkin Incised, late variant, in fact, seemed to develop in the later stages of Alto and Haley potteries, also in the period of transition from Coles Creek to Plaquemine in central Louisiana, and the incised pottery of Bossier focus seems to be part of this general development (Plate 17).

VII. *Brushed Wares*. Every site of the Bossier Focus has a considerable amount of brushed pottery varying from 2 to 25 per cent of decorated sherds. Undoubtedly many of these may be attributed to other cultures represented on these sites, as brushing becomes very frequent in all later periods, but this universal appearance, even on almost pure Bossier sites, makes it necessary to include brushed wares among the Bossier pottery types. No whole vessels have been found, neither are there illustrations from reports elsewhere which give good clues to definite vessel shapes.

Many of the sherds are similar to two types illustrated by Ford (4) on pages 91 and elsewhere, now attributed to Plaquemine and Caddo potteries. Ford and his co-workers later called these two Anna Random Brushed and Maddox Cross Brushed. A third type of rather firm and regular brushing was termed Plaquemine Brushed. A few sherds on Bossier sites show the vertical brushing of Glassell Brushed, of the Belcher Focus, but without shell tempering. Believing that occasional cross brushing is fortuitous and that unnecessarily complicated typology should be eliminated, the name Maddox Brushed is assigned by the author to cover brushed wares indigenous to Bossier focus.

Maddox Brushed. (Plate 13, Nos. 16-24). Vessel forms of this type apparently are quite similar to those of Pease

Brushed Incised and Belcher Ridged, as are the paste, colors and general appearance of sherds. Rims are everted, occasionally thickened or rolled and frequently notched. If rims are brushed, the arrangement is usually horizontal. On the body, brushing may be irregular, horizontal, vertical or in herringbone bands similar to the incised wares. In a few instances vessel surfaces have widely spaced (probably quadrating) vertical nodes or ridges, with brushing between. This arrangement is similar to that of Pease Brushed-Incised except for the wide spacing of the nodes or ridges.

Decoration by brushing has not been described for the Coles Creek, Troyville or Marksville periods in central Louisiana and the lower Mississippi Valley, but one brushed type, Chinchuba Brushed, is described for the Tchefuncte Culture (15). The situation is much the same as noted in discussion of linear punctated types, where similarly a decoration technic present in Tchefuncte is interrupted by the Marksville-Troyville-Coles Creek sequence, to reappear in the Bossier horizon. Brushed wares also are present in Plaquemine of central Louisiana and appear in Phase 3 of the Davis Site (8), possibly intrusive from Plaquemine pottery. Similarly the Haley Focus of southwest Arkansas in its later stages reveals the development of brushing in place of incising over the bodies of utility vessels.

Other Pottery Complexes

It has been observed that two or more pottery complexes are represented at practically every site at which Bossier Focus pottery is found. Eliminating Dunkin Incised, late variant, other non-definitive incised sherds, and all brushed wares, all of which may be held in common by two or more complexes, one finds that marker sherds of Marksville-Troyville, Coles Creek-Plaquemine, Alto and Glendora pottery complexes are present on various listed sites (Table I). Moreover, two sites have sherds of Belcher Focus and one site has Choctaw and Natchez sherds. Marston, Pease, Sinner and High Island are strong Bossier sites, with less than 5 per cent Alto sherds and minimal amounts of other recognizable complexes. These sites occur in a north-south axis

TABLE I. PERCENTAGE OF DECORATED SHERDS*
FROM VARIOUS SITES WHICH ARE MARKER
SHERDS OF POTTERY COMPLEXES.

	Total Decorated Sherds	Coles Creek Period (1)	Alto Focus (2)	Bossier Focus (3)	Glendora Focus (4)	Others
Marston Place	1223	0.1	1.5	45.4	0	0
Sinner Place	772	0	3.5	43.1	0.3	0
Pease Place	778	0	2.3	46.8	1.0	(5)
High Island	290	0	0.6	38.1	2.0	0
Harrison Bayou	237	0.4	4.8	29.8	0	0
Swanson's Landing	167	4.6	7.4	20.0	0	(5)
Gilmer Bayou	122	0	5.4	22.8	0	0
Keatchie	347	0	1.4	14.9	0.6	(6)
Smithport Landing	584	4.6	28.4	7.1	2.0	0
Wilkinson Place	347	1.1	29.4	11.5	1.0	0
Chamarre Lake	206	1.5	16.0	4.5	0	(5) (7)
Colbert Place	930	11.0	10.1	16.4	0.1	(5)
Greer Place	300	4.0	14.1	16.0	1.7	0
Mounds Plantation	397	2.5	7.0	21.7	2.5	(8)
Belcher II	703	0	3.6	40.5	0	(9)

(1) Coles Creek types include Coles Creek, Chase, Mazique and French Fork Incised, Chevalier Stamped and Rhinehart Punctated.

(2) Alto types include Pennington Punctate—Incised, Weches Fingernail Impressed, Wilkinson Fingernail Punctated, Crockett Curvilinear Incised, Hickory and Holly Engraved.

(3) Bossier types include Pease Brushed-Incised, Belcher Ridged, Sinner Linear Punctated, Maddox and Taylor Engraved.

(4) Glendora types include Natchitoches Engraved and Keno Trilled.

(5) One to three Marksville-Troyville sherds at each of these sites, including Marksville and Troyville Stamped and Churupa Punctated.

(6) Brushed sherds suggesting Bullard Brushed of Frankston Focus constitute 40% of decorated sherds at Keatchie site; 1 sherd of Belcher Engraved.

(7) Three sherds of Chickachee Combed (Choctaw) and one of Fatherland Incised (Natchez).

(8) Belcher Focus, 2% of decorated sherds.

(9) Belcher Focus 6.6% and Texarkana Focus, 6.7% of decorated sherds.

*Dunkin Incised, late variant, and all Brushed sherds are omitted from tabulation because they are common to several pottery complexes.

on a series of lateral waterways along the eastern hill escarpment of Red River valley in Bossier and subjacent Red River parishes. Harrison Bayou, Swanson's Landing, Gilmer Bayou and Keatchie, all outside of the river valley, have a major representation of Bossier Focus pottery, with appreciable amounts from other complexes. Smithport, Wilkinson and Chamarre Lake sites have Alto Focus pottery as the major component, with smaller amounts of Bossier Focus pottery; these sites are in a group on the west side of the valley and further south than the major Bossier group. Colbert and Greer places, about 40 miles east of Shreveport and located on Black Bayou which flows into Red River below Natchitoches, are mixed sites with appreciable amounts of Coles Creek, Alto and Bossier potteries.

Mounds Plantation and Belcher are mound sites in the river valley, with representation of several culture periods. At Belcher, controlled excavations of Mound B, which had 4 habitation levels separated by almost sterile sand fills, afforded good clues of Bossier temporal relationship, in that Belcher II, where 72 per cent of recognizable sherds were of Bossier types, was preceded by a Haley Focus (Gibson Aspect) habitation and burials, with characteristic burial customs, projectile types (Alba Barbed), long stemmed pipe and pottery which in burial vessels and house floor sherds was a mixture of Haley and Alto Focus types. On the other hand, Belcher habitation levels III and IV exhibited typical Belcher Focus (Fulton Aspect) pottery on house floors and in burials, together with other artifact types and culture traits which distinguish this Focus in its several components.

It is interesting to speculate as to the reason why so many sites where Bossier Focus is represented have a number of other culture complexes in evidence. Although only those sites are tabulated from which we have more than 100 decorated sherds, the same situation prevails throughout the area. This is especially true of Alto Focus pottery types, which the table shows to be present with Bossier on each of the 15 listed sites. Stevenson (7) reports a similar situation in the McGee Bend Reservoir in east Texas, where Alto types were found on 12 of the 16 sites which had Bossier rep-

resentation. Krieger (8) states that these Alto sherds are chiefly of the Phase 3 or late Alto types and limited to rough utility wares, which to a considerable extent is true in Louisiana. Four of the sites listed in Table I are considered as major or unquestioned Alto sites—Smithport, Wilkinson, Colbert and Greer, in addition to Allen which is not listed—since they yield a practically full range of Alto pottery types, in addition to the appreciable percentile representation.

Relative Frequency of Bossier Pottery Types

Table II shows the percentage occurrence of the various pottery types ascribed to Bossier Focus in the 15 sites de-

TABLE II. PERCENTAGE OF DECORATED SHERDS
IN VARIOUS BOSSIER POTTERY TYPES*

	Maddox Band Engraved	Taylor Engraved	Pease Brushed-Incised	Belcher Ridged	Sinner Linear Punctated	Dunkin Incised, Late variant	Maddox Brushed
Marston Place	4.0	0.2	19.0	21.0	1.2	19.0	27.0
Sinner Place	1.9	2.2	18.6	12.0	8.4	37.4	7.0
Pease Place	2.0	4.4	19.8	16.0	4.6	38.0	8.6
High Island	2.4	1.4	16.3	16.0	2.0	33.4	9.0
Harrison Bayou	0.8	2.0	27.0	0	0	14.3	41.0
Swanson's Landing	0	0	9.4	10.0	0.6	43.0	12.0
Gilmer Bayou	0	0	13.4	3.0	6.4	32.3	16.6
Keatchie	2.0	0.3	11.4	0.6	0.6	13.2	24.5
Smithport Landing	0.5	0	4.5	1.4	0.7	36.6	6.8
Wilkinson Place	1.5	0.9	3.2	5.0	0.9	36.0	5.0
Chamarre Lake	0	0	4.5	0	0	54.0	13.5
Colbert Place	3.7	0.8	2.5	5.0	4.4	38.5	8.5
Greer Place	2.8	0.8	3.0	6.0	3.3	41.0	8.0
Mounds Plantation	0.5	0	3.0	18.0	0.2	38.0	2.5
Belcher II	0.7	1.0	3.4	35.4	0	26.2	2.7

*The figures indicate percentages of all decorated sherds from the site which the given type represents; not the percentage of Bossier sherds alone.

scribed above. It is to be remembered that Dunkin Incised, late variant, also occurs in Alto and Plaquemine potteries. However, its occurrence is remarkably constant, between 32 and 43 per cent in 10 of the 15 sites, regardless of complexes represented. It is also to be noted that the four adjoining Bossier sites, Marston, Sinner, Pease and High Island, present quite consistent figures for six types. The considerably higher percentage of brushed sherds at Marston, with some relative increase in Maddox Band Engraved and decrease in Sinner Linear Punctated, may have temporal significance. This is the only non-mound site of Bossier Focus which is situated in the Red River valley; of all sites it more nearly approaches a pure Bossier Focus site, with very low percentage of Alto and Coles Creek sherds (one Coles Creek, 19 Alto sherds in a total of 1,223). This site may well have existed at a later time than the others, and may represent a movement of Bossier peoples from the hillsides down into the valley; inadequate studies of the Vanceville mound are available to indicate whether this site may represent a similar trend.

Away from the four-site center of Bossier Focus, the pottery types tend to show a more spotty distribution (although smaller sherd sampling at several sites may have its effect). Pease Brushed-Incised, Dunkin Incised, late variant, and Maddox Brushed are found at all 15 sites; Belcher Ridged is absent from 2 sites; Sinner Linear Punctated and Maddox Engraved from 3 sites each and Taylor Engraved from 5 sites. Pease Brushed-Incised and Belcher Ridged are the two most consistent and reliable indicators of Bossier Focus pottery, especially in the absence of marker types of Belcher Focus, where Belcher Ridged would be confusing.

At the typical Bossier sites, the engraved types constitute only 4 to 6 per cent of the total decorated sherds, contrasting with the finding of 17.7 and 11.8 per cent engraved sherds in the Belcher Focus levels III and IV of the Belcher Mound site.

Other Clay Artifacts

Clay Pipes. A large fragment of an elbow pipe (Plate 14, No. 2) was found on the surface of the Pease Place. Neither end is complete, but the bowl and stem ends of the fragment seemed about equal in size and caliber of opening. The surface was smoothed and decorated with engraved, ticked or spurred lines encircling the stem and bowl, with a concentric circle of spurred lines between. The pipe found with the Williams Point burial was stated to be of the elbow type, but was not seen by the author. The pipe which was washed out near the burial at the Marston Place (Plate 14, No. 1) is a modification of the elbow pipe. The base is cuboidal, of solid, well fired, clay tempered pottery, bearing incised concentric circles on 3 sides and notching of all edges. Again the bowl and mouthpiece are broken, but the remaining parts show openings of approximately equal caliber joined by a small hole. There is a suggestion of mild flare to the sides of the bowl.

Stem or bowl fragments of long stemmed pottery pipes were found at Mounds Plantation and Harrison Bayou sites. Since these have been associated universally with the Gibson period and have not been found at other Bossier sites, they undoubtedly derive from the Alto Focus occupation at these two sites.

Pottery Discs. Fragments of flat pottery discs were found at numerous sites, including Marston, Pease, Swanson's Landing, Gilmer Bayou, Wilkinson, and 3 each at Sinner, Colbert and Greer Places, of the sites listed in Table I. These discs vary from approximately 2 to 4 inches in diameter, have a smooth central perforation and may be cut from decorated sherds or be flat undecorated discs (from vessel bases?). An entire large disc (Plate 16, No. 1) from the Marston Place is $3\frac{1}{4}$ inches in diameter and the central perforation measures $\frac{5}{8}$ inch. The excellent balance of this disc lends weight to the supposition that these objects were spindle whorls.

Clay Figurines. Fragments of figurines are about as widely distributed as discs. 6 figurine fragments were found at

Marston Place, indicating almost certainly that they were made by Bossier Focus people, since this is almost a pure site. One or more fragments (Plate 16, No. 4) came from the East Smithport, Sinner, Pease, Wilkinson, Greer and Colbert (6 fragments) sites. No entire figurines have been found and no head or face fragments. If the figurines were entire and proportionate to the size of the fragments, they ranged from 2 to 3 inches in height.

Other Objects. One bead-like object made from a pottery sherd (Plate 16, No. 2) was found at Sinner Place. It is $1\frac{1}{16}$ by 1 inches in size, shield shaped, with smooth central perforation. A small pestle or pin shaped object (Plate 16, No. 8) from the Marston Place is different from anything seen in this area. Except for its very small size ($1\frac{1}{8}$ inches in length) and base, it suggests the Middle Mississippi pottery trowels.

Chipped Stone Artifacts

The multi-cultural status of the sites described makes it difficult to assign artifacts to a given culture, especially since no objects other than pottery and pipes have been associated with burials. We can only assay the artifact assemblage generally found on sites which have a major Bossier pottery representation, eliminating those types known to have narrow cultural affiliations (for example, long-stemmed pipes).

Every site which exhibits Bossier pottery, with exception of the large mound sites, has a variety of chipped stone artifacts, including large and small projectile points, several types of scrapers, and drills. This is a consistent finding in northwest Louisiana and in the McGee Bend Reservoir (7). A similar situation prevailed in the Henrietta Focus of central North Texas (6) and Fourche Maline in Oklahoma, in which instances it was thought to represent a carry-over of Archaic traits, including use of the atlatl.

Large Projectile Points. At the Sinner, Pease, Swanson's Landing, Harrison Bayou, Keatchie and Gilmer Bayou sites, large projectiles were 3 to 10 times as numerous as the small points; at Smithport twice as numerous; while at Allen, Col-

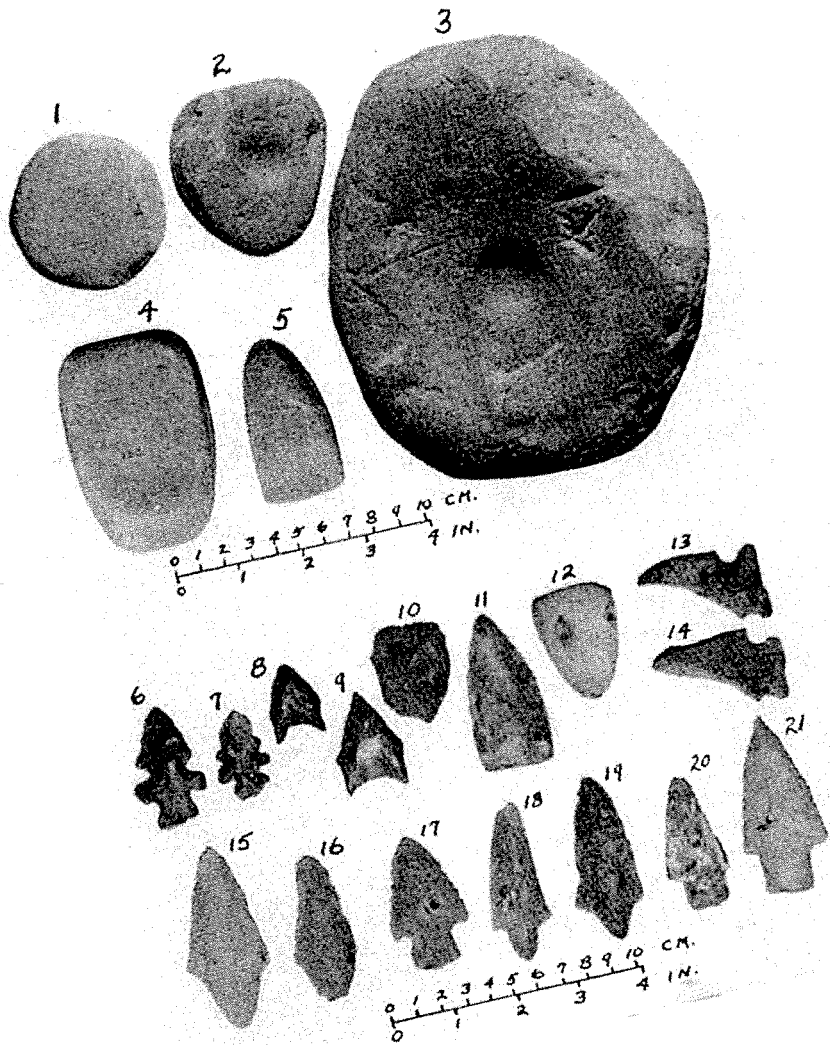


PLATE 15

Stone artifacts from Bossier Sites. No. 1, round hammerstone or mano; No. 2, pitted mano; No. 3, pitted grinding stone or mortar; No. 4, rectangular celt or adze; No. 5, triangular celt; Nos. 6 and 7, multiple notched projectiles, Sinner place; Nos. 8, 9, San Patrice concave base projectiles; 10-12, triangular scrapers or knives; Nos. 13, 14, Albany beveled spokeshaves; 15-21 large projectiles from Bossier Focus Sites.

bert and Greer the small (arrow) points exceeded the large (dart) points in frequency. The four latter are major Alto Focus sites and three of them have Coles Creek representation, whence many of the small points may be derived.

The larger (dart) points (Plate 15) include lozenge-shaped (Nos. 15, 16), simple haft or contracting base (Nos. 18-21) and barbed, with expanded (No. 17) or contracting base, all of which appeared in the Tchefuncte (15), Poverty Point (9) and Marksville (14) cultures in Louisiana and seem to be carried over from the late Archaic horizon. One of the contracting base or simple haft type (No. 19) was found at the Marston site, where there is no evidence of Archaic or Marksville artifacts. This finding, with its widespread occurrence on other sites, suggests that some of these early dart types may have been carried over into the Bossier period.

On several sites, but particularly at the Sinner and nearby Pease places, many large projectiles with expanded base, barbed shoulders and multiple side notches (Plate 15, Nos. 6-7) were found. Points of this type were associated with Marksville culture at the Crooks site (14) and on the Ouachita River in Arkansas (16). Other expanded base barbed (corner notched) points (Plate 15, No. 17) from several sites may or may not have serrated edges.

We have previously described (17) the San Patrice concave base projectile point (Plate 15, Nos. 8, 9), with concave base thinned by bilateral short channel grooving. These have been found on 6 of the 15 sites in Table I, in addition to a number of other unlisted sites.

Small Projectile Points. Those sites where small points exceeded the large in frequency showed a preponderance of Alba Barbed (Plate 16, Nos. 24-26), the dominant projectile type of Alto (6, 8) and Gahagan (18) Foci of the Gibson Aspect, and several types (including the "fir-tree") attributed to Coles Creek cultures (Plate 16, Nos. 27-35). Two points of type Alba Barbed (Plate 16, Nos. 24, 25) were among the five small points found at Marston Place. It is

possible, but by no means certain, that this type carried over into Bossier Focus.

Bassett Pointed Stem type, the characteristic projectile of Belcher and Texarkana Foci, a keen, small point with straight sides, acutely barbed shoulders and short pointed stems, was found on only two of the listed sites. At the Belcher Mound, this type appeared at the third or Belcher Focus level, after the Bossier habitation period.

Several other types of small projectile, found on the Bossier sites (Plate 16, Nos. 19-23) are of uncertain provenience. As yet it is not possible to establish the resident type of small or large points for Bossier Focus, although there is good indication that both are present.

Scrapers. Large and small, triangular, oval, keel-shaped, and reworked projectile ("bunt") scrapers are all represented, with both side and end scraper types. The most frequent types, considered likely as resident types of the Bossier Focus, are small oval or triangular, thin, usually $\frac{3}{4}$ to 1 inch in length; larger triangular scrapers or knives (Plate 15, Nos. 11, 12) and the Albany type beveled scraper or spokeshave (Plate 15, Nos. 13-14) previously described as being limited to this area and often associated with the San Patrice concave base projectile (17).

Drills. As with projectiles and scrapers, several types of drills found on these sites are of uncertain association. Included are narrow, diamond-sectioned (Plate 16, Nos. 14, 15); small expanded-base (Plate 16, Nos. 10-12) and a few large expanded base or T-shaped. The small, expanded base type is more often found on Coles Creek sites but probably was used also by Bossier peoples. The other two types have been associated with the late Archaic throughout the southeast.

Ground Stone Objects

Celts. Rectangular and rectanguloid celts or adzes with squared base and mildly curved edges (Plate 15, No. 4) constitute the predominant type. Edges are usually rounded, but in many instances natural flat stones were used

with minimal modification. For this reason thickness varied considerably. The usual range of size is 4 to 5½ inches in length and 2 to 3 inches in width. Triangular celts (Plate 15, No.5) are less frequent, often larger and thicker and less symmetrical than the small triangular celts of the Coles Creek period. Long, massive, thick polled celts are even scarcer and have usually been attributed to the late Archaic. Small chisels or wedges are rare.

Grooved Axes. Although less numerous than celts, grooved axes have been found at a few of these sites. They are fully grooved, rectangular with squared or mildly rounded bases, quite thick with less acute blades than the celts. The average objects are 3½ to 5 inches in length, 2 to 3 inches in width and 1 to 1½ inches thick.

Manos, Metates, Pitted and Pecking Stones. Oval or spheroidal manos, usually rough edged, and sandstone mortars, or milling slabs, with shallow basins occur on most of these sites. No metates which show evidence of back-and-forth grinding were found, and apparently circular grinding in comparatively small basins prevailed. Many of the manos (Plate 15, No. 2) and even mortars (Plate 15, No. 3) had pits on one or both sides, indicating use for both grinding and nut cracking. Other pitted stones are numerous, and combination pitted and pecking stones are not infrequent. Pecking stones, with or without pits, are about convenient hand size; some pitted stones, however, are large with multiple pits. No large mauls and only a few hammerstones of moderate size have been found.

Stone Beads. No beads have been found with burials of this focus. A few tubular or long, rectangular (Plate 16, No. 5) polished beads of tan or grey stone may relate to the Archaic (as they also occur on non-pottery sites). An engraved (effigy?) bead of gray slate from the Sinner site is illustrated by Ford (4) and a modified barrel-shaped counter-drilled bead of banded slate was found at Smithport Landing. An odd-shaped bead form (Plate 16, No. 3) of ferruginous sandstone was a surface find at the Sinner site.

Red jasper and bird effigy beads, so numerous at Poverty Point site (9), have not appeared in Bossier Focus sites.

Problematical Stone Artifacts. Ford (4) illustrates portions of a greenstone gorget (3 hole?), granite boatstone and slate bead (small biconical bannerstone?) collected by Neild from the Harrison Bayou site. A carved stone mask or effigy pendant from Sinner site appears in the same illustration. An entire two-hole gorget (Plate 16, No. 9) was found by the author washed out from the Gilmer Bayou site, apparently from midden material, as there was no evidence of a burial. Several fragments of bannerstones came from the Pease site and the occasional finding of gorget, boatstone or bannerstone portions have been reported at other Bossier components.

Other Polished Stone Objects. No association of stone pipes, pipe fragments or plummets with Bossier Focus has come to the author's attention. A rectangular, thin, polished stone tablet, having the appearance of an unperforated gorget, was found in midden material in the fill of one of the Smithport burials (Alto Focus). It is $2\frac{3}{8}$ by $1\frac{3}{4}$ inches in diameter. Polished pendants, sometimes natural pebbles perforated near one end, are rare finds.

Bone, Shell, Copper, Galena, Quartz

No objects of shell, copper or galena have been found with Bossier Focus burials, nor have there been surface finds of objects made of these materials.

One bird bone which apparently had been made into a bead was a surface find at the Smithport Landing. Unworked quartz crystals or fragments are frequent; a small notched crystal pendant (Plate 16, No. 7) came from the village surface at Greer Place.

Trait List of Bossier Focus

On the basis of the preceding discussion, it is considered that the following list constitutes those culture traits which, in the light of our present limited knowledge, probably characterize the Bossier Focus:

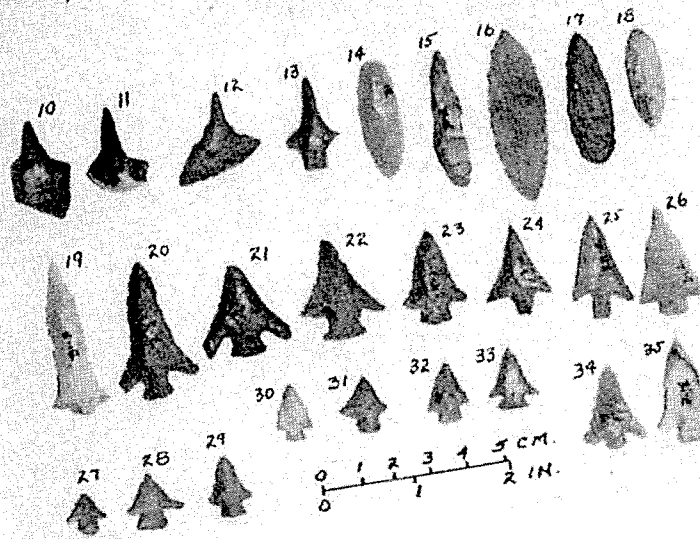
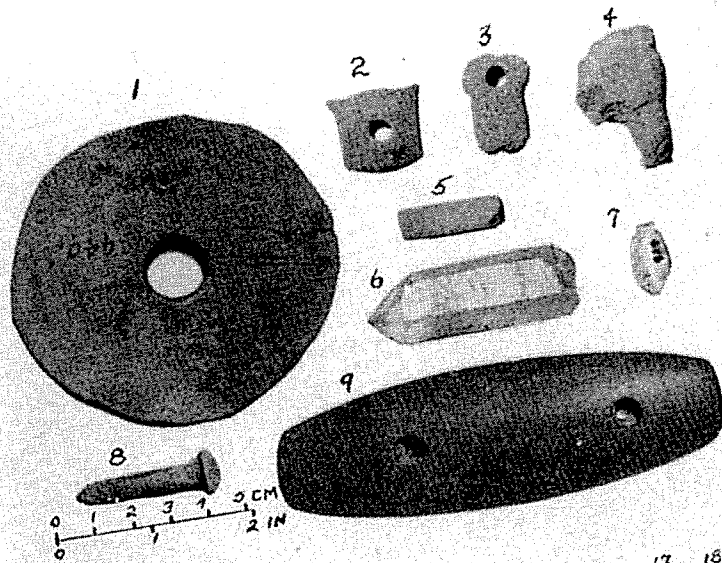


PLATE 16

Artifacts from Bossier Focus Sites. No. 1, perforated circular pottery disc; No. 2, bead cut from potsherd; Nos. 3, 5, stone beads; No. 4, pottery figurine fragment (?); No. 6, unworked crystal; No. 7, crystal pendant; No. 8, pottery trowel (?); No. 9, two-hole gorget; Gilmer Bayou Site; Nos. 10-13, expanded base drills; Nos. 14, 15, possible drill forms; Nos. 16-18, leaf-shaped blades; Nos. 19-35, small projectiles (arrow) from various sites. Nos. 23-25, the latter two Alba Barbed type, from Marston Place.

COMMUNITY PLAN

Sedentary communities

Settlements typically on hillsides near minor streams, lakes or springs; often on hills fronting the river valley

Mounds rare; occasionally small sand mound on hilltop overlooking valley; four mound sites in river valley

Village usually rather compact and small

Often evidence of Archaic materials on same site

European trade materials not found unless Glendora component represented

Burials on village site, scattered

One to four other cultures represented on same site

SUBSISTENCE AND COMMERCE

Agriculture, hunting, fishing and gathering indicated

Materials largely local—no indication of widespread commerce

ARCHITECTURE

House floor on village—multiple post molds, apparently irregularly oval

Individual post molds

White sand on floor

Projecting entranceway, post rows

Multiple firebeds, not specially prepared

Cyst-like cache pit under ashbed (4 ft. depth, empty)

Post molds opposite sides of ashbed

House ovals on small mound; entrance uncertain; no central ashbed; no regular interior post molds; individual post molds

POTTERY

Clay temper predominates, occasional bone, tufa

Shell temper entirely or almost entirely missing

Highly polished engraved wares rare

Red filming, effigy vessels, rattle vessels, modeled animal heads on bowl rims, spurred lines, negative discs—all absent or rare
Preponderance of incised, punctated, ridged and brushed utility vessels

Everted rim jar usual shape for utility vessels

Bottles and bowl usual shape for engraved vessels

Pottery types—Maddox Band Engraved; Taylor Engraved; Pease Brushed-Incised; Belcher Ridged; Sinner Linear Punctated; Dunkin Incised, late variant; Maddox Brushed

Other foci or periods represented by pottery at sites: Marksville-Troyville; Coles Creek-Plaquemine; Alto; Belcher; Texarkana; Glendora

Elbow pottery pipes, plain or engraved

Rectangular pottery pipe, incised

Perforated pottery discs

Pottery figurines, human (fragments)

Pottery trowel (?)

Bead from pottery sherd

CHIPPED STONE

Projectile points, large (possibly foreign)

Projectile points, small (some foreign)

Scrapers, small oval or triangular

Drills, small flake, expanded base
 Drills, small rectangular (resident?)
 Albany type spokeshave and San Patrice concave base type
 points (foreign?)

GROUND STONE

Celts

Small, thick triangular
 Larger rectangular, thin or thick
 Fully grooved axes (foreign?)
 Two-hole gorget (rare, not a resident type?)
 Oval manos
 Rough sandstone metates or mortars
 Pitted stones—numerous
 Large and small hammerstones
 Bones of brown sandstone
 Bead, stone, pendant type (resident?)
 Beads, tubular, stone (resident type?)

ANTLER, TOOTH, SHELL, COPPER, GALENA PRODUCTS

Information inadequate; none found in surface collections or
 in few burials excavated

BONE, QUARTZ CRYSTAL

Bone Bead (resident?)
 Quartz crystals, unworked
 Quartz crystal pendant (resident?)

BURIAL CUSTOMS

Few burials found in various sites, detailed information not
 available
 Single burials in shallow pits
 Fully extended burials, supine
 Burials in village
 No evidence of special preparation of pits or of specialized
 burial ware
 Burial offerings limited—usually pottery, rare pipe
 Pottery placed above or near head
 No burial mounds in evidence

SKELETAL MATERIAL

Inadequate information for generalizations

Relationship to Other Cultures

Late Archaic. It has been noted that a group of culture
 traits related to chipped and ground stone artifacts has
 occurred at many of the hillside sites, along with Bossier
 materials, also on similarly located non-pottery sites
 throughout northwest Louisiana. These traits occur else-
 where in the Eastern United States in the late Archaic period
 and have been the subject of careful study in Alabama,

Tennessee, Kentucky and south Louisiana. Evidences of continuation of these Archaic traits into the early pottery making periods are ample. The absence of Tchefuncte and Poverty Point artifacts and the minimal amounts at Marksville-Troyville period sherds at Bossier Focus sites, in contrast with the regular distribution of Archaic objects, suggests a late survival of the Archaic in northwestern Louisiana, with possible carry over of Archaic traits into the Alto-Bossier period. Only the evidence of extensive testing and distributional studies at these sites, with stratigraphical control, will answer this question.

Tchefuncte. No artifacts which constitute marker traits of the Tchefuncte culture have been recognized from Bossier Focus sites. However, it has been noted that the pottery type Sinner Linear Punctated bears more similarity in decoration technic and appearance, although completely different in paste and vessel shape, to the linear punctated pottery of the Tchefuncte Period than to any other pottery of the lower Mississippi or Red River areas. Other incised and nail punctated wares, together with rim notching, bear similarities with Tchefuncte technics which largely are missing in intervening cultures (Marksville-Troyville-Coles Creek).

Although some Tchefuncte traits, especially in stone work, projectile types and pottery traits, were transmitted to the succeeding Marksville period, yet undoubtedly the well organized Marksville groups effected spectacular changes in the lower Mississippi and central Louisiana areas. Evidences of this are the development of large ceremonial, mound building centers, the well developed burial complex and introduction of new technics of pottery decoration. It is interesting to speculate that other, as yet undiscovered, pottery making peoples of the lower valley escaped domination of the Marksville-Troyville centers and carried on those Tchefuncte methods of utility pottery decoration which reappear in Alto and Bossier potteries—overall fingernail punctations, rim notching, linear punctations. Beyond this speculation, for which there certainly is no basis of present facts, it is fully indicated that Tchefuncte pottery was “ancestral in large part to the predominantly smooth-sur-

faced wares that later came to dominate the Mississippi Valley" (15).

Marksville-Troyville. Despite the presence of a Marksville site (Fredericks Place) in the Red River valley just below the center of Bossier cultural development, and the finding of a few distinctive sherds of stamped wares on Bossier sites, there is little evidence of Marksville influence on the Bossier pottery. The significance of the many multiple-side-notched projectile points at the Sinner site is undetermined, especially since these seem to be infrequent in central Louisiana Marksville and common on the Mid-Ouachita, with Marksville type pottery. This may be a local development in the North Louisiana-Arkansas Marksville.

Coles Creek-Plaquemine. Incomplete publication of the Louisiana State University materials leaves the Coles Creek-Plaquemine situation unsettled. There seems little doubt that the same close relationship exists between these cultures as between Marksville and Troyville, with certain changes in community organization, pottery decoration, and other artifact traits as Plaquemine developed out of Coles Creek in central Louisiana. There are also indications that the term "Coles Creek" relates to a time period with certain artifact and cultural relationships between various units over a wide area. Weeden Island is closely related but distinct; the Coles Creek potteries of central and north Louisiana are quite different and that of north Louisiana is dissimilar to the Pre-Caddo of the Crenshaw Mound.

Under these circumstances it is difficult to relate the Alto-Bossier developments to Coles Creek-Plaquemine. Krieger (8) considers the earliest Alto (Phase 1) as preceding Coles Creek of central Louisiana and probably Phase 2 at the Davis Mound as coeval with "early Coles Creek," whereas Phase 3 is correlated with "late Coles Creek." As will be indicated later, Bossier Focus is thought to have developed largely out of late or Phase 3 Alto and we consider it probably contemporaneous with Plaquemine. On the Mississippi, Plaquemine is thought to precede and overlap Natchez. In the middle Red and Mid-Ouachita River areas, Natchez pottery

is found with that of Belcher Focus and the historic Glendora Focus. We have already noted that Bossier Focus seems to antedate Belcher Focus in northwest Louisiana.

Contemporaneity of Plaquemine and Bossier periods is also indicated culturally in that almost identical incised and brushed wares occur in both; vessel shapes are not too dissimilar; small projectile points, usually attributed to Coles Creek-Plaquemine, occur on Bossier sites out of proportion to or in the absence of pottery sherds of these two complexes; and small drills made from flakes, which are not found in Belcher or Glendora Foci, seem to be common to Coles Creek-Plaquemine and Bossier.

Ford and Willey's report (14) of the Crooks site does not clarify the relative position of the sherds which they list together as "late period types." In Fig. 42 of this report, types Sanson Incised, Catahoula Incised and Haynes Bluff Plain, which probably would be assigned to the Plaquemine period; Coles Creek Plain; Wilkinson Punctated, which we now consider as a body treatment of several Alto types; and Harrison Bayou Incised, which we would include in Dunkin Incised, late variant, of the Bossier Period, all are listed as found in the secondary mantle as well as in the wash on the secondary mantle. No stratification of this mantle is described and it is to be noted that about half of the Marksville Period sherds came from this same secondary mantle. We also have no provenience indicated for illustrated sherds which appear to be of types Sinner Linear Punctated (Fig. 19 a-d of the Crooks report) and Belcher Ridged (Fig. 20 g) except that they belong to the late horizon.

Alto Focus. Repeated reference has been made to sherds of Alto Focus types found on all sites in Louisiana and from the majority of the McGee Bend Reservoir sites in Texas at which Bossier Focus is represented. These specific Alto types have been mentioned and illustrated by Krieger (6), also have been discussed at conferences, but have not been fully described in the literature. Complete descriptions will appear shortly in Krieger's volume on the Davis site near Alto, Texas, a large mound site which is one of the two

farthest southwest of the clay-sand tumuli which are so characteristic of the Mississippi Valley.

Krieger correlates three Alto Focus (Gibson Aspect) periods, Phases I, II and III, with pre mound, initial platform mound and overlying mantle. In his previous publication (6) he estimates Alto as beginning at approximately 1100-1200 A. D., at which time fine line engraved, black ware; tapering spout bottles and incised scroll decoration were introduced into this area. These types—Holly and Hickory Engraved and Crockett Curvilinear Incised—lasted throughout all phases of the Davis Mound and are represented in comparatively small amounts on the five sites which were listed as major Alto sites in Northwest Louisiana—Wilkinson, Smithport, Allen, Colbert and Greer. Furthermore, 4 of the 5 vessels which Moore (1) and we (18) found in the tremendous Gahagan burial pits were of Holly Fine Engraved type and three bottles found adjacent to the mound in recent years, exposed by river caving and presumably but not certainly with burials, were Hickory Fine Engraved. Gahagan cannot be classed as belonging to Alto Focus, due to its distinctive burials, stone and copper artifacts and ceremonial traits. Krieger thinks the Alto burial pottery may have been trade material, but considers Gahagan as belonging to the early part of the Gibson Aspect.

Phases 2 and 3 of the Davis site mark the beginning of considerable increase in amounts of straight line incised pottery, often with fingernail punctated bodies which appear on all of the Bossier Focus sites. Also, during Phase 3, brushed sherds, which were related by Krieger to Plaquemine types, were found in relatively small amounts.

Krieger (8) suggests that in early Alto and other early Gibson periods, communities were few and widely separated, but with large well developed ceremonial and civil centers. By phase 3 times at Davis a trend had started which continued throughout the entire Fulton Aspect, except in the large mound sites on the Red River (especially Belcher and Texarkana Foci), toward living in many small villages which seemed to have lost mound building, special burial and other

ceremonial traits. The cause for this dispersion into numerous small villages has not been ascertained—whether natural causes related to sustenance, the breakup of strong civil authority, rebellion against cruel burial ceremonials with their attendant human sacrifice, or changed relationships with neighboring tribes.

Alto people spread during these times to many sites in central east Texas, northwestern Louisiana and possibly Arkansas—it is likely that hundreds of sites, mostly on the smaller streams or in the hill country, have late Alto representation. In addition to pottery sherds, this is indicated in our sampling by white sandstone hones and Alba Barbed small projectiles. On these same dispersed sites, we see development of the Bossier pottery complex alongside or out of the Alto—chiefly the utility wares. Vessels from the Smith Place burials (Plate 17) combine Alto Bossier shapes and decorative elements. It is still not certain whether Alto Focus is directly ancestral to Bossier (physically or culturally) or whether Bossier peoples, deriving cultural influences from both Coles Creek and Alto, coexisted with Alto people in numerous villages during the latter phases of Alto Focus. It seems certain that Bossier is generally later than Alto, occupying an intermediate or transitional period between characteristic Gibson (Alto) and Fulton (Belcher) cultures. This is certainly the situation at the Belcher site, the only excavated stratified site where Bossier is represented.

Belcher Focus. We have noted that Belcher Focus artifacts are not widely represented on the many Alto-Bossier hillside sites, also that Belcher Focus differs in continuing the riverine, large ceremonial center, southern cult participating and mound building or using traditions of the Gibson period, even though its pottery and artifact traits and trade relationships place it in the Fulton period temporally. Bossier and Belcher people seem to have had contact only when the former entered the major river valley.

Yet we see two pottery types—Belcher Ridged and Taylor Engraved—common to both foci, with evidence that the

former (and possibly both) originated in Bossier times. Maddox Band Engraved bowls of Bossier Focus have shapes and decoration arrangement not too different from Barkman Engraved bowls of Belcher and Texarkana Foci. Utility vessel shapes are quite similar in Bossier and Belcher potteries except for minor variation, as previously noted, in rim height and treatment. Rim notching becomes less frequent. Small flat triangular scrapers, brown sandstone hones and Bassett Painted Stem small projectiles are other Belcher artifacts which possibly also are Bossier Focus traits.

Conclusions

Bossier Focus is a culture of the Caddoan area, primarily found in numerous scattered hillside sites of Northwestern Louisiana, but also in central East Texas, often in association with one to several other culture complexes on the same site. There is a suggestion that part of the stone artifact assemblage of this culture may have been carried over from the late Archaic; evidence of usage of both atlatl and bow is at hand. The Bossier pottery complex seems to derive from the long sequence of Tchefuncte-Marksville-Troyville-Coles Creek-Plaquemine of central Louisiana and the Alto Focus of East Texas which, during its late period, spread across the adjoining portions of East Texas and Northwest Louisiana. Bossier Focus appears to precede and contribute in certain pottery types and possibly other minor traits to the riverine people of Belcher Focus, although close relationship does not appear to exist.

The people responsible for Bossier Focus apparently were hunters, fishermen and agriculturists living in small, closely placed communities away from the major streams. Locally self contained, they traded very little, were satisfied with limited contacts and avoided highly developed ceremonials.

PLATE 17

Pottery from burials on Smith Place, Lincoln Parish. Note the tapered spout bottle with notched rim and encircling lines as well as punctates, combining Alto and Bossier decorative elements on a modified Hickory Engraved bottle shape. Also note vessel 4, combining Dunkin Incised, Late Variant Engraving of the type seen in Plaquemine and Alto vessels around the rim, with notched lip and Pease Brushed-Incised body (Bossier Elements). Vessels x 1-3.

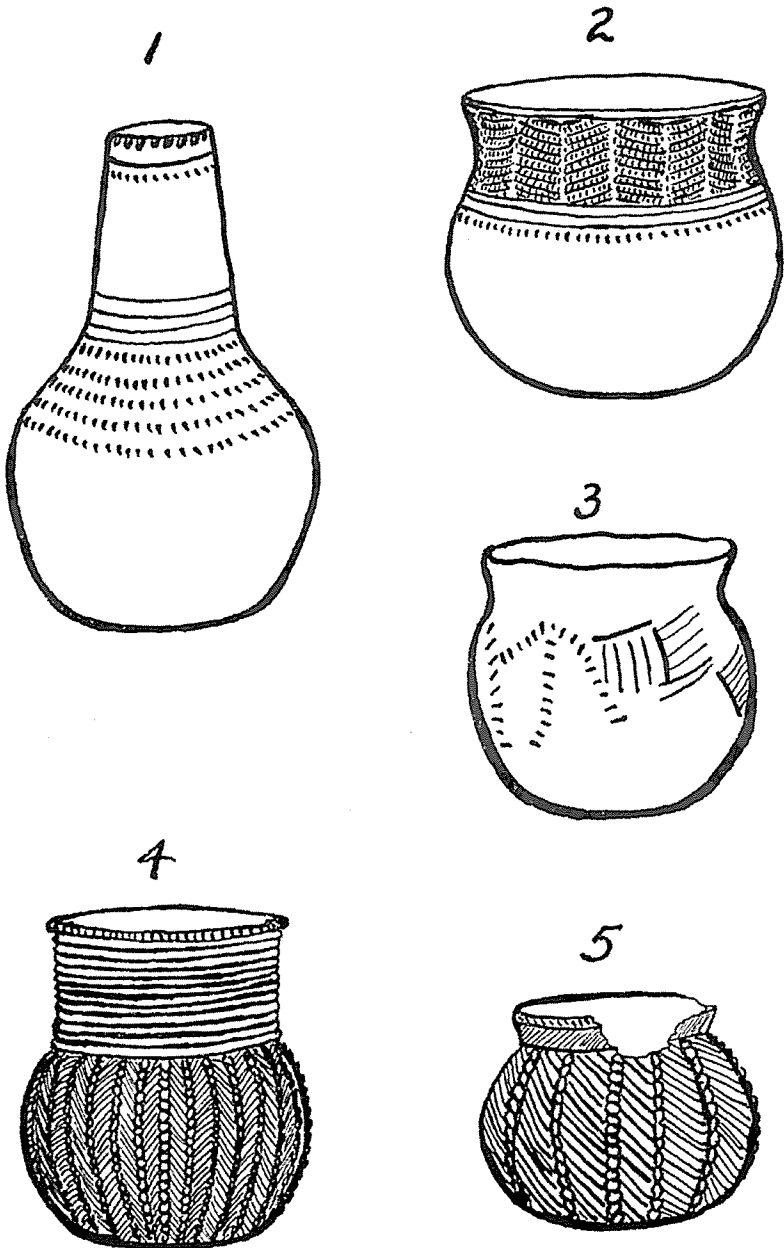


Plate 17

They produced several types of pottery, modifying ideas of others and initiating at least one decorative technic which they transmitted to a later cultural group, the remains of which we know as Belcher Focus. This latter seems to be immediately ancestral to Glendora peoples, identifiable as Kadohadacho, Natchitoches and other historic Caddoan groups.

There are frequent references in early narratives of certain "fringe" or unusual tribes among or near the Caddoans, whose language or customs seemed different and who usually lived away from the major streams on which Caddos were found. Two of these "fringe" groups were the Adai, near the Natchitoches in Louisiana, and the Eyeish, near the Hasinai (on Eyeish creek, in the McGee Bend Reservoir) in East Texas. Possibly future research can establish whether these isolated groups may represent descendants of Bossier Focus peoples.

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RECENT ARCHAEOLOGICAL RESEARCH IN OKLAHOMA

ROBERT E. BELL

During the past two years considerable archaeological activity has been conducted throughout the state of Oklahoma. This has not been an extensive nor especially planned program of development, but rather a sudden intensification in archaeological work brought about by the various Federal River Basin Reservoir projects. Most of the work accomplished has been survey or salvage work in an effort to beat the bulldozer or rising flood waters to an important site. No less than seven surveys have been completed, six of them representing reservoir areas. Emergency excavations have been accomplished in two of the reservoirs, and small test trenches have been opened in newly discovered sites relatively near the University.

In order to give you an idea as to what has been done, I prefer to discuss these various projects separately, rather than to attempt an overall summary statement.

There are three reservoir areas in which little of consequence was found—Canton Reservoir in western Oklahoma, Hulah Reservoir in north central Oklahoma, and the Heyburn Reservoir in east central Oklahoma. In each of these areas only occasional camp sites were noted by the survey party, hence nothing in the way of excavations has been contemplated for these localities. For once it has been a pleasure not to find something, for this means our efforts can be devoted to other localities and that little will be lost in so far as the archaeological record is concerned.

Southwestern Oklahoma Survey

Mr. David Wenner conducted a survey in sections of Harmon and Greer counties in the southwestern portion of the state. The survey included portions of Salt Fork, Prairie Dog Fork and the North Fork of Red River. A total of 15 sites was recorded, two of them being extensive village

areas and the remaining thirteen representing smaller camp sites.

No test excavations were attempted though surface collections indicated materials representing the Texas Henrietta focus. Some sherds resemble the Sanders materials, and a few Pueblo sherds were reported from the area. No Folsom or early man sites were noted. Excavations in this region should be valuable in establishing cultural contacts between the Pueblo area and Oklahoma.

Wister Reservoir

One of the more important archaeological areas within the state falls within the Wister Reservoir in Le Flore county. This reservoir lies in the eastern part of the state and includes rich archaeological sections of the Poteau and Fourche Maline rivers. We have been fortunate in one respect, however, for a large number of the sites known in this area were excavated during the extensive W.P.A. operations a few years ago.

Out of a total of 32 sites within the Wister reservoir, 19 had been completely or partially excavated. It is from these sites that we have the archaeological complex known as Fourche Maline. Of the remaining 13 sites, 4 were tested and one of these was selected for additional investigations. This site is known as the Scott site, and it appears to be an important example of the Fourche Maline culture.

The Scott site represents a midden deposit which has an average thickness of about five feet in the deepest part. A block about 20 feet by 30 feet was carefully excavated by arbitrary six inch levels in the thickest portion of the midden. The site offers a clear transition from pre-pottery to pottery bearing levels, the pottery being confined to the upper portions of the midden. The final analysis of the Scott site should help to clear up somewhat the position of the Fourche Maline culture and its general relationships to the eastern Archaic horizons. Until this time we have had no clear understanding as to the presence of pottery in what otherwise appeared to be an Archaic or pre-pottery culture.

Work at the Scott site indicates that the Fourche Maline complex should properly be subdivided into two periods—a pre-pottery and a pottery bearing period. The final outcome of the Fourche Maline status can only await analysis of the Scott and other excavated sites within that region. This work has already been started.

Tenkiller Reservoir

During the past summer a survey was conducted in the Tenkiller Reservoir along the Illinois river in eastern Oklahoma. A total of 38 archaeological sites were recorded, and test pits were dug into the most promising of those discovered. The majority of the sites were non-pottery sites and may represent an early Archaic horizon within that locality. One site appears to represent the Spiro focus of the Gibson aspect, and another the Fort Coffee focus of the Fulton aspect. Some excavation work is anticipated in this region during the coming summer.

Onapa and Canadian Reservoirs

In July and August, David Wenner directed a survey of two reservoir areas near Eufala, Oklahoma; the Onapa Reservoir on Deep Fork, and the Canadian Reservoir on the North Fork of the Canadian. Both areas were quite productive as far as archaeological materials are concerned.

A total of 41 sites were recorded for the Canadian Reservoir, many of these representing historic villages. The Onapa Reservoir produced a total of 25 sites, again many of them containing historic materials such as trade beads, gun flints, broken china and crockery. Since this area is that occupied by the Creek Indians in historic times it is surprising that these contact sites appear to be abundant. If further work demonstrates that these sites are Creek, then an interesting problem is presented. The aboriginal pottery wares found on these sites are almost identical to three wares associated with the Creeks in Georgia—Walnut Roughened, Okmulgee Fields Incised, and Kasita Red filmed. It has been thought that these historic wares found in Georgia became extinct around 1750 and that they were

not made after that date. Since the Creeks did not enter Oklahoma until 1830, the date of 1750 for Georgia must be in error. For it would hardly seem reasonable that the Creeks suddenly revived three pottery wares that they had not produced for 80 years. If the material is not Creek, then we must account for some tribe within that region for which we have no historical records.

Not all the sites in this region are historic, and sherd collections suggest relationships to both the Gibson and Fulton aspects.

Cedar Creek

One site representing early man has been noted just north of Carnegie along Cedar Creek. Throughout the gravels of the stream bed various types of projectile points and also the bones and teeth of extinct animals can be found. Typical Folsom points, Yuma like points and Plain-view points have all been found. One can also find points which are from later horizons, such as those which are common on the Southern Plains. These materials appear to be concentrated along a stretch of about two miles of Cedar Creek and are apparently eroding out of the banks as the rains wash away the soils. At this time we have been unable to locate the original sources for the materials. Several trips and some testing of the river terraces have produced no results to date; however, we are constantly hopeful that we can locate some specimens in situ and establish the archaeological position of these various types.

Lee-Bowen and Brown Sites

Two sites have been located within short driving distance of the University. These are located on the Washita river to the southwest of Norman. At various week-end intervals, students in anthropology participate in test excavations at these sites. Although no extensive work has been done, we have learned a great deal about these two village sites.

At the Lee-Bowen site in Garvin county, an L-shaped trench, 25 feet on each side has been excavated. This trench cut across three refuse or storage pits so that considerable

cultural material was recovered. Dr. Schmitt has prepared a statement on this site, and considers it to be an example of the hunting-agricultural economy existing in the Low Plains in late prehistoric times.

The Brown site is located about 15 miles westward from the Lee-Bowen site along the Washita river in Grady county. A smaller area has been tested but considerable material has been recovered. The types of artifacts from the Brown site generally resemble those from Lee-Bowen; however, there are some specific differences.

Both of these sites have certain features which resemble the Texas Henrietta focus; there are also many features which resemble other sites in Garvin county along the lower Washita. In all probability both of these sites will eventually be grouped into a Washita focus which is related to the Texas Henrietta focus to the south and to the Paint Creek focus in Kansas to the north. No correlation with historic tribes is possible at the present time.

Fort Gibson Reservoir

The Fort Gibson Reservoir is located in the northeastern section of the state along the lower section of Grand river. The survey has reported a total of 26 sites from this area, two of them being important mound groups and the remainder representing village or camp areas. Some non-pottery sites were found which may represent an early Archaic horizon somewhat similar to that noted for the Illinois River area.

During the past summer extensive excavations were conducted at the Norman site within this reservoir. Previous work at this site indicated that it represented the Spiro focus of the Gibson aspect. Since one large conical mound remained unexplored at this site, it was considered necessary

that it be examined in order to place our understanding of the Spiro focus materials on a more secure foundation. Excavations at this site were conducted as a cooperative project between the Smithsonian Institution and the University of Oklahoma.

Some limited excavations were conducted in the village area where portions of several houses and refuse pits were uncovered. Our major efforts, however, were directed toward the large conical mound.

This mound was the largest of a group of six, and it measured approximately 27 feet high and 90 feet in diameter. Excavation was not complete although sufficient knowledge of its contents had been gained to consider our work at this mound as completed. The mound proved to be a domiciliary sub-structure mound with no less than six construction phases represented. A series of five flat topped mounds had been built one on top of the other, the last of these having been capped with a cone-shaped mantle. Although very little in the way of artifact material was recovered, the mound is interesting for several reasons. The feature of placing a conical capping over the last occupation surface appears unusual. Glass trade beads were found within the upper mantle. The mound is circular in outline rather than square or rectangular as in most sub-structure mounds. In addition, the construction periods were marked only by a heightening of the mound, not a general enlargement of the structure. Each addition was merely placed upon the old occupation surface and did not include the sides of the mound. This again appears unusual for this type of mound. Analysis of this material is now in progress and a report should be available in the near future.

A second mound group, the Harlin site, contains seven mounds, and at the present time remains untouched.

Present plans include excavations at this site during the coming summer. It, too, apparently represents the Gibson aspect—probably Spiro focus.

Summary

If something in the way of a summary statement were made, it would include the fact that 172 new archaeological sites have been recorded. These sites appear to range in age from Paleo-Indian materials represented by Folsom up to historic villages of living tribes now found in Oklahoma. Excavations have shed additional light upon the Fourche Maline complex, the Spiro focus and the more recent Washita River remains. We have a better idea as to the distributions of various cultures which will help in understanding the role of Oklahoma in American prehistory. Last, but not least, we know the types of sites that are to be inundated by reservoir areas, and we know where immediate excavations should be done. Getting this work done remains for the future.

IMPORTANCE OF THE "GILMORE CORRIDOR" IN CULTURE CONTACTS BETWEEN MIDDLE AMERICA AND THE EASTERN UNITED STATES¹

ALEX D. KRIEGER

For more than a century, students of archaeology have theorized about prehistoric connections between the high civilizations of Mexico and Central America, and the agricultural, mound-building Indians of the Eastern United States. While it is generally agreed that the knowledge of agriculture had to be carried into the United States from Middle or South America, there is little agreement on just what other culture traits were introduced with agriculture, or during subsequent periods. The practice of mound building is often mentioned, as are various forms of polished pottery, artifacts suggesting ritualistic uses, and—by inference—complex ceremonies dedicated to the earth, sun, fertility, etc., and various religious and civil offices in complex social systems.

For the most part, it is very difficult to present definite archaeological evidence for the introduction of traits other than agricultural from the Middle American civilizations. There is no escaping the probability that culture borrowing occurred, very likely at different times and from different Middle American areas, and affecting various parts of the Eastern United States in varying degrees, but we are just beginning to achieve the necessary controls over culture complexes and their chronological relationships to see these problems in perspective. For one thing, "mound building" is not a single trait, there being several kinds of mounds in the Eastern States as a whole, erected for different purposes and representing several distinct periods of development.

¹ Based on an address to the Texas Archaeological and Paleontological Society at its annual meeting, October 25, 1947, in Lubbock, Texas. Publication was deferred one year when it was found that the 1947 Bulletin had sufficient material. Several passages have been re-written and expanded.

Thus, "burial mounds" were sometimes erected as protective caps over a large grave, log tomb, or crematory basin, and may contain nothing within the mound material itself; other "burial mounds" may contain village refuse and graves dug downward into the mound. "Temple mounds" may have square or rectangular flat tops on which important buildings were erected or ceremonies performed, or they may be odd-shaped, or consist of several terraced platforms; some contain the remains of houses, and even burials, subsequently covered when new additions were made to the mound. Generally speaking, the low round, more or less conical mounds were used in connection with disposal of the dead and occur in earlier culture horizons in the Eastern United States than do the flat-topped "temple mounds," although when the latter appear, the burial-mound trait sometimes continues along with them.

I have never understood why archaeologists so often speak of "mound building" having been introduced into the Eastern States from the Middle American civilizations, without specifying which kind of mound is meant. At the same time, nearly all accept the Asiatic origin of cord-impressed Woodland pottery, and many other traits of the Woodland culture. Since conical burial mounds, built over graves, log tombs, or cremations, like cordmarked Woodland pottery, are found very widely in Asia, it would seem rather obvious that one cannot speak simply of "mounds" being derived from Middle America. On the other hand, there are reasons for believing that the erection of flat-topped, more or less pyramidal, mounds of clay in the Eastern United States was due to an initial stimulus from some part of Middle America: it is very difficult to state which part, or at which time, for no survey of the purely clay mounds has been made in the southern countries even though they occur very widely.²

² Attention has always been directed toward the more spectacular mounds with stone facing, and the pyramids of stone in Middle America, rather than toward those entirely of clay, although the latter were also quite common and probably cover a considerable time span. Stone was never used in or on the mounds of the United States as a building material.

In the field of pottery-making, there may also be said to have been two major, very widespread traditions existing over long periods of time in the eastern half of the United States, including much of the Great Plains region. These are: (1) the afore-mentioned Woodland pottery, devoted very largely, if not entirely, to cooking vessels, taller than wide, with their bottoms pointed, convex, or flat, and the surfaces roughened by the use of cord-wrapped paddles in shaping the walls; and (2) a much more complex tradition including many forms of polished bowls, bottles, and beakers, and smoothed-over cooking jars, many of them decorated in a wide variety of techniques such as incising, engraving, punctating, applique elements, and modeling in effigy forms. Where the cultures producing these potteries mingled, the ceramic styles influenced one another in various ways, but the main contrasts are fairly definite. The first tradition (Woodland) belongs generally to the more northern regions such as the northern and central Great Plains, Great Lakes, Northeast, and Middle West, while the second (Mississippian) belongs to the middle and lower valleys of the Mississippi River basin and the Southeastern States from the southern Great Plains to the Atlantic Ocean.

Again, we know little as to the time or place of the original entry of either tradition into the United States. The Woodland is commonly regarded as much the earlier of the two, and in both cases there is a distinct tendency at present to set the dates farther back than has been the vogue during the last fifteen or twenty years. Thus, the earliest Woodland culture, probably non-agricultural, could hardly have appeared as late as 500 A. D., as many have claimed, but is now thought to date closer to 500 or even 1000 B. C. The Mississippian cultures, long thought to have appeared no earlier than 1000 or even 1200 A. D. (even as late as 1400 A. D. by some), are being pushed back some centuries although there is as yet no concrete evidence for a date earlier than roughly 500 A. D.³ The Mississippian cultures were positively horti-

³ Many factors must be considered in any such estimate. These, and the tentative date, are discussed by the writer in a publication entitled "The George C. Davis Site, Cherokee County, Texas," by H. Perry Newell and Alex D. Krieger, to be issued in 1949 as a Memoir of the Society for American Archaeology.

cultural, and there is evidence of farming in some of the relatively late Woodland communities, such as those of the Hopewell culture. As to whether agriculture was introduced into the Eastern United States before any truly Mississippian culture appeared, or whether agriculture first appeared with the Mississippian cultures and then spread northward and was adopted by the later Woodland cultures, there is difference of opinion and either theory has possibilities. It would be tempting to deduce that the first practice of agriculture, centered around corn, temple-mound building, the complex tradition of Mississippian pottery-making, as well as various fertility cults and perhaps civil and religious structures were all introduced at about the same time from some Middle American source and spread widely over the East, eventually affecting the more northerly or Woodland peoples as well. I believe most archaeologists favor such an interpretation, but caution demands that we proceed only so fast as archaeological data permit. The facts necessary to valid interpretations emerge slowly, for enormous areas are involved and there is never enough excavation. However, steady progress is evident and before many years we should be able to gather enough data and ideas to present sound correlations.

In the past few years the dating of Mississippian cultures has been aided to some extent by studies carried eastward across Texas from the Southwestern United States;⁴ where tree-ring dating has produced, with great labor, a generally reliable scale. These projections, and geological studies, have also cast much light on the age of non-pottery cultures in central Texas.⁵ The pottery-bearing cultures of the central Great Plains have similarly been brought into chronological perspective through their relationships with the dated Southwestern horizons and those of north Texas.⁶ The extension of dates from the relatively well-established

4 A. D. Krieger, *Culture Complexes and Chronology in Northern Texas*, University of Texas Publication, No. 4640, 1946; and *The Eastward Extension of Puebloan Datings Toward Cultures of the Mississippi Valley*, *American Antiquity*, Vol. 12, pp. 141-148, 1947.

5 J. Charles Kelley, *The Cultural Affiliations and Chronological Position of the Clear Fork Focus*, *American Antiquity*, Vol. 13, pp. 97-109, 1947.

6 Waldo R. Wedel, *Culture Chronology in the Central Great Plains*, *American Antiquity*, Vol. 12, pp. 148-156, 1947.

Mexican and Mayan cultures, northward around the Gulf coast, has proved more difficult because the few "trade" objects have either been found in uncertain circumstances, or have proved difficult to date in terms of Mexican archaeology. When objects of Middle American origin can be more accurately placed and dated in Texas and adjacent states, they will also aid in attaining better chronologies for cultural developments in the Eastern States, at least in the western portions and the Mississippi Valley.

Another important matter is that archaeologists no longer insist quite so strongly that all borrowing between these provinces was in one direction. Where it has long been assumed that all "higher" traits in the Eastern States were derived from Middle America, it is now granted that some may have passed the other way.⁷ This, of course, depends upon the strength of such contacts as took place, and further knowledge of how the comparable artifacts are to be dated in both regions; if improved datings show them to belong many centuries apart and the gaps cannot be filled, the resemblances may prove to be superficial and not the result of culture borrowing in either direction.

Possible Routes of Contact

Speculations on the route or routes by which Middle American and Mississippian cultures were in contact, or along which migrations may have taken place, generally include Texas, it being insisted that when more is known of Texas archaeology, such "routes" will become evident. Presumably, they should reveal agricultural practices, probably accompanied by temple-mound building, the making of potteries traceable to Middle American peoples, and specialized artifacts or ritualistic paraphernalia of such definite form that their origins would be clear. The following routes are generally considered most likely:

1. The Gulf coast littoral and coastal plain of Texas, traverse being by land, or boat, or both.

⁷ Richard S. MacNeish, *A Preliminary Report on Coastal Tamaulipas, Mexico*, *American Antiquity*, Vol. 13, pp. 1-15, 1947.

2. Across the Gulf of Mexico by boat from the Mexican east coast or Yucatan peninsula to the mouths of the Mississippi, thence probably some distance up the river.

3. A long interior route through northern Mexico into the Southwestern States or extreme western Texas, thence eastward across the southern Plains.

4. Through the West Indies to Florida and inland to the north and west.

There is, of course, no need to settle on any one such route to the exclusion of the others. More than one may have been used, simultaneously or at different times. As for (2), there is no evidence for it, but since some coastal Indians of Middle America are known to have make long trips by canoe, it will always be an intriguing possibility. Routes (3) and (4) are the subject of research by others; my present impressions are that the diffusion of culture elements by either of them may have provided relatively late accretions rather than such fundamental practices as agriculture, building of temple mounds, and rituals connected with agriculture.

This leaves (1), the Gulf coast of Texas, as a short and seemingly feasible route of contact. We shall examine it briefly and then turn to a parallel route farther inland which has received almost no attention.

The Gulf Coast

Due to conditions not generally appreciated by those unfamiliar with its geography, the coastal fringe of Texas and Tamaulipas presents certain difficulties in the location of archaeological sites. Excavations have been few and far between, but at least 100 sites are known.⁸ Along the southern end of the Texas coast, and the northern Tamaulipas coast, the shorelines and adjacent land are now undergoing almost constant change due to the cutting back of

⁸ T. N. Campbell, *The Johnson Site: Type Site of the Aransas Focus of the Texas Coast* (this Bulletin, Vol. 18, pp. 40-75, 1947) presents the best and virtually the only report on a controlled excavation along this coast. He reviews the previous literature and states that through the non-pottery Aransas Focus, "It is hoped thereby to establish at least one reference point in the archaeology of the Texas coast." He is also organizing all available data on the archaeology of this coast for further publications.

off-shore islands by landward winds and tides; sand is lifted from the island fronts and the mainland shores, being carried inland and dropped in the lagoons or added to the active dune fields on the mainland.⁹ Hurricanes often accelerate this process, in at least one case churning up and cutting back the sandy shore some 50 feet in a single day.¹⁰ Although the northern end of the 100-mile long Padre Island is relatively well watered and supports enough grass for cattle grazing, the southern end presents such desert conditions that winds and storms have literally moved it shoreward since 1881 by removing sand from its Gulf front and depositing it in the Laguna Madre, which is filling to such an extent that it is only a few inches deep in places.¹¹

These conditions make it highly probable that archaeological sites on the exposed shoreline (usually the seaward sides of the great off-short islands, but also including unprotected segments of the mainland) have been largely destroyed. Thus, direct evidence of canoe travelers along the outer shores is almost impossible to find.¹² On the other hand, the sand and clay mantles of aeolian origin in the lagoons and the mainland shores have undoubtedly covered many other sites, now occasionally exposed in the sides of erosion gullies in the dunes. Pottery-bearing camp sites are sometimes found on the modern surfaces, but are thought to date generally within the last 500 years. The buried sites, so far as known, are non-pottery, and since many are being exposed simultaneously by surface (rain) erosion and shoreline cutting, they should be excavated before disappearing forever.

9 W. Armstrong Price and Gordon Gunter, *Certain Recent Geological and Biological Changes in South Texas, with Consideration of Probable Causes*, Proceedings and transactions of the Texas Academy of Science, pp. 3-21, 1942.

10 The late A. E. Anderson of Brownsville, Texas, was an unusually keen observer, making extensive and well documented archaeological collections in the southern tip of Texas and northern Tamaulipas. His notes describe the tremendous shoreline destruction after a single hurricane at the Boca San Jose, Tamaulipas, virtually obliterating all archaeological evidence in the vicinity.

11 Price and Gunter, *op. cit.*

12 At least four dugout canoes have been found on the shores of Padre and Mustang Islands, possibly suggesting Indian travel. However, they could not have been preserved any great length of time, no camp sites or other cultural remains have been found near them, and ocean currents may have been entirely responsible for depositing the canoes on these shores from very distant points. Chunks of pumice from Mexico and perhaps even the West Indies are very common on the island and lagoon beaches, having floated great distances.

These most unfavorable conditions are, however, principally found in what is now a semi-arid climatic zone extending from the northern side of Baffin Bay, Texas (about 100 miles north of the Rio Grande mouth), southward to the Rio Soto la Marina (about 150 miles south of the Rio Grande mouth). This zone is termed DB'd by Thornthwaite,¹³ who bases his distinctions on *precipitation effectivity* rather than on gross annual precipitation; thus DB'd is semi-arid, mesothermal, and precipitation is deficient in all seasons. On the coasts of Texas and Tamaulipas this semi-arid corridor is about 250 miles wide but away from the coast it expands enormously over northern Mexico and southwestern Texas. On the coastal plain the annual rainfall is now between 25 and 30 inches in this corridor, decreasing to 20 inches about 100 miles westward, and to 15 inches still farther into the interior (Plate 18).

Proceeding northward and northeasward along the Texas coast, rainfall increases quite uniformly in gross terms and in terms of its *effectivity*. From Baffin Bay to a point between Copano and San Antonio Bays lies Thornthwaite's CB'd zone (sub-humid, mesothermal, precipitation deficient in all seasons). From the latter point to just south of the Brazos River mouth is the CB'r zone (sub-humid, mesothermal, precipitation adequate in all seasons), in which annual rainfall is between 35 and 45 inches; and from the latter point to the Louisiana border at Sabine Lake is the BB'r zone (humid, mesothermal, precipitation adequate in all seasons), with rainfall over 45 inches, over 50 inches beyond Sabine Lake. It will be noted (Plate 18) that these climatic borders run roughly at right angles to the Texas coast, then turn northward to extend far into the interior of the United States.

Southward from the Rio Soto la Marina in Tamaulipas, virtually the same succession of climatic zones occurs along the Gulf coast of Mexico, but in this direction the precipitation (both gross and effective) increases much more rap-

¹³ C. Warren Thornthwaite, *The Climates of North America According to a New Classification*, Geographical Review, Vol. 21, pp. 633-56, 1931, Plate III.

idly than in Texas in the opposite direction; hence the zones are much narrower. A BA'r zone (humid, tropical, precipitation adequate in all seasons) is reached in Veracruz state about 200 miles south of the Soto la Marina, and continues around the Gulf into the Yucatan peninsula.

Two questions naturally arise for the archaeologist: (1) What effects would the present climates of southern Texas and Tamaulipas have had on native economies, communication, and the diffusion of agriculture and other advanced traits? (2) Has climate been stable during the whole time of development of agricultural civilizations in Mexico and the United States (as well as the New World in general) up to the present? Certainly the many speculations on culture contacts and diffusions between the various major regions have always been made in a climatic vacuum—as though climate and land resources had always been just as we now see them.

The Thornthwaite classification, based on effectivity of precipitation, is far more valuable for practical economics than mere statistics on rainfall. In the region under consideration, 35 inches annual precipitation falling in all seasons appears to be the critical boundary between deficient (d) and adequate moisture (r) for raising of crops without artificial means of supplying water. In other regions, such as the arid Southwest, far less precipitation is needed for effectivity because most of it falls in the seasons of direct benefit. On the Gulf coast, the DB'd and CB'd climates, at least, would have made native agriculture without irrigation practically impossible over an area roughly 400 miles wide along the coast (about 200 miles on either side of the Rio Grande); and due to the fanning out of these zones toward the interior, the unfavorable area would increase to 600 or 700 miles across, and even more in the deep interior of north Mexico and western Texas.

This does not mean that the DB'd and CB'd zones are barren or waterless—far from it. Vast areas of grass and mesquite are contained in them, with some oak along the water courses, and innumerable ponds and lakes of drink-

able water are to be found along the Gulf littoral, even on the off-shore islands. Small game, deer, perhaps antelope, peccaries, great numbers of water fowls, fresh and salt water fishes, shell fish, mesquite beans, *Opuntia* fruit, and doubtlessly other foods would supply a considerable if not abundant subsistence under present conditions. That the ecological balance is in very delicate adjustment, however, is shown by the tremendous damage to plant and animal life on the coastal plain between Kingsville and Raymondville, Texas, during the droughts of the early 1880's and 1896-1903. This is the area in which active dune fields are now found, and since historical records suggest that it was a verdant plain in the middle 19th century, the present dune activity probably resulted from the recent droughts mentioned.¹⁴ Similar shifts, perhaps of longer duration and more widespread, have undoubtedly occurred before. At any rate, the semi-arid zones as they stand now, with their scanty and erratic summer rain, are far from uninhabitable but would provide an effective barrier several hundred miles wide to the spread of native agriculture without irrigation.

The next question is whether climate has varied sufficiently in the past two or three millenia to expand or contract this non-agricultural gap. The current researches of Dr. Price, in which the writer and Dr. T. N. Campbell have assisted, will provide much significant data on this matter. The number of recent climatic fluctuations and their dates have not been fully determined, but there is much to indicate that some, at least, have been of sufficient intensity to narrow and widen the semi-arid zones. Such fluctuations would, of course, be most evident in the driest or most critical zones, but should also have affected the adjacent sub-humid and humid zones to some extent.

It is possible that during considerably moister periods the DB'd and CB'd zones disappeared temporarily along the coast, in which case it could be argued that prehistoric cultures based on agriculture could have spread around the Gulf coast. However, there is no archaeological evidence of

¹⁴ Price and Gunter, *op. cit.*, pp. 11-14.

any such diffusion at any time, and the northern limits of Middle American culture seem never to have passed the lower Rio Soto la Marina, *i. e.*, the present southern limit of the DB'd climatic zone. In the Tampico area about 85 miles farther south, Ekholm has defined six ceramic periods which may be correlated with virtually the whole known sequence of ceramic cultures in Middle America.¹⁵ It is difficult to state how much of the sequence at Tampico is represented as far north as the Rio Soto la Marina. MacNeish has shown that some of the latest types of pottery in the Tampico sequence, those associated with the Huastecan tribes, occur on camp sites along the coastal fringe as far north as the vicinity of Brownsville on the Texas side of the Rio Grande.¹⁶ The writer would disagree with him in that this pottery demonstrates the northward extension of Huastecan *culture*, for the pottery may have been entirely obtained from Huastecan peoples living no farther north than the Soto la Marina. Further surveys will undoubtedly clarify these matters.

Climatic factors were probably partly responsible for the failure of the Middle American province to be extended farther north, but if climate had been more favorable in times past, there must have been other reasons as well. The Middle American cultures certainly did not reach the Huasteca region in any form as well developed or vigorous as in the great cities of central Mexico and the tropics of southern Mexico and Yucatan; this attenuation toward the north may have been accompanied by a disinclination to push still farther north. Also, the coastal strip of Tamaulipas and Texas could hardly have been very inviting to agricultural peoples because of its low, marshy topography, "heavy" soils, and such territory may already have been occupied by tribes unreceptive to influence. The accounts of Cabeza de Vaca and other early explorers emphasize again and again that the coastal peoples of Texas were warlike and unfriendly to all strangers, Europeans and other

¹⁵ Gordon F. Ekholm, *Excavations at Tampico and Panuco in the Huasteca, Mexico*, American Museum of Natural History, Anthropological Papers, Vol. 38, Pt. 5, 1944.

¹⁶ MacNeish, *op. cit.*, pp. 2-3.

Indians as well. It was unusual for American natives to treat Europeans as bitter enemies from the start.

Proceeding eastward around the Texas Gulf coast, precipitation increases uniformly, and the effects of wind erosion correspondingly decrease; the more stable vegetation cover prevents the coverage of sites by dunes, and extensive shell heaps have accumulated around the lagoon and bay shores. The exposed outer coast has undoubtedly been cut backward to some extent by winds and tides, destroying sites facing the open Gulf waters, but probably to a less extent than along the southern reaches.

Theoretically, the CB'r or moist sub-humid zone of Thornthwaite would be suitable for native agriculture, but there is no satisfactory evidence that it ever was practiced in this zone in southern Texas,¹⁷ any more than in the zones previously discussed. Still farther east, the BB'r zone, humid, with over 45 inches annual precipitation, conforms more or less with the heavy forest of eastern Texas. The great pine belt does not extend quite as far west as the present BB'r boundary (Plate 18). In northeastern and central-east Texas the village sites of pre-Columbian agricultural and pottery-making Mississippian tribes (the latest of which were Caddoans) correspond rather well with the area of pine forests. However, along the southeastern Texas coast, and for some 100 miles inland, there is as yet no more *direct* evidence for agriculture (in the form of charred remains of domestic plants) than along the rest of the Texas coast. The absence of large village sites and temple mounds in this area also contrasts with the Mississippian cultures farther inland. On the other hand, pottery does occur on many shell and midden heaps, and the soils in wooded areas back from the grassy and marshy coastal strip are loose and easily tilled; hence it is quite possible that some agriculture actually was practiced, if only to a limited degree. With plenty of game, fish, shell fish, nuts, and other wild foods,

¹⁷ It is certain that corn agriculture was practiced in this and the CB'd zone in north-central Texas, in the upper Brazos and Red River valleys and between. See Krieger, *Culture Complexes and Chronology in Northern Texas*, sections on Henrietta Focus.

agriculture may have been no more than a supplementary pursuit; the archaeologist simply desires more direct proof. In very similar surroundings, the later peoples of nearby southern Louisiana undoubtedly did raise crops of corn, perhaps other plants as well.

As to travel along the Texas coast, this could have been done easily by boat. We simply have no means of proving that it was an important means of communication. By land, there would have been no serious physical barriers, but anyone desiring to make long trips would have had to pass around numerous large bays and lagoons reaching far inland, necessitating a great deal of extra mileage. At the eastern end, travel around Galveston Bay and Sabine Lake would have presented no great difficulty unless the Trinity, Neches, or Sabine River, or any of several large bayous, was in flood. At such times, water spreads for miles through dense woods and matted, jungle-like undergrowth which is difficult enough to cross when dry, and almost impossible to wade, swim, or push a boat through when flooded. Such conditions last for weeks.

In summary, the Texas and Tamaulipas coasts present a very negative picture in respect to the diffusion of agricultural practices from the Middle American province toward the Mississippi Valley. Even in allowing for past shifts in climatic boundaries, we still do not find any archaeological evidence for agriculture at any time along the entire coast from the Rio Soto la Marina around to southeastern Texas, where the growing of domestic crops was possibly present, but if so, the practice could well have spread westward from Louisiana. Neither do we see the slightest evidence of influences from Middle American cultures on the coast of Texas north of the Rio Grande delta, and by this I mean influences that modified the native cultures. Individuals or small parties could, and undoubtedly did, pass along the coast from time to time, either for purposes of trade or to visit far-off lands for the same reasons that human beings have always felt compulsion to "look around."

The "Gilmore Corridor"

In 1935, Dr. Melvin R. Gilmore of the University of Michigan Ethnobotanical Laboratory became interested in the possible routes by which native agriculture had been introduced into the Eastern United States. The late Elmer Johnson, economic geographer at the University of Texas, informed me that in 1935 Dr. Gilmore spent several months in Austin and other parts of Texas, collecting botanical specimens and exploring the agricultural problem. The only published statement of his thoughts in this connection is a very brief one.¹⁸ Its substance is that the coastal belt was unsuitable in several ways, while a more plausible one lay farther inland. This, the undulating prairie belt between the low coastal plain and the Edwards Plateau uplift, he called the "Gilmore Corridor." This prairie was very easy to travel, being open grassland for the most part, but crossed by numerous rivers from the Texas interior, and streams arising from springs in the Edwards Plateau margin or Balcones Escarpment. The bottoms of all these streams are well wooded with oak, pecan, walnut, hickory, gum, cypress, hackberry, persimmon, and many other trees, but are narrow and not choked with excessive undergrowth. Land game, fish, and water fowls, not to mention many vegetal foods, would provide ample subsistence. Dr. Gilmore believed that native agriculture had been practiced in these numerous bottomlands, presumably from Mexico entirely across Texas, at least in this "Corridor." He does not state where it begins or ends.

It may be seen in Plate 18 that in southern and central Texas this corridor crosses the present climatic zones DB'd (semi-arid), CB'd (dry sub-humid), and CB'r (moist sub-humid). We have seen that the first is too dry for native agriculture without irrigation, chiefly because of the scanty and erratic summer rain. The second now provides sufficient summer rain in much of central Texas for corn crops on the prairies and bottomlands, although they are not infrequently destroyed by summer droughts of several weeks duration.

18 Science News Letter, June 29, 1935, p. 419.

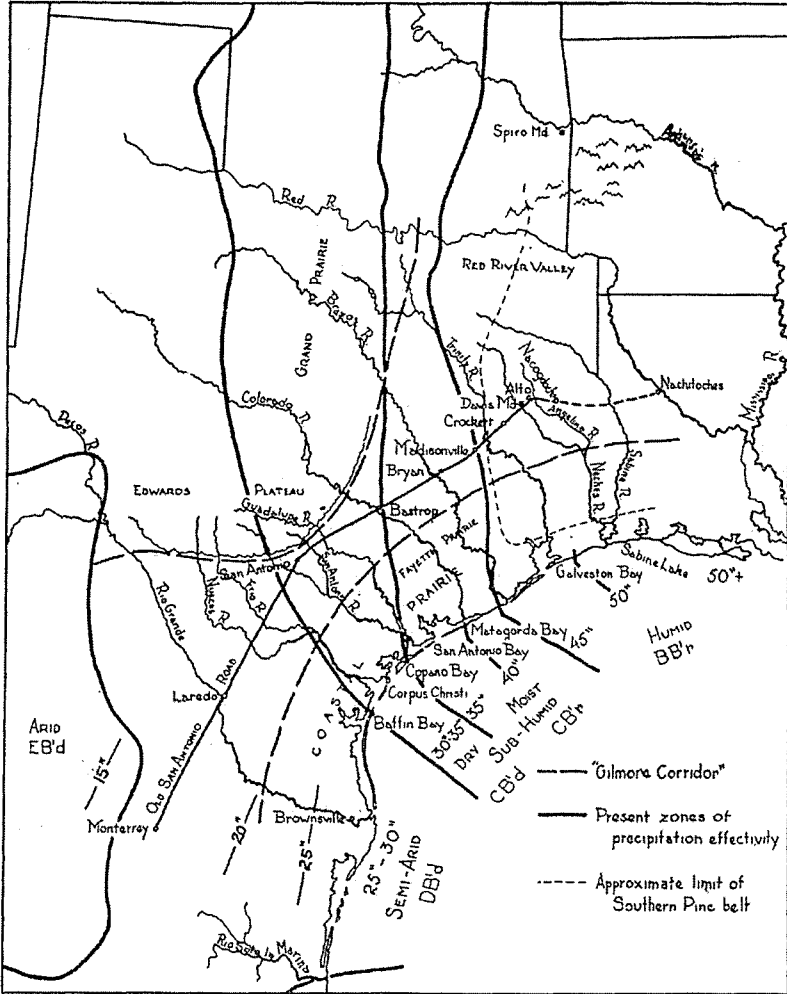


PLATE 18

Texas and adjoining areas, showing zones of precipitation effectivity (after Thornthwaite) and general position of "Gilmore Corridor," according to the author's interpretation. Dr. Gilmore did not specify the limits of the "corridor" through which he thought agriculture had been diffused. Agricultural Indians are known to have occupied the humid zone east of the pine frontier, and much of northern Texas, in pre-Columbian times, but evidence has not been found for agriculture between the Rio Soto la Marina and this eastern pine frontier. Note that in most of Texas the precipitation boundaries run at right angles to the coast, but in the lower Rio Grande region rainfall decreases inland in zones parallel to the coast.

Conditions are more favorable in the moist sub-humid zone farther east, nearly all of it now being successfully farmed without irrigation; occasionally, however, as in the present year, deficient rainfall results in great damage to some crops while aiding others, such as cotton.

Speaking generally, there is no apparent factor at present which would have prohibited Indian farmers from successfully growing corn, beans, or squash on the central Texas bottomlands and terraces in most years, had they desired to do so. Many hundreds of camp sites are known in the Edwards Plateau region and along the Gulf-ward flowing streams in the "Corridor." They are largely characterized by great accumulations of burned limestone hearth rocks, fractured by heat (the "burnt-rock middens"), in and around which are found enormous numbers of flint artifacts, manos, and milling stones used with rotary motion.¹⁹ These sites, unless divided by stream sediments, give every appearance of more or less sedentary occupation by small groups who may have lived on them for centuries, scouring the surrounding country for game, fish, and plant foods. A thorough survey of economic resources and their exploitation, population density and length of occupation of favored sites, etc., would form a most interesting study even though exact data may never be obtained.²⁰ We may be safe in stating that *if* agriculture were ever practiced in central Texas in pre-Columbian times, it was probably in a distinctly supplementary capacity because of the fairly rich natural food resources.

If it could be demonstrated that crops were raised in the "Gilmore Corridor," say a thousand years ago or more, this information would provide an important link in the spread of agriculture from northern Mexico in the general direction of the humid BB'r zone (Plate 18) and the eastern woodlands

¹⁹ Kelley, *op. cit.*, (note 5) has recently outlined the distinctive traits and distribution of the Round Rock and Clear Fork Foci in the Abilene and Edwards Plateau regions, and the Uvalde Focus in the general Nueces River area.

²⁰ The writer is indebted to Glen L. Evans of the Texas Memorial Museum for many stimulating conversations along this line. Evans and Grayson E. Meade have recently conducted excavations in southwestern Texas, partly to gain some insight into these interesting economic problems of the past.

beyond. However, this proof is not at hand, and *even if it were, it would not serve to close the non-agricultural gap, only to reduce it somewhat.* A broad belt of semi-arid DB'd climate on both sides of the lower Rio Grande would still mark, so far as any archaeological evidence reveals, a permanently non-agricultural gap some hundreds of miles wide. Its width may have varied from time to time, but even so, *the problem of how and when agricultural knowledge reached the Eastern United States would remain the same,* and the argument would be reduced to whether it is more likely that this knowledge could be carried across some 400 miles of intervening territory than across 600 or 800 miles.

In short, Dr. Gilmore's idea that this corridor was an easy and logical *route* for the diffusion of agriculture was well taken. The archaeologist, however, can only show that it was a route of *communication*. Since none of the foreign peoples who may have used this corridor stayed in it long enough to influence the resident cultures, it may be inferred that movements through it by traders, travelers, or migrating groups were rapid. An individual or small party could have crossed from the Rio Grande to the Red River in a few weeks if compelled to. I believe we consistently under-rate the ability of Indians to cover very great distances, often for seemingly trivial reasons.

If rapid crossings were made in this manner from time to time, it is of considerable significance in chronological correlations, for it means that no time must be allowed for the slow diffusion of Middle American elements across most of Texas. Let me hasten to add, however, that any picture of migrants or traders regularly using this route as a sort of highway is bound to be erroneous. If small groups passed along it more often than once in a century or so, we should expect to find much more material evidence of it.

What evidence is there that the "Gilmore Corridor" was ever used for such long journeys? First, it is well known that early exploring expeditions quite commonly followed Indian trails, being led along them by guides so as to visit important settlements; or, if not literally following such

paths, they frequently had to cross and skirt the same topographic features. Trappers, traders, and colonists would later use the trails traced by explorers, wagon roads would develop, and eventually railroads and modern highways would more or less correspond to ancient routes over a given terrain.

Thus, a route passing through the "Gilmore Corridor" from northeastern Mexico to the agricultural Caddoan villages in eastern Texas, eventually came to be known in Spanish days as the San Antonio Road and is now closely followed by a modern highway. This highway is shown in Plate 18 as beginning in Monterrey, Mexico, crossing the Rio Grande at Laredo and passing north by northeast to San Antonio; from here it turns to the northeast and crosses the Colorado River at Bastrop, the Brazos near Bryan, the Trinity between Madisonville and Crockett, and the Neches southwest of Alto; from here it turns eastward to Nacogdoches, the official end of the San Antonio Road in the 18th century. It can, however, be considered as extending farther east to Natchitoches on the Red River in central Louisiana, for in the early 18th century much trade and diplomatic business was carried on between those two posts, Spanish and French respectively. The road might further be extended to the Natchez towns on the Mississippi or to the mouth of Red River, the Red being an all-important artery of communication. The original road passed a few miles north of modern Bryan and Madisonville, but otherwise the modern highway conforms almost exactly to it.

Plate 18 shows that the San Antonio Road closely parallels the great curve of the Gulf coast, consistently 130 to 150 miles inland. From Monterrey to Nacogdoches is about 600 miles by highway; from there to Natchitoches is 100 miles; and from there to the Mississippi about 125 miles.

If one supposes that a trail conforming to the general course of the San Antonio Road was already known to pre-Columbian Indians, it is quite possible that several early explorers made use of it, at least in part. As early as 1542 the De Soto expedition under Luis de Moscoso (who came

to command after De Soto's death) attempted to reach Mexico City overland. From some point in southern Arkansas, Moscoso led the party southwestward through country inhabited by Caddoan-speaking peoples, reaching villages of the Hasinai division of this family, probably in the Angelina and Neches River valleys; from here they passed on to a large river identified by Swanton as the Trinity, but at this point they abandoned the overland trip, returning "by the same route" to the Mississippi to attempt to reach Mexico by boat.²¹ What is particularly interesting is that the Spaniards seem to have had a very good idea of how to reach Mexico overland, and since they passed through the Hasinai country, later traversed by the San Antonio Road, it is quite possible that they were actually on it as far as the Trinity. That Moscoso decided to abandon this attempt was probably due in part to accounts of wild and hostile tribes west of that river.²²

After being shipwrecked on Matagorda Bay, La Salle made two attempts in 1686 and 1687 to reach the Illinois country. While exploring the possible routes by which to lead his men to Illinois, La Salle seems to have gone rather directly northward and northeastward to the "Cenis" (French equivalent of Hasinai) villages before he was murdered. He may therefore have been guided northward to intercept a trail conforming to the San Antonio Road, thence northeastward to the Hasinai villages. Scholars might well consider such matters in tracing the journeys of early explorers, usually extremely vague.

In 1690 Fray Canañas de Jesus Maria founded the mission Santísimo Nombre de Maria close to the Neches river, in proximity to several large villages of the Neche and other Hasinai tribes. In 1691 Father Massanet founded mission San Francisco de los Tejas within a few miles of the first one. In 1714 the French established a fort at Natchitoches in Louisiana, and in 1715 St. Denis made a rapid trip to Mexico City,

21 John R. Swanton, *Source Material on the History and Ethnology of the Caddo Indians*, Bureau of American Ethnology, Bulletin 132, pp. 31-32, 1942.

22 *Idem*, p. 32. Swanton says that the tribes beyond the Trinity "were evidently Tonkawa or Bidai," but we should have to know whether these tribes were living in central Texas at this time before accepting such an identification.

passing through the Hasinai villages and crossing the San Marcos River in central Texas, undoubtedly following the course of the San Antonio Road. In 1716 several Spanish missions were established in eastern Texas, including that at Nacogdoches. In this year St. Denis made another trip to Mexico, and from then on, especially with the founding of missions in the San Antonio area, there must have been almost constant travel between northern Mexico and the Hasinai country. The San Antonio Road had become quite literally a highway across Texas and has remained so to the present day. The travelers started from different points in northern Mexico, and had various objectives in eastern Texas, but that they generally "funneled" their route through the "Gilmore Corridor" seems undeniable. The Tejas or Hasinai tribes of the eastern Texas forests, with their intensive agriculture, large towns, temples, fairs, etc., were always held in great contrast to the impoverished and thinly scattered peoples west of them.

Except for the mountain ranges of Trans-Pecos Texas and the fairly rugged canyons of the Edwards Plateau, there are few topographic features in Texas to hinder travel on foot or horse. We can be sure that natives and Europeans alike could and did travel over the state in many directions. We should not, therefore, overestimate the importance of the "Gilmore Corridor" or expect that expeditions made great detours in order to reach it. Its usefulness was most apparent to those traveling back and forth between northeastern Mexico and the eastern forests, and it was evidently considered very preferable to the coastal plain. To judge from published journals, there was much less hostility from the natives in this belt than along the coast. Also, it should be remembered that this corridor skirts the Edwards Plateau, the main canyons of which run from northwest to southeast, across the line of travel to eastern Texas. Once past the Plateau, one could take any of many courses to the east, northeast, and north, continuing into Oklahoma without hindrance from any natural barriers.

Archaeological evidence does not yet permit a definite statement on how long ago this corridor was used for long-

range travel. MacNeish has recently outlined the occurrence of certain artifact types which suggest a "chain of contacts" across central Texas, reaching from the Huastecan cultures in Tamaulipas to the Caddoan region of eastern Texas, Louisiana, Arkansas, and Oklahoma. This study was made primarily to account for the presence of ceremonial elements at the Spiro mounds in eastern Oklahoma.²³ MacNeish's article throws into relief the probability that the "central Texas route" was preferred to others in this direction, but I do not believe that the projectile-point styles on which he bases his argument are very convincing for the particular problem of contact between the Huastecan area and Caddoan cultures. That is, one can hardly assume that the people who left certain styles of projectile points along this route were also the bearers of highly developed Middle American ceremonial traits. Nevertheless, his data points to the use of this corridor by pre-Columbian Indians.

There are a few published references to clay and stone figurine heads of Mexican origin in localities in or near the "Gilmore Corridor." Other such objects are on record in the University of Texas files and are being carefully checked as to the conditions of discovery. When not found in connection with Indian habitation sites they are of small value and in more than one case the figurine was traceable to modern visitors to Mexico. Even the most trustworthy specimens are quite hard to identify as to date and place of origin.²⁴ When all such cases are thoroughly examined, it should be possible to gain a good idea of their source and the time or times during which they were carried into Texas.

²³ See note 7.

²⁴ A carved head of "hard volcanic ash" from a gravel pit in Dallas, Texas, was reported in this Bulletin, Vol. 4, pp. 79-80, 1932, by Ellis W. Shuler. A head of green stone from a stratified archaeological site in Travis County near Austin was reported by Carl Chelf in this Bulletin, Vol. 13, pp. 58-62, 1941. In Vol. 17, 1946, Mr. and Mrs. J. H. Ray described a clay head similar to those of the Mexican god Xipe Totec; this was found near Cisco in north-central Texas. A very similar "Xipe Totec" head was found in 1947 near Fort Worth by Miss Sylvia Golden and reported to R. L. Stephenson of the Smithsonian Institution, River Basins Survey. A small, flat clay head, possibly mold-made, comes from near the swimming pool at Barton Springs in Austin, the site of a large aboriginal camp. The carved stone head with conical cap, mentioned by MacNeish (*op. cit.*) as certainly Huastecan, was found long ago in Callahan County, but whether in a habitation site or not is unknown. When found in the open country of northern Texas, the Mexican figures may well have been carried along some western route.

In contrast to the present indefinite information provided by figurines in scattered parts of Texas, the Davis mound site near Alto in Cherokee County, central east Texas, gives evidence of a comparatively strong influence from Middle American cultures. This material will soon be published (see note 3). Briefly, a ceramic complex including quantities of highly polished black and brown pottery with finely engraved designs was found in and under a large platform mound of clay. The closest apparent affiliations of this pottery lie with early Formative cultures in southern Mexico and the Maya region; on the other hand, certain non-ceramic traits at Davis suggest at least partial contemporaneity with such relatively early eastern cultures as Adena, Tchefuncte, Copena, and Hopewell. The writer estimates that these influences merged at the Davis site by about 500 A. D. if not earlier.

It is therefore remarkable to note that the Davis site is directly on the "Old San Antonio Road" just east of the Neches River crossing between present Alto and Crockett. There is some argument as to just where the first Spanish missions were located in this vicinity, but by the time the "Road" had become firmly established in the 18th century, it passed over the same narrow terrace on which the mound is located. This may of course be pure coincidence, but the possibility cannot be ignored that the trail from Mexico that later became the San Antonio Road was already in use many centuries before the Spanish explorations. Furthermore, a migrating group passing northeastward toward the Mississippi Valley region would have found in the Neches valley one of the first really attractive environments for agricultural pursuits along this route. In protohistoric times the Neches valley also marked the western extent of firmly established agricultural communities of the Hasinai.

So far as archaeological records reveal at present, the Davis site may represent an initial introduction of agricultural knowledge into the entire region of the Eastern United States woodlands. It would be foolish to insist on such a claim, however, for there is too much involved and not

enough direct evidence yet by which to trace the spread of agriculture in space and time.

As to the establishment of agricultural life in the Neches valley more than 800 miles from the Soto la Marina river, the intervening country being entirely non-agricultural so far as known, there should be no *theoretical* objections. Archaeologists are prone to insist that nothing can be proved *without continuous distributions*. In this respect they are rather in a rut and out of step with living history. When an unhappy or disgruntled or hungry segment of a population decides to seek a new homeland, it has often wandered great distances before settling down in a new environment. Due to its economic basis of existence, the group will in all probability seek a natural environment in which it can pursue a similar economy, in this case an intensively agricultural one supplemented with some hunting, fishing, and collecting of wild plant foods.

Thus, to anyone familiar with the geography of Texas, it is not at all surprising that a Middle American agricultural group would cross most of the state before reaching a humid forested region where it could continue the habitual economy under climatic conditions similar to the homeland. The Rio Soto la Marina is only the closest point in Mexico from which such a movement is conceivable. We know next to nothing of this northern outpost, however, and if it were settled in comparatively late times, a much more southern part of Mexico could well have been the original point of departure. The distance covered may thus have been 1000 miles or even considerably more. My point is that the movement of a given cultural group, its causes, and place of settlement are of first importance, the actual distance traveled quite incidental. A trek of 100 miles is no more logical or easier to prove than one of 1000 miles.

Conclusions

There is no present evidence for pre-Columbian agriculture on either side of the lower Rio Grande in the zone of precipitation effectivity designated DB'd by Thornthwaite. Neither is such evidence at hand for agriculture in the

southern half of Texas in the CB'd (dry sub-humid) and CB'r (moist sub-humid) zones. Since native crops could probably have been raised without irrigation in most years in the two sub-humid zones, three possible explanations have come to mind: (A) due to past climatic changes, the area in which these zones are now found was less favorable when agriculture was being spread into northern Mexico; (B) the climate was favorable but the pre-Columbian Indians in this belt were adverse to adopting it; or (C) agriculture was adopted as a supplement to the economy but we have not found the evidence. It is highly improbable that agriculture was practiced in the drier semi-arid zone at any time. Further work on the correlation of culture and climate may show more definitely the width of these zones when the knowledge of agriculture reached into northeastern Mexico.

In pre-Columbian times as well as in the European period, long-distance travel between northeastern Mexico and the eastern woodlands was often funneled through the "Gilmore Corridor" in preference to other routes, although due to the general absence of serious physical barriers in most of Texas, such travel undoubtedly was carried over other routes as well. The "Gilmore Corridor" simply presents certain natural advantages for traverse in a northeast-southwest direction across the southern parts of Texas, and was evidently much preferred to the coastal fringe.

As a route of communication over a very long period, it is quite possible that the "Gilmore Corridor" was also the route by which agricultural knowledge was carried to the Eastern United States, crossing rapidly the broad expanses of northeastern Mexico and Texas which were either unsuitable for it or inhabited by tribes adverse to adopting it. This much granted, it is further conceivable that other culture traits were similarly carried rapidly across these expanses in either or both directions, leaving no traces of their establishment among the intervening peoples.

NEWS NOTES AND EDITORIALS

THE POCKET GOPHER AT THE JOHNSON SITE:

A CORRECTION

In an article entitled "The Johnson Site: Type Site of the Aransas Focus of the Texas Coast," published in Volume 18 of this *Bulletin*, I reported (p. 46) the occurrence of bones of the pocket gopher, genus *Thomomys*, at the Johnson site. Dr. W. Armstrong Price of Corpus Christi recently called my attention to the fact that *Thomomys* does not now live on the Texas coast, and he suggested that the pocket gopher remains from the Johnson site may have been incorrectly identified (letter, May 10, 1948).

At the suggestion of Dr. Price, these pocket gopher remains were sent to Dr. William B. Davis, Head of the Department of Wildlife Management, Agricultural and Mechanical College of Texas. Dr. Davis, author of "Distribution and Variation of Pocket Gophers (Genus *Geomys*) in the Southwestern United States" (Texas Agricultural Experiment Station, Bulletin No. 690, 1940), has extensively collected pocket gophers from the Coastal Plains of Texas and has also described many new subspecies from that area. In a letter dated May 15, 1948, Dr. Davis reported as follows: "The specimens of pocket gopher you submitted for identification prove to be *Geomys* cf. *personatus* The size of the mandible and the teeth compare favorably with *Geomys personatus*, a form now living from Corpus Christi southward."

It is regrettable that this error has entered the published record, for some mammalogists may be misled into believing that *Thomomys*, a western pocket gopher, once had a more southeastern distribution in the United States than at present. The occurrence of *Geomys* at the Johnson site agrees with the present known distribution of that genus. According to distribution maps published by Dr. Davis (reference cited above, Figs. 2, 3, and 5), *Geomys* cf. *personatus* of the Johnson site occurs just north and east of the present range of *Geomys personatus* and on the southern margin of the present range of *Geomys breviceps*. The scanty data provided by the Johnson site fauna suggests that within the past thousand years *Geomys personatus* lived somewhat farther north than at present.

T. N. Campbell

The University of Texas

PANHANDLE-PLAINS MUSEUM, CANYON

In response to our inquiry, Mr. Floyd V. Studer replied:

"It would be a pleasure to respond to your request with reference to a report of our field activities of the Panhandle Plains Historical Society Museum, except for the fact that we have done so little in this direction since the war that we actually have nothing to report."

However, this does not mean that things have not been happening at Canyon. A new addition to the Museum building has been made, and although there is no plaster on the walls as yet, the floor space is there and usable. Boone McClure and his assistants have set up a number of new exhibits. A visit to the Museum gives one the feeling that it is growing with a lusty abandon. All of Texas is proud of what the Panhandle institution is doing to preserve the cultural history of the area.

W. C. H.

EL PASO ARCHAEOLOGICAL SOCIETY

The El Paso Archaeological Society has forty-three (43) members at present, and have regular monthly meetings, with the exception of June, July and August. The election of officers was held in January, 1948. Mrs. Glen E. Moore was elected President, Mr. Ray O'Bryan, Vice President, and Mr. Lloyd Ault, Secretary-Treasurer.

At the February meeting, Mr. Wiltz Harrison, silversmith, gave an interesting talk on "Indian Silver, Old and New." At the March meeting, Robert Zingg spoke on the Tarahumara Indians. In April Mr. Chas. Hutchinson talked on the Klondike Gold Rush, using pictures that were taken at the time but since colored and made into slides. In May the entire group were the guests of the Grant County Archaeological Society, arriving at Silver City on a Saturday. Joint meetings of the Societies were held that night with Dr. C. L. Sonnichsen, El Paso historian, giving a talk on the Apaches. Dr. Harold E. Cooley, president of the Grant County Society also gave a talk. On Sunday morning the combined groups first visited Treasure Hill, excavated by the Coogroves, next they stopped at the Santa Rita mine, then went to the Galaz ruin, and on to Mimbres Hot Springs for picnic lunch. After lunch the group followed the Mimbres to the old Butterfield stage depot, City of Rocks, and to Faywood Hot Springs. It was a wonderful trip. For the October meeting, the El Paso group made a field trip to cave shelters in the Hueco Mountains.

The Society has a very nice collection of Chihuahua pottery,

from the collection of Mrs. D. Bruce Smith, placed at the Municipal Airport. This is we hope, a permanent display, to be changed twice a year.

Our principal objective at the present is to preserve our camp sites and educate our members to make records of all trips, finds and excavations.

Mrs. Glenn E. Moore

UNIVERSITY OF OKLAHOMA MUSEUM, NORMAN

The Museum of the University of Oklahoma is a departure from the usual practice among universities in that a lot of small and ineffective departmental "museums" have been combined into one organization with a common exhibition building, research and storage laboratories.

At present, the Museum is moving into its new quarters. Installation will probably be completed by April of 1949.

The exhibition building is fireproof. The windows have been closed and an attic fan provided for cooling and changing the air to increase the comfort. The large and small animal groups of the Divisions of Zoology, Botany, and Geology and Paleontology exhibits occupy the first floor. The Divisions of American Indian, Classical Art and Archaeology, Anthropology, and History occupy the second floor.

All of the exhibition cases are cloth lined, and the trimming is light in color.

The laboratory and storage space will make all collections more available. Consequently, research is expected to take on new vitality.

Special features of interest to all Divisions of the Museum are: (1) a Dendrochronology laboratory, (2) a Caddoan typological repository, (3) a Lapidary room, (4) a Photographic studio, (5) a General Work Shop, and (6) a Conference and Lecture Room.

Robert E. Bell

WITTE MUSEUM, SAN ANTONIO

About two thousand years ago the Cave Dweller Indian and Basket Maker Indian settled in what is now known as the Big Bend of Texas. It is believed that at one time these people occupied a strip from the Gulf of Mexico to Utah. From where they came and where they went is still unknown. A large mural

8' x 15' by Anthony De Young depicting these people is high on the wall opposite as we enter the museum and the Cave Dweller room is on the right.

That these people loved peace there can be little doubt, but, that they found it necessary to constantly defend themselves and their families is plainly shown by their choice of weapons and the location of their homes.

Their home was a shelter or cave high in the canyon walls. One needs the sure foot and dexterity of a mountain goat to reach them. How they prevented all of their youngsters from taking the shortest route to the canyon floor before they developed this agility we will never know, unless they had the instinct of fledglings. The prospect of carrying the daily water supply up these canyon walls is appalling.

During their time the bow was not yet known, so they used what is known as the Atlatl, or spear thrower and the rabbit stick, which was also used to fend off the shafts of their enemies. The so-called rabbit stick is always found in conjunction with the Atlatl.

These people spent their days hunting and fishing and although it was a necessity to keep themselves supplied with food, they were not without sporting blood. They devised weapons, traps, snares and nets to help and to satisfy their necessities. They devised fishhooks without barbs. The lures were tied somewhat in the manner of a present day fly and were attached to a very light fiber line.

We imagine the twilight hours spent around the fire were devoted to the telling and retelling of the day's adventures. Those of special note were painted on the shelter walls in black and red. The job was so well done that the animals and fish depicted can be identified today, and are more realistic than we see in many so-called "modern art" pictures.

There was no store around the corner or in the next block that the family could go to if they needed a new knife, basket or dress. They manufactured what they needed using every piece of bone, stone, wood, shell or grass that came into their hands. If the need was urgent the manufacturing process was carried only so far as to make the article useful, but at other times the process was completed and a good polishing and sometimes carving job was thrown in.

It takes only a glance around this room to see that nearly every article and tool in every day use now, had its counterpart manufactured by these primitive people.

They smoked, and their pipes consisted of a joint of cane filled with cedar foliage. The cane pipe was consumed at the same rate as the cedar tobacco. When they finished their smoke they threw the whole thing away and when they again wanted a smoke a new pipe was cut.

As we enter the room we see the cast of a Cave Dweller's head and eleven oil paintings by Peter L. Hohnstedt depict the country these people lived in: Santa Helena Canyon; Rio Grande; Brewster County, Mule Canyon near Langtry looking south; Mule Canyon near Eagle Cave; Haze in Chisos Mountains; Entrance of Santa Helena Canyon; Evening, Del Carmen Mountains; Mule Ear Peaks, Brewster County; Castelon Peak, Brewster County. These paintings are about a yard square and the large painting 5 x 7 on the west wall shows the Chisos Mountains; and below it a plaster model 6 x 12 feet of Petroglyphs found near Terlingua. There are 14 wall cabinets below the paintings, a map showing 20 named sites; fiber sources; cordage; netting; basketry; matting; sandals; clothing; ornaments; tools; weapons; food; projectile points; about 50 metates and manos are on the floor below the cases. There are four floor cases showing projectile points, drills, bird points, hatchets, arrow shafts; coiled pitched baskets, twin woven storage baskets, lance blades, split pebble knives, fist axes, manos and metates, hammer stones, celts, grooved manos, painted stones, boat stones, fetishes, pendants and bone heads, sinkers, obsidian cores, small points, drills and arrows.

There are two glass cases 5 x 5 and 3½ feet deep showing an adult burial with accompanying artifacts and the other three infant burials with their shell and paint stone toys and cradles.

The museum publishes the following illustrated bulletins of the Southwest Texas Archaeological Society by George C. Martin:

Bulletin I, Big Bend Basket Makers, pp. 14.

Bulletin II, Big Bend Basket Makers, pp. 18.

Bulletin III, Big Bend Basket Makers, pp. 95.

Painted Pebbles from the Lower Pecos and Big Bend Regions of Texas by J. Walker Davenport and Carl Chelf.

M. L. Crimmins

HOUSTON ARCHAEOLOGICAL SOCIETY, HOUSTON

Our group here is still excavating in the Doering Site, started by Joe Wheat, but we have to finish before Christmas or abandon the site as the new owner of the land does not want any excavating

done on his property. He gave us this short time to finish what we could. We also have started a survey of Buffalo Bayou beginning about four miles above Addicks Dam, where the Bayou is just a trickle of water, and working down towards Houston some twenty miles away. We expect to finish this survey by summer. Several interesting sites have already been noted.

We now have several new members in the group who are really interested and who are helping to keep the organization going. We try to hold one field trip each month for the entire membership, at which time we work on the Doering Site, and we also have been putting one day a month into our survey. Meetings are held once a month at the museum and from ten to twenty people generally attend; of these about eight are actually interested in doing any field work. We more or less disbanded last winter due to bad weather curtailing our excavating and the fact that only a couple of others besides myself would share in the responsibility of doing anything towards working up a program. The attendance also fell off considerably due to the museum being poorly heated, however, we have done much better this summer. We use the *Texas A. & P. Bulletin* a great deal on our programs.

Concerning the museum itself, which has long been a disgrace to Houston due to its poor building and meager budget, the Gold Star Mothers are now talking with the City Fathers for a million dollar building to be erected in memory of our war dead, and should this become a reality the new museum would probably have its own archaeologist, or a curator of anthropology, and this branch of science would come into its own at last in this area. We are all keeping our fingers crossed hoping this may come about. I will keep you posted of any new developments.

R. B. Worthington

DALLAS ARCHAEOLOGICAL SOCIETY, DALLAS, TEXAS

That the Dallas Society has been unusually active is evidenced by its mimeographed issues of *The Record*, Numbers 1, 2, and 3, Vol. 7 for September, October, and November 1948. Mr. Robert Hatzenbushler is the editor and Mr. R. K. Harris is the assistant editor. Communications concerning the publication may be addressed to assistant editor, R. K. Harris, 9024 San Fernando Way, Dallas, 18, Texas. The Dallas organization has been especially cooperative with Mr. R. L. Stephenson who has been making an archaeological survey of the proposed reservoir sites in the Dallas area.

W. C. H.

WEST TEXAS HISTORICAL AND SCIENTIFIC SOCIETY,
ALPINE

Mr. Victor J. Smith writes:

"We will have some news notes for the *Bulletin*, but should like to develop latest information concerning a large gift collection."

We will look forward to this announcement in time for the next issue of the *Bulletin*.

W. C. H.

THE 1948 ANNUAL MEETING AT AUSTIN

The twenty-first Annual Meeting of The Texas Archaeological and Paleontological Society was held in Austin, Texas, October 23, 1948. The Society is especially indebted to the Program Committee, consisting of Dr. Tom N. Campbell, Dr. Alex D. Krieger, and Dr. J. Charles Kelley, for the splendid arrangements and excellent program. Members of the Department of Anthropology at The University of Texas held open house for visiting members in the Anthropology Museum, Friday evening, October 22.

The following papers were read at the meeting:

Alex D. Krieger, Aims and Problems in Texas Archaeology.

Charles E. Mear, The Discovery of Folsom Points in Kincaid Shelter, Uvalde County, Texas.

E. H. Sellards, Progress Report on the Excavation of Kincaid Shelter, Uvalde County, Texas.

Robert E. Bell, Recent Archaeological Research in Oklahoma.

Jane Holden, Fingerprint Cave.

Cyrus N. Ray, Summary of Twenty Coke County Sites.

Clarence H. Webb, Caddoan Prehistory: The Bossier and Haley Foci as Transitional Cultures.

Robert L. Stephenson, Archaeological Survey of the Lavon Reservoir, Texas.

J. Charles Kelley, An Archaeological Reconnaissance of the Rio Grande Valley between Redford and Fabens, Texas.

Herbert C. Taylor, Jr., An Archaeological Reconnaissance in Northern Coahuila, Mexico.

Erik K. Reed, Functions of the Staff Archaeologists in the National Park Service.

TITLE OF PRESIDENT EMERITUS CONFERRED UPON
DR. CYRUS N. RAY

At the business session of the Austin meeting Colonel M. L. Crimmins of San Antonio was elected President. Colonel Crimmins is the second President of the Society, Dr. Cyrus N. Ray having been elected President annually since its organization. It was upon his own insistence that Dr. Ray was not re-elected. By a unanimous vote of the members present, the following resolution was adopted:

In recognition for twenty years of service as President of The Texas Archaeological and Paleontological Society, and as Editor of its first seventeen volumes of the *Bulletin* and in appreciation of the great amount of time that he has put in, and for the contributions that he himself has made in archaeology, the Society confers upon Dr. Cyrus N. Ray the permanent honorary title of *President Emeritus*.

FINANCIAL CONDITION OF THE SOCIETY

The Secretary-Treasurer desires to call attention to the critical financial condition of the Society. Our balance at the end of October, 1948, was \$511.42 as compared to a balance of \$878.07 at the end of October, 1947. This reduction in finances is the result of the tremendous increase in the cost of printing the *Bulletin* while at the same time, membership and membership dues have remained practically constant. It appears that the Society must adopt one or more of the following alternatives within the near future:

1. Increase membership dues.
2. Increase its membership. At least one hundred new members will be needed, at the present rate for annual dues, to obtain needed revenue.
3. Reduce the size of the *Bulletin* considerably (possibly to approximately 64 pages).
4. Obtain voluntary contributions. This appears to be the most desirable method provided it can be done. Here is an opportunity for some person or organization of charitable inclination to make a worthwhile contribution. The Society operates with practically no overhead. Probably more than ninety-five per cent of every dollar received is spent directly to pay for cost of publications and mailing charges.
5. As a temporary expedient, the Society still has available most

volumes of the *Bulletin* at the regular price of \$3.00 each. If your file is incomplete, why not give us your order while the *Bulletins* are available and while we are in desperate need of more money.

It is hoped that the Society will take action on this matter at the Alpine meeting.

E. W.

THE 1949 MEETING

The next annual meeting of the Society will be held in the spring of 1949 at Alpine in conjunction with the Southwestern Division of the American Association for the Advancement of Science. Heretofore, it has been our custom to meet in October, but the benefits to be derived from meeting jointly with the Southwestern Division seem to justify holding our next annual meeting several months early. The over-all program for the Social Sciences is being handled by Dr. Erik Reed, National Park Service, Santa Fe. It is the plan for the Texas Archeological and Paleontological Society to hold a one day's session under the direction of Col. M. L. Crimmins, president of the Society. The program for the sessions of the Society is being arranged by a committee composed of Dr. T. N. Campbell, Dr. J. Charles Kelley, and Mr. Alex Krieger. Anyone having suggestions for the program may communicate with the members of the committee. The committee is also working with Dr. Erik Reed in order to correlate the papers which will be presented at the sessions of the Society with the general anthropological theme selected by the Southwestern Division.

W. C. H.

THE 1949 BULLETIN

It is our intention at this time to get out the 1949 *Bulletin* immediately after the Alpine meeting in the spring. We already know of some five or six papers which will be available at that time. We are sure that there will be a number of others. Anyone who has something which he would like to include in the 1949 *Bulletin* should have the manuscript in our hands not later than May 15.

W. C. H.

**REPORT OF THE SECRETARY - TREASURER
OF THE TEXAS ARCHAEOLOGICAL AND
PALEONTOLOGICAL SOCIETY**

Report for the twentieth year from the annual meeting,

October 25, 1947, to October 23, 1948

RECEIPTS

Balance on October 25, 1947.....	\$ 845.07
Collected on 1946 dues.....	15.00
Collected on 1947 dues.....	192.00
Collected on 1948 dues.....	33.00
Collected on 1949 dues.....	3.00
Collected on sale of <i>Bulletins</i>	30.00
Total.....	\$1127.07

DISBURSEMENTS

Postage	\$ 15.00
To Texas Tech Bookstore for ledger and rubber stamp.....	2.60
To Texas Tech Press for letterhead stationery.....	37.75
To Hester's Office Supply for 1M, 7 x 10 envelopes.....	22.30
To U. S. Copyright Office for copyright of Vol. 18.....	2.00
To Texas Tech Press for printing Vol. 18.....	590.00
Total.....	\$ 669.65

Balance on deposit in First National Bank, Lubbock,

Texas on October 23, 1948.....\$ 457.42

ERNEST WALLACE,

Secretary-Treasurer

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Foreword

The society was organized and chartered in pursuit of a literary and scientific undertaking; for the study of the history, pre-history and the major artifacts of man and the fossils representing the past floras and faunas of Texas; for the encouragement of the proper collection and preservation of such artifacts and fossils in museums and their study and classification and the publication of the results of the researches incident thereto.

The BULLETIN is published annually for distribution to members of the society. Opinions expressed herein are those of the writers, and do not necessarily represent views of the society or the editorial staff.

SKELETAL REMAINS OF MAN AND EXTINCT ANIMALS: A CAMP SITE COVERED BY RIVER DRIFT

E. T. ADAMS

It has been the opinion of many eminent anthropologists of some years past that the Americas have not been occupied by members of the human race for more than a few thousand years. This opinion has been modified somewhat in the last twenty years or more due to the research of American archaeologists, so that until recently it had been thought that man has lived in North America ten to fifteen thousand years. Due to the recent excavations of the Ventana Cave near Tuscon, Arizona, the date of such occupation is now placed at thirty-five thousand years or more.

The failure to regard the Americas, particularly North America, as a center of the development of the human race is influenced by the fact that neither the fossil remains of the ape nor those of a man of the Neanderthal type have been found in North America. The presence of fossil man in both North America and Europe is generally deemed to be due to migrations from both the west and the east.

Having become interested in the Piltdown man during his student days, the writer has devoted a great amount of time since to field research in the area surrounding his own home to determine if any comparable evidence of ancient man could be found. This is the locality of the four bends of the Brazos River, which has cut its valley about nineteen miles wide and about six hundred feet deep through the limestone of the Lower Cretaceous. It is a very ancient river. In the many canyons and other water courses flowing across the valley and cutting into the river drift, are exposed banks which exhibit the deposits of the ancient river, particularly those of the Miocene and of the Pleistocene. Along the escarpments of the Cretaceous stone are cliffs where the less indurated stone has decayed, forming shelter caverns of

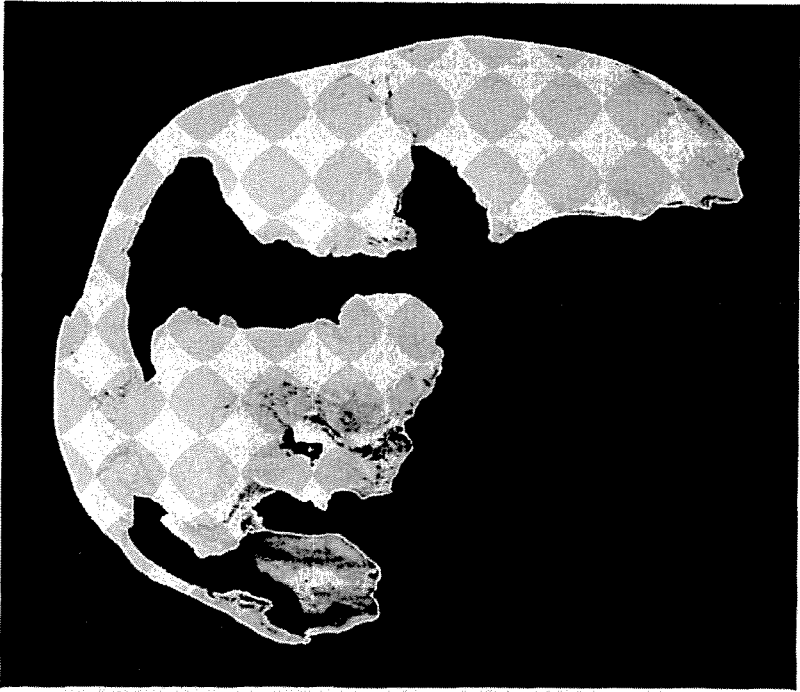
which there are many. It is believed that the stratigraphy of the more favorably situated caverns dates from the third interglacial period upwards.

Some modern farming operations had uncovered some bones, which were ignored by the operator. A large piece of a human occiput was given the writer by an amateur archaeologist, and from him the location was ascertained. The occiput was unusually thick: 14 mm. at the internal occipital protuberance, and 10 mm. elsewhere.

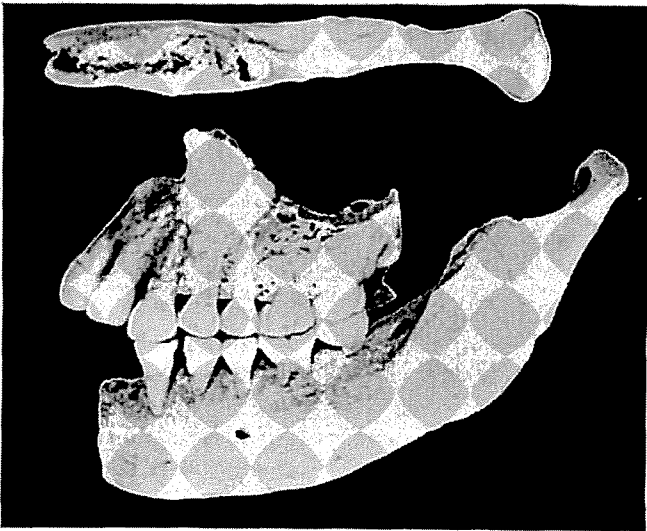
A thorough search of the locality has been made, and continues to be made at infrequent intervals. Parts of the skeletal remains of four individuals have been discovered: a young woman about nineteen years of age, another woman eight or ten years older, an infant, and an old man. There was a fire hearth but neither pottery nor grinding stones. About the hearth were bones of extinct animals. Pieces of glyptodont armor were the most frequent. Teeth and parts of the mandibles of pig, bison primigenius, wolf, ground sloth, and an ancient deer, together with unidentified teeth were found.

The smaller foramina of the human bones were filled with the bluish loess which marks the second interglacial period. The stratigraphy of the site was destroyed by the farming operations. Only one bone was found intact, the right femur of the young woman. (Measurements: $17\frac{1}{2}$ inches long; platymeria, taken at UF., LM 28, AP 20 mm. Pilaster taken at middle, LM 24 mm., AP 26 mm.: muscular attachments slight.)

Sufficient of the fragments of the skull of the young woman were found so that a profile view could be reconstructed in part (Plate 1, Fig. 1). The skull was not unusually thick, and, upon comparison with the skull bits of the older woman and the old man, it seems that the thickness of these skulls increased with age. Only one of the principal measurements was estimated; that of the biporionic vertical height, which was placed at 79 mm. No attempt has been made to estimate the nasion-inion distance because it is



①



2^a

2^b

PLATE 1

evident that the nasion was well forward of the position usually expected. The supra-orbital rims diverge laterally and posteriorly from the supra-orbital notches (Plate 2, Fig. 2). The frontal sinuses are large and extremely extensive laterally. The basion and the whole of the right maxilla and zygoma are missing. The greater part of the left half of the young woman's mandible and a portion of the left maxilla were found, as well as the left zygoma.

The extinct snails and clam shown on Plate 2, Fig. 4c do not form a basis for estimating the date of the occupation by these people. They were there in any event. The animals mentioned could have belonged to a much later period, except the *B. Primigenius*. It is assumed that the many different remains of the animals reached this place by the hands of these people.

The bison deserves particular mention. He is far younger than the human race in his development, and exhibits more clearly the climatic conditions through which he passed to achieve the specialized form of his teeth of the present day (Plate 2, Fig. 3). The teeth and mandible shown in Fig. 3 (Plate 2) exhibit the pieces of jaws and teeth found scattered about the site. The crests are high and the width (bucchallingual) narrow. These are compared with those of the bison (Plate 2, Fig. 3) of the "pitch bog" days. The latter are about twice as broad as the former and have the crests well ground down. The present day bison has teeth about twice as wide as the "pitch bog" bison, without crests, and well affixed to the jaw, forming an efficient mill for grinding his food (Plate 2, Fig. 3 b).

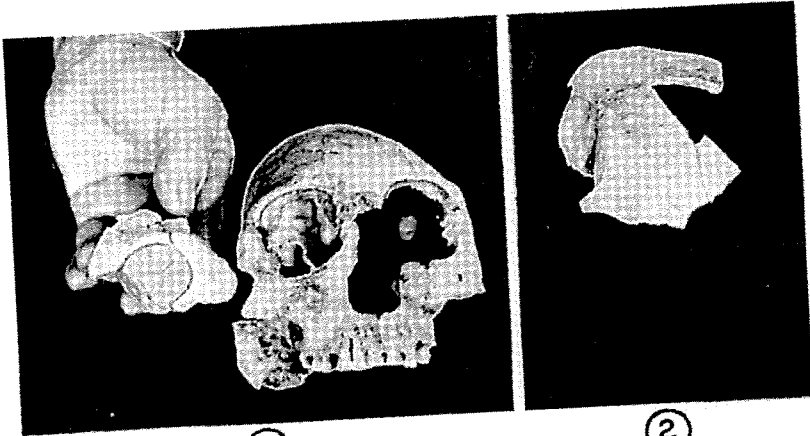
Recourse is next had to the differences between the scanty skeletal remains of these people and the same portions of modern man's skeleton. On the whole, so many of the skeletal exhibits are so like those of modern man that many of them would pass unnoticed by a competent observer of such matters. Mention has been made above of the peculiar position and direction of the supra-orbital rim. This makes an angle of about seventy degrees with a plane passed vertically through the saggital suture and the center of the frontal

and suggests the Rhodesian Man and the extinct lemur of North America for a likeness of structure, contrasting strikingly with the frontal plane of modern man. This is believed to occur as some sort of compensation for the rigidity of the spine of these people. The processes of each vertebra overlapping the one just below present a box-like trough effect instead of the V-shaped effect of the modern spine, which permits us, by pivoting the body about, to look entirely around us without moving our feet.

The orbit of the eye is strikingly small, covering about one fourth of the area contained within the orbit of modern man. On Plate 2, Fig. 1 is shown the comparison between an orbit of these people (formed by the right supra-orbital rim of the older woman and the zygoma of the younger woman) compared with the orbit of a modern Indian man taken from a shelter cavern. The minimum templar width of the Indian is 92 mm., and that of the young woman is estimated at 98 mm.

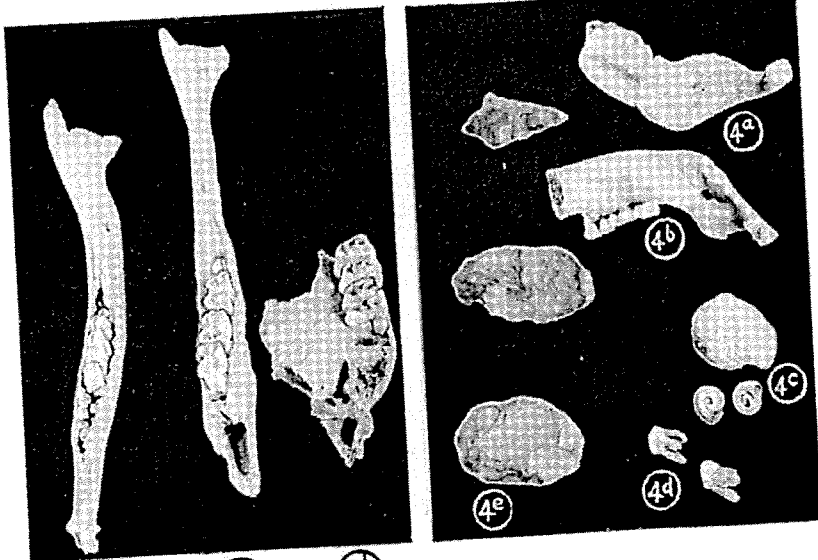
It is also to be noted that the suture between the orbital rim (Fronto-sphenoidal process) and the zygoma is close to the supra-orbital notch and well upon the rim. (The position on Plate 2, Fig. 1 is exaggerated.) This again suggests the extinct lemur. It has been noted from several skeletal remains found by the writer that this suture has receded from this position regularly until in the modern Indian cave man shown here it is nearly in the normal position of modern man.

The parietals bend sharply inward at pterion, so that the broad low vault may conform to what is evidently a narrow maxilla. The squamatic suture forms a low, long arch, the type to conform to the low squashed down and flat parietals and frontals. The frontal is very short. This feature, together with the small orbits, cause the vertex of the line marking the biporionic vertical height to fall behind the bregma as in modern man. The lateral sinus passes around the hinder, inferior angle of the parietal in two cases; the others have not been found. This feature has been observed in other skulls of the southwestern United States, occasion-



①

②



③

③^a

③^b

④^a

④^b

④^c

④^c

④^d

PLATE 2

ally cutting across the angle of the parietal and in others going around it.

The antrum or nasal sinus of the young woman merits attention. It is compared with that of a modern cave man, associated with the Yuma type knife, and the sinus of a young man of the third interglacial period (Plate 3, Figs. 1, 2, and 3, respectively). It is well known that the size of the sinus increases with the age of the individual at the expense of the walls surrounding it. The sinus floor usually extends from the third to the first molar, occasionally to both premolars. The sinus floor reached the roof of the alveolar process in the region of the third molar (which was about to erupt) and extended upward to the upper rim of the nasal aperture. This left a spongy mass of bone from the third molar region forward, which continued medially between the palate and the floor of the nasal cavity. Viewed from above, the floor of the nasal cavity is concave and the palate convex so that only along the mid-line between the halves of the maxilla does the bone become as thin as found in modern man. The palate is smooth. This feature is perhaps more unusual than significant except that it is believed to indicate a very prominent alveolar prognathism. This is confirmed by the obtuse angle of the ascending ramus and the body of the mandible. The dental arcade is V-shaped.

The body of the mandible is smooth, laterally and medially, and the border is rounded. A slight mylo-hyoid ridge extends forward to the first molar and from there to the symphysis is a slight groove. The alveolar cavity remains open in the old man's jaw (Plate 1, Fig. 2a), and the lower border is rounded as in the young woman (Plate 1, Fig. 2b). Prominent muscular attachments are noted about the region of the gonion. This is confirmed by the unusual wear of the molars. Both women had two lower molars. The premolars had a peculiar polish and were still rounded. They were not used for grinding food, but rather for shredding it so that the molars could grind it more easily. This feature is also found in the people from the third interglacial period. The molars were not particularly different from those of

modern man except for the extra-ordinary thickness of the dentyne, which is three or four times as thick as that of the modern cave Indians. The lower borders of the body of the mandible rises upward at the symphysis to form an arch, *incisura submentalis* (Plate 1, Fig. 2b).

The region of the ramus about the mandibular foramen exhibits either no mylo-hyoid groove or a very shallow and faint groove. The lingula, a platelet of bone which overhangs the lower rim of the foramen in modern man, is lacking. To this platelet are attached the sinews of the pharynx. The lingula exists in a very rudimentary form in these mandibles. It is a mere tip rising up from the upper or forward rim of the foramen. It is well removed from the rim. The gradual shifting of the tip to form the modern lingula has been observed in the closer approach to the rim in the mandibles from the third interglacial period and the platelet begins to form and overhang the rim in the mandible from the fourth glacial period, finally reaching the position of modern man in the postglacial cave Indian (Plate 3, Figs. 4 and 5; Plate 2, Fig. 4a and 4b).

The mylo-hyoid groove in the mandible from the fourth glacial period is covered over in part of its length with a sheath of bone (Plate 3, Fig. 4). This seems to indicate that the mylo-hyoid nerve and vessel was at some prior time extricating itself from its imprisonment within the body of the mandible. It is but a step backward to the showing of two foramina, as in the Piltdown and ape mandibles. The fact that the covered groove occurs in two known specimens (Plate 3, Fig. 4), one coming from the interval between the Wurm I and Wurm II glaciations, and the other probably earlier, is believed to be due to a reversion to a former type because of the hardships of the glacial periods mentioned. This reversion to a former type is not unknown to students of paleontology. These physical facts lend support to the theory that the Piltdown jaw belongs to the skull although the skull of the young woman supports the British workman's description of that skull as a brown "kokernut."

The shelter caverns here reflect the fact that the fourth

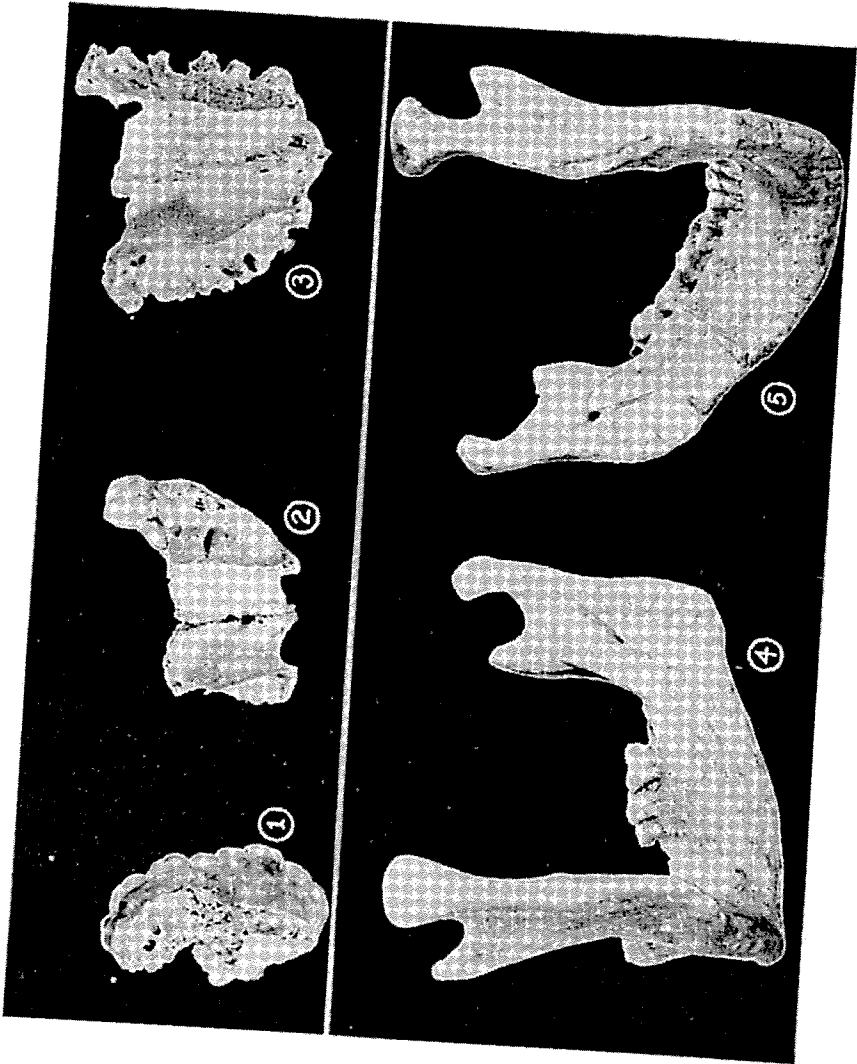


PLATE 3

glacial period was one of extreme dryness, except for a slight interval, between Wurm I and Wurm II. Whether the climate was cold is not shown. There were probably extremes of heat and cold. If this section, about thirty degrees north latitude, was a desert of such nature that animals and plant life could not be supported, then all animals drifted either north to a wet fringe or toward the tropics where moisture was plentiful during this period. Along the northern fringe, animals could have drifted either west or east. The presence of extinct animals in a more northern latitude does not mean that such presence was contemporaneous with the presence of the same animals in this latitude. There was little inducement for a migration into this section during the last glacial period. The close of this period is marked in the caverns here by evidence of excessive rainfall, which might have meant that the same precipitation in the form of ice, snow, and sleet freezing and covering the ground in more northern latitudes caused the extinction of the mastodon, horse, camel, and other animals which once roamed North America. According to the cavern evidence here, the end of the glacial period came suddenly.

The various features of the skull fragments of the people in question, such as the long low arch of the equamous suture, dove tail flanging, the rounded occiput and sloping curved nuchal plane, light supra-orbital ridges, and many other features mentioned suggest the Piltdown, Swanscombe, and other skulls found, but whether there is a racial affinity is a matter for future years and further discoveries. The race or perhaps phylum of these people is marked. An inspection of the tibia reveals faintly but unmistakably that these people are ancient Indians of the southwestern part of North America.

The shift in the position of the lingula, and the development of the mylo-hyoid groove probably accompanied an improvement in the swallowing efficiency of the pharynx and the further development of the oral digestive system. The exhibits of such skeletal features do not constitute a case for definite antiquity. If the theory is correct, the man-

dible of the Eskimaux, before the advent of the white man, should show some interesting facts. The teeth of the people under discussion showed neither cavities nor pyorrhoea. The same theory accounts for the modern type of wear and nature of the teeth exhibited by the Mauer jaw. The Heidelberg man and his ancestors could have stayed more closely at home and have subsisted principally on grass seeds, rather than on food from the chase.

The typical and theoretical ancestor of ape and man (if such animal is ever identified) would be neither of the two but would possess physical capabilities of producing either descendant under a suitable environment. If the conditions of food and other surroundings had not changed, then neither of the two would have evolved. The theoretical ancestor would have continued its existence and there would have been no one to have known about him. If the subsequent conditions of living had been favorable to the development of the ape, such would (and did) result. A dissimilar but favorable environment would have resulted in the evolution of man. The ape probably needed four hands to place food in his mouth, thus efficiently gathering all the fruit and such like food within reach of the numerous hands without moving the body about.

Under a favorable environment suitable for the development of man and isolated from an environment which would in like manner have been suitable for the evolution of the ape, there is no reason that man should not have evolved without the development of an ape. The treeless plains of North America were not suitable for the evolution of the ape, but were suitable for the ancestor who "took a chance" on the ground. Under such conditions, man could have come into being. Too little is known at this time about the matter to form the basis of a very serious argument, but eventually the ancestry of both will be traced further into the remote past than it has been hitherto believed possible.

ARCHAEOLOGICAL SURVEY OF LAVON AND GARZA-LITTLE ELM RESERVOIRS: A PRELIMINARY REPORT

ROBERT L. STEPHENSON

Introduction

The Corps of Engineers, Dept. of the Army, has begun work on four dams and reservoirs on the upper drainage of the Trinity River. Benbrook Dam on the Clear Fork of the Trinity in Tarrant County is small and a brief investigation of the area showed that no archaeological material was to be lost by inundation. Grapevine Dam on Denton Creek in Denton and Tarrant Counties is also small and a brief investigation showed no significant archaeological material was to be lost by flooding. Garza-Little Elm Dam on Elm Fork of the Trinity in Denton County, and Lavon Dam on East Fork of the Trinity in Collin County are both moderately large, and extensive surface surveys of the areas to be flooded revealed considerable archaeological material. It is with these latter two reservoirs that the present paper will deal.

Garza-Little Elm Dam is located one mile north of the Town of Lewisville, Texas. When completed it will be 125 feet high with 32,700 feet of earth embankment and 600 feet of concrete spillway forming a reservoir to be used for flood control and water conservation. This reservoir will have a surface area of 66,100 acres at an elevation of 553 feet M.S.L., and will affect the present river level 21 miles upstream on Elm Fork, 17 miles upstream on Little Elm Creek and 13 miles upstream on Hickory Creek, completely inundating the present Lake Dallas. Impounding of water in this reservoir will probably begin in August, 1952.²

Lavon Dam is located three miles northeast of the Town

¹ Permission of the Smithsonian Institution for publication of this article has been kindly granted the writer by Dr. Frank H. H. Roberts, Jr.

² Data furnished by the Fort Worth Suboffice, Corps of Engineers, Fort Worth, Texas.

of Wylie, Texas. When completed it will be 69 feet high with 8,972 feet of earth embankment and 568 feet of concrete spillway forming a reservoir with a water surface area of 24,190 acres at an elevation of 496 feet M.S.L. This will affect the present river level 10 miles upstream on the East Fork and 14 miles upstream on Pilot Grove Creek. Impounding of water will probably begin in August, 1951.³

The streams on which these reservoirs are being built form the headwaters of the Trinity River, one of the series of large rivers flowing in a southeasterly direction across Texas to empty into the Gulf of Mexico. The East Fork and Elm Fork are relatively small branches of the main stream, but at flood stage frequently attain a width of 300 feet or more. Their immediate channels are normally quite narrow and seldom over 5 feet or 10 feet deep. Each, however, is cut into an older channel of one-half to one mile in width, the latter being filled with alluvial sediments. The entire area lies in the upper reaches of the Coastal Plains physiographic province. The Elm Fork area forms the border between the low, rolling hills of the Eastern Cross Timbers Region to the east and the Grand Prairie Region to the west. The East Fork area is entirely within the Eastern Cross Timbers Region. The basic geologic formations in the Elm Fork area are Woodbine sandstones and the Eagle Ford formation, while the East Fork area is largely composed of Taylor Marl.⁴ In both areas the soil is principally a heavy, black, silty clay but in the western parts of the Elm Fork area this gives way to a light brown sand. Natural vegetation consisting of typical southern river bottom hardwoods, vines and brambles is quite heavy along both stream channels while the areas a few hundred yards from the streams are under cultivation, or in pasture. This land has been cultivated for 50-100 years prior to which time it was partially timbered, particularly in the East Fork area. Cotton, corn, maises, and peanuts are the principal present day crops.

Under the direction of Dr. Frank H. H. Roberts, Jr., Di-

³ Idem.

⁴ Data based on Raiz, Erwin, 1939 and Fenneman, N. M., 1931.

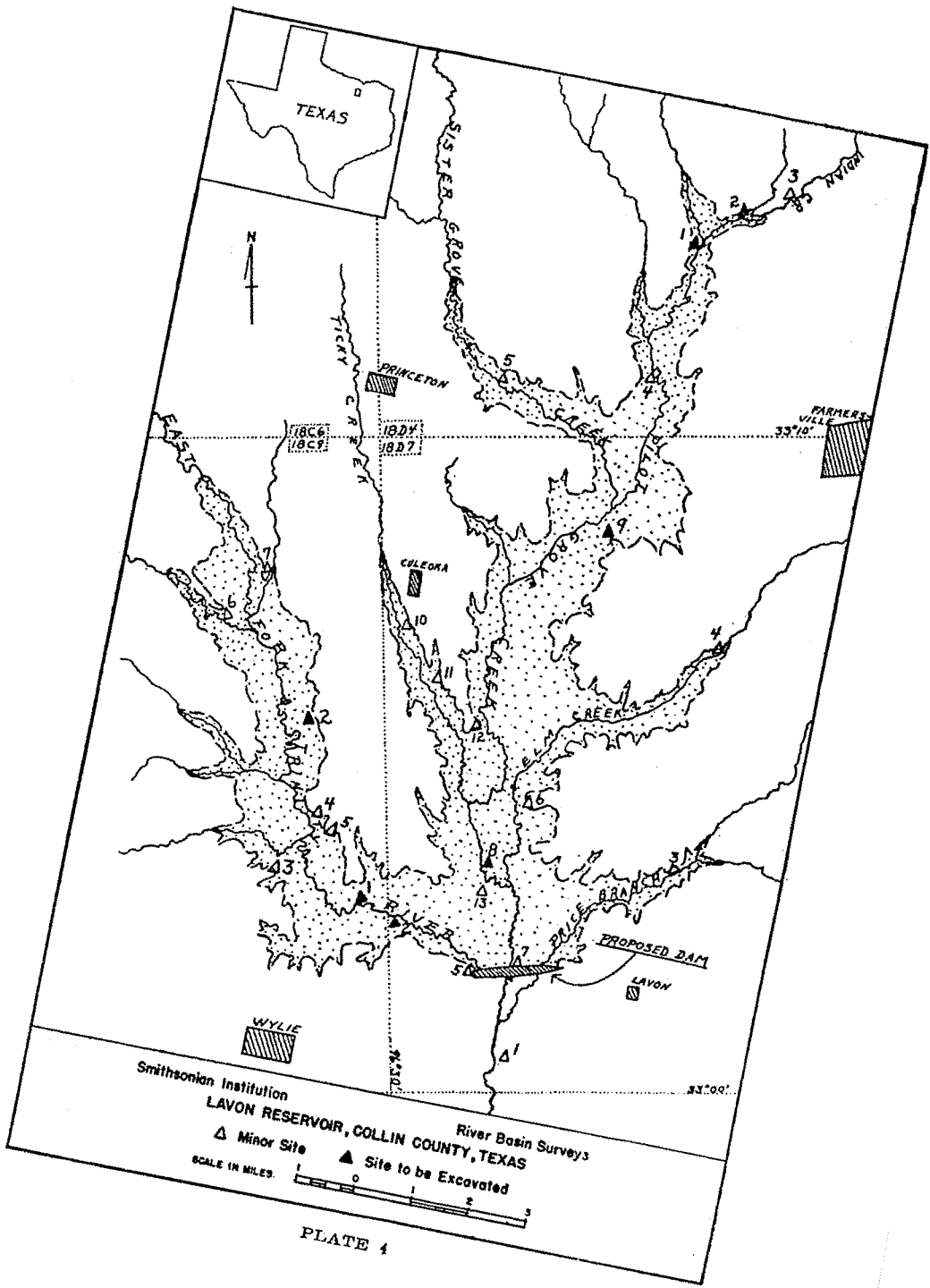


PLATE 4

rector of the River Basin Surveys, the writer made an archaeological survey of the areas to be flooded by these two reservoirs. This project is a part of the River Basin Surveys, a cooperative program of archaeological salvage between the National Park Service and the Corps of Engineers, and is under the direction and supervision of the Smithsonian Institution. The survey was begun on August 2, 1948 and brought to completion on September 17, 1948. A total of 25 sites in the Lavon area and 27 sites in the Garza-Little Elm area were examined and surface collections made from them. Some minor test trenching was carried out in the former area. Eight sites in the Lavon area and seven sites in the Garza-Little Elm area proved to be of major significance in the interpretation of the pre-history of this region. These sites have been recommended for further excavation and are described below. In the interest of brevity, the remaining 37 sites which are relatively insignificant are not described here.

Summary Tabulation of all Sites

	Lavon	Garza
Early lithic sites.....	0	1
Late non-pottery sites.....	13	10
Small pottery-bearing camps coeval with late Fulton Aspect.....	5	17
Large pottery-bearing villages coeval with late Fulton Aspect.....	6	4
Double occupation sites.....	(?)	5
Artificial mound sites.....	1(?)	0

Acknowledgments

To the Corps of Engineers, Dept. of the U. S. Army, and to the National Park Service, Dept. of the Interior, is due sincere appreciation for providing funds to make these surveys possible. During the course of the surveys the District Office, Sub-office and field Offices of the Corps of Engineers were most cooperative and extended every possible assistance to the survey. The many landowners and local collectors were very helpful. The members of the Dallas Archaeological Society, who for a number of years have col-

lected extensively in this area and kept accurate records, made all of their collections, notes and data available for study. Members of this group, especially R. K. Harris, Lester Wilson, and Rex Housewright extended most generous hospitality to the writer and gave unstintingly of their time in field assistance and discussion of problems. The Department of Anthropology, University of Texas, extended complete facilities to the survey, including laboratory and storage space, file information and valuable technical advice and criticism. To all of these people and organizations is due deep and sincere gratitude.

Garza-Little Elm Sites⁵

41-18C7-3, Lake Dallas Site. This site is located in a large sand dune area one mile below the present Lake Dallas. It is partly destroyed by wind action on the sand, but one section remains that may still show stratigraphy. Two periods of occupation are implied here on the basis of artifact types. The earlier period is indicated by a group of lanceolate projectile points, including several of the Plainview type,⁶ and some unnamed types that are often found in association with early lithic sites. A large number of net sinkers were also found here.⁷ Occasional specimens of these artifacts are often found in relatively modern sites. However, here a large enough group was found in a single site to indicate actual occupation of the site by the people who made these artifacts. The major occupation of the site is indicated by Gary, Sterrett, Trinity and Ellis Stemmed projectile points, gouge-shaped scrapers, several large, barbed blades, many flake scrapers, reworked projectile point scrapers and a boatstone fragment but no pottery. These artifacts imply a later, pre-pottery occupation similar to that found in many sites of east and east-central Texas.⁸ The artifacts imply an occupation of this site at a very early period followed at a much later time by a pre-pottery occupation probably

⁵ Artifacts collected in the present survey are reported here, together with those collected by members of the D. A. S. in past years.

⁶ Krieger, A. D., 1947, pp. 939-942.

⁷ Watt, F. H., 1938.

⁸ Stephenson, R. L., 1948, pp. 69-70.

coeval with or just preceding Gibson Aspect times.⁹ It will be extremely important if stratigraphy can be found here and the true sequence of these artifact types determined.

41-18C7-2, *Ledbetter Site*. On a high, sandy ridge 100 yards west of Elm Fork, this site is 1½ miles above the damsite. Potsherds are relatively plentiful and are 60% of the plain shell tempered type. Only 10% are decorated and none are definitely identifiable by type. The clay tempered sherds generally appear to be of Frankston Focus types¹⁰ while the shell tempered sherds are similar to the Nocona Plain ware of Henrietta Focus.¹¹ The shell tempered sherds are of two kinds; those in which shell fragments are visible and those with small cavities resulting from the leaching of the tempering material. This ware is referred to here as vesicular.¹² Projectile points while few in number are largely arrow point types with Alba Barbed predominating. The small, triangular and triangular side-notched points are very rare in the surface collections. Scrapers, celts, drills, and other artifacts are similar to those associated with the Fulton Aspect. The presence of shell tempered potsherds in combination with apparently Frankston Focus types and other artifacts that seem to represent that focus may indicate the presence of a group of people who borrowed traits from both the Frankston and the Henrietta foci but were, themselves, of neither. There are indications of at least one house structure and several burials in the site.

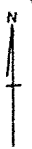
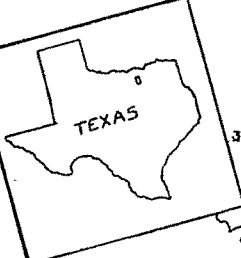
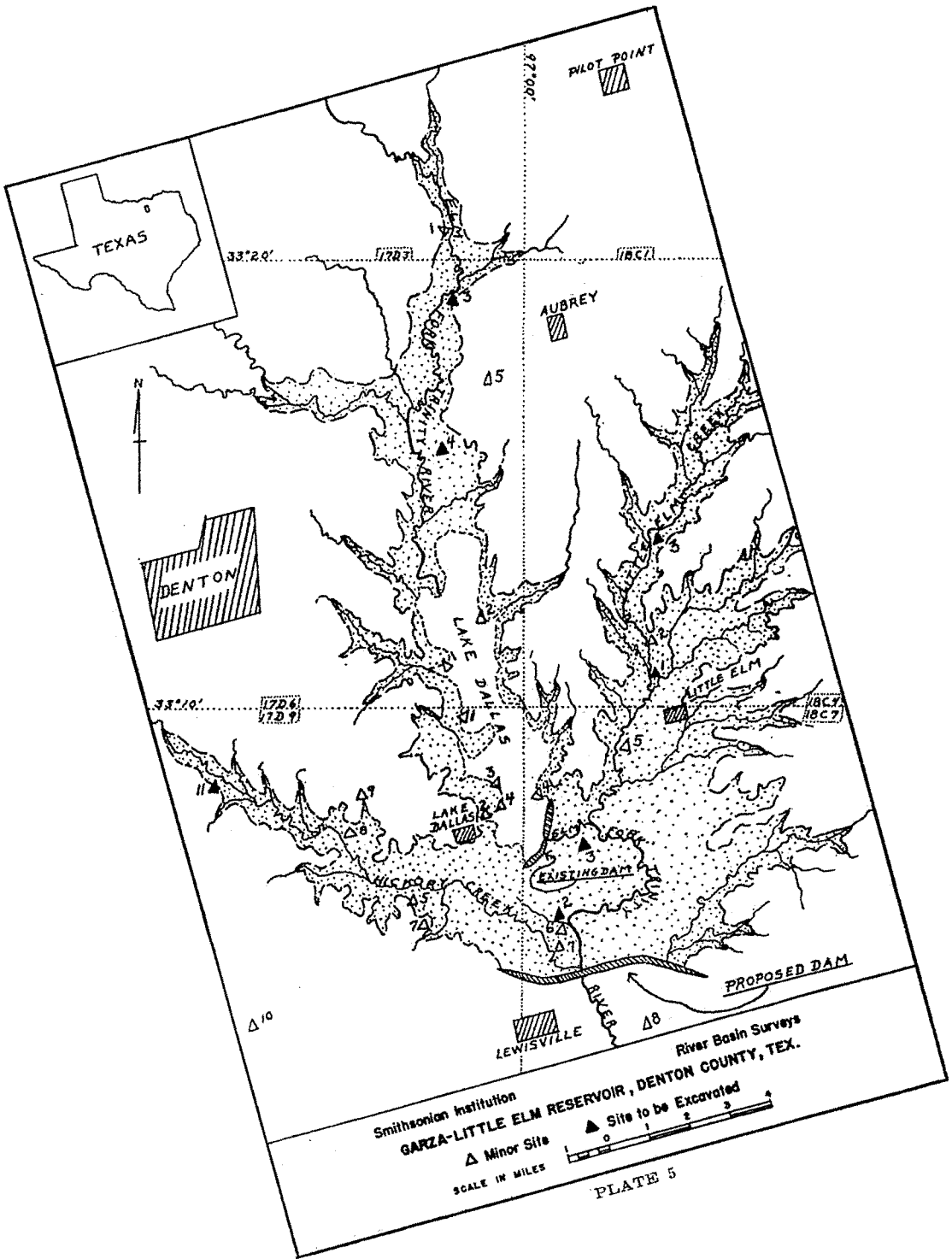
41-18C4-3, *Brown Site*. This site is located on a high, sand and clay ridge on the east bank of Little Elm Creek. The surface collections here show some differences from those of most sites in this reservoir. Potsherds are only 21% shell tempered. Clay tempered sherds are largely engraved with some incised, plain and punctate decorations appearing. Projectile points are predominantly arrow point types over half of which are of the Alba Barbed type. Large blades and

9 Kelley, J. C., 1947, pp. 103-104.

10 Krieger, A. D., 1946, pp. 206-207.

11 Krieger, A. D., 1946, pp. 109-111.

12 See discussion of this vesicular ware under the Pottery section of this report.

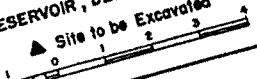


Smithsonian Institution

GARZA-LITTLE ELM RESERVOIR, DENTON COUNTY, TEX.

▲ Site to be Excavated
 △ Minor Site

SCALE IN MILES



River Basin Surveys

gouge-shaped scrapers are very prominent here. Probably a double occupation of the site is represented, the earlier of which was derived from the central Texas area,¹³ the later from the Caddoan area.¹⁴

41-17D6-3, Cagle Site. On the east bank of Elm Fork, this site is at the extreme northern end of the Reservoir area. Numerous burials are reported here by the landowner, including one group burial of "several skeletons." In this group burial were found "many beads" which have since been lost and the material from which they were made is unknown. The land owner stated that artifacts and graves from the eastern side of the site differed from those that were found in the flat flood plain area near the river. He thought the latter were more recent. Informants reported pottery, arrow points and dart points from the site. However, due to a heavy cover of grass, few artifacts were collected in the present survey and definition of the site is at present only presumed. The eastern section of the site is a vertebrate fossil locality.

41-17D9-11 Pearsall Site. On the south side of Hickory Creek, this site occupies the top of a small sandstone bluff and represents a large village of the late pottery period. Artifacts are similar to those found at the Ledbetter site. One sherd of Tonto Polychrome ware¹⁵ from southern Arizona (Pueblo IV period) was found at this site. The soil here is shallow and excavation would be useless. It is recommended that a further search be made of the surface area and the top few inches of the entire site for other Puebloan artifacts.¹⁶ Such trade items are extremely useful dating tools. Presumably only one period of occupation is represented in this site.

41-18C4-1, Little Elm Site. One mile northwest of the Town of Little Elm on a large sand and clay ridge on the east side of Little Elm Creek is another small village site

¹³ Kelley, J. C. n. d.

¹⁴ Krieger, A. D., 1946, pp. 205-213.

¹⁵ Identification by Dr. Florence Hawley, Univ. of New Mexico.

¹⁶ In site 41-17D9-1 (now inundated by Lake Dallas) a projectile point of obsidian was found some years ago by R. K. Harris. This is undoubtedly another Puebloan trade item.

of the late pottery period. Artifacts are similar to those from the Ledbetter site. Some future excavation is recommended in this site as it represents the small pottery-bearing villages of the area.

41-17D6-4, Landtrip Site. This site, on the eastern flood plain of Elm Fork, is located at the upper end of Lake Dallas. It seems to be only a small temporary campsite but several sherds found here are extremely interesting. Most of these sherds are of Frankston Focus wares, but one may be Ripley Engraved ware of Titus Focus.¹⁷ Three others are entirely foreign to this area.¹⁸ More surface collecting and some test trenching is recommended to locate additional foreign pottery types, and to place them in the cultural context of the area.

Lavon Sites¹⁹

41-18D4-1, Farmersville Site. This site is located along a low terrace on the west side of Pilot Grove Creek, five miles northwest of the Town of Farmersville. Local collectors have gathered artifacts here for many years.²⁰ No excavations have been made except for some minor test pits and recovery of a few plow-struck burials. These burials are all flexed. Some are single interments; other double. Orientations are to both the east and the west. In each grave, mussel shells, charcoal and often red ocher were found. Bone beads accompanied one infant burial. Bison scapula hoes (6 with sockets, 2 without sockets) were found in one adult grave.²¹ These were placed in a group in front of the body and on top of a prepared bed of charcoal. This is the only evidence of Bison so far recovered in this area, and it is the only burial furniture found. (The beads were probably ornaments worn by the deceased and not true grave furniture.)

A large ceremonial pit is located in the southern part of

¹⁷ Identification tentative.

¹⁸ Dr. James B. Griffin, Univ. of Michigan, examined these sherds and was uncertain of their exact identity but suggested that they might be Mississippi Valley wares; one Early Baytown and two of a late period.

¹⁹ Artifacts collected in the present survey are reported here, together with those collected by members of the D. A. S. in past years.

²⁰ Harris, R. K., 1945; 1947; 1948 and Wilson, L. L., 1946.

²¹ Harris, R. K., 1948, p. 40.

this site.²² It is roughly 100 feet in diameter and the rim is 1 foot-6 feet above the present surface of the center of the pit. It was excavated into the eastern slope of the terrace and the native soil of the terrace forms part of the west wall of the pit. Cultivation and erosion have destroyed most of the pit outline. There is evidence of numerous house structures in the site in the form of many fragments of burned, wattle-impressed daub.

Pottery artifacts include two pipe stem fragments; a fragment of a small, thin-bowled, long-stemmed pipe; a clay ball the size of a marble, and containing a groove and partial perforation; and two small cylindrical objects, possibly parts of an effigy bowl. One vessel was reconstructed from sherds. It is a clay tempered, buff colored bottle with incised decoration. The design element is repeated four times around the body (a Fulton Aspect feature). It has a flat bottom. The neck has been broken off at the top but shows wear from re-use after having been broken.²³ Potsherds are not numerous in the site. Of 1170 artifacts recovered only 186 are potsherds. These represent 40-50 individual vessels. Scarcity of pottery is further attested by re-use of the above-mentioned bottle. Shell temper occurred in 42% of the sherds, clay temper in 55%, and limestone temper in 3%. Nearly all of the shell tempered sherds are undecorated, none are vesicular, ²⁴ and five possess a red film. The clay tempered sherds are 34% plain. Red filmed, brushed, punctate, incised and engraved decorations occur. None are positively identifiable by type but the majority seem to be of Frankston Focus wares. A few sherds reminiscent of older

²² See description of one of these pits in site 41-18C9-1 in this report.

²³ This bottle is of a form common in the Caddoan area in Fulton Aspect times and according to Krieger the design is aberrant and difficult to identify with any specific type. He believes it may belong to the Bossier Focus. See Webb, C. H., 1948, Plate 11, Fig. 1.

²⁴ See discussion of "vesicular ware" in the Pottery section of this report.

PLATE 6

A. Excavation at Campbell Hole Site, Lavon Reservoir. View looking into test pit No. 2. Wilson standing on bottom of upper level. Housewright working in house pit and brushing off clay firehearth. August 29, 1948.

B. View looking southwest toward Bullock Mound, Lavon Reservoir. Northeast edge of mound is marked by small tree. Stream flows through timbered area in background. July 21, 1948.

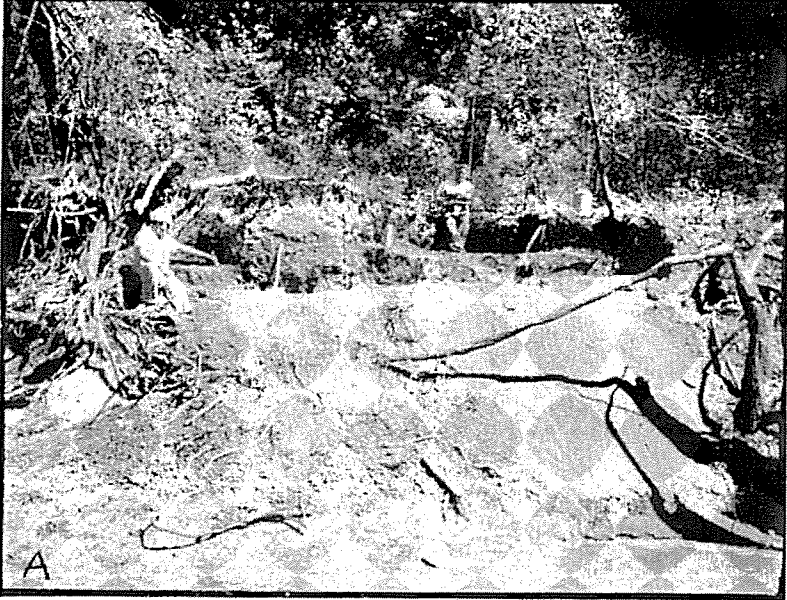


Plate 6

wares were found. Of the six limestone tempered sherds, one is undecorated; two are vessel bottoms and are basketry-impressed; three are incised.

Artifacts of bone, shell and antler are abundant. Notable among these is a bone atlatl hook, a perforated bear tooth pendant, the bison scapula hoes mentioned above and a large number of bone pins.

The projectile points are 62% small, arrow point types of the sort that are usually found in Fulton Aspect sites. However, 16% are triangular or triangular side-notched specimens of the type usually associated with Henrietta Focus. Dart points are mostly of the types found in Fulton Aspect sites, principally Gary Stemmed. Scrapers, drills, and blades are of types common to many Texas cultures.

The surface collections and features of this site differ markedly from the culture patterns established for any of the known foci of this or surrounding areas. The site is similar in most details to other large East Fork pottery-bearing sites. These sites appear to represent a focus of the Fulton Aspect that has not previously been described. Excavation in the undisturbed section of this site and test trenching elsewhere in it will add greatly to the ultimate definition and description of this focus.

41-18D4-2, Bullock Mound. One mile northeast of the Farmersville site, on Indian Creek is an elliptical knoll 15 feet high, 270 feet long and 200 feet wide. It appears to be a terraced mound, the upper section of which is 10 feet high and 100 feet in diameter. No artifacts were found on or surrounding this mound²⁵ but some sherds and projectile points are reported. Shell, bone and flint refuse was seen on the surface of the mound and around the base. A test trench should be cut into the mound to determine whether or not it is artificial.

41-18D7-2, Campbell Hole Site. Located three miles northeast of the Town of Wylie, on the south bank of the East

²⁵ Artificial mounds of the Lower Mississippi and Red River Valleys frequently lack surface artifacts.

Fork, this site covers two acres immediately adjacent to the present stream channel. A slight ridge and shallow depression occupy the center of the site. Both are the result of erosion and deposition due to river overflow. The entire site is covered with dense, stream bottom vegetation. The East Fork has cut its channel southward and encroached upon the northern edge of the site, exposing a 15 foot vertical bank on the south side of the channel. Here occupational material is exposed to a depth of nearly five feet. Approximately a foot of the alluvial soil has been deposited over the entire site by periodic inundation since the site was occupied. As a result almost no surface material is to be found except in the eroded bank and in the shallow depression mentioned above. One day was spent by the writer, accompanied by Mr. and Mrs. L. L. Wilson and Mr. Rex Housewright, in excavating a test trench into the exposed bank. This was an extension of a previous test pit begun by members of the D. A. S. Occupational material was found to be stratified into two zones. The upper zone, including 6 inches-18 inches of sterile topsoil varies in thickness from 12 inches to 36 inches. The lower zone varies in thickness from 6 inches-24 inches. Below that level is completely sterile soil. A house floor appeared at the junction of the upper and lower zones at a depth of 36 inches, and contained a well defined fire hearth of burned clay. Presuming the house to be circular and the hearth to be in the center, the structure would be about 12 feet in diameter, with a flat floor curving sharply upward at the base of the walls. No post holes were found but burned, wattle-impressed, daub fragments were abundant about the edges of the house floor. This agrees in many respects with a house site excavated in 1946-47 by the D. A. S. in the Butler Hole

PLATE 7

A. Projectile points from Lake Dallas Site, Garza-Little Elm Reservoir. 1-3 type Sterrett Stemmed; 4 type Orla Expanding Stem; 5-7 type Sистерdale Shouldered; 8-11 type Plainview; 12-15 Miscellaneous dart points of the early lithic.

B. Artifacts from Lake Dallas Site. 1-3 notched stones or "Waco Sinkers;" 4-5 large, gouge-shaped scrapers made of ferruginous sandstone; 6-9 gouge-shaped scrapers of flint.

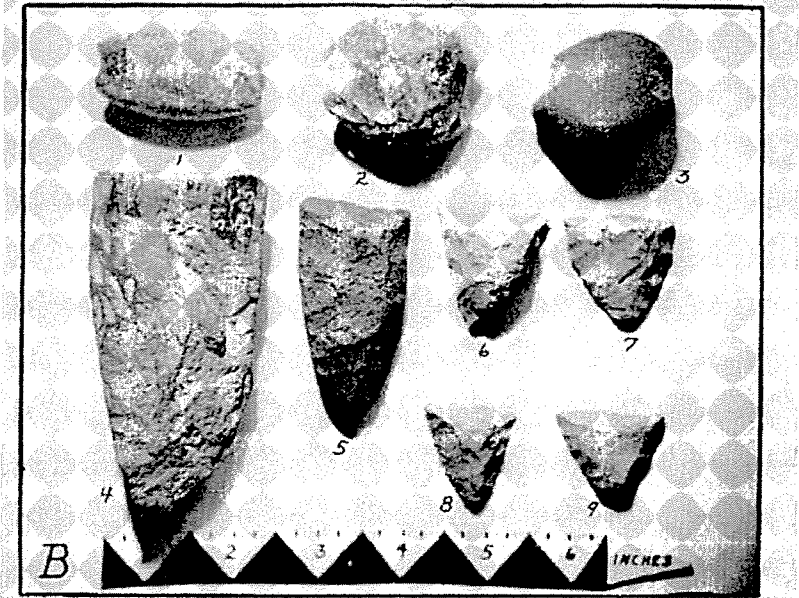
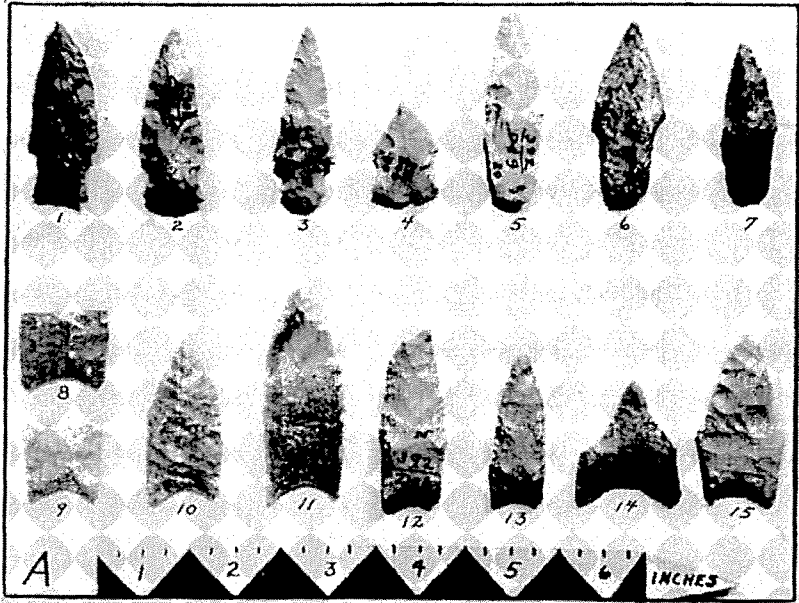


Plate 7

Site some five miles downstream.²⁶ Time did not permit excavation of more than a cross sectional face of the house floor and fire hearth, which probably accounts for the lack of post holes. It was not definitely determined whether one of the ceremonial pits occurs in this site.

Pottery was extremely scarce in this site but this was probably due in part to the inability to make surface collections. Except for one shell tempered sherd, all pottery came from the upper zone. The shell tempered sherds (nearly 50% of the total) are more nearly like the Nocona Plain ware of Henrietta Focus than are any of the sherds from other sites in either the East Fork or Elm Fork drainage. One clay-tempered bottle neck (nearly complete) is unidentifiable but has a constricted opening reminiscent of bottles of Spiro Fine-Engraved ware.²⁷ Engraved pendant triangles decorate the base of the neck. None of the sherds were positively identifiable by type.

Artifacts of bone occurred in both zones. All of the bone pins, however, are from the upper zone; bone beamers, the single bone flaker, and 8 of the 9 bone awls are from the lower zone. All of the other flaking tools and the single conch shell, disc bead are also from the lower zone.

In summary it may be said that this is a double occupation site with probably little time elapsing between the two occupations, and both by people with similar but gradually changing culture patterns. No burials were found. A house structure with a central fire hearth of clay was found. A ceremonial pit may or may not have been present in the site. Pottery is of both clay and shell temper, but is not abundant and is confined to the upper zone. The entire site is probably preserved intact beneath a capping of depositional soil. The culture represented here cannot be identified with any known foci, but influence is seen from the Caddoan area and the Henrietta Focus.

41-18D7-8, Highpoint Site. One mile east of the Clearlake

²⁶ Housewright, Rex., et al., 1947, pp. 8-16. See also Webb, C. H., 1940.
²⁷ Orr, K. G., 1946, Plate XXVIII, Fig. b. Also Krieger, A. D., 1946, Fig. 19e.

Community on the east side of Pilot Grove Creek, this site represents one of the small, temporary, pottery-bearing campsites in the East Fork drainage. It is recommended for further excavation as a representative of this type of small site in the Lavon area.

41-18D7-9, Pilot Grove Site. This site covers five acres of the east side of Pilot Grove Creek, ½ mile south of the confluence of Pilot Grove and Sister Grove Creeks. In the present flood plain, it is subject to frequent inundation and is largely covered with alluvium. Only a few artifacts were found in the present survey but these artifacts, midden refuse, wattle-impressed daub, and the general plan of the site indicate that this is another of the large pottery-bearing sites in the East Fork drainage.

41-18C9-1, Hogge Bridge Site. On the east side of East Fork, three miles northeast of the Town of Wylie, this site covers 3 acres or more of the present river flood plain. Midden refuse was found scattered over most of the site; house structures were indicated by numerous fragments of wattle-impressed daub; and a large ceremonial pit²⁸ occupies the center of the site.

This pit ²⁹ is a large, circular, concave depression in the surface of the site with an earthen embankment completely enclosing it. It is 90 feet in diameter and 2 feet to 4.5 feet deep (erosion due to cultivation and periodic flooding has reduced the rim unevenly making it higher on the east side than on the west). A test trench ³⁰ across this pit showed the original depth to be roughly 8.5 feet to 9 feet with a concave floor sporadically covered with refuse. No post holes were found but some evidence of a superstructure is indicated in fragments of wattle-impressed daub. The purpose of such a pit is unknown. Perhaps it was an out-door dance or ceremonial arena. Possibly it contained a large semi-subterranean com-

²⁸ Wilson, L. L., 1946, pp. 11-12.

²⁹ Stephenson, R. L., 1949.

³⁰ R. K. Harris, Mr. and Mrs. L. L. Wilson, Henry Hanna, Jr., J. B. Sollberger, Mr. and Mrs. Robert Hatzenbuehler and C. R. Allen very kindly assisted the writer in this 2-day excavation as a project of the D. A. S.

munity house. Certainly it was large enough to have had some function in which all or most of the inhabitants of the village could share. The feature is common to nearly all of the large, pottery-bearing sites in the East Fork drainage, a single such pit occurring in each site. Similar pits are unknown elsewhere to the writer. The term "ceremonial pit" has been applied to this feature merely as a matter of convenience in reference.

The potsherds from this site are 55% clay tempered. The majority are undecorated but fingernail punctate, brushed and incised decorations appear on some sherds. Probably 5-10 individual vessels are represented in the clay tempered group. Shell tempered, plain sherds are nearly as abundant as the clay tempered and probably an equal number of vessels is represented. There is some evidence of an orange film on some of the sherds both of clay and of shell temper. Pottery is not abundant here and probably all sherds represent trade wares, although actual types were not identifiable.³¹

Small arrow point types comprise 55% of the projectile points. The type Alba Barbed is dominant but some are of the small triangular form. The larger dart points are all of types also found in the Caddoan area. Drills are all small, with shaped bases and these and other lithic artifacts are of common types identifiable with no particular culture complex. Numerous artifacts of bone, including a bone hook, bone pins and a carved human tooth were found, but artifacts of shell and antler were rare. The only shell artifact of note is a fragment of an undecorated, conch shell gorget.

The general cultural context of this site appears to be similar to that of the other major pottery-bearing sites along East Fork and quite distinct from any of the known foci of this or surrounding areas. Pottery was probably not made here but was obtained in small quantity from neighboring groups. Further excavation of the ceremonial pit and parts

³¹ Harris, R. K., 1936, pp. 113-114.

of the village will provide important information regarding this culture.

41-18C9-2, *Branch Site*. This three-acre site occupies a low, sandy ridge in the eastern edge of the East Fork flood plain, $\frac{1}{4}$ mile southwest of Branch store. Cultivation has lowered the surface of the site by a foot or more and resulted in a slight change in the artifact types found in surface collections. For example projectile points collected a number of years ago were predominantly arrow point types, while those collected recently are predominantly dart point types. Thus a stratified site seems to be indicated. House structures are indicated by fragments of wattle-impressed daub. A ceremonial pit is located near the center of the site. Potsherds are predominantly plain, shell tempered ware, but clay tempered wares comprise 44% of the sherds found. The only decorated sherds are of an incised ware. Probably 20-25 individual vessels are represented in the sherd collections. Projectile points, both dart and arrow point types are typically Caddoan but a single, small, triangular point was found. Other lithic artifacts are of types common to many known foci. Artifacts of bone, shell and antler were found in small numbers and are of types common to sites of the East Fork drainage.

This site is another of the pottery-bearing villages of the East Fork area. The original surface of the site is not apparent so stratigraphy probably cannot be determined here, but probably existed in the past. Excavation should be undertaken here to locate the house structures and burials and to substantiate the artifact complex that the surface collections imply.

41-18C9-5, *McGuire Site*. This site, on the slope of a large

PLATE 8

A. Dart points from Farmersville Site, Lavon Reservoir. Typical pottery site artifacts. 1-16 type Gary Stemmed; 17 type Sterrett Stemmed; 18 type Orla Expanding Stem; 19-20 type Ellis Stemmed; 21-23 Miscellaneous forms.

B. Projectile point types from Garza-Little Elm Reservoir. 1-8 Miscellaneous small dart points, tentative type Trinity Stemmed; 9-11 type Gary Stemmed; 12-13 type Ellis Stemmed; 14 type Perdiz Pointed Stem; 15-23 type Alba Barbed; 24-27 side-notched, triangular arrow points; 28 Serrated edged arrow point; 29-32 triangular arrow points.

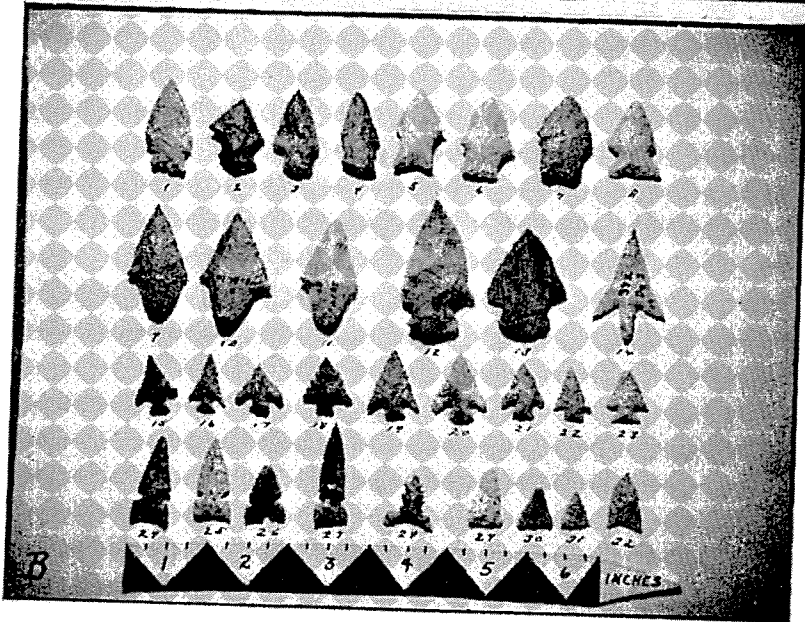
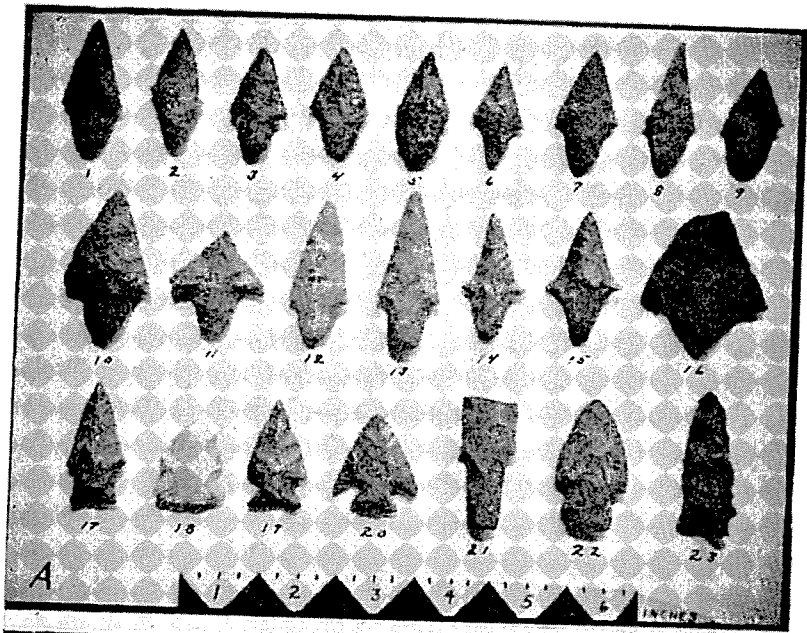


Plate 8

gravel ridge on the east side of East Fork is 4 miles northeast of the Town of Wylie. Refuse is abundant on the site but no potsherds nor small arrow points have been found. It seems to be a campsite of a non-pottery culture.

Pottery

Garza-Little Elm Area. No complete vessels or pottery artifacts other than potsherds were found. Sherds were found in 9 sites and totaled 271 in number, or 21% of the 1270 artifacts recovered. Sherds were reported from 12 additional sites making a total of 21 pottery sites out of the 27 sites located. These sherds are dominantly shell tempered (55%), none of which are decorated in any way. However, they seem to be of two varieties: plain ware with a heavy percentage of coarse, shell temper; and plain ware with "hole temper." The former is either Nocona Plain ware of the Henrietta Focus³² or a very similar ware. It is, though, of a wider range of shades and colors than the typical Nocona Plain ware and usually of poorer quality with a smaller percentage of shell temper. The latter is here called "vesicular." It is very similar to the shell tempered ware in color, paste, thickness, and surface treatment, but is somewhat softer. The temper of this ware is usually entirely missing and is replaced by small, pin-head sized cavities, giving a vesicular appearance to the sherd. Some sherds contain combinations of this vesicular structure and shell temper. It may be that this is merely a shell tempered ware, which has had all or most of the shell leached out by a chemical action of the soil. On the other hand the vesicular appearance of the sherds may be due to limestone temper which burned out in the firing process or has otherwise disintegrated. If so, some of the vessels were made with a combination of both shell and limestone temper. This vesicular ware constitutes 40% of the sherds from the Garza-Little Elm area while the plain shell tempered ware constitutes only 15%. The remaining 45% of the sherds are clay tempered and as a whole represent Caddoan types.³³

³² Krieger, A. D., 1946, pp. 109-111.

³³ Krieger, A. D., 1946, pp. 186-255.

The plain undecorated sherds (31%) probably represent the body sherds of the decorated wares, although a plain ware is also present as identified by a few plain rim sherds. The decorated sherds (14%) contained engraved, incised, fingernail punctate and brushed decorations. All are small and difficult to identify accurately. One Patton Engraved sherd of historic Allen Focus and two Harleton Applique sherds of Titus Focus were identified.³⁴ One sherd is of a polished redware; several are of unpolished redware; one is identified as Tonto Polychrome from southern Arizona and three others seem to be Middle-Mississippi wares.³⁵ While exact types are not easily assignable to most of these clay tempered sherds it is reasonably certain that most of the incised, punctate, engraved, and brushed wares are of Frankston Focus types.

Lavon Area. Pottery was found in 9 sites in this area and reported from 3 others, making a total of 12 pottery-bearing sites. Sherds indicate that all 12 sites were probably coeval and were also coeval with the pottery-bearing sites in the Garza-Little Elm area.

Most of the pottery in the Lavon sites is in the form of small potsherds, but one bottle of an unknown clay tempered ware was reconstructed and a pottery pipe bowl, a clay bead, two pipe stems, and two small effigy fragments³⁶ were also found. Vessel shapes indicated are few. Water bottles certainly were present and probably even relatively numerous. Other shapes that seem to be indicated are small carinated bowls, hemispherical bowls, shallow bowls, and flat bottomed pots expanding in diameter toward the top. Pottery was not abundant (a total of 442 sherds were found or less than 23% of the 1926 artifacts) and apparently was sometimes used even after having been broken. However, a wide variety of types was used. Clay tempered sherds are dominant in the collections studied (52.6%). Of these nearly

³⁴ Krieger, A. D., 1946.

³⁵ As tentatively identified by Griffin. See footnote 18 of this paper.

³⁶ These probably represent appendages of small effigies such as were often incorporated into the rim decorations of Frankston and Titus Focus vessels.

two-thirds are decorated. Decorations consist of punctations, incising, engraving, brushing and application of a red film. Pottery types could not be identified but the majority of the decorated sherds appear to be of Frankston Focus types. Red filmed sherds may be of a Titus Focus type. Shell tempered sherds (45.8%) are nearly all undecorated and appear to be either of Nocona Plain ware or of a closely related ware. Sherds of this type from the Lavon area are more similar to the Nocona Plain type than are similar sherds from the Garza-Little Elm area. In the Lavon area only 13 sherds (2.9%) are vesicular. The unusual occurrence of red filming on shell tempered pottery was found in 16 sherds. Limestone tempered sherds numbered 6 or 1.4% of all sherds. One of these is undecorated; 3 are incised and 2 are vessel bases bearing coiled basketry impressions.³⁷ These are reminiscent of pottery of the Grant Focus of southern Oklahoma.

In both the Lavon and Garza-Little Elm areas, the combination of such factors in the pottery complex as: (1) scarcity of pottery, (2) wide variety of types known to several other cultures, (3) relative inferiority of the wares as compared to type specimens, and (4) re-use of broken vessels, leads one to believe that no pottery was manufactured at these sites. All vessels were probably secured by trade or other means from neighboring cultures. If so, a wide range of travel is indicated, extending for 50 to 100 miles to the east, north and west. If pottery was manufactured in these villages it was not an indigenous part of the culture complex but rather was made by a few individuals who came from neighboring areas. Such a situation could result from intermarriage with the known pottery peoples.

Lithic Artifacts

Garza-Little Elm Area. The majority of the projectile points from these sites are of types usually associated, in varying proportions, with pottery sites throughout the Gibson and Fulton Aspects in the Caddoan area. Alba Barbed,

³⁷ Krieger, A. D., 1946, p. 132, refers to similar sherds from a site on the Red River.

Gary Stemmed, Ellis Stemmed and Trinity Stemmed are dominant types. Types found in late Balcones Phase sites in central Texas are second in numerical significance. These include Sterrett Stemmed, Orla Expanding Stem, Sisterdale Shouldered, and a large, triangular type.³⁸ The small, triangular and triangular side-notched arrow points commonly associated with the Henrietta Focus, were also found here in significant quantity. It will be noted that of the several types listed, those thought to represent atlatl dart points are dominant (68.9%) over the smaller, arrow point types (31.1%). In one site, however, a completely different lithic complex occurs. Here a very early horizon is represented by a series of lanceolate projectile points. In one other site an obsidian projectile point of intermediate type was found and is probably of Puebloan origin. Scraping tools are of many types. Small reworked flake scrapers dominate. Gouge-shaped scrapers made of flint and also of ferruginous sandstone; small, well made, snub-nose scrapers; rejects; and chopping implements were common throughout. Several four-bladed, beveled knives were found in the same site with the obsidian projectile point. Unfortunately that site is now inundated by Lake Dallas and no further work can be done there. One mid-back-tang knife³⁹ came from site 41-18C4-1. Notched stones (or net sinkers) occurred in two sites. Small flint drills with unshaped bases; small, triangular celts; one incised, perforated, slate pendant;⁴⁰ a boatstone fragment; several deeply grooved sandstone abraders; and numerous manos and metate fragments complete the list of lithic artifacts.

Lavon Area. Few significant differences were noted in

³⁸ Kelley, J. C., n. d.

³⁹ Patterson, J. T., 1936; pp. 12 and 44-45.

⁴⁰ Harris, R. K., 1936, pp. 126-130.

PLATE 9

A. Miscellaneous artifacts from Garza-Little Elm Reservoir. 1-5 small, snub-nose scrapers; 6 and 8 large flint drills; 7 engraved slate pendant; 9 mid-back-tang scraper; 10-11 beveled, four-bladed knives; 12 large, barbed blade.

B. Artifacts of bone, shell and antler from Farmersville site, Lavon Reservoir. 1 ulna awl; 2-11 bone pins; 12-13 bone beads; 14 perforated bear tooth; 15 dog tooth; 16-19 antler flakers; 20 conch head; 21 conch columella; 22-24 shell artifacts; 25 bone awl; 26 turkey spur; 27 bone atlatl hook.

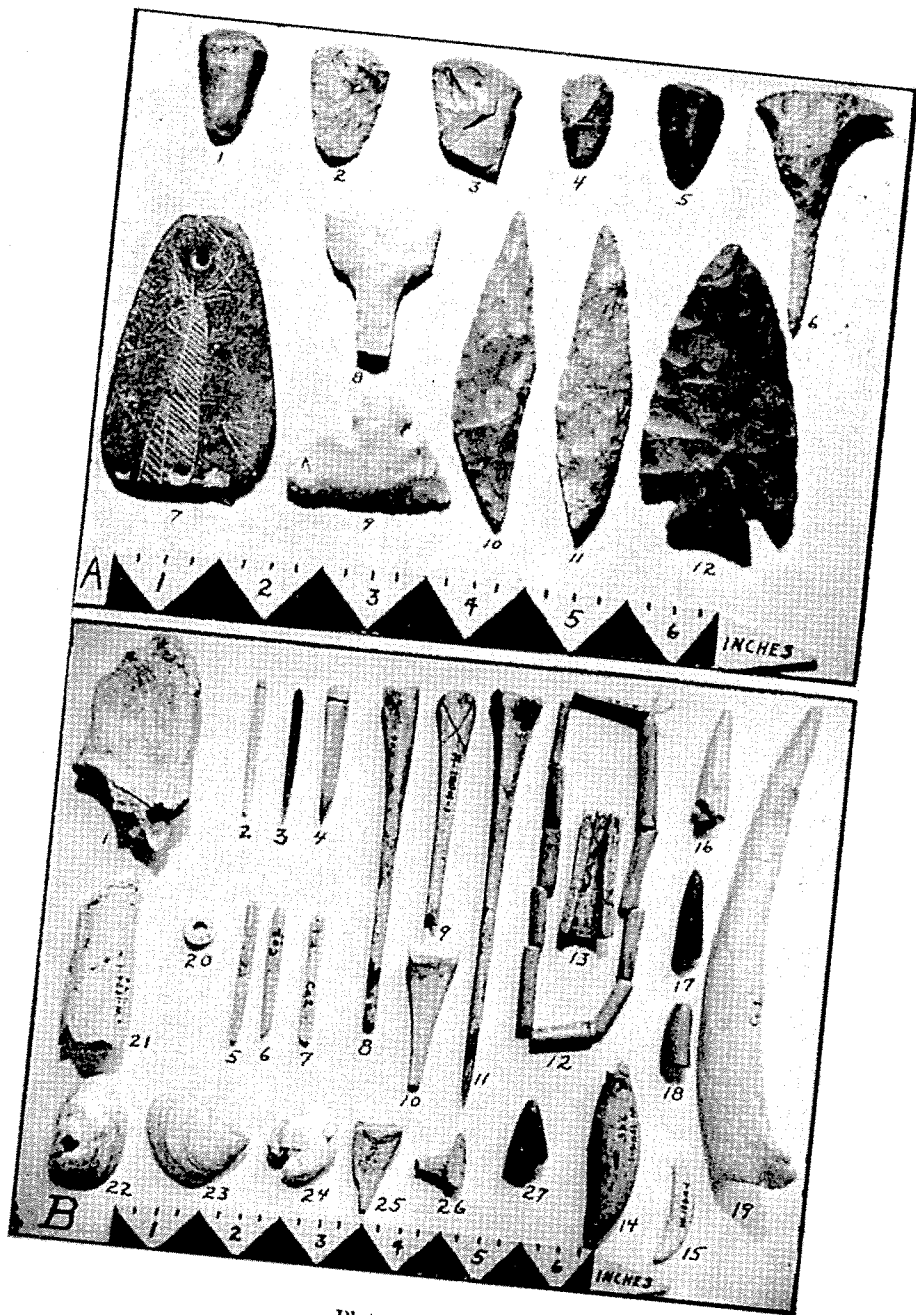


Plate 9

the lithic artifacts from Lavon area sites designated as non-pottery and those in which pottery was found. There may actually be typological differences within certain sites as is indicated by the stratigraphy in the Campbell Hole site and there undoubtedly are some differences between the pottery and non-pottery sites.⁴¹ Such differences will need to be determined, though, on the basis of future, excavated material. At present the lithic artifacts from all sites in the Lavon area can only be considered as a homogenous unit in a single tabulation and typological differences noted. The majority of the projectile points are of types usually associated, in varying proportions, with pottery sites throughout the Gibson and Fulton Aspects in the Caddoan area. Alba Barbed and Gary Stemmed types are dominant. The small, triangular and triangular side-notched types commonly associated with Henrietta Focus occur in significant quantity (8.0%).⁴² A few specimens of types found in the late Balcones Phase sites in central Texas were also found.⁴³ The types thought to represent arrow points (57.5%) are dominant over the larger, atlatl dart point types (42.5%). Scraping tools are dominantly small flakes with one or more chipped edges. Other scraping tools are small, snub-nose scrapers and reworked projectile points of the Gary Stemmed type. Small, triangular celts, boatstones, and a few sherds of small stone vessels were found but not abundantly. In the Lavon area no artifacts representing the early lithic horizon were found. Otherwise the lithic complexes from the two reservoir areas are very similar. The difference, however, lies in the relative shift in percentages of types. The Lavon area produced more arrow point types than dart point types. The reverse was found in the Garza-Little Elm area.

Bone, Shell and Antler Artifacts

No artifacts of bone, shell or antler were found in the Garza-Little Elm area nor have any been reported to the

⁴¹ Kirkland, Forrest, 1942, pp. 32-38.

⁴² See Wright, G. T., 1940 for suggestion of an identification of these projectile points with the Caddoan area.

⁴³ Kelley, J. C., n. d.; See also Stephenson, R. L., 1947.

writer. On the other hand a large number of these artifacts were found in the Lavon area. Antler tips were utilized as flaking tools. Mussel shells with deep, narrow notches in the edges were probably used as string softeners. Other mussel shells were used as scraping tools. Some conch shell was used in making simple ornaments. Bone was utilized extensively in the manufacture of pins; some short with grooved ends; others ungrooved; and yet others very long and slender often with engraved decorations. Awls, flaking tools, beamers, fish hooks, atlatl hooks and beads were also made of bone. Bison scapula hoes (found in a single instance as burial offerings) were the only evidence of bison found in the area. Other animals whose bones were used as artifacts were deer (95%), bear (tooth pendant), coyote (or dog), and both large and small birds (beads). Shells found are all (except the conch) of species that are now living in the streams in that area.⁴⁴

Summary and Speculations

Fifty-two archaeological sites were located in the areas of these two reservoirs. Indications of their cultural content and significance is derived solely from surface collections and from some minor test trenching in some of the sites of the Lavon area. Three chronological periods were isolated and some information was obtained regarding each. The earliest period is represented by a single site in the Garza-Little Elm Reservoir (41-18C7-3).^{*} This seems to be a camp-site of the early lithic period and may be coeval (broadly speaking) with the Plainview and other early sites of the

⁴⁴ Land and freshwater shells identified by Robert J. Drake, University of New Mexico.

^{*} Sites marked with an asterisk have been recommended for further excavation and are described in this report. Those sites that are not so marked are relatively small and insignificant and no further work is recommended in them. However, they do serve to fill out the cultural assemblage and substantiate the information derived from the major sites.

PLATE 10

A. Unusual potsherds from Lavon Reservoir. 1-3 Marksville incised (?); 4 Holly Fine Engraved (?); 5 Pennington Punctate-Incised (?); 6-11 are limestone tempered; 10-11 are basketry-impressed vessel bottoms.

B. Unusual potsherds from Garza-Little Elm Reservoir. 1 late Mississippi Valley ware (?); 2 early Baytown ware (?); 3 late Mississippi Valley Red on Buff (?); 4 Tonto Polychrome sherd; 6-7 Harleton Applique sherds; 8 Patton Engraved sherd; 5 and 9-14 are the usual decorated types of clay tempered sherds from this area.

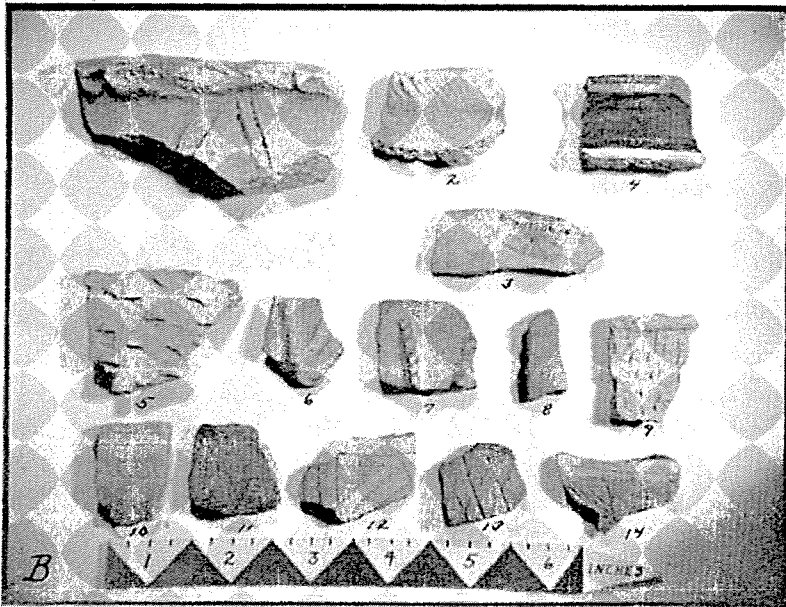
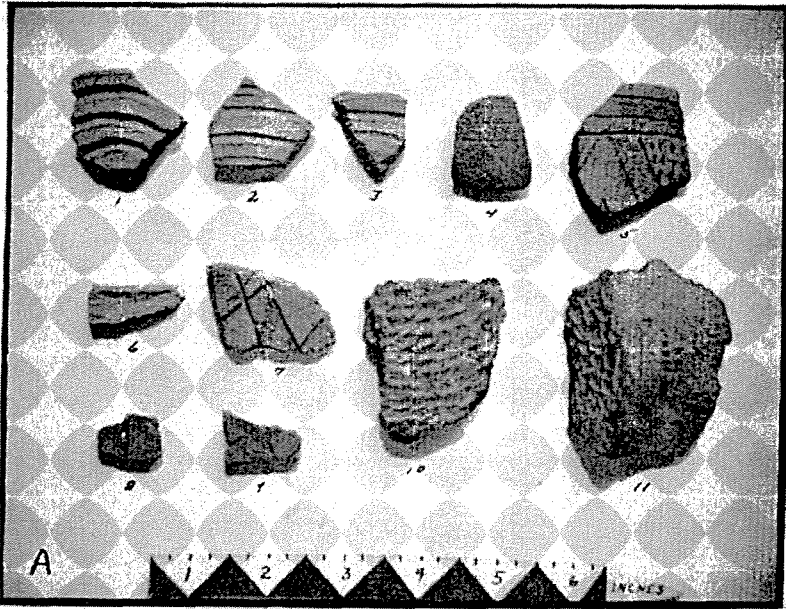


Plate 10

southern plains. Plainview points, other early lanceolate projectile point types and notched stones (or net sinkers) serve to identify it. It is hoped that future excavation in this site will provide a stratigraphic record and more identifying material from this site.

The intermediate period is represented in a later occupation of this site as well as occupation of nine additional sites in the Garza-Little Elm area (41-18C7-5; 41-18C4-1*; 41-18C4-3*; 41-17D9-1; 41-17D9-7; 41-17D9-8; 41-17D9-9; 41-17D6-2; 41-17D6-5). In the Lavon area this period is represented in thirteen sites. (41-18D7-3; 41-18D7-4; 41-18D7-5; 41-18D7-6; 41-18D7-10; 41-18D7-11; 41-18D7-12; 41-18D7-13; 41-18D4-3; 41-18D4-5; 41-18C9-3; 41-18C9-5*; 41-18C9-7). No potsherds, nor small arrow point types were found in these sites, nor can any house types or distinctive village features be associated with them. Artifacts consist of large dart point types of projectile points similar to those found in Balcones Phase sites of central Texas (Sterrett Stemmed, Orla Expanding Stem and Sisterdale Shouldered); triangular gouge-shaped scrapers; large, corner-notched blades; roughly made chopping implements; and large flint drills. The artifact lists from these sites are not as distinctive as could be hoped for but lack of such items as pottery and arrow point types is sufficient to differentiate the sites tentatively, until further work is done in the area. Apparently these twenty-three sites in both reservoir areas are approximately coeval, and are part of a widespread culture complex embracing the major portion of east Texas from the Brazos to the Sabine River and perhaps beyond. Too little is known of the chronological position of these sites in northeastern Texas to assign cultural affiliations at this time. Probably an aspect of the Balcones Phase is represented as the artifact types are similar to those found in central Texas aspects of that phase. On the basis of Dr. J. Charles Kelley's identification of certain foci and aspects of that phase⁴⁵ it seems reasonable to assume that these sites occupy a chronological period coeval with or possibly just prior to Gibson Aspect times, perhaps sometime between 500 A. D. and 1,000 A. D.

⁴⁵ Kelley, J. C., 1947, pp. 103-104.

The late period is represented in the Garza-Little Elm area by re-occupation of four of the non-pottery sites (41-17D9-1; 41-18C4-1*; "41-18C4-3*"; and 41-18C7-5;) and by occupation of seventeen additional sites (41-18C7-1; "41-18C7-2*"; 41-18C7-4; 41-18C7-6; 41-18C7-7; 41-18C7-8; 41-18C7-9; 41-18C4-2; 41-17D3-1; 41-17D6-1; "41-17D6-3*"; 41-17D6-4*; 41-17D9-2; 41-17D9-3; 41-17D9-4; 41-17D9-5; "41-17D9-11*"). In the Lavon area this period is represented in eleven sites, ("41-18C9-1*"; "41-18C9-2*"; 41-18C9-4; 41-18C9-6; "41-18D7-1"; "41-18D7-2*"; 41-18D7-7; "41-18D7-8*"; "41-18D7-9*"; "41-18D4-1*"; and "41-18D4-4). Another (41-18D4-2*) is probably an artificial mound but its cultural affiliation is unknown. Relatively large villages (as indicated above by quotation marks) were found in both areas as well as smaller temporary campsites. There is no indication of a cultural difference between the small campsites and the large village sites within each reservoir area. Perhaps the small campsites were even occupied seasonally by the same people who lived most of the year in the villages.

There seems to be a rather high degree of cultural similarity between the sites of the two reservoir areas at this period, yet there are some significant differences. In the Lavon area the villages are all located within the river flood plain. They are 3-4 acres in extent. Houses, were (probably) circular, 10 feet to 15 feet in diameter, with a centrally located fire hearth of clay and were made of wattle and daub construction. Burials were within the village but apparently outside the houses; were flexed, unoriented and without burial furniture (with one exception). Interments were both single and multiple. Each major village contained a large earthen pit with an encircling embankment. The purpose of this pit is unknown but probably was some sort of community center. Pottery was used but apparently not made by these people, as it was not abundant and individual vessels were valuable enough to be mended and re-used after having been broken. A wide variety of pottery types were used. Clay tempered wares of Frankston Focus and Titus Focus types were most common. Plain, shell tempered wares similar to the Henrietta Focus type, Nocona

Plain, was of secondary importance. Limestone tempered pottery (some with basketry-impressed vessel bottom) was used but rarely. The bison does not seem to have been hunted for food but deer and small animals were. Fish, mussels and snails were apparently eaten. Agriculture was practiced. Manos and metates were used with both back-and-forth motion and circular motion. Projectile point types were dominantly small arrow points and in order of importance were Alba Barbed, Gary Stemmed, Trinity Stemmed, Ellis Stemmed, Perdiz Pointed Stemmed, and triangular and *triangular* side-notched types. Many types of scraping tools were used including small flakes of flint with one or more edges retouched; small, well made, snub-nose scrapers; and reworked projectile points. Abraders were made of small blocks of coarse sandstone. Ornaments of non-perishable materials, such as stone, bone and shell, were used but not abundantly. Red ocher pigment was commonly used. Small, triangular, polished celts, boatstones, perhaps small stone bowls, and gaming stones were also used. Bone was abundantly used for making pins, awls, fishhooks, flakers, and tools for preparing hides. Stone implements were apparently chipped with both antler and bone flaking tools. The lack of abundant pottery, re-use of broken vessels, and the wide variety of pottery types used indicate an extreme range of trade for these items by the people of the Lavon Reservoir, or the procurement of wives (as potters) from distant areas.

In the Garza-Little Elm area the villages were located on knolls above the river flood plain for the most part, although some villages were found extending into the flood plain. These villages were 3-4 acres in extent. Nothing is known of the house types except that they were probably of wattle-and-daub construction. Burials were within the villages and both single and multiple interments were made. In none of these villages was the large ceremonial pit used. Pottery was used but apparently not made by these people. The same variety of types was used as was the case in the Lavon area. However, there were significant differences in percentages of these types. A variety here called vesicular, and the shell tempered ware that is similar to Nocona Plain,

were most commonly used. Of secondary importance were the clay tempered wares of Frankston and Titus Focus. Limestone tempered ware was apparently not used here. None of the wares in either area can be considered intrinsic. The bison does not seem to have been hunted for food, but deer, small animals, fish, mussels and snails were eaten. Agriculture was practiced. Manos and metates were used with both back-and-forth motion and circular motion. Projectile point types were very similar to those used in the Lavon area but there were significant differences in percentages of types used. Dart point types were dominant and in order of importance they were Trinity Stemmed, Alba Barbed, Gary Stemmed, Ellis Stemmed, triangular and Perdiz Pointed Stemmed types.⁴⁶ Other lithic artifacts used were generally similar to those used by the people of the Lavon sites. No bone, shell, or antler artifacts have been found in association with the Garza-Little Elm sites. The people of this area apparently had as widespread contacts with other cultures as did the people of the Lavon area.

The sites of this period in the two reservoir areas seem, at this time, to represent two distinct and previously undescribed cultural units. The Lavon sites appear to be basically Caddoan but distinct from any known group of the Caddo. Their culture extends from the upper reaches of the East Fork of the Trinity River, including the tributary streams, to the confluence of the East Fork and the main Trinity River. Pottery and other artifact types indicate that this culture is coeval with Frankston, Titus and Henrietta Foci and may be roughly dated between 1500 A. D. and

⁴⁶ Projectile point types used throughout this report are types established by either Dr. J. Chas. Kelley or Mr. Alex D. Krieger and in use generally by the members of the Anthropology Dept., University of Texas. The single exception is the type Trinity Stemmed, a tentative type established by the writer.

PLATE 11

A. Typical undecorated potsherds from both Lavon and Garza-Little Elm Reservoirs. 1-5 plain clay tempered sherds; 6-10 vesicular sherds from Garza-Little Elm; 11-14 plain shell tempered sherds; 15 sherd of Nocona. Plain ware from Clay County included for comparison.

B. Incised pottery bottle from Farmersville Site, Lavon Reservoir. (R. K. Harris collection.)

Legend for Plate 12, Ayala Site

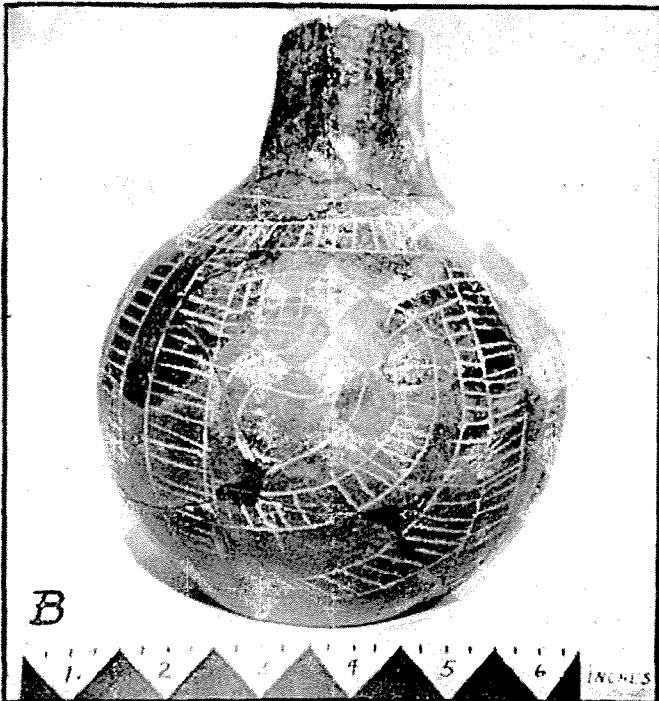
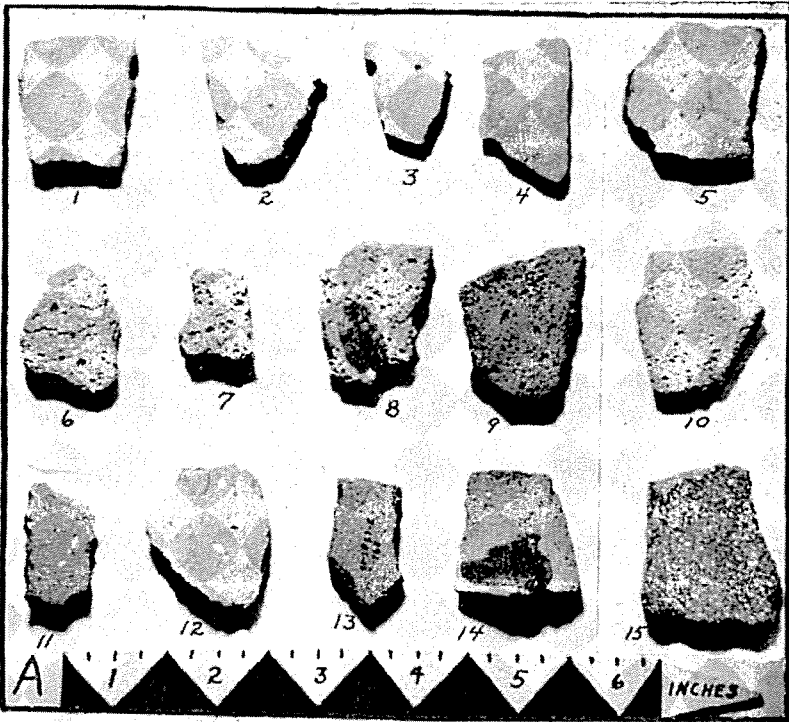


Plate 11

1650 A. D.⁴⁷ The writer and the members of the Dallas Archaeological Society have agreed on a tentative name of *Wylie Focus* for this culture. When the excavation recommended as a result of the present survey has been completed it should be possible to fully describe and define this focus and to establish its relation to other neighboring foci.

The pottery-bearing sites in the Garza-Little Elm area, as has been shown, are similar in many respects to those of the tentatively identified *Wylie Focus*, and certainly are coeval with them, i. e. 1500 A. D. to 1650 A. D. Too little, however, is known about these sites at present to attempt to place them in their proper cultural position. On the basis of the known similarities it may be reasonable to assume that this group of sites represents a separate component of the *Wylie Focus*. However, the differences that were shown between the sites in the two areas are differences of kind, as well as of degree, and seem significant enough in their aggregate to imply a separate focus. If this is so and a separate focus is represented here, it may be more closely related to the Henrietta Focus to the west than it is to the Caddoan groups to the east. The present survey has only served to present and outline the problems here involved. The future excavation that has been recommended should provide the necessary information to place these sites in their proper perspective.

⁴⁷ Krieger, A. D., 1946, pp. 205-212.

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NOTES ON THE AYALA SITE, LOWER RIO GRANDE VALLEY, TEXAS

T. N. CAMPBELL AND JACK Q. FRIZZELL

Introduction

In the Lower Rio Grande Valley of Texas and Tamaulipas two archaeological cultures have thus far been recognized. Knowledge of these cultures is based primarily on reconnaissance, for no real excavation has as yet been attempted.

The first and best known of these two cultures is the Brownsville, which is largely coastal in its distribution and is characterized by an abundance of artifacts made of shell. This was first recognized by Anderson,¹ who in 1932 published a brief paper which listed the most common kinds of artifacts but gave no name to the culture. In 1935 Sayles² referred to this culture as the Brownsville Phase, naming it after the city of Brownsville. Sayles showed its distribution on the Texas side of the Rio Grande (roughly the delta region), supplied a trait list, and indicated that it belonged to a relatively late time period. In 1947 MacNeish³ presented the main outlines of this same culture, referring to it as the Brownsville complex. He mapped its full distribution (a strip along the Gulf coast between the Arroyo Colorado in southern Texas and the San Fernando River in northern Tamaulipas), and he also cited evidence to show that it began at some unknown date after 1,000 A. D. and survived into the historic period.

The second culture, which has an inland distribution, is less clearly defined and several different names have been applied to it. As now known, it is characterized primarily by stone artifacts. This culture was first recognized in 1935 by Sayles,⁴ who called it the Coahuiltecan Phase. He showed

1 Anderson, 1932.

2 Sayles, 1935, p. 40; Plate X, d, e, f, p. 42; Table 5, p. 102; Table 9, p.

3 MacNeish, 1947, pp. 2, 5-8, 10.

110; p. 117; Table 13, p. 124; Map C, p. 132.

4 Sayles, 1935, p. 41; Table 5, p. 102; Table 9, p. 110; p. 117; Table 13, p. 124; Map C, p. 132.

its distribution in Texas only (a long strip north of the Rio Grande extending from Eagle Pass to Hidalgo), and his tables suggested a comparatively late date for the culture. As a result of extensive reconnaissance in Tamaulipas, MacNeish⁵ in 1947 described two related inland culture complexes, the Repelo and the Abasolo, which appear to be closely related to Sayles' Coahuiltecan Phase. According to MacNeish, the Repelo complex is the earlier (about 500 to 1,000 A. D.) and is largely confined to the inland area lying between the Rio de las Palmas and San Fernando rivers in Tamaulipas. The Abasolo complex is later (about 800 A. D. to historic times) and occupies the inland area extending from the Rio de las Palmas of Tamaulipas northward across the Rio Grande into southern Texas. Of these two inland complexes described by MacNeish, the Abasolo appears to be virtually the same as the Coahuiltecan Phase of Sayles. Hughes⁶ has reported archaeological materials from northern Tamaulipas which evidently belonged to MacNeish's Repelo and Abasolo complexes. In his paper on the Clear Fork Focus, Kelley⁷ used the term Monte Aspect, which apparently includes Sayles' Coahuiltecan Phase as well as the Repelo and Abasolo complexes of MacNeish. It is hoped that this varied terminology will soon be systematized. We prefer to use Kelley's broad term, Monte, until local subdivisions in the lower Rio Grande Valley have been clearly distinguished on the basis of excavation.

Recent discoveries at the Ayala site⁸ in the Lower Rio Grande Valley have provided specific information on Brownsville burial customs and physical type. Stratigraphic evidence at this site also indicates a Monte (Coahuiltecan-Abasolo) occupation followed by a Brownsville occupation. The Ayala site is approximately 50 miles above the mouth of the Rio Grande.

⁵ MacNeish, 1947, pp. 1-3, 10.

⁶ Hughes, 1947. Mullerried (1934, pp. 217-219) has also described a small collection from northern Tamaulipas which seems to belong to the same basic culture.

⁷ Kelley, 1947, p. 104 (footnote 26).

⁸ In the files at the University of Texas this site is designated as 79D5-1.

Discovery and Investigation of the Ayala Site

In the summer of 1948, Mr. M. E. Ayala of McAllen (Hidalgo County) built a house on his farm 1.5 miles south of that city. This house faces east on South Depot Road. A sewer trench was dug from the rear of the house westward toward a low bluff overlooking a former channel of the Rio Grande, and during the course of excavation workmen encountered a series of burials at depths ranging from 2 to 6 feet. The bones were removed from the trench by the workmen as they were encountered and were placed in small piles along the trench. The initial discovery was made on July 2.

A newspaper story covering the first three burials was published by the *McAllen Valley Evening Monitor* in its issue of July 8. On July 9, Mr. Paul T. Vickers, manager of the McAllen Chamber of Commerce, wrote to the Department of Anthropology, University of Texas, describing the finds and enclosing a clipping of the newspaper story. Frizzell, whose home is in the nearby town of Weslaco, was asked to investigate the Ayala burial locality. On July 17, Frizzell visited the Ayala farm and found that five additional burials had been removed between July 9 and 14. He collected all the available information on these burials, drew a sketch map and a profile, took photographs, and returned to Austin with a portion of the badly damaged skeletal material and most of the artifacts collected from the burial area.

On July 23 and 24, three more burials were found, making a total of eleven. The skeletal materials and associated artifacts from these last three burials were sent to the University of Texas by Mr. Charles A. Fink of the *McAllen Valley Evening Monitor*.⁹

The Ayala Site and Its Archaeological Materials

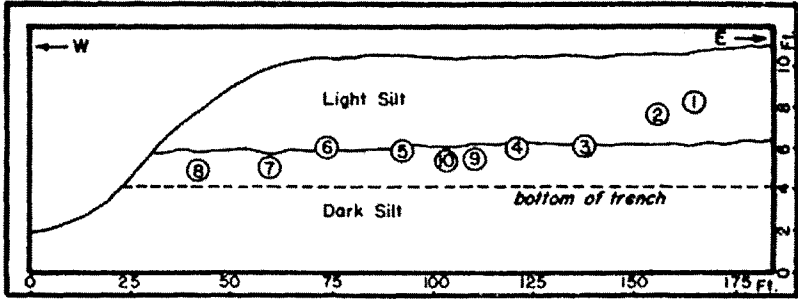
The Ayala site has a distinctive physiographic location. It lies on high ground which rises about 15 feet above a

⁹ We are much indebted to Messrs. Ayala, Vickers, and Fink for their cooperation, and we are especially grateful to Mr. Fink for his generous efforts in our behalf. Mr. Lewis Carver of the *McAllen Valley Evening Monitor* also kindly supplied data on other burials previously found in the vicinity of McAllen.

former channel of the Rio Grande. This old channel has a width of approximately 2,500 feet at the Ayala locality, and it is now used as a floodway. According to Mr. Ayala, the records show that the Rio Grande occupied this channel in the latter part of the eighteenth century, when the area was first settled by Europeans. Today the Rio Grande is six miles south of the Ayala site. The site is now sparsely covered by large mesquite trees, and there is no record of its ever having been under cultivation.

The sewer trench, which extended from the newly constructed house to the low bluff overlooking the old river channel, was 2.5 feet wide, 7 feet deep, and approximately 180 feet long. In the vertical walls of this trench two alluvial layers could be distinguished. At the top was a layer of light silt 4 feet thick, and below it was a layer of darker silt which continued downward to the bottom of the trench. In Plate 12a, the approximate vertical distribution of the burials is shown. This profile is based on the measurements and observations of both Frizzell and Fink. It should be made clear that in some cases the burials had already been removed before the stratigraphic data were collected. Some of the burials were entirely in the upper layer (Burials 1 and 2), some were entirely in the lower layer (Burials 7, 8, 9 and 10), and the remainder lay near the division between the two soil layers (Burials 3, 4, 5, and 6). The position of Burial 11 could not be obtained. In Burials 5, 6, 7, and 8, portions of which still remained in the walls of the trench, Frizzell noted darker soil surrounding the bones; but the outlines of the original burial pits could not be traced. It would appear that most of these burials were made during the period when the upper layer of silt was being deposited.

Except for Burial 10, which was a group burial, all of the Ayala site burials were single burials. The available information on the orientation and position of the skeletons in these burials is not very satisfactory, but all accounts indicate flexed burials. The reports also indicate that in several burials the forearms were crossed, and in one burial it is



PROFILE SHOWING VERTICAL DISTRIBUTION OF BURIALS
AT THE AYALA SITE

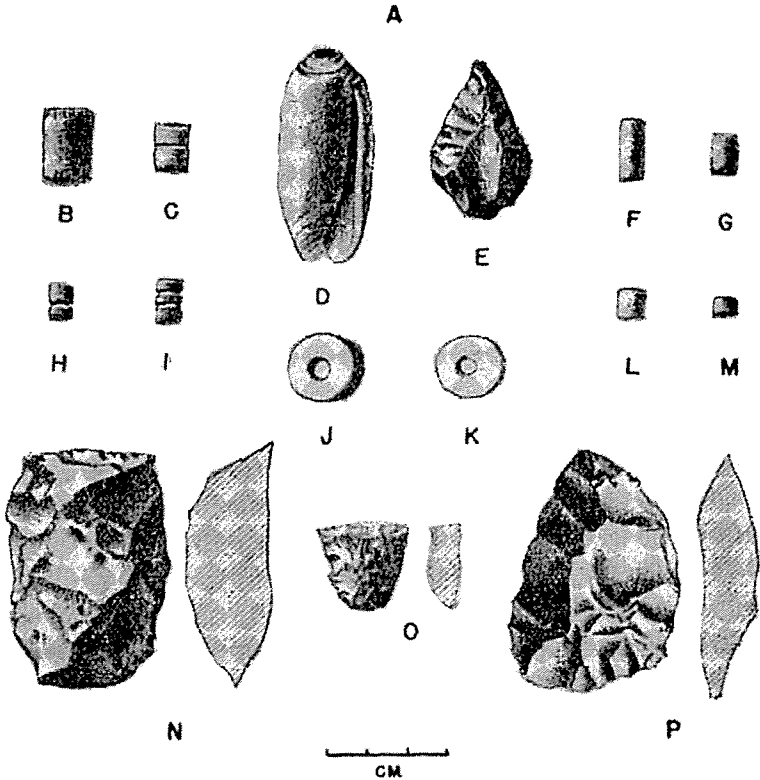


PLATE 12

Ayala Site, Lower Rio Grande Valley, Texas. A, profile showing vertical distribution of burials; B-C, F-I, L-M, bone beads; D, Oliva bead; E, projectile point; J-K, conch shell beads; N-O, flint gouges; P, knife.

stated that the hands were adjacent to the face. The skull and some long bones of Burial 1 show traces of red ochre.

The skeletal material is badly damaged because of the manner in which it was removed from the earth. Burials 5, 6, 7, and 9 are not represented by any skeletal material. Five skulls have been partially restored, so that some information on sex and age is available. The individuals in Burials 1 and 2 were adult males. Those in Burials 3 and 4 were adults, but the bones are too fragmentary for sexing. Burial 8 was that of an adult female; and Burial 10, the group burial, seems to have contained two adults, one of which is a female, and three children. Burial 11 was that of an infant. The total number of individuals in the eleven burials was fifteen.

These burials present some evidences of death by violence. The skull of the adult female in Burial 8 appears to have received a strong blow on the right side of the frontal bone adjacent to the coronal suture. One of the adults in Burial 10 probably died from a dart wound, for the distal fragment of a small dart point is embedded in the right side of the centrum of one of the lumbar vertebrae. The dart point entered the centrum near its lower border and penetrated it in an upward oblique direction.

The badly fragmented cranial material from the Ayala site has been reconstructed to the maximum extent possible. Two female calvaria are complete enough for preliminary measurements,¹⁰ which indicate a dolichocranic or long-headed population. The female from Burial 8 has a cranial index of 74.7, and the female from Burial 10 has a cranial index of 73.

The artifacts definitely associated with the burials are all ornaments. Encircling the neck vertebrae of the female in Burial 8 were 94 beads which formed a necklace. This necklace included 60 *Oliva* shells¹¹ with spire tips removed

¹⁰ The skeletal material from the Ayala site will eventually be sent to a physical anthropologist for further study.

¹¹ Fourteen of these *Oliva* beads (*Oliva sayana* Ravenel) are now at the University of Texas. The smallest has a length of 47.5 mm., the longest a length of 60 mm. Thirty-eight *Oliva* beads were kept by Mr. Ayala, and the remainder were taken by an unidentified collector in McAllen.

(Plate 12, *d*); two disk-shaped beads (Plate 12, *j*) made from conch columella, each with a diameter of 18 mm. and a thickness of 4 mm.; and 32 tubular bone beads. The shortest bone bead has a length of 5 mm. and a maximum diameter of 6 mm.; the longest a length of 16 mm. and a maximum diameter of 6 mm. Five of the bone beads have encircling grooves—three with one groove (Plate 12 *c* and *h*) and two with two grooves (Plate 12, *i*). The remainder of the bone beads are undecorated (Plate 12, *f*, *g*, *l*, *m*).

With one of the infants in Burial 10 was a necklace composed of very small tubular bone beads. Sixteen of these tiny beads were recovered. The shortest has a length of 4 mm. and a maximum diameter of 2.5 mm.; the longest a length of 12 mm. and a maximum diameter of 6 mm. Encircling the neck vertebrae of one of the adults in this same burial was another necklace, this one composed of alternating shell and bone beads. Seventeen beads from this necklace are in the University of Texas collection. Ten of these are disk-shaped conch shell beads (Plate 12, *k*) of approximately the same size (diameter 17 mm., thickness 3.5 mm.). The remaining seven are tubular bone beads; they are also of approximately the same size (length 16 mm., maximum diameter 12 mm.) and have notched ends (Plate 12, *b*).¹²

It is clear that the Ayala burials were placed in a midden deposit. This is indicated by the materials from the soil surrounding the burials. These materials include flint flakes and artifacts, baked clay fragments, snail and bivalve shells, and animal bones.

Near Burial 5, but seemingly not associated with it, was

¹² Burials similar to those at the Ayala site have been reported from the same vicinity near McAllen (Mr. Lewis Carver, letter, October 8, 1948). In October, 1938, Mr. Jason Matthews uncovered two burials near his residence on South 10th Street, which is about two miles east of the Ayala site. These burials came from a depth of approximately six feet below the surface; the skeletons were in a flexed position and associated with them were beads and "bone ornaments." At about the same time Mr. Walter Hart excavated "four or five" burials from an east-west ridge on his farm just south of McAllen. Two are described as flexed burials, but information on the position of the remainder is lacking. A projectile point was embedded in one of the skulls.

a large flint gouge of Clear Fork type¹³ (Plate 12, *n*). This specimen has a length of 62 mm., a width of 38 mm., and a thickness of 18 mm. It is chipped on both faces. Near Burial 8 was a very small gouge or scraper (Plate 12, *o*) which is triangular in outline and chipped on both faces. It has a length of 22 mm., a width of 22 mm., and a thickness of 7 mm. Likewise near Burial 8 was one complete dart point (Plate 12, *e*) and also one distal fragment of a dart point. An asymmetrically triangular knife was also found near one unidentified burial (Plate 12, *p*). Fifteen flint flakes were also collected from the soil surrounding the various burials.

The faunal material includes deer (*Odocoileus*), coyote (*Canis latrans*), pocket gopher (genus unidentifiable, but probably *Geomys*¹⁴), and snake (genus unidentified). One marine shell is represented in the midden, the transverse arc shell (*Arca transversa* Say). Reference has already been made to ornaments made from two marine shells, *Oliva* and conch. The snail shells, as yet unidentified, are all land snails of the same species.¹⁵

Interpretation

Two conclusions have been drawn from the evidence presented above. First, the midden in which the burials were placed can be identified with the Monte (Coahuiltecan-Abasolo) culture; second, because of the associated ornaments, two of the burials (Burials 8 and 10), and probably all of them, can be attributed to the Brownsville culture.

None of the flint artifacts from the midden, except possibly the small gouge or scraper (Plate 12, *o*) can be attributed to the Brownsville culture. Sayles has listed the small gouge or "core scraper"¹⁶ as occurring in his Brownsville Phase, but Anderson and MacNeish do not mention this type for the Brownsville. On the other hand, the large Clear Fork gouge is an important artifact type in Sayles'

13 Ray, 1938, pp. 197-198.

14 Davis, 1940, pp. 7, 23-31. *Geomys personatus* occurs in this area today. See also Campbell, 1948, p. 179.

15 Assistance in identifying the faunal material was given by Mr. Glen L. Evans, Assistant Director of the Texas Memorial Museum, Austin.

16 Sayles, 1935, Table 5, p. 102.

Coahuiltecan Phase,¹⁷ and Hughes¹⁸ illustrates what appears to be one of these from northern Tamaulipas (MacNeish's Repelo-Abasolo area). Insofar as it is possible to tell from published accounts, the dart point (Plate 12, e) and the knife (Plate 12, p) are much more likely to belong to the Monte than to the Brownsville culture.

The beads associated with the burials are characteristic Brownsville ornaments. MacNeish reports that Brownsville burials "are predominantly flexed, and about half the time are without burial furniture. When burial furniture does occur, it usually consists of beads, pendants, and Huasteca pottery."¹⁹ But Abasolo burials, according to MacNeish, are "semi-flexed, in shallow pits and without burial furniture."²⁰ Sayles reports Coahuiltecan Phase burials as "partially cremated . . . covered with large stones,"²¹ and he makes no mention of burial furniture. We thus seem to be reasonably safe in assigning the Ayala burials to the Brownsville culture.

In summary it may be stated that the Ayala site consists of a Monte (Coahuiltecan-Abasolo) midden into which Brownsville culture burials were intruded. The evidence supports MacNeish's statement that in the Lower Rio Grande Valley some sites show Brownsville materials overlying Abasolo materials.²² However, it should be pointed out that the present scanty information from the Ayala site needs to be confirmed by controlled excavation. Preliminary measurements of skulls from the Ayala site indicate that the Brownsville population was long-headed.

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17 *Idem.*

18 Hughes, 1947, Plate 5, p.

19 MacNeish, 1947, pp. 6-7. Mason (1935, pp. 34, 37) mentions Brownsville burials which contain Huasteca pottery and shell beads.

20 MacNeish, 1947, p. 2.

21 Sayles, 1935, Table 5, p. 102.

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A TENTATIVE CULTURAL SEQUENCE FOR THE AREA ABOUT THE MOUTH OF THE PECOS'

HERBERT C. TAYLOR, JR.

This paper is concerned with the archaeology of the area about the confluence of the Pecos River and Rio Grande. The region is cut by deep arroyos, in the walls of which are found the rock shelters which comprised the homes of the pre-historic Pecos River cave dwellers. Within a radius of thirty miles of the Pecos River mouth is found a distinctive type of pictograph, from whence is derived the appellation, "Pecos River Focus pictograph area."²

Objectives of this article are: first, the location and synthesis of all reported sites in the area; and second, the presentation of a tentative cultural sequence.

On the map (Plate 13) an attempt has been made to locate all sites so far reported. Because several institutions and individuals have conducted archaeological investigations in the area, sites have frequently been reported under different names or numbers in various publications. Many have been located only in a cursory or tentative manner. On the map (Plate 13) an attempt has been made to locate all sites so far reported, and doubtless other sites have yet to be located. Hearsay reports of sites are not included.

¹ Condensed from portions of a thesis to be presented to the Faculty of the graduate School of the University of Texas in partial fulfillment of the requirements for the degree of Master of Arts. So much of this tentative reconstruction springs from suggestions by Dr. J. Charles Kelley that the work must be regarded as largely his. He should not be, however, pilloried for errors herein; the responsibility of this presentation is the writer's.

In addition to Dr. Kelley, the writer is indebted to Dr. T. N. Campbell, Dr. J. Gilbert McAllister and Mr. A. D. Krieger of the University of Texas Department of Anthropology, and to Mr. A. T. Jackson, formerly field archaeologist for the University, for suggestions and criticisms. In the field, Don Valeriano Diego, Mr. Guy Skiles, and Mr. E. M. Zuberbueher have the thanks of the writer for not only giving permission to enter their land but for providing every assistance to him.

Thanks are also due for assistance in the field to Mr. A. D. Peterson of Pennsylvania State College, and Senores Ramon and Raul Diego-Riza.

The field work was financed by my parents, Mr. and Mrs. H. C. Taylor of Houston, Texas. Much of the research was done by my wife, Mrs. Ruby Taylor, Assistant Curator of the Anthropology Museum, University of Texas.

² For a delineation and description of the area see Taylor, "An Archaeological Reconnaissance in Northern Coahuila," *Texas Archaeological and Paleontological Society Bulletin*, Vol. 19, Abilene, 1948.

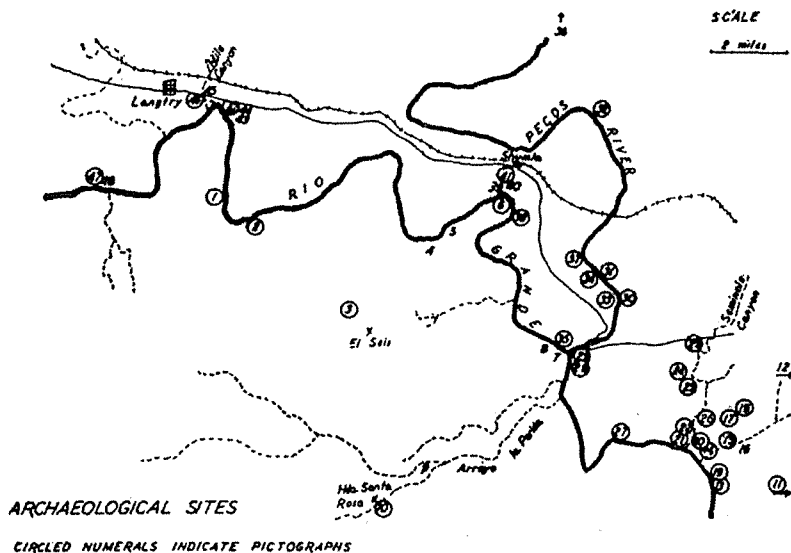


PLATE 13

The following chart shows which sites in this area have been investigated by workers in the field. The site number given in the left hand column is that marked on the map in this article; the quadrangular number gives the site number found on the master site map of the University of Texas, employing a system recommended by the Texas Archeological and Paleontological Society. Under the column marked "Jackson's PWTI"³ the site number is that given in A. T. Jackson's *Picture Writing of Texas Indians*; the next two columns contain the numbers or names employed elsewhere by Jackson and by the writer in notes and publications. Finally, the primary source for the location and description of the site is given. Only the article containing the original description or most exact location is employed; later references are omitted. Since in some instances the same site has been reported in different locations, the identification and site number are based upon personal examination.

³ In the chart certain abbreviations have been employed: PWTI—Picture Writing of Texas Indians by Jackson; ARNC—"Archeological Reconnaissance in Northern Coahuila," by Taylor; BBBMP—Big Bend Basket Maker Papers; TAPS—Texas Archeological and Paleontological Society Bulletin; UT—University of Texas; Coah.—Coahuila; FN—Field Notes.

Correlation of Site Numbering Systems

Site No.	Quadrangular System No.	Jackson's PWTI No.	Jackson's Notes No. or Name	Taylor's Notes No. or Name	Local Name	Sources
1				Coah. 1	La Elephante	ARNC
2				Coah. 2	San Martin	ARNC
3				Coah. 3		ARNC
4				Coah. 4		ARNC
5				Coah. 5	La Angelita	ARNC
6				Coah. 6		ARNC
7				Coah. 7		ARNC
8				Coah. 8		ARNC
9				Coah. 9		ARNC
10				Coah 10	La Parida Cave	ARNC
11	60B9-1	96				PWTI
12	60B8-1				Horse-shoe Cave	Woolsey, UT Notes '35, Butler, UT Thesis '48.
13	60B8-3	92				PWTI
14	60B8-4	91	Painted Canyon B	Z Canyon Shelter		PWTI, Kelley, FN '48, Taylor, FN '48
15	60B8-2	90	Painted Canyon A	Z Canyon Gallery	Painted Rocks	PWTI
16	60B8-5					Kelley, FN '48
17	60B8-6	88	Presa Canyon A			PWTI
18	60B5-1	89	Presa Canyon B			PWTI
19	60B8-7	98				PWTI
20	60B8-8	84	No. 3	Panther Cave	Panther Cave	PWTI
21	60B8-10	87	No. 7 & 8			PWTI
22	60B8-11	86				PWTI
23	60B5-2	83	2			PWTI
24	60B5-3	82	1 & 1-A		Fate Bell Shelter	Pearce & Jackson U.T. publication
25	60B5-4	85	4			PWTI
26	60B8-9		6	Zuber-bueller Cave		Jackson, FN Taylor, FN '48
27	60B7-1	75				PWTI
28	60B4-1	71	Painted Cave		Painted Cave	PWTI
29	60B4-2	72	Parida Cave		Parida Cave	PWTI
30	60B4-4	67			Goat Cave	PWTI
31	60B4-5	68			Moore-head Cave	PWTI
32	60B4-6	80				PWTI
33	60B4-7	70				PWTI
34	60B4-8	69	Painted Cave			PWTI
35	60B4-3					PWTI

CORRELATION OF SITE NUMBERING SYSTEMS (Continued)

Site No.	Quadrangular System No.	Jackson's PWTI No.	Jackson's Notes No. or Name	Taylor's Notes No. or Name	Local Name	Sources
36	60B4-10				Murrah Cave	Holden, TAPS '37
37	60B4-9	74				PWTI
38	60B4-11	78		Shumla 1	Shumla Caves	BBBMP I
39	60B4-12					BBBMP I
40	60B4-13			Shumla 3	Shumla Caves	BBBMP I
41	60B4-14			Shumla 4		Taylor FN '47
42	60A6-2			Kelley Cave		Kelley FN '32
43	60A6-3					Taylor FN '47
44	60A6-4			Skiles Cave		Taylor FN '47
45	60A6-5			Langtry Rock Midden		Taylor FN '48
46	60A6-6	76		Eagle Cave	Eagle Cave	BBBMP III, PWTI
47	60A5-1	73	Sites 1&2 Rattlesnake Canyon			PWTI
48	60A5-2					PWTI

A few words of warning might be set down here concerning the use of the map; sites here numbered 42, 43, and 44 all lie upon Mile Canyon although spatial limitations prevented their being so depicted. Site number 10 is only nominally a pictograph site; the cave wall has collapsed and one bit of painted limestone was found in the debris.

There are several types of sites in the area, the most common being rock shelters containing evidences of human occupation in the form of middens, or refuse heaps on the cave floor.

In one instance, site number 16, hearths were found along a canyon rim without other evidences of occupation. A few sites, numbers 9, 45, and 48, are composed of piles of burnt rock. Several names have been applied to this type of site: "burnt rock mounds" of Texas, sotol pits, etc. Perhaps a better system of nomenclature would be to employ the term burnt rock middens, since these piles were obviously incidental accumulations and not deliberately constructed

mounds.⁴ In contrast to the rock shelters the burnt rock middens seem to be virtually artifact sterile.

Pictographs occur in two types of sites, on the walls of occupied rock shelters and in gallery-like form on cliff-sides and stream cutbacks. Sites 1, 2, 3, and 15 are examples of this latter type.

Archaeological investigation of the pictographs of western Texas had its inception only recently. In his classic pictographic study Garrick Mallery devotes only a few lines to Texas paintings.⁵ Colonel M. L. Crimmins⁶ and Professor Victor J. Smith⁷ were pioneers in locating and describing pictographs in the area and in 1938 A. T. Jackson published his exhaustive *Picture Writing of Texas Indians*.⁸

Mr. and Mrs. Forrest Kirkland, in a series of publications in the late thirties, set up a classificatory system for these paintings.⁹ It was in the course of this study that the Kirklands noted a distinctive type of pictograph peculiar to the area immediately about the confluence of the Pecos and the Rio Grande. (See Plate 14).

These paintings are distinguishable from those which occur elsewhere in West Texas by several criteria:

- 1) They are polychromatic.
- 2) The atlatl, but never the bow, is depicted in them.
- 3) They show evidence of greater age than other types of pictographs in the area; frequently other types of paintings are found superimposed upon them.
- 4) There seems to be group composition in the paintings.

4 Krieger, A. D., "Some Suggestions on Archaeological Terms," *Texas Archaeological and Paleontological Society Bulletin*, Vol. 16, 1945, pp. 41-46.

5 Mallery, Garrick, 4th and 5th Annual Reports of the Bureau of American Ethnology.

6 Crimmins, Colonel M. L., "The Pictographs at Hueco Tanks," *Texas Archaeological and Paleontological Society Bulletin*, Vol. 3, Abilene, 1931.

7 Smith, Victor J., "Indian Pictographs of the Big Bend in Texas," *Publications of the Texas Folklore Society*, No. II, Austin, 1923. Smith, Victor J., "The Human Hand in Primitive Art," *Publications of the Texas Folklore Society*, No. IV, Austin, 1925.

8 Jackson, A. T., *Picture Writing of Texas Indians*, University of Texas Publications, No. 3809.

9 Kirkland, Forrest, articles in *Texas Archaeological and Paleontological Society Bulletins*, Vols. 9, 10, and 11. (See bibliography).

5) The figures are highly conventionalized.

In actuality, there seem to be three discrete types of paintings in the area.¹⁰

1) The previously discussed Pecos Focus paintings.

2) Crude realistic representations of men and animals done in red or black. This type depicts the bow and is sometimes found superimposed upon the Pecos Focus pictographs. (Plate 15).

3) Linear representations of men depicting firearms, horses and a U. S. Army officer dressed in a uniform of the latter part of the nineteenth century.

Thus, we have in the region a sort of pictographic stratigraphy. The third type must be, inferentially, Apache, since they are known to have occupied the area in the nineteenth century and similar types of paintings are found among the Navajo. The second type seems to be late pre-historic and is found widely throughout West Texas. On the other hand, the first type seems to be early, and, as has been pointed out, is peculiar to the area under discussion. In an effort to explain the presence of a complex type of early pictograph in such a restricted locality, it will be necessary to consider, briefly, the development of concepts concerning the pre-historic cultural sequence in western Texas.

When the first reports of an early hunting and gathering horizon in western Texas were made the culture was identified as an off-shoot of the Basket Maker and thus gained the alliterative title of Big Bend Basket Maker.¹¹ The culture was assigned no place in relative chronology, save that it was prehistoric. Its material remains consisted mainly of flint dart points, arrowheads, other flint artifacts, sandals, matting, coiled basketry, netting and pictographs.

¹⁰ Mr. Forrest Kirkland described only the first two types; the paintings in Presa Canyon, described herein, would seem to be a third.

¹¹ Smith, Victor J., "Archaeological Notes of the Big Bend Region of Texas," *Texas Archeological and Paleontological Society Bulletin*, Abilene, 1931, p. 69.



PLATE 14

This conglomerate of cultural bag and baggage was held to prove its affinity to the Basket Maker of New Mexico.

Soon the workers in the field challenged this concept.¹² They argued that a lithic, hunting tradition was basic to the early pre-history of most of North America and that the consequent similarity of cultural material did not prove an immediate relationship to the Southwestern Basket Makers.

E. B. Sayles tentatively identified three early food-gathering groups in West Texas: Hueco Cave Dweller in the El Paso region, Big Bend Cave Dweller, and Pecos River Cave Dweller in the area about the mouth of the Pecos.¹³

In 1940 Kelley, Campbell and Lehmer published the report of extensive archaeological field work and geological-chronological correlations in the Big Bend.¹⁴ Briefly, this paper identified three successive cultural horizons and for the first time, gave relative chronology to the cultures.

The Pecos River Focus is the earliest of these cultures, having come to an end before the beginning of the Kokernot formation, giving it a possible terminal date of before 1000 A. D. Its diagnostic characteristics are the *Langtry Stemmed* projectile point, retouched flint knives with a straight or slightly curving edge, shell ornaments, non-split stitch coiled basketry, round toed sandals, and painted pebbles. It was pre-agricultural and pre-ceramic.

The Chisos Focus which follows the Pecos Focus, is characterized by distinctive projectile points such as the *Paisano*

¹² Setzler, F. M., "A Prehistoric Cave Culture in Southwest Texas," *American Anthropologist*, Vol. 37, 1935.

Reed, Erik, Summary of a letter in an editorial note entitled "Big Bend Basket Makers," *El Palacio*, Vol. XLIII, Santa Fe, 1937.

Judd, N. M., "Progress in the Southwest," *Essays in Historical Anthropology of North America*, Smithsonian Institution, Washington, D. C., 1940, pp. 429-30.

¹³ Sayles, E. B., *An Archaeological Survey of Texas*, Gila Pueblo, 1935.

¹⁴ Kelley, J. Charles, T. N. Campbell and Donald J. Lehmer, "The Association of Archaeological Materials and Geological Deposits in the Big Bend Region of Texas," *Sul Ross State Teachers College Bulletin*, Vol. XXI, No. 3, September 1940.

Indented Base,¹⁵ fish-tailed sandals, split stitch basketry and agriculture.

The third cultural phase is that of the Livermore Focus, which seems to have been contemporaneous with the Chisos Focus but which probably was ancestral to the Bravo Valley Aspect. This period is characterized by arrowpoints, including side-notched points, the so-called Livermore point, snub nose scrapers and flake knives.

The cultural sequence outlined above is the accepted one for western Texas and has been considered to be applicable to the area about the mouth of the Pecos.

Originally, workers reported that one culture only was represented in the area. This concept, it is believed, was mistaken and resulted from the excavational techniques employed. In the Witte Museum report on Shumla cave¹⁶ it is stated that the assumption was that only one culture was represented and thus no effort was made to determine stratigraphy. Other workers employed the layer technique; this resulted in cutting across stratigraphic lines with a consequent failure to see changes in the culture.

Artifacts found in these sites include diagnostic points of the Pecos and Chisos foci as well as Livermore arrowheads. There seems, however, to have been a difference between the cultural sequence here and that in the Big Bend.

Analysis of Davenport's,¹⁷ Holden's¹⁸ and Pearce and Jackson's¹⁹ reports, plus examination of an unpublished analysis of projectile point types by depth in Fate Bell Shelter by Jackson²⁰ and a test trench of site number 26 by A. D. Peterson and the writer²¹ brought forth a distinction in the cultural sequences in the two areas.

15 The writer regrets that, in a previous paper ("An Archaeological Reconnaissance in Northern Coahuila," *Texas Archaeological and Paleontological Society Bulletin*, 1948) Dr. Kelley was misquoted as saying that Paisano Indented Base is characteristic also of the Pecos Focus.

16 Op. cit., Big Bend Basket Maker Papers, No. 1.

17 Op. cit., Davenport.

18 Holden, W. C., "Excavation of Murrah Cave," *Texas Archaeological and Paleontological Society Bulletin*, Vol. IX, Abilene, 1937.

19 Pearce and Jackson, University of Texas Bulletin No. 3327.

20 Jackson, A. T., Unpublished M. S., U. T. files.

21 Taylor, Field Notes, June 1948.

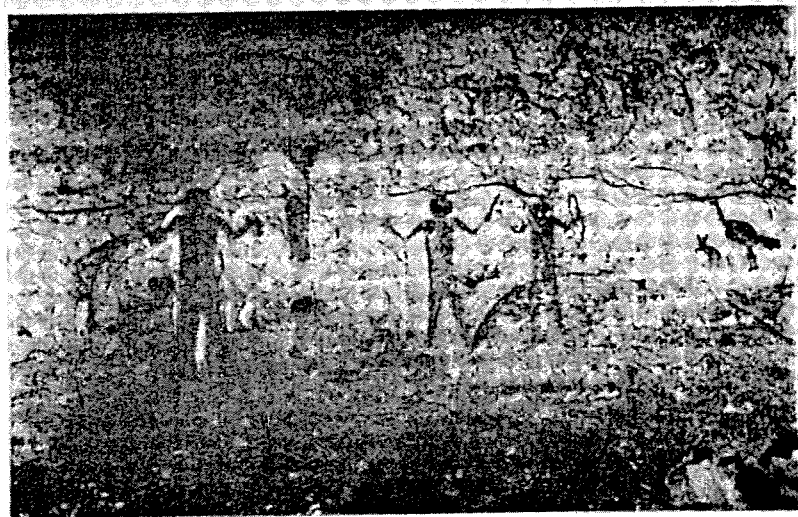


PLATE 15

In the Big Bend, Pecos Focus sites cease to exist before the deposition of the Kokernot formation; a few Chisos Focus artifacts are intrusive in these sites but a fairly clear line of demarcation is apparent between the foci. In the area about the mouth of the Pecos, *Langtry Stemmed* points are found at the bottom of the deposits, then working upward one finds variants upon this point type, and also, typical Chisos Focus points. The *Langtry Stemmed* projectile points do not cease in the upper layers, but there are greater numbers of Chisos type points. Livermore points have been reported from a few sites in the area, and where figures exist, they seem to have been found in the upper layer of the forward mid-section of the midden.

It is now proposed, on the basis of the evidence given, to present a tentative cultural sequence for the area about the mouth of the Pecos. It is admittedly conjectural, designed to fit the facts that we have thus far discovered, in the light of what is known concerning areas peripheral to it. Let it be emphasized that this reconstruction is tentative, not presented as a final or sweeping one, but it is felt that enough field work has been done in the area, not only to justify but to necessitate the beginnings of interpretation.

Sometime before 1000 A. D. western Texas was occupied by an hunting and gathering group which possessed the material culture which archaeology has designated Pecos River Focus. During the dry period represented by the closing phases of the Calamity formation, i. e., at about 1000 A. D. or shortly after, this group largely abandoned the Big Bend area and either moved to or remained in the area about the confluence of the Pecos and Rio Grande.

The emphasis of this group presumably had been upon hunting, but the archaeological evidence shows that in their location about the mouth of the Pecos River, their chief subsistence was derived from river mussels and wild plant food. This probably resulted from drought conditions then prevailing with a consequent decrease in the number of large animals. The culture then had recourse to religious or magi-

cal devices in an effort to produce game. A hunting cult developed, the proof of which is to be found in the paintings—conventionalized men carrying the implements of the chase, atlatl and throwing stick, beneath these men the small paintings of deer, frequently with dart shafts sticking in them; above these paintings frequently is depicted the puma, menacing and very large in proportion to the men, enormous in proportion to the deer. Possibly the painted pebbles found in this region also reflect this hunting cult. Meanwhile, in the Big Bend area, the Chisos Focus appeared and supplanted the Pecos River Focus culture, but at the mouth of the Pecos the old culture still thrived. As a consequence we find certain artifacts diagnostic of the Chisos Focus as intrusives from the west, but the Pecos River Focus continued to be, until a relatively late period, the dominant culture. Agriculture and pottery-making were never, however, adopted in the lower Pecos River area, since this area has been too arid.

For the later sedentary, agricultural peoples, the dry, barren country about the mouth of the Pecos was undesirable. Probably in the immediate pre-historic period it was only seasonally or sporadically occupied, the caves being used as hunting stations or camping spots by peoples from the west. Here we find the solution to the Livermore points found in a few of the caves and probably during this period were painted the second type of pictographs found in the area, possibly by Jumano or a similar people.²²

During the historic period the Apache ranged across the area driving out the more peaceful inhabitants, and left the third type of pictograph found in the region.

In brief summary, the evidence seems to point to a long-lived cultural continuum of the Pecos River Focus in the area, later affected but not dominated by assimilation of the material culture of the Chisos Focus. This culture seems to have finally disappeared approximately coincident with the appearance of an agricultural sedentary culture into the

²² Suggested as a possibility by Dr. J. Charles Kelley.

Big Bend area farther west. Following this the area was traversed by wandering bands of hunters from West Texas and later by the Apache.

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ARCHAEOLOGICAL NOTES ON TWO EXCAVATED HOUSE STRUCTURES IN WESTERN TEXAS

J. CHARLES KELLEY

In the summer of 1948 an archaeological reconnaissance of the Texas side of the Rio Grande valley between Redford and Fabens, Texas was made by the writer. This reconnaissance was financed by a grant from the Institute of Latin American Studies of The University of Texas and was sponsored by the Department of Anthropology of that institution.¹ In the course of the reconnaissance, 58 archaeological sites were visited and recorded. Of these sites, 49 were not previously known. Surface collections were made from 46 sites and excavations were completed at four sites. Some 5,996 specimens, including 5,689 potsherds, 301 stone artifacts, and six miscellaneous artifacts, were recovered.

A final report on the reconnaissance and on the laboratory studies of the artifacts obtained is now in preparation. Since this report may not be published for some time, it is thought wise to place on record the information obtained from excavation of two house structures in regions where little information as to house type has previously been available. One of the two houses here described (House No. 2, Site 57D2-3) was located near the bank of the Rio Grande at the edge of Redford, Texas. It was excavated in July, 1948. The second house structure described (House No. 1, Site 31C9-5) was located near old Fort Quitman on the Rio Grande below Esperanza. It was excavated in August, 1948. Specimens found in both sites are on file at the Anthropology Museum of The University of Texas, Austin, Texas.

¹ I wish to express my appreciation for this grant to the Institute of Latin American Studies, and in particular to Dr. C. W. Hackett, Director of the Institute. Thanks are also extended to Dr. T. N. Campbell, Chairman of the Department of Anthropology of the University of Texas, for his generous and painstaking support and encouragement in inaugurating and completing the reconnaissance. I am also indebted to Mr. Herbert C. Taylor and Mr. Myrri McBride for assistance for short periods of time, and to Mrs. Herbert C. Taylor for expediting correspondence from my office in Austin to the field camp in its varied locations. Mrs. Kelley accompanied me throughout the reconnaissance and the work described here is hers as well as mine.

Site 57D2-3

On the eastern bank of the Rio Grande at the site of the old town of Polvo, at the Vado Rojo, about one mile southwest of the schoolhouse at the modern village of Redford, Texas, there is an extensive accumulation of fire-cracked stone and ash. This midden covers several acres of ground between the elbow of an arroyo and the river. It is bounded on the southeast by the road running south from Redford and by a high gravel terrace. At one spot on the site there are several large refuse heaps rising a meter or more above the general level of the midden and containing much artifact material, principally potsherds of the historic period, some quite recent. Among the mesquite thickets of the northern part of the site are depressed areas surrounded by low mounds of fire-cracked stone, apparently the sites of pithouses of the historic or late prehistoric period. In the arroyo to the northeast of the site, lines of charcoal, pit outlines, etc., can be seen in the present cut-bank. Ruins of recent Mexican houses are visible on the site, and there are several houses now occupied.

The site occupies the upper strata of an alluvial terrace, the surface of which lies about 5 meters above normal low water level of the Rio Grande. It lies directly opposite the mouth of the Arroyo Bayo Nuevo which has a considerable drainage area in Chihuahua to the west and has a steady but meagre flow of water. The site lies at the southern edge of an extensive stretch of alluvial farm land on the eastern, or Texas, bank of the Rio Grande. Even more extensive farm lands are formed by the lowlands on the Mexican side of the river and along both sides of the Bayo Nuevo for some distance up that arroyo. Besides Site 57D2-3, other archaeological sites are reported in the farm lands to the north, and several are known in the rough gravel terrace country to the south. There are undoubtedly many sites as yet unreported on the Mexican side of the Rio Grande at this point, and there is a large modern Mexican farm popu-

lation with a concentration in the village of Mulatto, several miles down the river.

Settlement of the modern towns of Redford (formerly Polvo) and Mulatto is said to date back to the building of the local community diversion dams and ditches about 1872 by groups of migrants from Ojinaga, at the mouth of the Rio Conchos, and from Julimes farther up that river. Since there are extensive historic deposits at this site it may have been occupied throughout most of the historic period. In 1746 the Spaniard Joseph de Ydoiaga led a military expedition to La Junta and explored the general region thereabouts, including the Redford valley. Ydoiaga noted that Pulicos Pueblo, which still exists as a modern Mexican hamlet located on the Mexican side of the river about two miles above the mouth of Alamito Creek, was made up of three Indian nations or rancherias; the Puliques, the Cibolas and the Pescados.

Ydoiaga stated that: "These Pescados lived not long ago on the lower river, moving their rancherias, according to their wish and convenience, from place to place along the moist lowlands formed by the river, in order to make their small fields of corn and squash. For fear of the Apache, seeing themselves too few for defense, they came together to live at Puliques and are found now at this pueblo."²

The expedition continued down the Mexican side of the Rio Grande to the entrance to Canon Colorado below Redford. The Redford valley was described and Ydoiaga noted: "In the middle of this valley, on the edge of the river on the northern bank, is seen the ancient pueblo called that of Tapacolmes, the sole vestiges of which are some large adobe walls which remain standing, those of the church or chapel. In its environs lived settled in huts the Pescados (Indians), making their plantations of corn and squash in

² "Quaderno quee comienza con la Carta Orden del Exmo. Senor Virrey, Governador y Capitan General de estos Reynos, de resulta de mi Consulta y Diligencias - - - en la Junta de los Rios del Norte y Conchos, y sus Contornos" - - - por el Capn Comandante y Comissario dn Joseph de Ydoiaga. Archivo General de Indias, Audiencia de Mexico, 89-2-3; Dunn Transcripts, 1746-1747, Archives Room, The University of Texas. pp. 44-27.

the moist river lowlands. Because of the Apache, since they are too few to resist them, they went up to the pueblo of the Puliques, where they maintain themselves as a group, as has been said." On the Mexican side of the river, on an arroyo that came down from the Sierra de la Mula, and about one league away from the river they found the *jacales* of an Apache family. This Apache, called Alonzo the Baptized, lived there with his family while hunting deer in the hills, but his actual home was at Pulicos Pueblo where he lived in peace with the other Indians.

Thus, in 1746 the only occupants of the Redford valley were the members of one Apache family. The Pescados Indians had abandoned it some time before, and their main settlement had been that called Tapacolmes on the northern bank of the river, where an adobe church had once existed. The Tapacolmes Pueblo may be identifiable with site 57D2-3, since the general location is correct and this is the only site known to the writer in this vicinity which has extensive historical deposits.

Site 57D2-3 was first reported to the writer by Mr. V. J. Shiner, then of Presidio, Texas, and was later visited by Mr. Victor J. Smith of Alpine, Texas, and by Mr. Donald J. Lehmer, who was at that time supervising the excavations of the First La Junta Expedition of the School of American Research and the Sul Ross College at Shafter 7:1, the Millington Site, near Presidio, Texas. The present site is located on land owned by Mr. Teofilo Carrasco and Mr. Julian Carrasco of Redford, Texas, both of whom have generously granted permission to excavate on their property.

Surface Collections

Surface collections from this made during the 1948 reconnaissance include the following artifacts:

Stone

Chipped Stone: (28 specimens)

Small to medium flake side

Scrapers or knives.....	9	Plate 18, A,B,C.
Small end and side scrapers.....	2	Plate 18, D.

Finger-shaped scraper.....	1	Not shown.
Thumb-nail end and side scraper with graver point.....	1	Not shown.
Small leaf blade, fragmentary.....	1	Not shown.
Utilized flake.....	1	Not shown.
Small to medium cores or rejects.....	6	Plate 18, K.
Dartpoint, Langtry stemmed.....	1	Plate 19, A.
Arrowpoints:		
Perdiz Stemmed.....	2	Plate 19, B, C.
Side notched with concave base.....	1	Plate 19, G.
Side notched with notched base.....	1	Plate 19, F.
Triangular, serrate edges, concave base.....	1	Plate 19, D.
Triangular blade, with very short broad stem.....	1	Plate 19 E.
Pecked and Ground Stone: (10 specimens)		
Manos one-hand, usage both faces, shaped.....	2	Plate 18, I.
End-notched pebbles ("sinkers")....	5	Plate 18, J.
Pebble hammerstone, showing usage at both ends.....	1	Plate 18, H.
Discoidal hammerstone, re- used scraper.....	1	Not shown.
Pebble of volcanic tuff with hole pecked in one surface.....	1	Not shown.

Pottery

Indian Wares: (4 sherds)		
El Paso Polychrome.....	3	
Polished Red.....	1	
Indian-Mexican Wares: (85 sherds)		
Conchos Plain.....	78	
Conchos Red-on-Brown.....	5	
Capote Plain (?).....	2	
European and Modern Wares: (25 sherds)		
Black and Green on Yellow Crockery (glazed).....	12	

Green Crockery (glazed).....	1
Brown Crockery (glazed).....	3
Red Crockery (glazed).....	1
Cream Crockery (glazed).....	1
White "China"	2
Blue-On-White "China".....	2
Green-On-White "China".....	1
Red-On-White "China".....	1
Brown Glass	1
<hr/>	
Total Pottery:.....	114

Excavations at Site 57D2-3

When Donald J. Lehmer and the writer examined this site in 1938, dipping bands of charcoal, burned roof clay, and other evidences of eroding house structures were noted in the bank of the steep-sided arroyo channel on the northeastern edge of the site. During the present reconnaissance this spot was again inspected, and three or more structures were at once discovered in the bank. The arroyo channel at this point is some 3.5 meters deep, becoming much shallower toward the southeastern edge of the site, where one branch of it originates. The material exposed in cross-section in its bank is almost entirely of alluvial and aeolian origin, consisting largely of sands, silts, and occasional beds or

PLATE 16

Site 57D2-3 House No. 2

A. Plan. The northern edge of the house had been destroyed by a modern arroyo channel. Presumably a second pair of large support posts had been set in the northern end of the floor and a ridge pole had rested upon the two sets of support poles.

B. Cross section along edge of arroyo. The house pit had apparently been cut from the old surface shown. The age of the refuse overlying this surface and filling most of the pit was not determined. The floor of the pit had been lined with adobe clay. Burning of the house had hardened and preserved the floor as well as the pit walls up to the level of the old surface.

C. Longitudinal section. The northern end of the pit, destroyed by the modern arroyo channel has been reconstructed in dotted lines. Note relation of floor of old pit to that of present house.

D. View of the south-east quadrant of house pit. The fire-hardened adobe floor, the small wall postholes, and the two large support postholes are shown. The irregular hole at the southeast corner is apparently a rodent burrow. The burned roof and part of the walls lay on the floor, together with segments of burned adobe clay bearing the imprint of the jacal walls at the inside corners.

E. East side of house pit, showing profile of older house pit intersected but not totally destroyed by present pit. The age of the older house was not determined.

(Note: The placement of the directional arrow is only approximately correct).

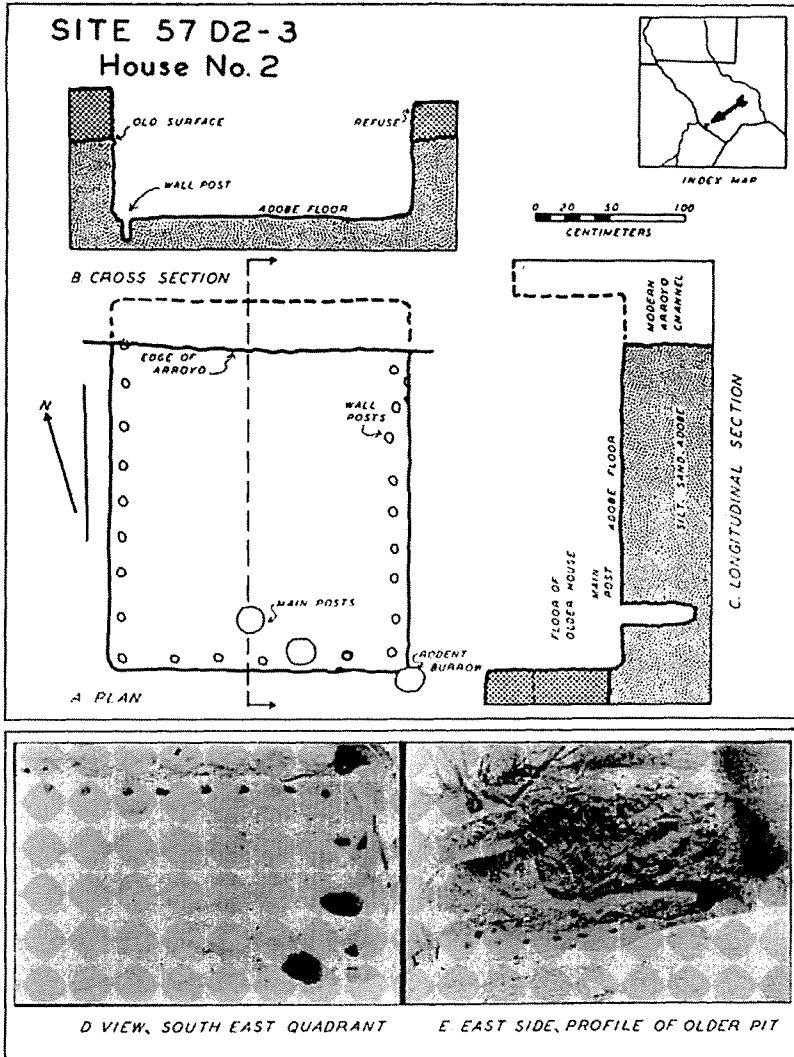


PLATE 16

lenses of gravel. There is considerable charcoal in the upper 50 centimeters of the fill, which in part at this level must be described as refuse. Toward the southeast, this refuse dips into an old arroyo cross-section and drops to a depth of about 1.5 meters. Thus, there must have been an erosional epicycle during or immediately following the occupation of the site.

The first feature excavated was House No. 1 (not shown). This structure appeared as an irregularly rectangular pit cross section in the bank with a clearly marked burned clay floor about a meter below the surface, and with a dipping band of burned roof or wall debris containing incidentally inclusions of burned clay showing the marks of a *jacal* wall structure. This burned roof debris in places lay directly on the floor and in places on an ashy fill. Only about twenty centimeters of the southern end of the structure remained, most of it having been destroyed by erosion. The parts that did remain compared in size and general features with the southern end of House No. 2, which lay parallel to it some 6 meters to the east with its missing northern wall probably in alignment with the southern wall of House No. 1. The large central post holes of House No. 2 were not present in House 1, however, but were replaced by larger holes at the corner. No specimens were found in House No. 1.

Some 4 meters east of House No. 2, the cross-section of a pit about 1 meter wide and 1 meter deep was exposed in the bank. This did not appear to have been a house but rather a storage pit similar to one found at Shafter 7:3 near Presidio. As in the case of the Shafter 7:3 pit this structure was filled with boulders 10 centimeters or more in diameter. It was not excavated.

House No. 2 (Plate 16)

Apparently only the northern end of House No. 2 had been destroyed by erosion, judging by its size and proportions in relation to similar houses excavated earlier at Shafter 7:1 and Shafter 7:3. This house is a rectangular structure built in a pit and floored with adobe clay. Its present

size is about 2.2 by 2.0 meters; its original size must have been about 2.5 by 2.2 meters. The pit appeared to have been cut down some 55 centimeters from an old surface which lies about 35 centimeters below the present surface. It had been cut into sandy adobe or silt showing no cultural inclusions at this point, but the material overlying the old surface and filling the upper part of the pit contained much charcoal, ash, flint chips, and other indications of human occupation. The pit of House No. 2 had been cut into the northern end of an older pit of greater width, but somewhat shallower. The older pit too had an adobe floor and had been refilled with sandy refuse (Plate 16, C & E) but no data as to its characteristics, age, or cultural associations were obtained.

House No. 2 had been oriented with its long exit extending approximately north-northeast and south-southwest. It had been burned and debris from the burned roof and part of the walls lay on the floor. A line of small postholes, averaging 4 centimeters in diameter and set about 15 centimeters into the floor was uncovered along the edges of the prepared adobe floor a few centimeters in from the pit walls. Along the length of the pit these posts, which were not directly in line, were spaced about 25 centimeters apart. Almost midway along the south wall, and set in some 32 centimeters to the north, was a large posthole about 14 centimeters in diameter, an estimated 45 centimeters in depth, and containing the charred butt of a post. About 35 centimeters east of this hole, and set close to the south wall, was a second posthole similar in dimensions, and likewise containing a charred post butt. Presumably, a second set of two large support posts had been present at the other end of the house but had been destroyed together with the northern pit wall.

Combining the evidence of the postholes, the charred roof and wall debris, and pieces of burned clay from the *interior* of the roof and walls, the house superstructure may be tentatively reconstructed as follows. The walls were thin and flimsy, supported as they were by small and widely spaced wall poles. They were probably constructed by tying

saplings horizontally across the wall poles and other small vertical poles, *ocotilla* stalks, etc. across these to form flimsy wall panels, which in turn were lightly plastered with adobe clay. The two large posts at each end (?) of the house probably supported a longitudinal ridge pole. From this stringer, beams probably extended to small saplings lying horizontally across the top (in forks?) of the wall posts. Over these, criss-crossed saplings covered with leaves, grass twigs, and possibly river cane or corn stalks formed a fairly thick roof which was then covered with loose silt and sand, rather than adobe clay. The resulting roof was thus nearly flat but with a slight pitch, probably in four directions. A somewhat similar construction is used in making modern *jacal* structures in this vicinity,³ but the modern construction is more substantial, the pits are larger but shallower, if not totally lacking, and often several abutting rooms are constructed. No evidence of an entrance was found, but a roof entry seems most probable. Notably, in neither House No. 2, nor House No. 1, was there any trace of the rectangular plastered blocks of adobe, termed "altars," which occurred midway of the southern end of many of the houses of similar type excavated in the Presidio vicinity.

In the upper fill of House No. 2 one sherd of Chupadero Black-on-White pottery was found, and at a depth of 30 centimeters above the floor a sherd of El Paso Polychrome was recovered. A second sherd of El Paso Polychrome was found on the floor, and in addition the following articles were recovered or noted in place on the floor.

Stone Artifacts: (3 specimens)

Flake side scraper.....	1	(Plate 18, N)
Pestle, with yellow pigment and scratch marks on one flat surface (31.5x10.5x7.5 cm.).....	1	(Plate 18, P)
"Fetish" (concretion with knobby protuberances and high polish; 15.5x11,x9 cm.)	1	(Plate 18, M)

³ See Donald J. Lehmer, "Modern Jacales of Presidio," *El Palacio*. Vol. XLVI, No. 8, pp. 133-186. Santa Fe, 1939.

Other Artifacts: (5 specimens)

Bone awls (made from half of tibia (?) of small animal, polished; butt ends missing).....	2	Not shown
Antler "tool handle" (portion of butt of antler, smoothed, distal end cut evenly and hollowed; might have served as handle for bone awl).....	1	(Plate 18, O)
Gourd vessel (fragmentary, burned, no data as to shape but lip of opening smoothed).....	1	Not shown
Textile (charred, fragmentary, appeared to be a tassel of fiber cords).....	1	Not shown

Total Specimens from House Floor: 9

It should be noted that the bone awls, the antler handle, the fragment of textile, the flake side scraper, and the fragments of gourd came from a small area in the northeastern quadrant of the house, suggesting that the former may originally have been in the gourd container.

PLATE 17

Site 31C9-5 House No. 1

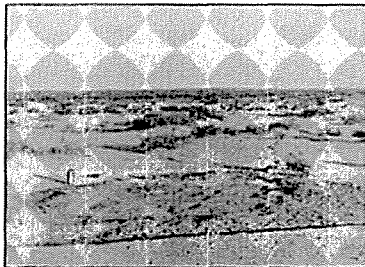
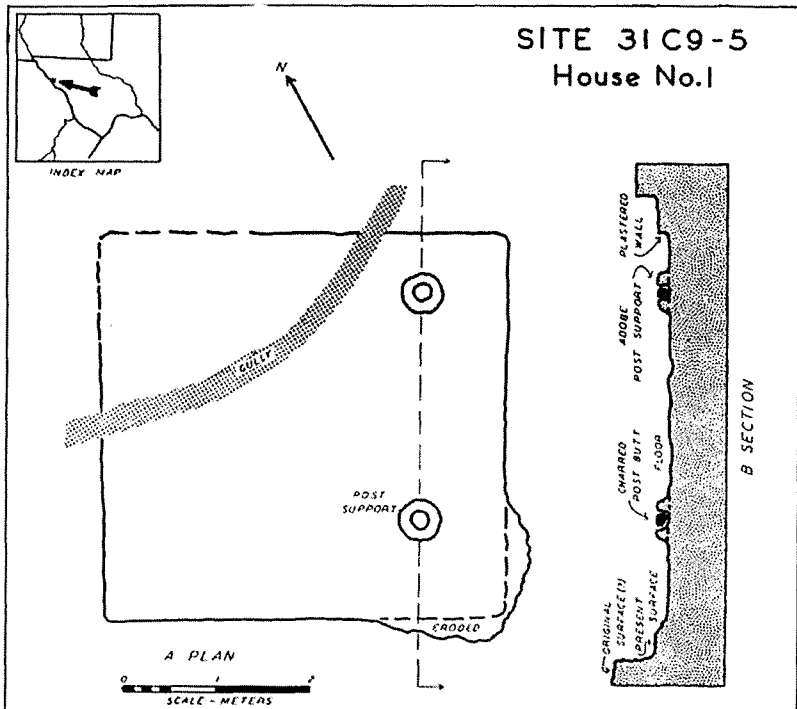
A. Plan. The dimensions and outlines of the house pit and the post supports are shown approximately correct but the irregularity of the eroded floor and the position of the gully is only indicated. The northwestern corner of the pit had been eroded to the level of the floor and the actual walls could not be located. The dashed line indicates the edge of the floor and the approximate location of the wall.

B. Cross section. The original surface level was not determined but a surface level preserved locally in bush clumps probably approximates it, as shown.

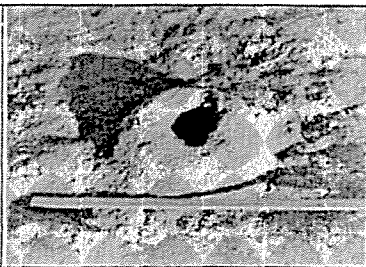
C. View. The straight line cutting across the foreground is the edge of the present road cut. The eroding flat, almost denuded of vegetation, surrounding the house was littered with potsherds.

D. Post support. No trace of postholes was found in the house floor or adjoining the pit. Two main support posts had apparently been set upright with their butt ends flush with the floor. Around the bases wet adobe clay had been plastered, producing the feature shown.

⁴ Kelley, pp. 31-38, in J. Charles Kelley, T. N. Campbell, and Donald J. Lehmer, "The Association of Archaeological Materials with Geological Deposits in the Big Bend Region of Texas," *West Texas Historical and Scientific Society Publication*, No. 10. (Sul Ross State Teachers College Bulletin, Vol. XXI, No. 3), Alpine, Texas, 1940.



C. VIEW



D. POST SUPPORT

Site 57D2-3: Conclusions

The artifacts from the surface of the site contain such diagnostics of the Bravo Valley Aspect⁴ as end-notched pebbles snub-nose, flake side, and thumb-nail scrapers, finger-shaped scrapers, shaped two-faced one-hand manos, Perdiz Stemmed, side-and base-notched, and triangular arrow-points; and the pottery types Conchos Plain, Conchos Red-on-Brown, Capote Plain, Polished Red, and El Paso Polychrome. From fill and floor of House No. 2, the stone pestle, bone awls, and Chupadero Black-on-White are likewise traits occurring in Bravo Valley Aspect components. Houses No. 1 and 2 represent a type commonly found in sites of the aspect. The Langtry Stemmed point belongs with an older cultural horizon and is probably intrusive at this site.

House No. 2 (and probably No. 1 also) belong typologically to the La Junta Focus of the Bravo Valley Aspect, and the pottery types found in the fill and on the floor confirm this identification. The lack of an "altar" is interesting but sufficiently common in such La Junta Focus houses to be without especial significance. The longitudinal ridge pole superstructure, if the interpretation given here is correct, has not been specifically noted in other La Junta houses but may have occurred. The presence of one sherd of Chupadero Black-on-White in the fill, the presence of an older house, presumably of the La Junta Focus likewise since cultures with permanent houses older than this focus are not known from the region, and the lack of an altar together suggest that House No. 2 belongs to the latter part of the La Junta Focus and that it was probably occupied between about 1300 and 1400 A. D., if not slightly later.

The remainder of the surface artifacts, in particular the large number of wares of European wares of late date, together with the lack of early European intrusives such as Spanish or Mexican Maiolica and native wares such as Chinati Plain and Capote Red-on-Brown suggest a very late historic occupation for the site, perhaps very late Conchos Focus (dated tentatively at 1700-1800 A. D.) or even early modern (Alamitos Focus). Since many of the historic wares

are modern, since a ware nearly if not actually identical with Conchos Plain is still used and/or made locally, and since the original site of Polvo is said to have been located here, all of the artifacts not strictly attributable to the La Junta Focus and perhaps also the large refuse heaps near the center of the site may be assigned to the early modern occupation, probably beginning about 1870. There are thus no artifacts attributable to the late prehistoric and early historic Concepcion Focus (dated at circa 1400, to 1700 A. D.) nor any that can certainly be referred to the Conchos Focus (circa 1700-1800 A. D.) However, the large pithouses visible at the surface in the northern part of the site are characteristic Concepcion or Conchos Focus types, and Concepcion Focus components, at least, are notoriously lacking in surface pottery. The point must be settled by future excavation.

Site 31C9-5

This site is located just northeast of the county Rio Grande Valley road about 8 miles down the river from Esperanza in Hudspeth County, Texas. It was discovered in August, 1948 during the Rio Grande reconnaissance. Specimens and field notes are on file at the Anthropology Museum of The University of Texas at Austin.

The site consists of potsherds, occasional fire-cracked stones, and rare traces of dwellings scattered over an eroding alluvial flat. The flat represents the floor of a shallow draw which rises in the Quitman Mountains, five or more miles to the northeast, and disappears in the lowlands of the Rio Grande Valley about 50 meters below the site. At this point the draw is 50 meters or more in width and is bounded by low gravel terrace remnants on either side. It is now traversed by several gullies, one or more meters in depth, and much of the flat has been reduced by wind and water erosion to a bad-lands topography. A few bushes of mesquite and greasewood and occasional cacti scattered over the eroding flat constitute the entire vegetative cover; much of the area is barren of any sort of vegetation. Occasional clumps of mesquite shelter residual alluvial deposits

with an old surface level visible at about 50 to 80 centimeters above the present average level of the flat. Scattered sherds and occasional hearth-stones visible on the eroded surface appear to have been dropped from a higher level and traces of the burned floors of two houses occupied slight elevations in the present flat, although they probably were constructed in pits.

The Rio Grande alluvial valley land below the site is now covered entirely by irrigated farms. No data are available but it is probable that extensive farming in this section and at a distance of about a mile from the river has developed only after installation of the Elephant Butte irrigation system. Prehistoric farming was probably dependent on river flood irrigation, and in the vicinity of Site 31C9-5 *temporal* fields at the mouth of the draw may have been used.

Surface Collections

Surface collections made at Site 31C9-5 during the 1948 reconnaissance include the following specimens:

Stone Artifacts: (5 specimens)

Mano, one-hand, unshaped, one-faced	1	(Plate 18, L)
Hammerstone, discoidal	1	(Plate 18, G)
Cores or rejects	2	(Plate 18, E, F)
Projectile point, fragmentary (type?)	1	Not shown

Potsherds: (367 specimens)

El Paso Polychrome	27
El Paso plain ware (plain sherds of El Paso Brown or Polychrome, undifferentiated)	135
<i>affinis</i> Three Rivers Red-on- Terra Cotta	1
Plain terra cotta ware, as above	70
Brown ware with red painted lip	1
Brown ware, unidentified	16

Banded-incised ware (Mimbres ?).....	3	(Plate 19, N)
Banded-corrugated ware (Mimbres ?)....	11	(Plate 19, J)
(Playas ?) Corrugated ware.....	3	
Deep-corrugated ware.....	67	(Plate 19, L,M)
Smearred-ribbed ware.....	23	(Plate 19, I)
Brushed ware.....	5	(Plate 19, K)
Unidentified plain sherds.....	4	
Potsherde disc, smearred-ribbed ware....	1	

Total specimens from
surface collections372

House No. 1 (Plate 17)

A local accumulation of charcoal and pieces of burned clay showing the imprint of an *jacal* wall or roof was the only surface indication of the presence of this house. On excavation it appeared that only the floor of the structure and a small section of the lower part of the pit walls on the southeastern and southwestern sides remained, together with the contents of the shallow pit thus preserved.

The house itself was an almost square structure, averaging about 4.3 meters on a side, with diagonals extending almost due north and south. Erosion of the flat had destroyed part of the floor at the northern corner and one shallow gully cut across the house as well as several minor erosional troughs or pits, not shown on the house sketch. The walls of the southern corner of the pit had slumped but the edge of the floor outlined clearly their former location. It was impossible to determine the original depth of the pit but it can not have been great since there is no surviving evidence that the flat ever stood more than 80 centi-

PLATE 18

Artifacts from Site 57D2-3 and Site 31C9-5.

A, B, C.—Flake side scrapers or knives, surface, Site 57 D2-3; D—Small end and side scraper, surface, Site 57 D2-3; E-F—Cores or rejects, Site 31 C9-5, surface; G—Discoidal hammerstone, surface, Site 31 C9-5; H, I, J, K—Surface, Site 57D2-3; H—Pebble hammerstone, I.—Two-faced, shaped, mano one-hand, J—End-notched pebble (sinker?), K—Core or reject I.—Unshaped mano, one faced, one hand, Site 31 C9-5, surface; M, N, O—Site 31 C9-5, floor of House 2: M—Concretion, indications of handling—fetish?, N—Flake side scraper, O—Antler section, with shaped butt, hollowed end-tool handle?, P—Pestle, with considerable wear in cone shaped area at right end, also peck-marks and yellow pigment on lower forward face as shown.

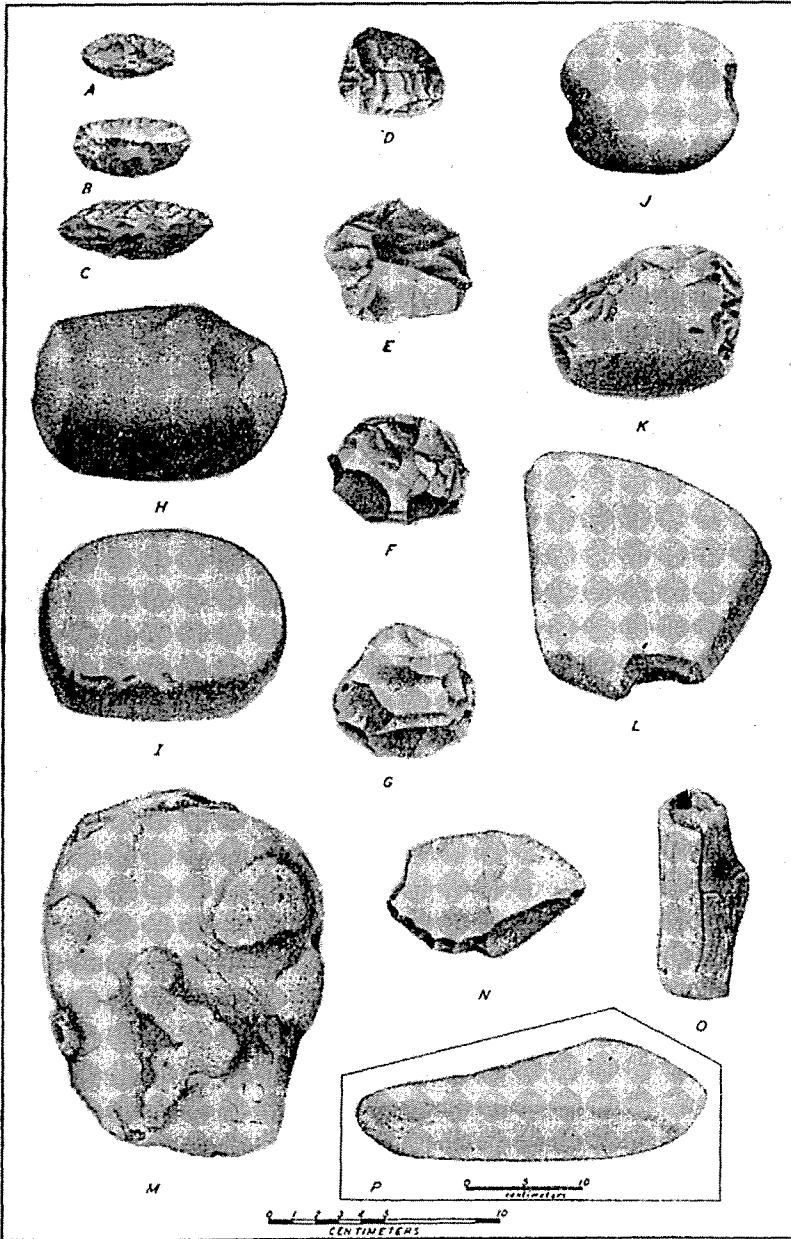


PLATE 18

meters higher than at present, and the pit may have been dug from a considerably lower level. The greatest depth of the pit as now preserved was found to be about 10 centimeters.

The floor and lower walls of the original pit had been covered with a layer of adobe not greatly different in texture or color from that of the surrounding flat. No post-holes were found in the floor, but roughly in line parallel to the southeastern pit wall, the butt ends of two posts, 11 and 12 centimeters in diameter, respectively, had been placed on the floor and held in position by plastering against them masses of wet adobe clay, averaging 36 centimeters in diameter and 10.5 centimeters high (Plate 17, D). Careful troweling of the western half of the house and of the flat just outside the pit revealed no evidence of any other vertical post support or post-hole. The type of super-structure therefore is unknown, although from the burned remains on the floor it is known that the roof was made of criss-crossed small saplings covered with a layer of adobe clay 3 to 7 centimeters in thickness. It is difficult to visualize a super-structure capable of supporting such a relatively firm roof based on only two major supports and placed in such a shallow pit. Perhaps posts were set upright in other parts of the pit without holes or adobe supports. At any rate the structure seems to have been of remarkably flimsy construction and was probably intended for only temporary, perhaps seasonal, usage. Interestingly enough, one of the two other poorly preserved house floors noted at this site also contained an adobe cast of a post butt set squarely on the floor, indicating that the structure type was not sheerly the result of individual eccentricity on the part of one Indian.

On the floor near the northeastern corner of the pit there were many charred beans of the *tornillo* or screwbean tree (*Prosopis pubescens*), and fragments of a charred and crushed coiled basket. Examination of a few relatively intact fragments indicated that the basket was probably an example of two-rod-and-bundle, split-stitch construction, although no further details were ascertainable. A large

quartz crystal (Plate 19, H) also lay on the floor and several potsherds, as listed below, were found either on the floor or in the mass of burned roof debris lying directly upon it.

Pottery From Floor of House No. 1

El Paso Brown (or a very early phase of El Paso Polychrome, since one direct rim sherd had a black line on rim).....	5
<i>affinis</i> Three Rivers Red-on-Terra Cotta.....	1
Plain Red-Brown, polished.....	1
Plain Brown	1
Deep-corrugated	1
 Total sherds.....	 9

Site 31C9-5: Conclusions

The cultural affiliations and chronological position of this site are not clear. The stone artifacts offer no clues either as to age or affiliations. Split-stitch coiled basketry is a trait of the Chisos Focus of the Big Bend Aspect⁵ and of the Hueco Phase.⁶ The specific house type has not, as far as the writer knows, been reported elsewhere. The quantity of pottery and the specific types suggests definite Southwestern affiliations, and specific relationships with the Jornada Branch of the Mogollon culture.⁷

Since the evidence favors a very short period of occupation, the pottery from the house may be lumped with that of the surface collection for further comparison. Nevertheless, it should be remembered that all of the definite El Paso Brown ware sherds came from the house, and that none of the later El Paso Polychrome sherds were found there, though a number of them were found on the surface.

⁵ Kelley, pp. 23-30, in Kelley, Campbell, and Lehmer, *op cit.*, 1940; E. B. Sayles, "An Archaeological Survey of Texas," *Medallion Papers*, No. XVII, Globe, 1935, Chart 8; Victor J. Smith, "The Split-Stitch Basket—A Big Bend Culture Trait," *Bulletin of the Texas Archaeological and Paleontological Society*, Vol. 7, pp. 100-104, Abilene, 1935.

⁶ Cosgrove illustrates an example of two-rod-and-bundle split-stitch basketry from Cave 1 in the Hueco Mountains, assigned to the Hueco Basketmaker (Hueco Phase). C. B. Cosgrove, "Caves of the Upper Gila and Hueco Areas in New Mexico and Texas," *Papers of the Peabody Museum of American Archaeology and Ethnology*, Harvard University, Vol. XXIV, No. 2, Cambridge, 1947. Fig. 96 a.

⁷ Donald J. Lehmer, "The Jornada Branch of the Mogollon," *University of Arizona Bulletin*, Vol. XIX, No. 2. Tucson, 1948.

It is probable that many of the plain El Paso sherds in the surface collection are actually specimens of El Paso Brown; lacking rim sherds this cannot be definitely determined. At any rate, the following points should be noted:

(1). El Paso wares represent the dominant types and the only definitely identified painted types. El Paso Brown, an early form of El Paso Polychrome, and classic El Paso Polychrome are represented. The El Paso Polychrome apparently is represented in greater quantity than the El Paso Brown.

(2). Wares related to Three Rivers Red-on-Terra Cotta but not definitely assignable to that ware are well represented.

(3). Textured wares, including banded-incised, banded-corrugated, deep-corrugated, smeared-ribbed, and brushed wares are present in quantity. Some of them seem to be identifiable as Mimbres Corrugated wares; others as Playas Corrugated wares of the Chihuahua Culture; others are of unknown affiliations.

(4). Plain or polished brown wares, including one sherd with a red painted lip, of unknown affiliation are represented.

(5). Notably lacking are important ceramic types common in nearby Jornada Branch components, such as Chupadero Black-on-White, Mimbres Black-on-White, true Three Rivers Red-on-Terra Cotta, and the various Chihuahua Polychromes and Playas incised wares.

A general consideration of all these points suggests that the culture represented is a local variant of the Jornada Branch, probably approximating most closely the transition between the Mesilla Phase and Dona Ana Phase. The amount of El Paso Polychrome present, the large quantity of corrugated sherds, and the lack of Mimbres Black-on-White probably means that the site dates later than the Mesilla Phase. The presence of both early and developed El Paso Polychrome, El Paso Brown, Mimbres (?) Corru-

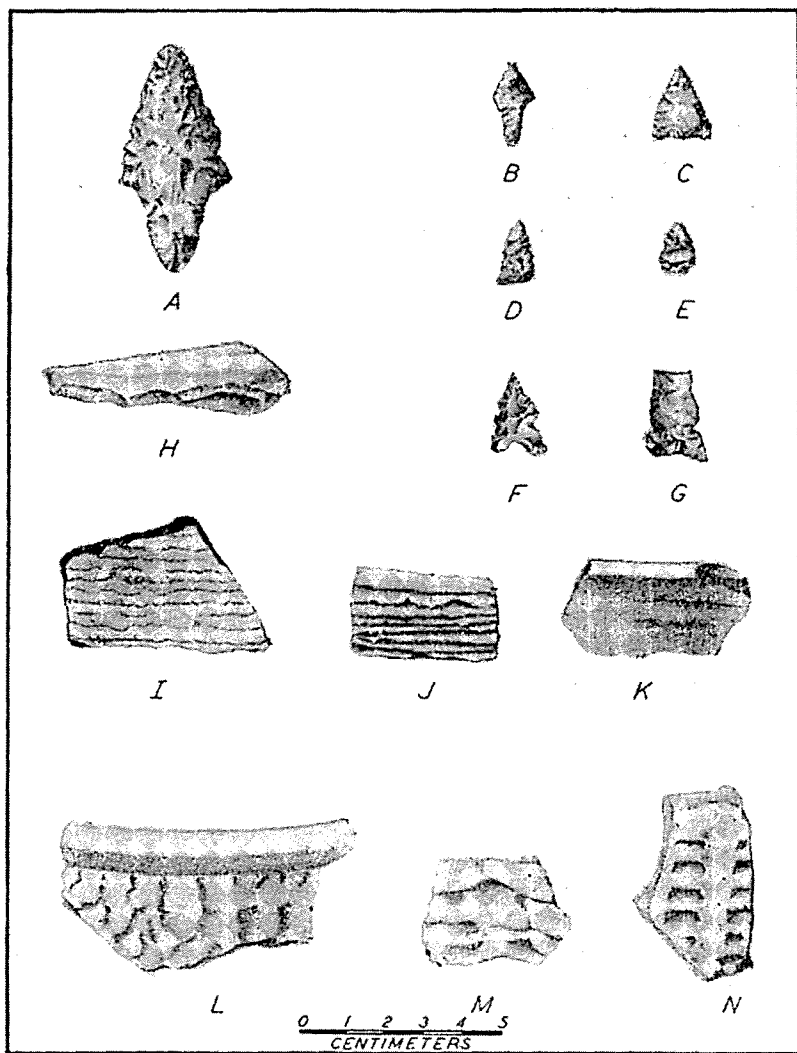


PLATE 19

Artifacts from Site 57D2-3 and Site 31C9-5.

A—Langtry Stemmed dart point, surface, Site 57 D2-3; B-G,—Arrow-points from surface of Site 57 D2-3; B, C (?)—Perdiz Stemmed; D—Concave base, triangular point; E—Small point with broad short straight based stem; F—Side notched and base notched point; G—Side notched point with concave base; H—Quartz crystal from floor of House 1, Site 31 C9-5; I-N—Potsherds from surface of Site 31 C9-5: I—Smearred-ribbed utility ware; J—Banded-corrugated utility ware—Mimbres Corrugated?; K—Brushed ware; L-M,—Deep-corrugated utility ware; N—Banded-incised utility ware—Mimbres?

gated, and a ware related to Three Rivers Red-on-Terra Cotta suggests that the early part of the Dona Ana Phase is represented. The lack of Chupadero Black-on-White and St. Johns Polychrome suggests that the full Dona Ana Phase had not yet developed, and the further lack of any of the Rio Grande glaze wares, Lincoln Black-on-Red, and the Chihuahua polychrome wares indicates that the El Paso Phase is not represented. The latter inferences are supported by the fact that sites containing these wares in quantity, but notably lacking in El Paso Brown, were found only a few miles away in both directions. The age of the site probably falls, therefore, at about circa 1100-1150 A. D., following Lehmer's datings.⁸ The settlement probably represents a temporary seasonal farming camp which utilized run-off of the draw for the irrigation of *temporal* fields, or perhaps this was a camp established for the purpose of collecting *tornillo* beans. At any rate there appears to have been very little occupation of the region before this time, and Site 31C9-5 may well have been a pioneer settlement, which might account for its aberrance in detail from the cultures with which it affiliates.

General Conclusions

Since the full results of the 1948 reconnaissance are not included here, it is impossible to draw general conclusions without bringing data into the discussion which have not been presented in the preceding pages. In order to place the two sites described into a general cultural framework, however, it may be noted that there appears to have been a general expansion of farming communities, derived culturally from the Jornada Branch, down the Rio Grande valley either through diffusion or migration or both, beginning around 1000 A. D., and culminating in areal expansion at about 1300-1400 A. D. Following the period of greatest expansion there was a more or less simultaneous disappearance of all of these farming communities above the Presidio

⁸ *Op. cit.*, pp. 75-89. A full discussion of the various ceramic complexes, their seriation, and their chronology, as followed above, is contained in the pages cited.

Valley, probably around 1400-1450 A. D. Around the mouth of the Rio Conchos in its own valley and the nearby valley of the Rio Grande and downstream in the Redford Valley, agricultural colonies survived the general disappearance and continued in existence in modified form until quite recent times.

In part at least, it seems that the swift spread of a farming economy down the Rio Grande took place, was caused by, and occurred during a period of somewhat improved climatic conditions (from the standpoint of primitive farmers). Similarly, there is some evidence that the sudden and nearly universal extinction of these same farming settlements along the Rio Grande above the Presidio Valley is to be attributed to the passing of these favorable climatic conditions, rather than by the pressure of nomadic tribes such as the Apache in the region. Accordingly, the survival of the farming settlements near and below the mouth of the Rio Conchos is attributable to the much greater and more dependable water supply for available flood irrigation contributed by the Rio Conchos.

The two sites discussed fall into their respective places in this framework. Site 31C9-5 is a relatively early colony established as part of the general movement down the Rio Grande. Site 57D2-3 is a site first established at the height and near the close of this period of colonization, but one which may have survived the period of destruction and continued in occupation into modern times, or else was abandoned and later reoccupied.

J. CHARLES KELLEY,
DEPARTMENT OF ANTHROPOLOGY,
UNIVERSITY OF TEXAS.

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CAVES AND SHELTERS IN DAWSON AND BORDEN COUNTIES

JEAN QUINN AND JANE HOLDEN

East of Lamesa and south and southwest of O'Donnell in Dawson County, on the Dean Ranch which was the C. C. Slaughter estate, a number of draws converge to form the head waters of the Colorado River of Texas. The most important of these little streams is locally known as Tobacco Creek. Until recent years, Tobacco Creek was a running stream fed by springs emanating from the water sands of the High Plains. The creek was used as a camping place for Indians, and later during the cattle epoch, it was an important watering place for cattle herds being trailed either westward or northward. Into Tobacco Creek from the northwest, flows Dry Tobacco, an intermittent stream.

The convergence of these two streams, together with several smaller, unnamed draws, creates a well-defined valley some six or seven miles across. The Cap Rock of the High Plains forms the sides of the U-shaped valley with the opening to the southeast. That part of the Cap Rock on the northeast of the valley is a deposit of Comanchean limestone whose thickness is not known, but which is exposed for fifty or sixty feet along the rim. From the top of the rim to the bottom of the valley is a vertical distance of approximately two hundred feet. Along this rim for a distance of eight to ten miles are occasional rock shelters and caves (Plate 20). Some of these contain evidence of pre-historic occupation.

These shelters and caves were brought to our attention by Mr. Ben Moore of O'Donnell, Texas. Mr. Moore is an amateur archaeologist who has lived in that area for about forty years.

FINGERPRINT CAVES

This site is six miles east and eight miles south of O'Donnell. The two caves are much alike in regard to size and shape, both containing hand prints. No artifacts were found

in the south cave, and the only evidence of occupation is the smoked ceiling and the hand prints. In fact, there is a greater number of hand prints in this cave than the north cave in which the excavation was done.

The south cave is eighteen feet from the entrance to the back. At the widest point, which is a line drawn from the north side of the entrance to a point to the south of the center of the back wall, the measurement is nineteen feet seven inches. The height at the center of the cave is four feet six inches while the height at the entrance is five feet four inches. The width at the entrance is ten feet nine inches (Plate 20). The floor of this cave rises toward the back with about a fifteen degree slope, which probably accounts for the fact that almost no fill had accumulated, and the rock floor is exposed throughout the area of the cave.

The entrance to the north cave is at the same level in the limestone bluff and fifteen feet to the north. This one measures sixteen feet between north and south walls and nineteen feet at the widest point, which is a line drawn from a point south of the entrance to a point to the north of center of the back wall. The height at the center is four feet seven inches, and at the mouth, it is four feet one inch. The entrance is ten feet six inches wide (Plate 20). The floor in this instance slopes very gradually to the center from back, front, and sides. To this fact may be attributed the four to six inches of fill which had accumulated since the cave was occupied. The fill consisted of a mixture of very fine wind-blown dust and ashes. The ceilings and walls in both caves were heavily blackened with smoke. A ledge extends for about ten feet in front of both entrances. Small native shrubs, scrub oak, mesquite, and poison oak, grow at the edge of the ledge and continue down the slope.

The first trip to the location was made on April 11, 1948, at which time only a preliminary examination was made. Several good artifacts were uncovered, and it was decided to return the following week for further excavation. The second trip was made on April 18. The party consisted of an

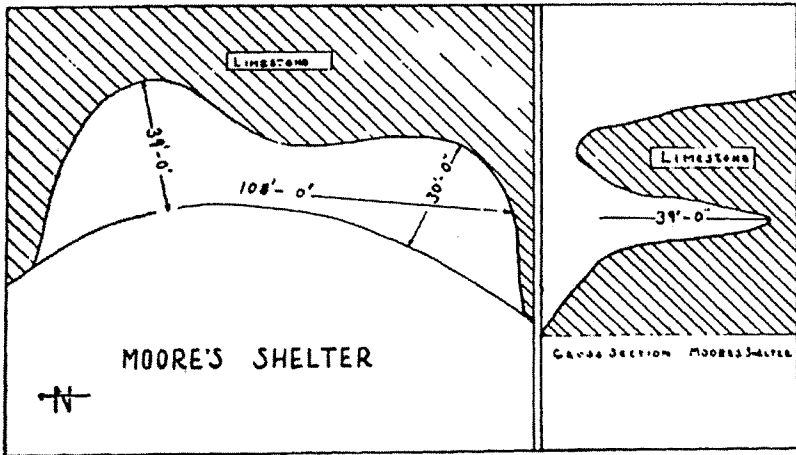
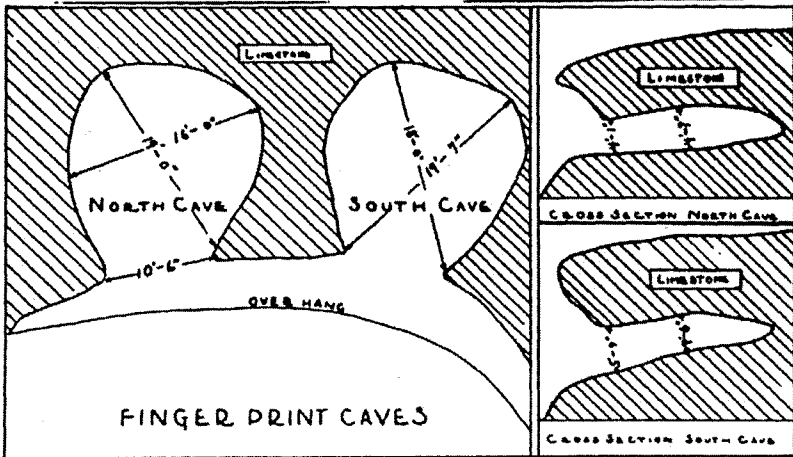
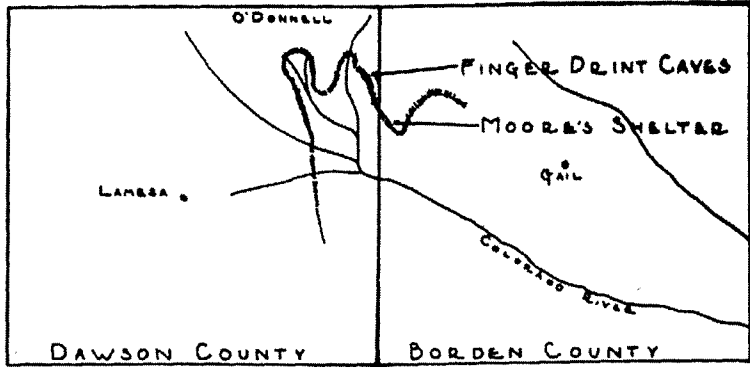


PLATE 20

Location, floor, and cross section of Fingerprint caves and Moore's shelter.

anthropology class, under the direction of Dr. W. C. Holden, and photographers and others interested in the work. As the fill was typical of that usually found in dry caves, it was necessary for members of the party to wear respirators while working. The crew was divided in two groups,—the shovelers and the sifters. Each spadeful of material was sifted through quarter-inch wire mesh; the artifacts were removed, and the residue dumped over the ledge (Plate 21 A).

Artifacts of Fiber

A total of seventy-three pieces of cordage, thirty-three of which contained square knots, was discovered. They came almost exclusively from the northeast corner of the north cave. They varied in size from stringlike pieces about the diameter of heavy twine to specimens one-fourth of an inch in diameter. The cords are all of the same type, having two strands which are twisted in a counter-clockwise direction. The texture of the cordage varies from a soft, fuzzy material to a hard, coarse fiber. No complete snares or nets were unearthed; however a piece of cordage was found which could easily have been part of a net. It consisted of three portions of cordage tied together at opposite ends to form a triangular shaped piece (Plate 22 B).

A small brush, made of a section of yucca stem was secured. It is about four inches long and three-eighths of an inch in diameter. It is similar to brushes used to paint Pueblo pottery.

Pottery

One potsherd was discovered which appears to have had a hole drilled through it. The fragment was broken so that the portion of the hole that remains lies along the break on one side. The sherd is black on one side and reddish-orange on the other. The piece is so small that it is impossible to

PLATE 21

- A. Looking west from the interior of South Fingerprint cave.
B, and C. Hand imprints on ceiling of South Fingerprint cave.

PLATE 22

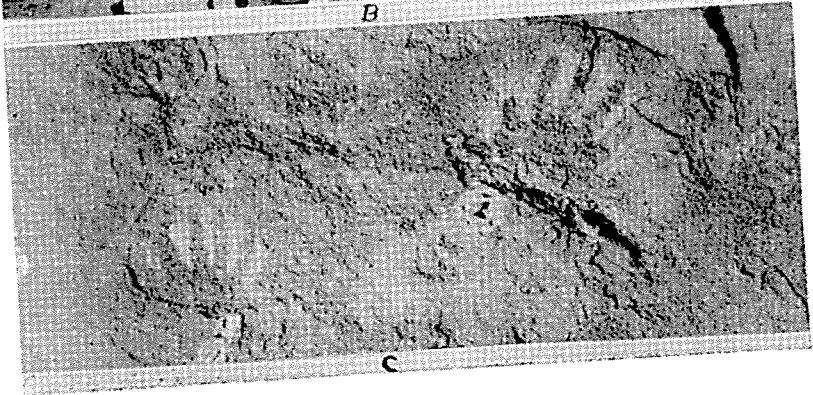
- A. Flint artifacts from North Fingerprint cave.
B. Cordage from North Fingerprint cave.



A



B



C

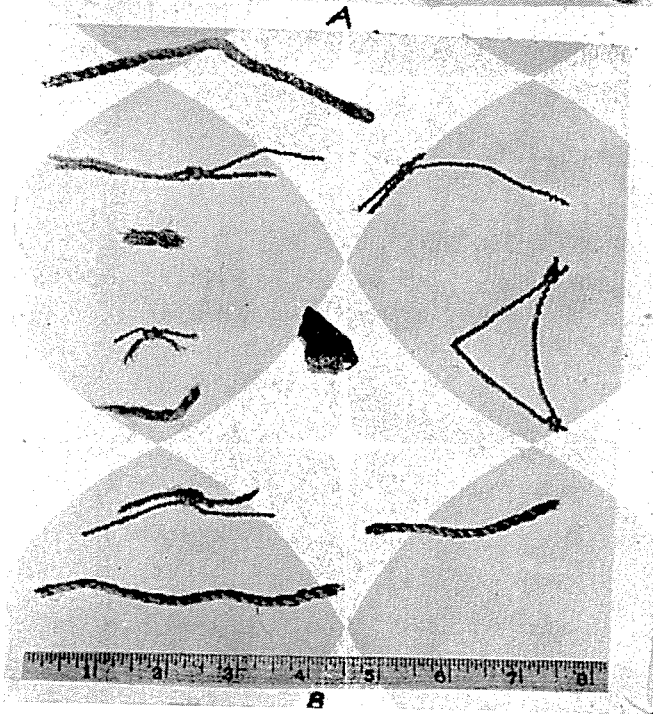
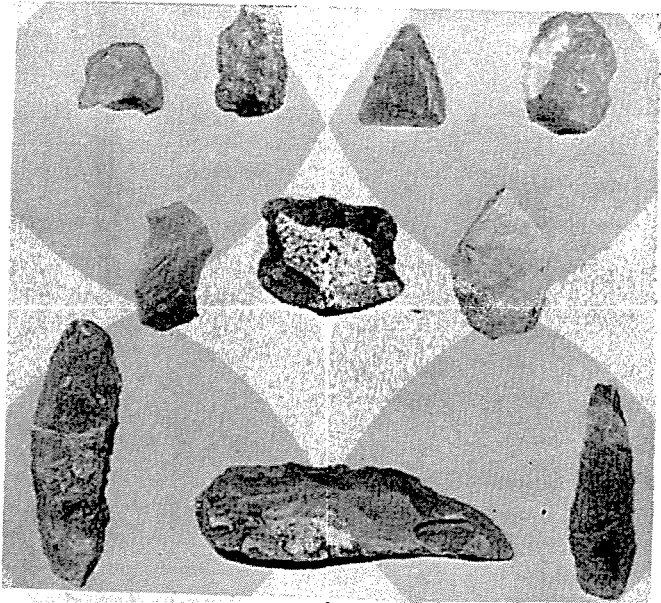


PLATE 22

identify which side was the outside, or to classify it (Plate 22 B).

Flint

A small number of flint artifacts was secured. Among these were five scrapers, one crude, apparently unfinished knife, one quartzite hammerstone, and one triangular shaped knife one inch thick and made of red jasper. (Plate 22 A). This artifact has been very carefully made. A beautifully shaped spoke-shave was found, but unfortunately misplaced before it reached the Museum. In the cave were also several fragments of a metate and a part of one mano.

Food Materials

Possible food materials found consisted of acorns, small wild onions, and grass seed. Among the animals represented by bones were prairie dog, rabbit, bird, and deer.

Charcoal

There were small pieces of charcoal throughout all the floor area; however, it is difficult to determine how much of it may be attributed to the prehistoric inhabitants.

Matted Grass

A layer of matted grass was present throughout most of the floor area round the walls. The greatest amount was concentrated in the northwest corner; most of the cordage also came from this area. There the grass layer averaged four inches in thickness, while the layer at other places around the walls varied from just a trace to a thickness of one inch. None of the grass was found in the center of the floor nor at a greater distance than two feet from the walls.

Hand Prints

There were twenty hand prints in the south room. They varied in size from that of a small child to that of an average size woman. It was the concensus of opinion that the prints were made by painting around the hand with a light colored substance on the back of the ceilings and walls, thus forming negative prints (Plate 21 B, 21 C).

A nearby group of shelters that have not yet been excavated contain several hand prints made in the same way, except that red paint was used instead of white.

MOORE'S ROCK SHELTER

Moore's Rock Shelter faces southwest and is the largest of all those located to date. It averages 108 feet in width, while the mouth has a span of 124 feet. It varies in depth from twenty to thirty-nine feet, and the height ranges from three feet at the back and sides to twenty feet at the front (Plate 20).

The floor in the east and center sections is so steep that no debris has accumulated. The limestone floor is exposed in many places, and no artifacts were recovered in this area. From the fill in the north side, which varied from one to eighteen inches, numerous artifacts were collected.

Artifacts of Stone

Four projectile points were discovered, all of which are of the barbed type. Two are about an inch and a half long, and the other two are less than one inch in length. All are made of flint of a light brown color. Nine scrapers and one graver were also identified (Plate 23). Fifteen flint cores and some 180 flint chips were secured. One large mano was found about six inches below the surface. It is oval shaped, measures about eight inches by five inches and shows wear on both sides.

Cordage

Only one specimen of cordage was discovered. It was about nine inches long and three-eighths inch in diameter. It lay six inches below the surface in a layer of leaves and dark earth.

PLATE 23

Artifacts from Moore's Shelter.

PLATE 24

A. Basket from Moore's Shelter.
B. Skeleton of infant from Moore's Shelter.

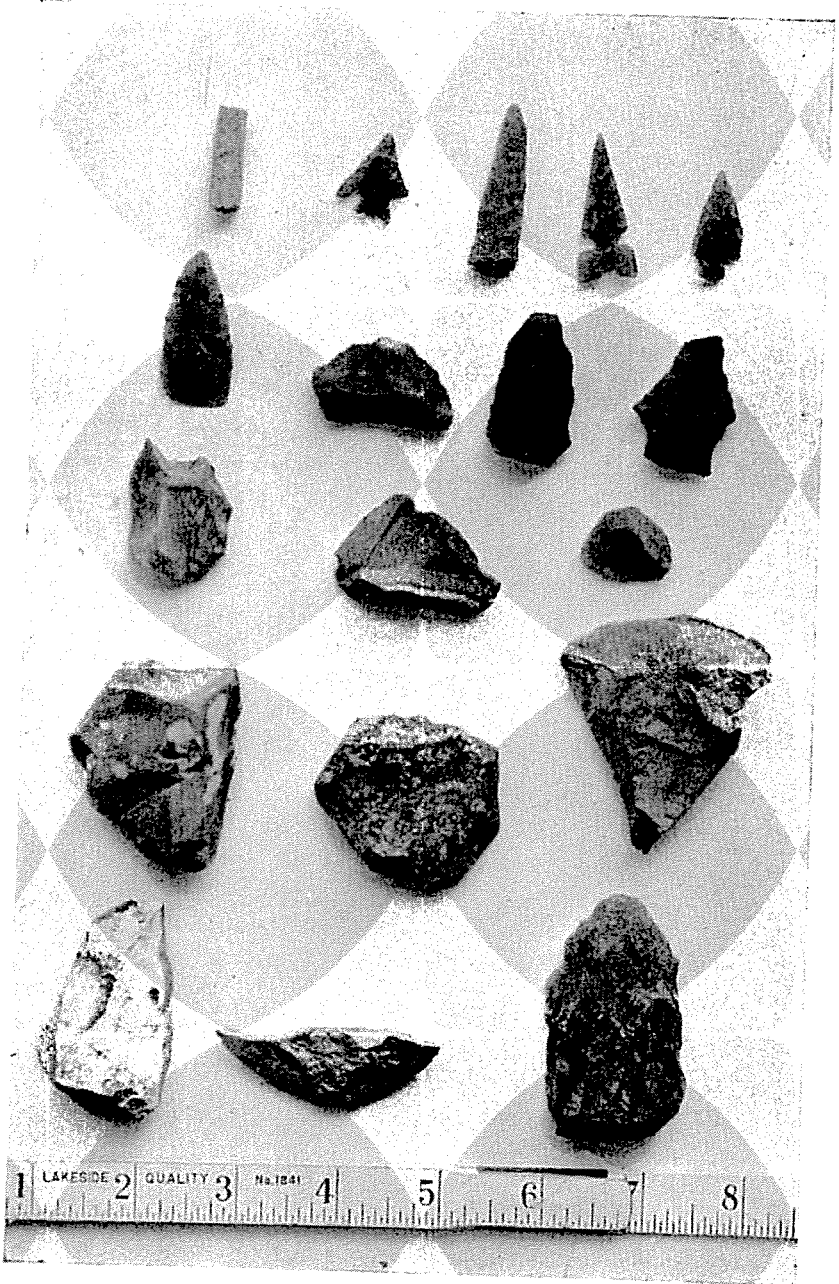
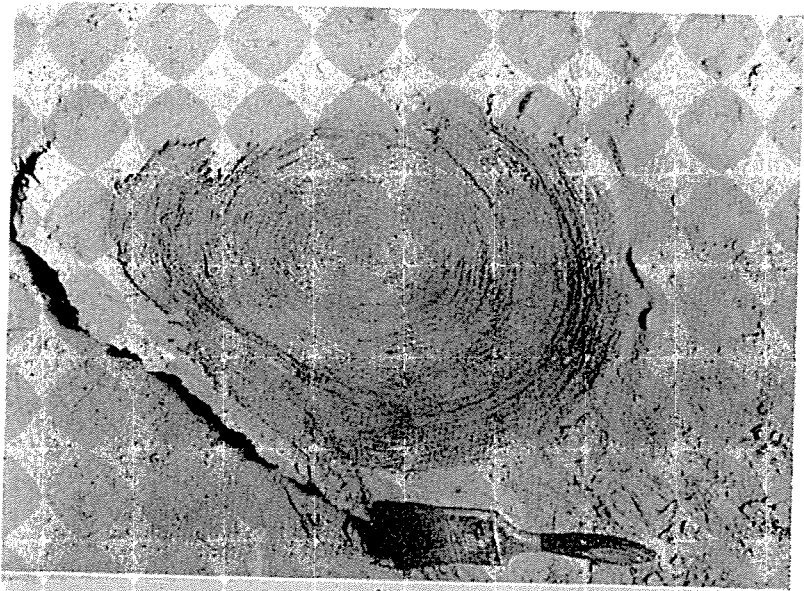
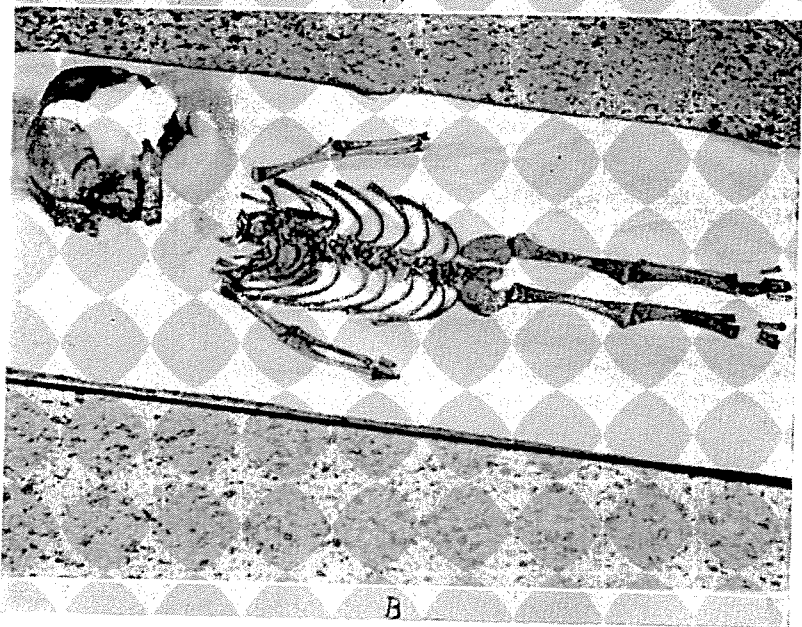


PLATE 23



A



B

Matted Grass

The residue contained a large amount of matted grass similar to that found in Fingerprint Cave. It was deposited in layers two to three inches thick over a fairly wide area of the floor. It lay at an average depth of eight inches below the surface.

Charcoal

Charcoal was found throughout the debris, from the surface to the lowest layers. One hearth containing charcoal and ashes was eight inches below the surface. It had been constructed with five stones all of which showed the effects of oxidation. The hearth was ten inches in diameter on the inside.

Food Materials

Acorns and wild onions made up most of the vegetal food material, while numerous bones were found, at least ninety percent of which were from small rodents. Other animals represented in the collection are lizards, turtle, fish, and birds. Antelope bones were present and fragments of larger bones, probably buffalo, were also found.

Basketry

Three baskets were located about eighteen inches from the north wall of the shelter. They lay superimposed on each other, the largest on the top and the smallest on the bottom. They were all of the tray type and had been placed on the floor of the shelter in an inverted position. The diameters of these baskets were respectively sixteen inches, ten and one-half inches, and eight and one-half inches.

The weave is apparently a non-interlocking stitch over a bundle of fibers. They are like the corresponding type of the Big Bend Basketmaker culture (Plate 24 A). Another small fragment of a basket was found on the opposite side of the shelter.

Miscellaneous

A tubular bone bead lay near the surface in a layer of grass matting about eighteen inches from the baskets. It is one inch long and not quite one-half inch in diameter. Both ends show that they have been smoothed (Plate 23). A hollow piece of cane, which had been burned on one end, came from the general area of the baskets. It seems possible that this may have been a "Cigar." Twenty-five pieces of mica and as many shell fragments were recovered.

Burial

The only burial encountered throughout excavation was that of a young infant. Judging from tooth and skull development, the child may have been from three to six months old at time of death. The cause of death was not apparent. The skull contains numerous small depressions resembling pock marks, but we have formed no opinion as to whether they were there at time of death, or whether they may be attributed to some post-mortem action. No burial position was discernible; the bones were completely jumbled. The skull lay on a smooth, flat stone about six inches in diameter. A dark fibrous substance surrounded the bones, but if the child had been wrapped in matting or any other material at the time of burial, it had completely disintegrated (Plate 24 B).

Conclusions

It is not our purpose to draw conclusions. Our principal object is to present what we have found with the hope that it may furnish for someone better qualified a little piece of the puzzle that is now prehistoric man in this area.

Due to the shallowness of the fill, it was not possible to determine whether or not Fingerprint Caves were occupied in historic or only in prehistoric times. In each sifting we were as likely to find a piece of newspaper or an empty cigarette package as we were to find a piece of cordage or a flint specimen. However, the material was better strati-

fied in Moore's Shelter, and we saw no evidence of white contact after the first six inch layer was removed.

Lack of pottery, except for one sherd found near the surface, would indicate a non-pottery culture, which leads one to wonder if these people could be contemporary with more well known pre-pottery cultures. Dr. Charles Kelley suggests that we may have found a new locus of a regional aspect. Dr. H. P. Mera is of the opinion that a careful comparison of the basketry and cordage from these caves with that found in caves to the west and north might reveal cultural connections in those directions. Victor J. Smith saw some relationship with the Big Bend Culture. A more detailed study of both the fiber and stone artifacts is necessary before more definite conclusions may be drawn.

There are several similar shelters in the vicinity showing evidence of occupation. When these are excavated and their materials studied, we shall have a broader view of the people who lived in them and shall feel better prepared to make comparisons with seemingly similar cultures in other areas.

NEWS NOTES AND EDITORIALS

REPORT OF THE NOMENCLATURE COMMITTEE

At the Sixth Plains Archaeological Conference in Lincoln, Nebraska, on November 25, 1948, I outlined the several suggestions approved at our meeting in Austin on October 23, 1948, regarding the aims and objectives of a committee on archaeological nomenclature. Considerable discussion followed. Briefly, the following points were adopted: (1) The work of the committee should be continued. (2) The committee should consist of two members, one from the northern Plains area and one from the southern Plains area. (3) The terms defined should include all technical terms commonly used in archaeological publications. (4) The scope of the definitions should be confined, at first to those used in the Plains area and later expanded to include all archaeological areas of North America. (5) The committee should solicit help from as many archaeologists as is practicable. (6) The results of the work should be eventually published in handbook form and circulated as widely as possible.

Jack Hughes, now working for the River Basin Surveys in the Missouri Basin, was appointed to represent the northern Plains area on the committee and I was appointed to represent the southern Plains area. We decided to use the following procedure in working out a list of terms and definitions: (1) Establish a card file of approximately 1,000 terms. (2) For each term, provide the standard definition as given in Webster's New International Dictionary. (3) Then we will check archaeological literature and note all variations in meaning of these terms as used in the past, giving credit to the writers and noting the specific areas and situations in which these terms were used. (4) When this card file has been completed as nearly as seems practicable the material will be mimeographed and circulated among archaeologists throughout the Plains area. Each archaeologist will then have an opportunity to criticize and select his preference for definitions of these terms or suggest additional definitions, or additional terms. (5) The results of this circularization of the material will then be tabulated and the most widely accepted definitions will be assigned to each term, with secondary definitions included where necessary. Other pertinent data regarding use of the terms including author and area will also be included. (6) The final results will be published in the form of a pocket dictionary, and given as wide circulation as possible.

To date the committee is working on the card file of terms, selecting dictionary definitions and special definitions, and an-

notating each term with as much data as seems pertinent to the problem at hand. Occasional reports of progress will be made in this bulletin and elsewhere. If the reader has any suggestions on either terms, definitions or methods of procedure they would be most welcomed by the committee and may be sent to me at the Department of Anthropology, University of Texas, Austin, Texas.

ROBERT L. STEPHENSON.

THE 1949 ANNUAL MEETING

The twenty-second Annual Meeting of the Texas Archeological and Paleontological Society was held May 1-5 on the campus of Sul Ross State College at Alpine, Texas, in association with the Southwestern Division of the American Association for the Advancement of Science. The Society is especially indebted to the local committee at Alpine for helping to make our visit there both enjoyable and interesting; to the program committee of the Society, consisting of Dr. T. N. Campbell, Dr. J. Charles Kelley, and Dr. Alex D. Krieger, for the interesting papers on our section of the program; and to Dr. Erik K. Reed of the National Park Service at Santa Fe, who was in charge of the over-all program for the Social Sciences.

The following papers were read:

Jane Holden, *Further Excavations at Fingerprint Cave.*

Cyrus N. Ray, *Report on Research in the Abilene Region.*

E. J. Adams, *Remains of Early Man and Extinct Animals in Texas.*

Ernest Wallace, *The Comanche on the White Man's Road.*

E. H. Sellards, *Preliminary Report on Excavations at the Kincaid Shelter, Uvalde County.*

Herbert C. Taylor, Jr., *A Tentative Cultural Sequence for the Area About the Mouth of the Pecos.*

J. Charles Kelley, *Archaeology and the Modern World.* This was the 1949 John Wesley Powell Lecture for the Southwestern Division of the A.A.A.S.

—E. W.

FINANCIAL CONDITION OF THE SOCIETY

In Vol. 19 the secretary-treasurer called attention to the critical financial condition of the Society and suggested several alternative possibilities. Fortunately, the sale of a rather large number of copies of the *Bulletin* during the year solved the problem temporarily. As a result, it was decided at the Alpine meeting to post-

pone for the time any increase in annual dues, even if it became necessary to reduce the size of the *Bulletin*.

The Society still has available most volumes of the *Bulletin* at the original price of \$3.00 each. If your file is incomplete, why not complete it while copies are available and while publication costs are high? Possibly you can persuade some institutional library or individual to order, or to become a member of the Society.—E. W.

THE 1949 BULLETIN

We regret that Vol. 20 is considerably smaller than usual. The financial situation is not altogether to blame. Not enough manuscripts were received. This was possibly due to the fact that copy for Vol. 20 was sent to the printer much earlier this year than has been customary. —E. W.

THE 1950 BULLETIN

Manuscripts for inclusion in Vol. 21 should be sent to the editor as soon as possible. Your co-operation in this matter will enable him to get out a better *Bulletin* on time. —E. W.

THE 1950 ANNUAL MEETING

Those present at the Alpine meeting voted to have the next annual meeting of the Society in October, 1950, at Canyon, Texas, with West Texas State College acting as host institution. Tentative plans indicate that it will be a meeting you will not want to miss.

Anyone having papers or suggestions for the program should communicate with the program committee as soon as possible. Members of the committee are Dr. T. N. Campbell, Dr. J. Charles Kelley, and Dr. Alex D. Krieger, Department of Anthropology, University of Texas, Austin. —E. W.

REPORT OF THE SECRETARY-TREASURER
OF THE TEXAS ARCHEOLOGICAL AND
PALEONTOLOGICAL SOCIETY

Report for the twenty-first year from the annual meeting,
October 23, 1948, to the Alpine Meeting, May 3, 1949.

RECEIPTS

Balance on October 23, 1948.....	\$ 457.42
Collected on 1947 dues.....	12.00
Collected on 1948 dues.....	330.00
Collected on 1949 dues.....	6.00
Collected on sale of <i>Bulletins</i>	501.00
Donations	2.00
TOTAL	\$1,308.42

DISBURSEMENTS

Bank debit for collections.....	\$ 2.73
Southwestern Engraving Co. for plates for Vol. 19.....	78.20
Abilene Printing & Stationery Co. for printing Vol. 19.....	637.00
Postage	23.00
To U.S. Copyright Office for copyright of Vol. 19.....	4.00
TOTAL	\$ 744.93

Balance on deposit in First National Bank, Lubbock, Texas, on May 3, 1949.....	\$ 563.49
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ERNEST WALLACE,
Secretary-Treasurer.

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 Joe Benton Nocona, Texas
 W. P. Brennan Crystal City, Texas
 Mrs. Charles Brower (Hall Ranch) Richland Springs, Texas
 Bureau of American Ethnology, Smithsonian Institution,
 Washington, D. C.
 C. M. Caldwell Abilene, Texas
 Dr. Tom N. Campbell, University of Texas Austin, Texas
 Mrs. Wm. H. Campbell, Box 116, Kings Canyon Road,
 Carson City, Nev.
 Sam Chamberlain Refugio, Texas
 Chicago Natural History Museum, Roosevelt Road and
 Lakeshore Drive, Chicago 5, Ill.
 Cleveland Public Library Cleveland, Ohio
 Columbia University Library New York City, N. Y.
 Corpus Christi City Public Library Corpus Christi, Texas
 Col. M. L. Crimmins, 312 Geneseo Road San Antonio, Texas
 Dallas Public Library Dallas, Texas
 E. C. de Montel, 1000 City National Bldg. Wichita Falls, Texas
 Frederic H. Douglas, Denver Art Museum, 1300 Logan St.,
 Denver 3, Colo.
 Dr. C. D. Eaves, Texas Technological College Lubbock, Texas
 Helen S. Farrington, El Paso Public Library El Paso, Texas
 Field Museum of Natural History Chicago, Ill.
 W. S. Fitzpatrick, Fitzpatrick Drilling Co. Corpus Christi, Texas
 M. F. Foote, 6110 Mimosa Lane Dallas, Texas
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 W. S. Fulton Dagoon, Arizona
 Gila Pueblo Globe, Arizona
 Frank Grimes Abilene, Texas
 Hardin-Simmons University Library Abilene, Texas
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Dr. Frank C. Hibbon, 3000 Campus Blvd.....	Albuquerque, N. M.
Dr. T. L. Hodges.....	Bismark, Ark.
Dr. W. C. Holden, Texas Technological College.....	Lubbock, Texas
Houston Public Library.....	Houston, Texas
Institute Panamericano de Geografia e Historia, 192 Avenida del Observatorio, Tacubaya, D. F., Republica Mexicana	
Illinois State Museum.....	Springfield, Ill.
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Newberry Library, 60 W. Walton Place.....	Chicago, Ill.
New York Public Library, Fifth Ave. and 42nd Streets.....	New York City, N. Y.
Northwestern University Library.....	Evanston, Ill.
Ohio University Library.....	Athens, Ohio
Oklahoma Agricultural and Mechanical College.....	Stillwater, Okla.
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H. A. Pender.....	Abilene, Texas
Phillips Academy, Dept. of American Archaeology.....	Andover, Mass.

Judge Hermon C. Pipkin (Deceased).....	Amarillo, Texas
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J. Henry Ray, 2130 Fannin St.....	Vernon, Texas
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Society des Americanistes, Musse de L' Homme, Palais de Chaillot.....	Paris, France
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TEXAS ARCHEOLOGICAL SOCIETY

Texas Archeological Society (TAS)

The Texas Archeological Society (TAS) offers a wide range of opportunities for those interested in Texas heritage. The mission of the Society is to promote study, preservation and awareness of Texas archeology. A recent strategic plan calls for the Society to create training opportunities for students, enhance and expand programs, increase and diversify membership, inform the community of their archeological heritage and cultivate and preserve resources. The membership generally numbers around 1400.

The Society calendar begins in October with the Annual Meeting, an event that has taken place since 1929. Archeologists, professional and avocational, get together to share information in research sessions and to hear from nationally renowned luncheon and banquet speakers. Friday is a popular evening for the public forum with high profile speakers and artifact identification. Meetings will be held in Lubbock (08) and Del Rio (09).

Each spring TAS offers sessions of the Texas Archeology Academy. Topics in this series of workshops include Archeology 101 (including a field day), Ceramics: The Stories Pottery Tells, Lithics: Reading Stone Tools, Historic Archeology and Rock Art of Texas. Each Academy features power point presentations, a manual and hands-on activities to reinforce concepts presented. In 2009 sessions will be held in Georgetown, Study Butte, and Lake Jackson. Surveys at the close of sessions reveal that participants greatly value the information imparted during the workshop and the camaraderie of fellow students.

The summer brings a field school that offers an opportunity for folks to contribute to research about Texas archeology. The principal investigator is supported by staff and experienced volunteers. Usually around 300 people participate. Newcomers appreciate an orientation session before joining crews in the field. Survey and lab sessions provide other venues for people who want to learn more about the archeological process. The field school in 2009 will be in the Panhandle near Perryton. We offer scholarships to college students and Native Americans. A youth program instructs around 60 students each year.

Publications of the Society include a journal, the Bulletin of the TAS, a quarterly newsletter and two web sites. www.txarch.org is the organizational web site that relates current programs and opportunities. The other web site is www.texasbeyondhistory.net, a venue that offers information in the form of multi-level exhibits. TAS has been a supporting partner of Texas Beyond History since its inception.

For more information about TAS see www.txarch.org or call 800 377-7240.

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