

BULLETIN

OF THE

**Texas Archeological and
Paleontological Society**

**VOLUMES 15&16
1943-44-45**

TEXAS

**ARCHEOLOGICAL
SOCIETY**

**2009
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OF THE

Texas Archeological and Paleontological Society

Volume Fifteen
SEPTEMBER
1943

Published
by the
Society at
Abilene,
Texas

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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 and minor 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.

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TABLE OF CONTENTS

1. Notes on the Decoration and Form of Arkansas Caddo Pottery, By S. D. Dickinson	9
2. Some Experiments in the use of the Atlatl, By J. Walker Davenport	30
3. Indian Arrow and Lance Wounds, By A. T. Jackson	38
4. The Watermelon Island Site in Arkansas, By Dr. and Mrs. T. L. Hodges	66
5. Some Archeological Material in the Museum of The Agricultural and Mechanical College of Texas, By Curtis J. Hesse	80
6. A Pueblo Pot Found Near Paris, Texas, By George T. Wright	92
7. Ground Sandstone Balls of Upper Elm Creek Bed Gravel, By Cyrus N. Ray	97
8. Wind Blown Oil Sands, By H. H. Adams	105
9. News Notes and Editorials	108
(1) Notes On the Big Bend Region of Texas, Adolphe Witte. (2) Should War Stop Cultural and Scientific Research, C. N. R. (3) Human Burial Covered by Twenty- one Feet of Silt, C. N. R.	
10. Secretary-Treasurer's Report	117
11. Membership List	118

Vol. 15, 1943, Price \$3.00
Abilene, Texas

LIST OF ILLUSTRATIONS

Plate 1	Page 13
Engraved fish effigy bowl from Clark County, Arkansas	
Plate 2	Page 17
A. and B. Fluted and engraved water bottles from Clark County, Arkansas	
Plate 3	Page 21
A. Incised punctate urn from Clark County, Arkansas.	
B. Linear punctate urn from Clark County, Arkansas.	
Plate 4	Page 25
A. Engraved cazuela from Clark County, Arkansas.	
B. Bottle from Nevada County, Arkansas.	
Plate 5	Page 31
Illustrating method of gripping the atlatl.	
Plate 6	Page 35
Illustrating method of throwing with atlatl.	
Plate 7	Page 41
No. 1. Apache arrow case and arrow.	
No. 2. Metal projectile points.	
Plate 8	Page 47
Remains of man and horse killed by Indian arrows.	
Plate 9	Page 57
No. 1. Mounted Comanche warrior with lance.	
No. 2. Indian in deerskin attire 1876.	
Plate 10	Page 71
No. 1. Marksville miniature jar.	
No. 2. Caddoan pottery pendant container.	
Plate 11	Page 75
No. 1. Caddoan engraved seed-jar.	
No. 2. Caddoan plain seed-jar.	
Plate 12	Page 83
Nos. 1-2 Large flints found in cache.	
A-B Collection of microliths.	
Plate 13	Page 87
Bison skull pierced by flint projectile point.	
Plate 14	Page 93
Two views of a pueblo pot found near Paris, Texas.	
Plate 15	Page 99
Shows collection of seventeen ground down balls from Elm Creek gravel bed.	

Plate 16 Page 101
No. 1. Shows markings on largest ball from Elm Creek bed gravel. No. 2. Shows another view. No. 3 Shows collection ground balls.

Plate 17 Page 111
No. 1. View of site before excavation showing top hole skull mold and footholds cut into steep bank below. No. 2. Close view of long bones in place. No. 3. James Putnam beside excavation and Mr. J. C. Putnam below it.

Plate 18 Page 118
No. 1. Skull mold in center. No. 2. Bank showing excavation beside boy, Dr. Frank H. H. Roberts, Jr., below. No. 3. General view of bank and Brazos River. In distance, Dr. Roberts standing in excavation.

NOTES ON THE DECORATION AND FORM OF ARKANSAS CADDO POTTERY

BY S. D. DICKINSON

The urge to decorate their pottery was strong among the Caddoes of southwestern Arkansas. The majority of the vessels they made bear considerable decoration. But they always held in check their desire for ornamentation, never forgetting that decoration is secondary and shape is primary in good design. Their standard of taste, I assume, was largely determined by utility like that of primitive potters the world over. Usage naturally controlled the shapes or at least was responsible for the original forms which might have been continued through the years partly because of tradition.

In ceramic decoration one might expect more freedom—more in the choice of motifs and their combination into patterns than in the techniques. Here individuality should have had its greatest chance to flourish. Using only a few motifs, the potters could have achieved innumerable combinations. The Caddoes did work out a wide variety of distinctive patterns which is not at all surprising. Yet, in some instances they appear to have been guided by group feeling in the choice of certain designs for certain shapes. How far this went is at present debatable. That would require an extensive count of shapes, patterns and techniques represented in a number of widely scattered public and private collections of Caddoan material. Only then could one be absolutely sure of his ground. Lacking sufficient statistics, I wish to point out only suggestions of artistic conventions which dictated the type of decoration for specific shapes. My observations are based on illustrations in the works of Clarence B. Moore and M. R. Harrington, and specimens in the collection of Federal Judge Harry J. Lemley, Hope, Arkansas, and in my own collection.

Caddo forms are functional. The vessels are light and easy to handle. Even the cooking pots are usually less heavy than pieces of approximate size made by Middle Mississippi potters in northeastern Arkansas. Although varied in shape, Caddo pottery shows

economy in design. Harrington's classification of shapes¹ includes:

Bowls—Conical form, Semiglobular form, Cazuela form, Intermediate form.

Pots—Urn form, Globular form, Semiglobular form, Vase-like form, Cylindrical form.

Bottles (Sub-classification based chiefly on decoration rather than shape)—With necks, Neckless.

Effigy and Eccentric Forms

These shapes are essentially spherical, conical and cylindrical in contrast to some Coles Creek pieces which follow a rectangular pattern.² Their function as containers seems to have been foremost in the potter's mind. Mass was reduced to minimum requirements. Structural features which might have impeded use of the vessel were avoided.

Proportions were refined. This is more evident in the vessel silhouette than in its dimensions, because placement of the maximum and minimum curvatures has much to do with the appearance and determines the measures or rhythm of the component parts of the vessel mass. Take the urns, for example, where the oral diameter approximately equals the height. Here the potter created an optical illusion of different proportions by constricting the vessel at a point customarily about two-thirds from the base. Had this constriction been lowered to a point midway, monotony would have been obvious.

Curves are subtle, less abrupt than Middle Mississippi silhouettes. When there is a decided change in curvature as in the cazuelas each half of the silhouette frequently forms an "infinite curve" as Ruskin defines it.³ The same holds true for many long necked bottles. One plane flows into another, a feature structurally desirable as well as more pleasing to the eye.

Eccentric shapes are rare. Compound* and zoomorphic vessels

*Excluding many bottles having short bulbous necks which Moore thought represented "a cup placed upon the body of the bottle—a compound form."⁴ Some may be. However, it is difficult to determine where conventionalization stopped.

constitute a minor percentage of Caddo pottery. Rarely were attempts made to model entire vessels realistically in the shapes of animals and humans. Fish (Plate I) and quadrupeds (chiefly turtles and bears), and quail done fairly realistically are occasionally seen in collections of Caddo pottery. A few bottles modeled with human features are known. Their rarity and style suggest influence from the Middle Mississippi. Usually when potters wished to give vessels zoomorphic ornament they were content to model a head of a bird, bear or rabbit on one side and a tail on the opposite. Conical and semiglobular bowls were the forms generally chosen for such decoration. Bottles with zoomorphic ornament on the neck have rather globular bodies. Effigy forms are more common in the Ouachita than in the Red River Valley. Occasionally the Caddoes modeled handles in the form of quadrupeds or placed small figures on the side of bowls and bottles. Modeling was more subordinated to conform to vessel shape than it was in the Middle Mississippi ceramic complex.

The grotesque element which figures so prominently in the design of much Middle Mississippi pottery is almost if not entirely absent in Caddo. There is no macabre spirit evident. Apparently the Caddoes were especially conscious of line. Possibly this accounts for them directing their attention to refinement of shape and to linear decoration rather than to flamboyancy in form and boldness in painted and relief designs.

A minor percentage of bottles and bowls are plain. Undecorated bottles may be of any of the Caddo forms. The bowls most frequently unadorned are the conical ones. Some of them, however, have scalloped rims. Also, a few highly polished and engraved ones having all-over patterns have been found in the Ouachita Valley. Undecorated urns and absolutely plain cooking pots of the globular, semiglobular, vase and cylindrical forms are decidedly uncommon.

Decoration of the neckless bottle—a cylindrical or conical jar having a small aperture in the top of the vessel—shows regional variation. The form is most common in the Ouachita drainage and rare in the Red. Those found in the vicinity of Friendship, Hot Spring County, near the Ouachita River itself are frequently decorated with engraved scrolls.⁵ Upstream above Hot Springs in Garland County the jars are more often plain. Along the Little Mis-

souri, coming into the Ouachita from the west, in Clark County, the jars I have seen are absolutely plain.

Harrington illustrates one from Ozan, Hempstead County, which has parallel lines incised below the orifice.⁶ This may not be Caddoan. A Coles Creek prototype of the Caddoan neckless bottle or jar, found by Judge Harry J. Lemley at the Crenshaw Site, Miller County, bears an incised pattern of scrolls and punctations.⁷

Ceramic decoration is of two types: (A) Integral which is structurally part of the vessel, conceived as a part of the form and if removed would alter the shape. (B) Applied which could be removed without affecting the basic shape, having been added after the vessel form was completed. It in turn may be subdivided into (1) Painting or Slipping; (2) Relief; (3) Intaglio. The last consists of brushing, punctating, stamping, possibly combing, incising and engraving.

The most common type of integral decoration is the vertically scalloped rim, occurring in most cases on conical bowls. Some urns have a four-scalloped rim. A few semiglobular bowls and a good many cazuelas have an everted rim scalloped horizontally. Four is the usual number of scallops on the everted rims of cazuelas. The lip may be notched also. Certain vessel appendages might be considered as integral decoration, though they had a functional origin. The bulbous legs of tripod bottles from the Ouachita and the up-turned pointed sides of handles on Red River pots are quite pleasing to the eye as well as serviceable.

Absence of pottery with painted designs is sufficiently noteworthy to be considered a negative trait of the Caddo ceramic complex. Vessels are found having a red slip which was certainly added for decorative effect. However, the painting is a mass and not a pattern; motifs are not present. Pottery first given a red film and later engraved is patterned, of course, in two colors because the underlying paste has been exposed. Enough of the film sometimes was removed to leave slightly raised designs in red, more or less isolated on the background which is normally buff colored. But this properly belongs to the engraving technique instead of to paint-

PLATE 1

Engraved fish effigy bowl from Clark County, Arkansas.

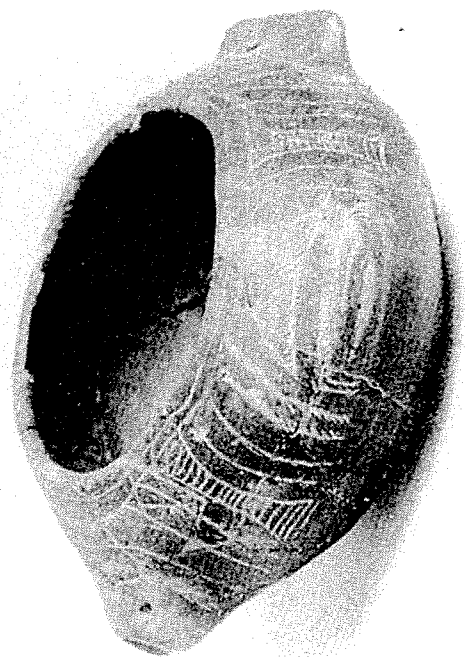


Plate 1

ing, as does rubbing red and white pigment into engraving. Semiglobular bowls and intermediate forms were sometimes filmed with red and then engraved. Neither filming alone nor with engraving seems to have been favored by Arkansas Caddoes when decorating cazuelas. Both methods were used on bottles. Pots and urns do not often have a red slip. I am not familiar with a single neckless bottle or cylindrical jar of the Caddoan complex that was painted or painted and then engraved.

Applique consists chiefly of nodes and fillets. They were used either together or alone, and frequently with intaglio designs. Nodes applied en mass occur on walls of conical bowls, occasionally on semiglobular ones and less frequently on rims of cazuelas that slope inward. In the decoration of urns, bands of nodes were applied to form circles or meanders or they fill the center of incised concentric circles. Isolated nodes were combined with incising or engraving on bowls of intermediate form. In the Upper Ouachita drainage one occasionally sees red filmed bottles decorated with nodes just below the juncture of the tall neck.

Long and short fillets are most common on urns and cooking pots. They were plain or crenulated possibly in imitation of cordage. Pots having long fillets or long series of short ones are more typical of the Red than the Ouachita Valley. Bands were placed up and down the vessel body, dividing it into panels or were arranged in simple geometric figures. They were also put on handles, as were nodes, though pot rims were not a favorite place for such ornament.

Bottles decorated with fillets are rarely found in the Red River Valley in Arkansas, but in the Ouachita Valley fillets were much more popular for bottle decoration. Long necked, flat bottomed, red filmed bottles having double bands in low relief swirling from the neck down the body are characteristic of sites in the vicinity of Hot Springs.

The fluted bottle occurs throughout the Ouachita area in Arkansas, apparently being most abundant in Clark County. Its body is rather conical, sloping to a straight neck which has a flat or an ovate lip. The base is usually rounded. All exterior surfaces were polished. Below the neck and equidistant are three groups of fillets, each group being composed of three strands of clay placed side by side

and smoothed together forming one fluted surface. Near the base there are similar groups either right under the others to balance them or else to the side for the sake of contrast. (Plate II, Fig. a) Thus, two horizontal zones were created on the body, further divided into three each by the groups of fillets. Spaces between the upper groups have wide, engraved, horizontal lines; those below are filled with alternating plain and engraved crosshatched bands running vertically or laterally. When they are lateral the bands accentuate the conical silhouette of the bottle body.

Variations of this pattern—still confined to the same shape—are found less frequently in the same area. The upper horizontal zone for decoration on the body is raised (an integral feature) and instead of flutes there are four parallel, incised vertical lines. (Plate II, Fig. b) The remaining decoration may be similar to that on the regular fluted bottle or else the engraved crosshatching in the bands of the lower zone is broken by plain discs. Then, too, these bands form arcs over the simulated flutes.

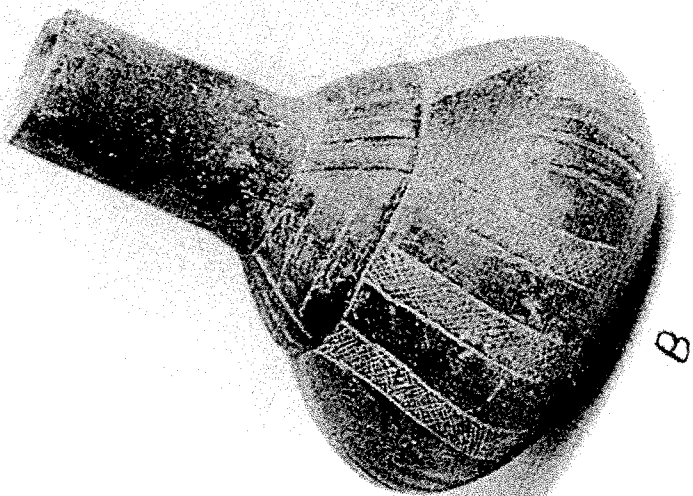
Simple designs—zigzags, herringbone, and meanders—done with a fiber brush on a moist surface appear to be confined to pot forms. Often there is no design, merely slight disconnected marks that cover the body. Some of this work is what Harrington calls *comb-ing*.⁸ A comb, though, should give more regular lines. Brushing was used alone or with punctating, nodes and incising.

Punctations—"indentations done one at a time with the point of a tool"⁹—run the gamut in Caddo decoration, forming complex as well as elemental patterns. Blunt and pointed twigs, reeds and canes appear to have been the instruments used. It is difficult if not impossible to determine whether some of the punctations were done with a piece of cane or with the thumb nail. Moreover, the punctation technique is responsible for a type of pseudo relief work, done not by applique but by pushing or pinching the damp surface into nodes, sometimes seen on conical bowls.

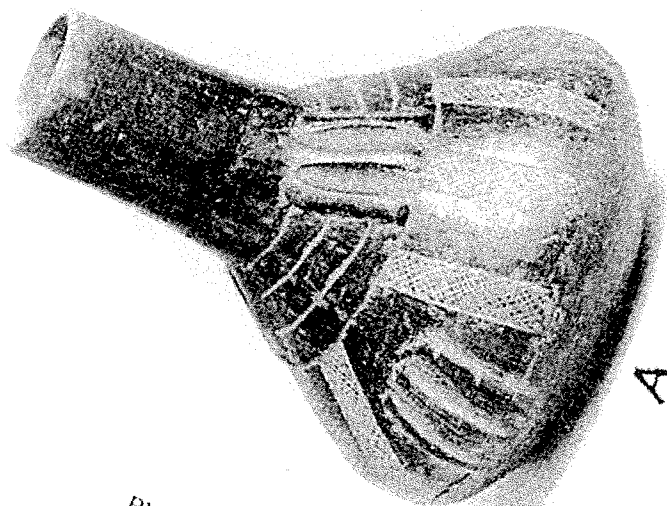
Although not confined to them, punctations are most common in the decoration of pot forms. Some of the patterns are very distinc-

PLATE 2

A. and B. Fluted and engraved water bottles from Clark County, Arkansas.



B



A

Plate 2

tive of these shapes, being composed of delicate indentations arranged linearly to form all-over designs—nested trinagles, alternate right and left oblique-hatched triangles, diagonal cribbing, concentric arcs and pendant concentric half-ovals.¹⁰ Many are so finely done that at a glance they might be mistaken for fabric impressions. Vessels decorated in this fashion are especially characteristic of Western Clark County. (Plate III, Fig. b).

Lunar shaped punctations which appear to have been done with half a cane and straight punctations done with a spatulate shaped tool are likewise typical of urns and pots. They are more common on the Ouachita, Caddo and Little Missouri rivers than they are on the Red. And the vessels from the Ouachita bearing this decoration are usually much larger. The punctations may be the sole element, repeated many times in the rim pattern; but more frequently they are combined with incised meanders and diagonal hatching. (Plate III, Fig. a). The same motifs may or may not be repeated on the vessel body. Scrolls may take the place of meanders, or else the diagonal hatching is increased, forming all-over, compact, rectilinear figures. The punctations are either arranged in parallel rows or done at random to fill the spaces between other elements when they are present. Occasionally they are the dominant motif, closely spaced impressions being arranged in curvilinear bands. On some vessels the punctations form depressed meanders, the indentations having been deeply impressed in the clay below the other motifs.

Moore illustrates three urns from the Foster Place, Lafayette County, which have designs composed of plain scrolls separated by incised U-shaped lines.¹¹ These, as have been noted, somewhat resemble certain Marksville patterns.¹² In my collection there are three similar vessels from Clark County.* One has closely spaced punctations. The other two have indentations which were done with a spatulate shaped tool, notched to make several indentations whenever it was pressed into the clay. Webb and Dodd call this technique Belcher Stamping.¹³ At the Belcher Mound, Caddo Parish, La., they found bowls bearing spirals consisting of stamping outlined by trailed lines. As they point out, Moore illustrates a

*Found in graves with engraved polished Caddo vessels.

pot from the Friday Place, Lafayette County, Arkansas, which has a stamped band around the rim.¹⁴ The decoration on the body is brushed spirals. On Caddo vessels from Arkansas it is unusual to find stamped motifs. Stamping was used to fill the background. Stamping, insofar as I have observed on Caddo vessels from Arkansas, is confined to pots and urns.

Incising varies considerably. Some incised lines are fine enough to be confused with engraving, whereas others are fairly wide grooves polished somewhat like those of the Marksville.¹⁵ Incising was a common technique for decorating all shapes except the neckless bottle. Most of the motifs which were executed in other techniques were also incised. Generally, the rectilinear designs occur more often on pot shapes while the scroll, meander and circle are more abundant on bottles and bowls.

The most complex treatment of the incised scroll is in the all-over patterns where the scrolls are continuous or are connected by curving lines. From Glendora, La.,¹⁶ northward to the headwaters of the Ouachita, and in the Red River Valley, these patterns are present on bottles that have a short bulbous neck. Whether or not the elaborate incised scroll combinations were done with a comb remains to be determined by measuring the grooves on the bottles.

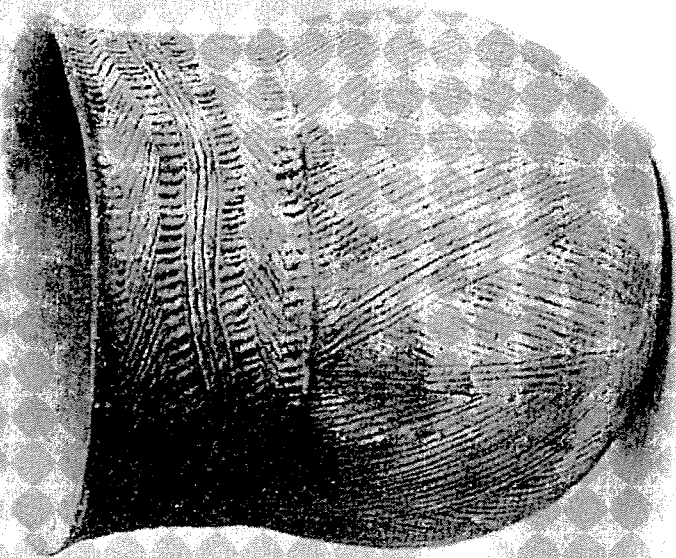
Engraving was used principally on bottles and bowls and eccentric forms, most of which were highly polished. An engraved pot is rare indeed.¹⁷ The absence of engraving here cannot be explained entirely on the grounds that it required too much labor to devote to culinary vessels, for some of the previously discussed punctated patterns would have been as difficult to do as engraving and would have taken as much time.

Engraving enabled the potters to achieve certain effects which could not be produced as easily by incising. Finer lines could be made and the edges would be smoother. Crosshatching—difficult to incise minutely — might have received stimulus from the engraving.

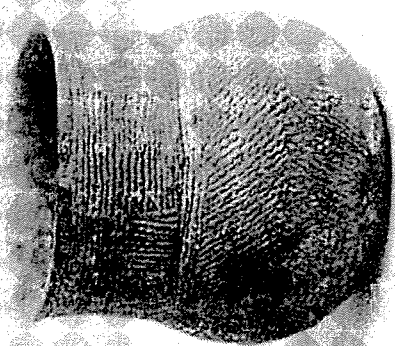
Many engraved lines have spurs projecting from them. Incised

PLATE 3

- A. Incised punctate urn from Clark County, Arkansas.
B. Linear punctate urn from Clark County, Arkansas.



A



B

Plate 3

lines do not have. Webb and Dodd state: "The spurred line which appears so often on *Belcher Engraved* and engraved wares from other Caddo sites does not appear elsewhere in the Southeast or Mississippi Valley area, so far as I can ascertain, but does appear early in the Southwest (Mesa Verde, Mimbres) and again in Central Mexico (Toltec)."¹⁸ Spurred lines were also painted on some Casas Grandes vessels.¹⁹ Granting that spurred lines might have been imported into the Caddo area, there is still a possibility that this simple motif could have originated independently. It is the sort of element which a potter might develop while learning to engrave. Incising is a freer process than engraving. Soft clay naturally yields more easily and quickly to an instrument than does clay at the leather-hard stage and after it is baked. So a greater area could be covered at one stroke and the resulting line would be more flowing. A skilled potter could easily incise a scroll or a meander at one stroke without having to stop at the inflection and begin anew in another direction. Engraving a hard surface, on the other hand, is often a piecemeal procedure, particularly when the design has curves. The graver may slip or the surface may flake. Working under such difficulties, a Caddo potter might have decided to incorporate the ragged edges of lines into the design, and thus have started a trait that was later used chiefly for its decorative effect.

Spurs were not limited to scrolls. They were used with circles and rectangular motifs and are present on cazuelas and bottles of various types. However, spurred scrolls and rectangles frequently occur together with plain line engraving on a peculiar bottle shaped somewhat like a pear, having a flat base, an elongated body and a truncated conical neck. (Plate IV, Fig. b).

Engraved continuous scrolls, discs and hatching or crosshatching are found in combination on semiglobular bowls (especially in the Red River Valley) on cazuelas, intermediate form bowls and on bottles. In most cases which I have observed, when they are all present in bottle decorations the vessel has a globular body, a rounded base and a bulbous neck.

The majority of the cazuelas were engraved. Others were incised, or incised and punctated incised and engraved, or punctated and engraved. To some extent, especially where the engraving technique was used, the designs vary according to the shape of the bowls. There

are two main types of cazuelas: (1) A bowl having a rounded base indistinguishable from the body and an inward sloping rim which ends in a rounded or slightly flared lip. The height of the body is usually greater than the height of the rim. (2) A rather flat bowl with less pronounced rounded body and a vertical or slightly concave rim ending in a rounded or a decided flaring lip. The height of the body is equal to or less than that of the rim.

The first type, as has already been mentioned, sometimes has nodes applied en mass to the rim. Incised designs appear to have been more frequently used on this form also. Engraved designs were not always confined to the rim, the base being covered with an all-over pattern usually composed of motifs similar to those on the rim.

Engraved scrolls, continuous or broken, with discs and hatching or crosshatching filling the interspaces, are customary motifs on the rim. On the base four continuous scrolls are commonly arranged around a circle engraved on the very bottom of the vessel, and the background is treated in the same fashion as on the rim.

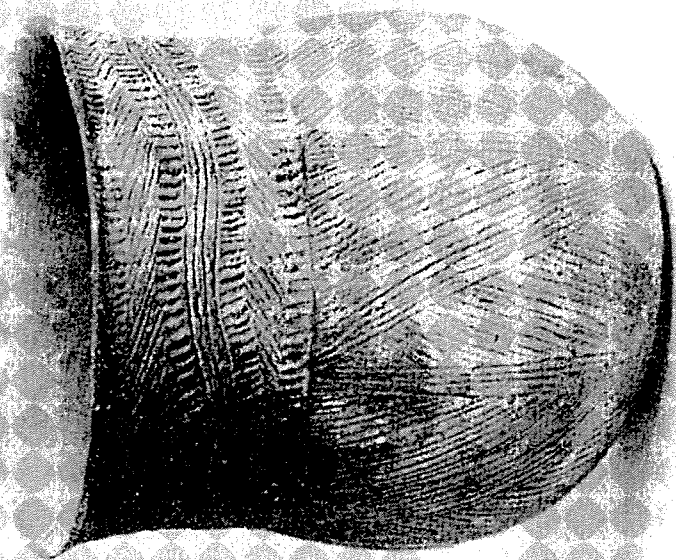
In Arkansas the second type of cazuela ordinarily lacks basal decoration as is found on vessels at Glendora, La.²⁰ Scrolls and spirals again occur on the rim. Motifs, likewise common, are a key-shaped figure which might have been derived by conventionalizing the spiral, and a motif resembling a link composed of two parallel bands separated by a line. When the latter is used all the background is generally crosshatched. These two motifs appear to be confined to cazuelas.

Scrolls, spirals, or keys occur with concentric circles—all having a common horizontal axis—on rims of cazuelas, an arrangement which appears to have been avoided in the decoration of bottles. Confinement of the pattern to the narrow rim band might well be the explanation. Certainly the scrolls and spirals, keys and links are elongated in patterns on the rim.

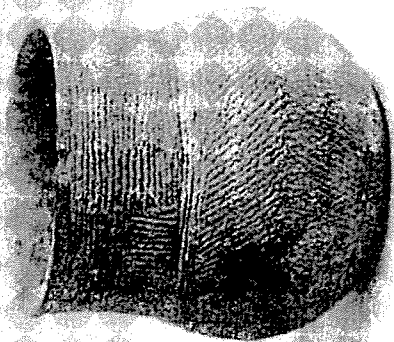
Necessity may have been responsible in the first place. Yet, there

PLATE 4

- A. Engraved cazuela from Clark County, Arkansas.
B. Bottle from Nevada County, Arkansas, having engraved spurred lines combined with fine line engraving.



A



B

Plate 3

is evidence of a definite artistic convention at work. On cazuelas of the first type which have a narrow rim the principal motifs extend from the shoulder to the lip. But on the second type, which has the wider rim, the space occupied by the dominant motifs is further narrowed by the addition of one or more lines parallel and just below the lip. (Plate IV, Fig. a).

Two art styles are evident in Caddo pottery, represented at their extremes by the smoothed, incised pots bearing rectilinear motifs and punctations, and the polished bulbous necked bottles and cazuelas having engraved scroll designs with crosshatching and discs. Tradition is always an important force in art both as a negative and as a positive factor. On one hand it sets standards for the conservative artist to meet while on the other hand it pricks the rebel to develop a new style. In civilized art circles these two aspects carry on a continuous tug of war. In a primitive society where art was not divorced from industry and religion one might expect a more intense struggle between the old and the new. Age and habit would nip novelty's heels. The new would be shadowed by the old. That is what happened in the Caddo country.

Judge Harry J. Lemley and I suggested in 1939 that the engraved pottery represented an intrusion into the indigenous incised ware area.²¹ Webb and Dodd proved it in 1941 by making a stratigraphic study of pottery and house types at the Belcher Mound, La.²² They found incised straight line and punctated wares followed by steadily increasing engraved, brushed and ridged wares. The *Smithport Incised-Punctate* which predominated on the first level bears some resemblance to the decoration of pot forms from the Ouachita area of Arkansas. Many of the latter, however, have curvilinear motifs combined with punctations and rectilinear motifs. *Foster Trailed-Incised* and *Belcher Stamped*, the decorative types most closely resembling Marksville, were coeval with *Belcher Engraved*. In other words, these two types had sufficient tradition back of them to survive despite the growing popularity of engraving. The patterns were still associated with an old form.

Even a brief examination of Caddo pottery reveals designs associated with specific shapes. Evidently artistic conventions recognized by the group and backed by tradition governed individual potters when choosing designs and techniques. When a detailed statis-

tical study of motifs, techniques and shapes has been completed then it will be possible to formulate the Caddo esthetic creed.

I wish to thank Judge Harry J. Lemley of Hope, Arkansas, and Dr. James B. Griffin of the Ceramic Repository, University of Michigan, for reading my manuscript and making helpful suggestions.

Prescott, Arkansas.

July 15, 1943.

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SOME EXPERIMENTS IN THE USE OF THE ATLATL

BY J. WALKER DAVENPORT

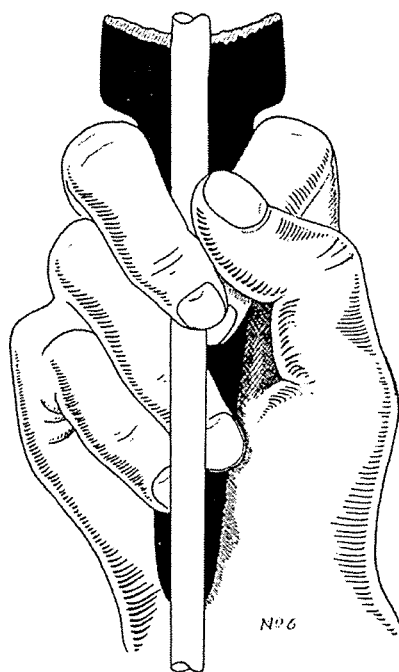
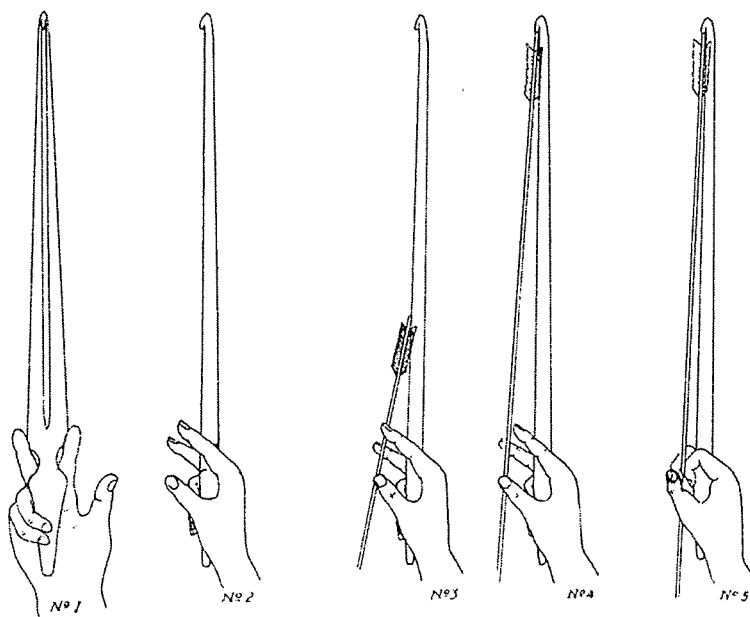
It was my good fortune to be a member of the Witte Memorial Museum's expedition of June, 1933, to the West Texas area. It was on this expedition that I first learned of the weapon known as the atlatl. We then found several handle and distal ends of atlatls, but unfortunately did not find any complete specimens. My questions regarding this weapon and its use went unanswered, so, for the time I dropped the subject.

While making the drawings for the Museum's Bulletin I was again reminded of it and decided then to make an atlatl at the first available opportunity and try it out. Sometime later when the opportunity arrived the only piece of wood available was one of yellow pine and this was used. The distal end of the atlatl was patterned after the portion described in the Witte Museum Bulletin No. 2. The handle was shaped somewhat along the lines of one found in the Shumla Caves. Having no idea as to what the length of the atlatl should be and as the piece of wood was twenty-four inches long I made it of that length. There was a groove in the face of the original atlatl and although its purpose was a mystery, I included it in my model. Talks with a number of archaeologists regarding this groove brought no explanation as most of them seemed to have given it very little thought.

The completed atlatl and a commercial twenty-eight arrow were taken out into the patio for a trial. Having had no instruction in the use of this weapon, a good bit of experimenting had to be done to find the proper handgrip. A grip was found that seemed to answer the purpose and a trial throw was made. Plate 5, figures 1 and 2. The shaft went straight up in the air and at the same time turned end for end. Different holds and releases were tried with little success. The shaft still turned end for end. Unable to control the flight of this arrow and believing it to be due to the short length, a search

PLATE 5

Illustrating method of gripping the atlatl.



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Plate 5

started for a longer one. A light javelin in the possession of Mr. A. K. Boyles, the Museum taxidermist, seemed to suit the requirements.

The first try with this produced astonishing results. The flight was true and the shaft struck with terrific force. In a very short time I was hitting within a three-foot circle at a distance of about eighty paces.

It was at this time that a reason for the groove suggested itself. It is rather difficult, when in a hurry, to hold the atlatl in one hand with about eighteen inches protruding, and the arrow in the other with an equal distance or more protruding and try to fit the nock to the hook. By using the first and second fingers of the atlatl hand as a guide, Plate 5, figure 3, the nock end of the shaft can be quickly dropped into the groove and slid up to the hook, where it automatically and properly nocks itself. Plate 5, figure 4. My use of this groove may or may not have been the original reason for its being there but it fulfills this purpose beautifully.

Several years of odd-time experimentation have revealed the following facts:

1. The shaft projected with the atlatl does not have the speed and snap of one driven by the bow, but the heavier weight of the shaft more than makes up for what it lacks in speed. I completely ruined the bark on the side of a hackberry tree at eighty paces using a bunt point.

2. For best results the shaft should be at least forty and not over seventy-two inches long.

3. A rather heavy point seems to add to, rather than subtract from the shaft's ability to hold a true flight.

4. When properly balanced, feathering is not essential, but cleaner flights can be had if three feathers about six inches in length are used.

5. The weight is not so important, as long as it stays within limits of a rather wide range. This range would vary somewhat with individuals. The greater the weight, the greater the shocking power but, after a certain point in weight the shorter the flight. My

experiments have as yet, been too limited to ascertain if standard rules could be worked out for this, but I believe that they can.

I have experimented with shafts of the following weight. $1\frac{1}{2}$ oz., length 49 inches; flight fair, distance average 75 yards. $3\frac{1}{2}$ oz., length $60\frac{1}{8}$ inches; flight excellent; distance average 148 yards. I have not yet had the opportunity of trying this shaft in real open spaces so am unable to say at this time what the final distance may be. $9\frac{1}{2}$ oz., length $71\frac{1}{2}$ inches; flight excellent; distance 110 yards. There is no doubt but that practice to develop the proper throwing arm would increase these distances, still, I am inclined to believe the relation between them would remain about the same.

6. The length of the atlatl again allows some variation. I have tried atlatls with over-all lengths as follows: $16\frac{1}{2}$, 24, 30, and 36 inches. Of these the 24 inch model seemed to give the best results. The 36 inch model seemed too long for accurate throwing and with the heavier shafts offered too much resistance. The strain on the hand and fingers being much too great for consistent practice. The $16\frac{1}{2}$ inch model on the other hand, offered so little resistance that the feel of the shaft was lost, resulting in loss of accuracy. This was more pronounced when throwing the light shafts. If however, the shaft weight was a pound or more, then the short model would give better results than the longer ones. Thus the weight of the shaft governs the length of the atlatl.

The atlatl took many forms among the aborigines of what is now the North American Continent. The groove is more or less present on them all. The hook assumed many shapes as each individual made his revisions and improvements. The handles suffered somewhat the same fate. On many, two finger holes were carefully carved in the handle, on others one finger hole and a thumb groove. Some types consisted simply of two finger grooves while others included loops of rawhide for the finger grip. Two shallow nocks for the first and second fingers are all that are necessary. Objects bound to the atlatl which served as fetishes, balance weights or both have been reported by several writers. I have experimented with balance stones of varying weights at various positions on the

PLATE 6

Illustrating method of throwing with atlatl.

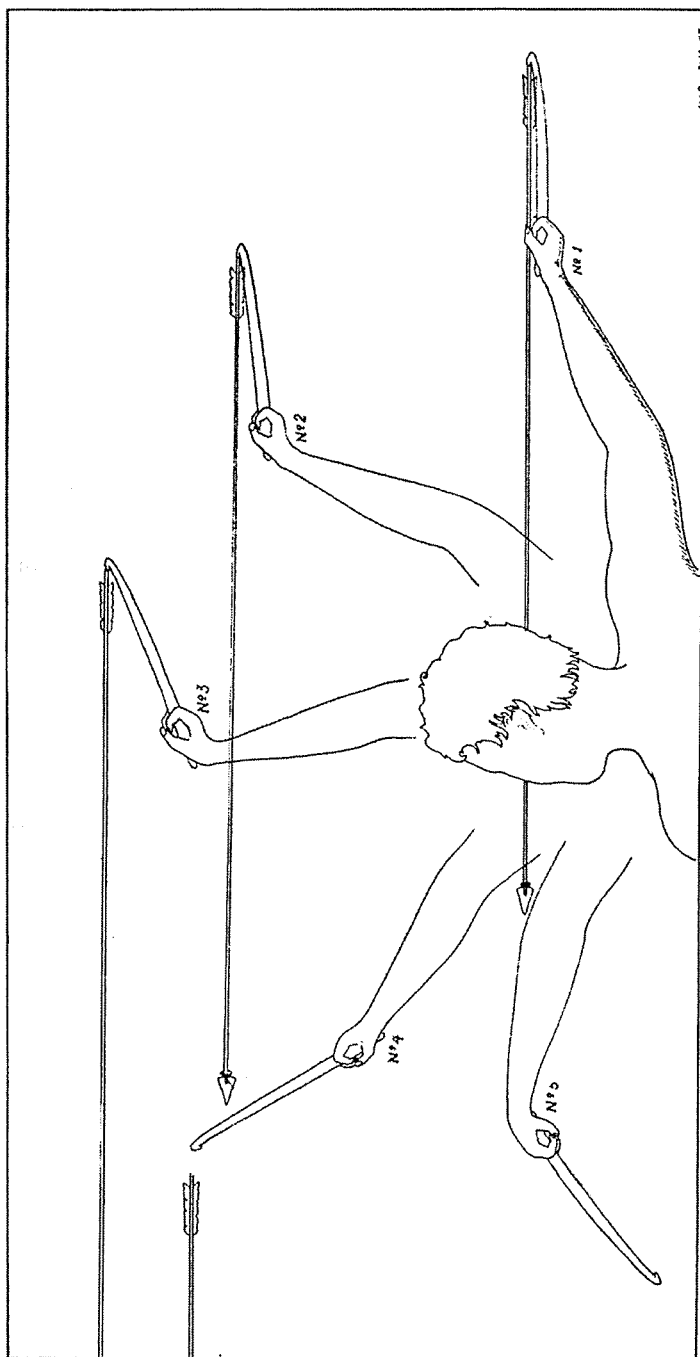


Plate 6

atlatl but was unable to detect any advantage or any special disadvantage. It is possible that balance weights were used only in special cases with specific types of shafts and as I have not run the entire gauntlet of shaft types and weights my findings are not conclusive.

In use, the atlatl is held in the throwing hand with the first and second fingers inserted through the fingernocks or loops and the third and fourth fingers holding the handle butt firmly against the palm of the hand. Plate 5, figures 1 and 2. Held in this manner a straight hinge movement of the wrist is possible. The shaft is then nocked to the hook and the first finger is pressed firmly against the face of the atlatl and the shaft lowered across the top of this finger. The thumb and second fingers are then brought up to a firm grip on the shaft. Plate 5, figures 5 and 6. This completes the hand grip. The throw takes the form of a straight overhand lob, with a snap wrist action at the end of the movement. The arm is carried over and back with the shaft projecting past the ear and approximately parallel to the ground. Plate 6, figure 1. As the throw starts pressure of the thumb and second finger against the shaft is released. The exact point of the release varies with the distance of the target etc., however, after a few throws this release is accomplished at the correct point with no conscious thought and effort on the part of the thrower. Just before the end of the forward arm movement, the wrist which has been steadily bending back to keep the shaft in line, Plate 6, figure 1, 2 and 3, is brought forward with a snap, adding many yards and much power to the throw. Plate 6, figure 4 and 5. The other arm is used as a balance, held out in front of the body at the beginning of the throw and carried around to the rear as the throwing arm moves forward. In this way balance is maintained on long, hard throws. It is of some use even on short, easy throws

Aiming is accomplished simply by looking at the target. It is absolutely necessary to concentrate on the object to be hit, because if the eye wanders, so does the shaft.

Curator of Archaeology,
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INDIAN ARROW AND LANCE WOUNDS

BY A. T. JACKSON

This paper is based on the records of 55 individuals wounded by arrows and lances. The wounds were inflicted by 147 projectiles, an average of nearly three per individual. No attempt has been made to conduct an exhaustive study. These representative cases were gleaned as a by-product of other research. The following tables present the facts.

*Number Individuals Wounded by Periods**

Period	Number Individuals	Per Cent
1851-1855	9	16.36
1856-1860	20	36.36
1861-1866	8	14.55
1867-1870	10	18.18
1871-1877	8	14.55
	55	100.00

*These are not complete counts, merely samples, but they give a fairly accurate picture of the situation as it existed at the various periods.

Severity of Wounds

Results of wounds	Number Individuals	Per Cent
Fatal Cases:		
Died instantly	7	12.73
Died soon after	2	3.64
Died a few days later	5	9.09
	14	25.46
Non-Fatal Cases:		
Bothered for years	2	3.64

Bothered for months	5	9.09
Made lame	3	5.45
Delirious for days	1	1.82
Suffered greatly	12	21.81
Not severe; recovered in a few weeks	7	12.73
Superficial	11	20.00
<hr/>		
Total non-fatal cases	41	74.54
<hr/>		
Grand total	55	100.00

Distribution of Wounds

Location	Number Wounds	Per Cent
Chest	35*	23.81
Not stated	23	15.65
Legs	19**	12.93
Abdomen	15	10.20
Back	12	8.16
Face	10x	6.80
Head	8xx	5.44
Shoulders	6	4.08
Neck	5	3.41
Thigh	4	2.72
Hands	4	2.72
Feet	2	1.36
Arms	2	1.36
Lungs	2	1.36
<hr/>		
Total	147	100.00

* Includes six heart wounds.

** Includes four knee wounds.

x Includes one eye wound.

xx Includes two ear wounds.

Flint and Metal Points Overlapped

In the majority of historic references to arrowpoints, mention is made that they were metal. Sometimes they are described merely as arrowheads. Some of these may have been stone.

Herman Lehmann,¹ among the Comanches and Apaches from 1870 to 1879, states:

* * * "We first used flint rock for spikes. * * * Later when the soldiers began to come onto the plains, we found old barrel hoops and other steel around their camp; and from this we made steel spikes and discarded our old flint rock spikes."

The use of flint was not entirely abandoned for some time after hoop iron and other metals were secured. I know of several graves that contained trade articles and flint points.

Chronology of Metal Points

The use of metal projectile points represents a short but colorful phase of the Indians' losing struggle to dominate his hunting grounds. How long were metal projectile points used in Texas? In small numbers, they appeared during the mission period from 1659 to 1800.

Between 1800 and 1845 traders were instrumental in placing many metal points in the hands of the Indians. These traders were "bringing up to date" the precedent set by Cabeza de Vaca,² who listed among his articles of barter "flint for arrowpoints, glue and hard canes wherewith to make them."

Available records concerning the activities of certain traders in Texas make no mention of metal arrowpoints being stocked along with Jewsharps, steels for lighting fire, etc. But much of his stock, such as flour, brown sugar, molasses, whiskey, etc., came in barrels. The barrels were encircled by sheet iron hoops that made excellent arrowpoints.

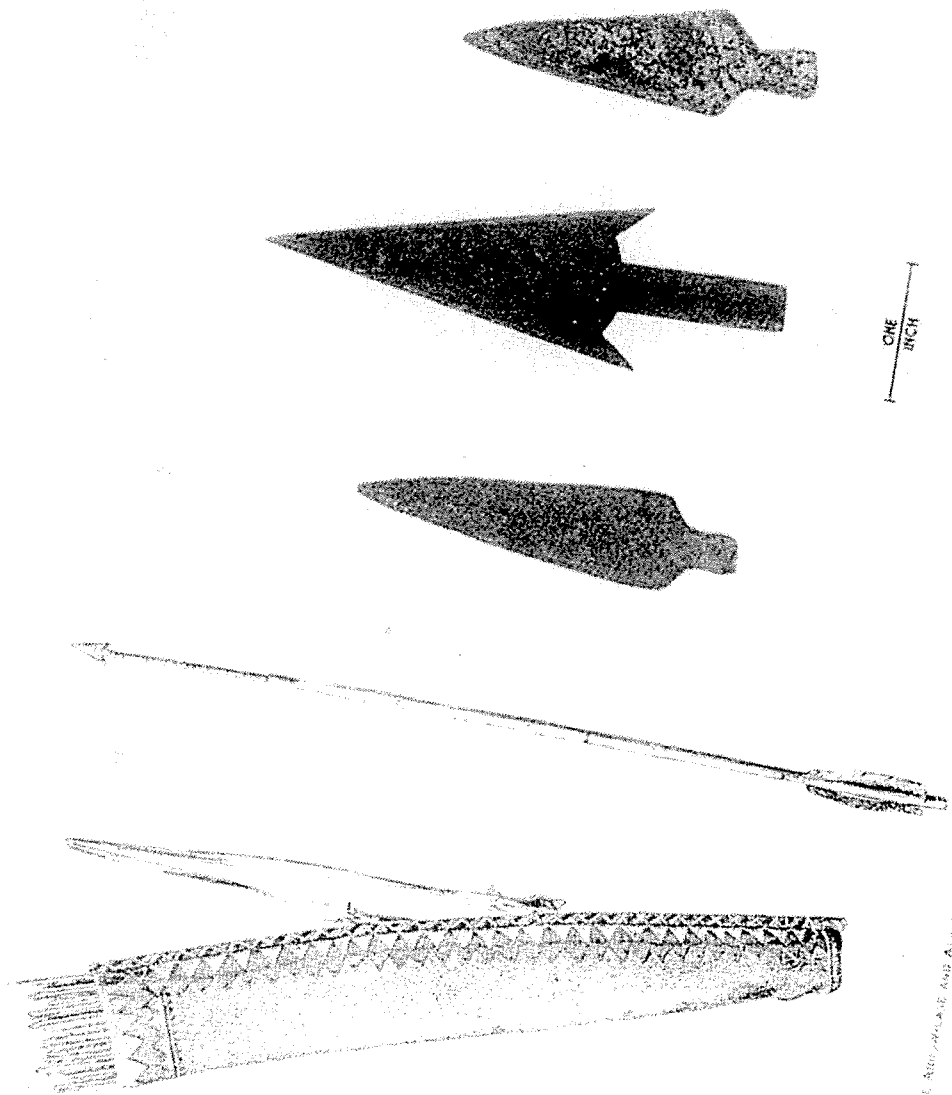
In the spring of 1832 Francis Smith,³ a fur trader at Tenox-

PLATE 7

Indian weapons immediately preceding guns.

No. 1. Apache arrow case and arrow. Deerskin quiver. Arrows, 35 inches long, have reed shafts with hardwood foreshafts and iron points. (Courtesy Smithsonian Institution and U. S. National Museum).

No. 2. Metal projectile points. Central one 3 11/16 inches long; others about 2 1/2 inches. Note roughened edges of stem at right. (Courtesy Anthropology Dept. University of Texas).



ONE
INCH

2

ARROW, ARROWHEAD AND QUIVER.

Plate 7

1

titlan on the Brazos River west of the Bexar-Nacogdoches road, ordered goods from merchants at Brazoria. Among other articles were two barrels of sugar, fire steels, pocket knives, large awls, axes and "tomahawks." The Indians not only used the hoop iron, but probably converted some of the other articles into projectile points. A broken blade from a pocket knife is known to have been made into a lance head.

Materials for metal points became much more plentiful between 1845 and 1875. By the latter date bows and arrows were largely replaced by firearms, secured from the whites.

A number of years ago the writer examined a small burned rock hearth near the site of a soldiers' camp. In the hearth were three hoop iron arrowpoints and a snubnose end scraper made of bottle glass. The glass was like that in many bottles at the soldiers' camp. The camp was occupied by U. S. cavalry from 1879 to 1882, during the time the Apaches were giving trouble in Southwest Texas. It thus seems that the metal points may have been contemporaneous with the soldiers' camp.

Manufacture of Metal Points

The making of metal arrowpoints was comparatively easy. Sometimes they were made by others and traded to the Indians. Again the Indians did the work.

Some trading posts and early settlements had blacksmith shops. In the shop it was a simple matter to manufacture arrowpoints from hoop iron, and lance points from worn-out files, broken knife and sword blades.

Jeff Smith,⁴ in recounting his boyhood experiences as a captive, states that Mexican traders brought with them "iron or steel arrow spikes ready made. All we had to do was to fit them on the dogwood shaft and sharpen them." He adds that the Mexicans on other visits brought "steel with which to make arrowpoints. * * * The arrival of the steel in our camp caused a lot of work, for we were soon busy making bows and arrows."

In making hoop iron points the Indians used a small hammerstone for bending and breaking the hoop into narrow strips. If short points were desired, a strip might be broken in two, but in most

cases the length of the point was governed by the width of the barrel hoop.

The strips were worked into shape and sharpened with a file—a treasured tool often secured by theft, sometimes by barter. Lehmann says the Mexicans furnished “files with which to fashion and sharpen our arrows.”

Another source of hoop iron was revealed by Smith:

“In slipping around through the white settlements the Indians would pick up all the hoop iron they could find, and would use this in making their arrowspikes.”

Several writers say barbed points were used for war, leaf-shaped ones for hunting. Marcy⁵ mentions triangular points of iron attached to arrows 20 inches long.

The *Handbook*⁶ states that war arrows had heads loosely attached, to remain in the flesh when the shafts were withdrawn and rankle in the wounds. Cases discussed later seemed to bear out this statement. The hunting points were firmly secured, and thus more easily recovered for subsequent use.

Mason⁷ declares that foreshafted arrows of the South and Southwest were loosely put together. This is verified by a statement of Lehmann that one of his periodical duties as a captive servant was to “tighten the spikes” on the chief’s arrows.

Bows, Arrows, Quivers and Shields

Various sources throw light on the materials used by the Texas Indians in making their weapons. John W. Hunter,⁸ Lehmann, Smith and others, mention arrows of dogwood. There are other references to arrows made of pecan branches, and to some of river reeds.

Bows of bois d’arc, or Osage orange, about five feet long—some shorter—frequently are mentioned. Some bows were made of wild mulberry, a few of mesquite and other woods.

Quivers were made of smoked deerskin; of calf or panther hide, each quiver holding about 250 arrows.⁹ Still others were of lynx hide.

The common material for shields was the thick part of bull buffalo hides, stretched over hickory hoops and sewed with thongs. There often was a cover of deerskin.

According to John W. Hunter,¹⁰ the whites learned to not shoot at a shield, "as it would be useless waste of ammunition; but to always take aim at the hips, the legs or the lower part of the abdomen, just below the lower rim of the shield."

Accurate Shooting With Bow and Arrow

The Indians, at close range, were more accurate with bows and arrows than with firearms. They had been trained since childhood to shoot the bow, while some had only recently come into possession of guns.

As an example of the accuracy of an Indian boy's aim, we are told that they "could hit a small coin placed in a split stick at a distance of 20 yards."

Even the women often became expert with the bow and arrow. Squaws sometimes inflicted serious wounds. Miller ¹¹ tells of a Comanche woman, in 1868, shooting him in the right cheek "with an arrow that protruded from behind the ear."

Abundance of Arrows

At times a band of Indians might have few arrows and use them sparingly. Again arrows were plentiful and used freely.

In an engagement, January, 1851, between 14 Comanches and eight Texas Rangers under Lieut. Ed Burleson, "the ground was literally covered with arrows. Over 200 were picked up on a space less than one-fourth acre."¹²

In 1862 a young lady in Gillespie County, Texas, was attacked by Indians as she left a spring near her home. The account reads: "She was riddled with arrows."¹³

February, 1863, witnessed another encounter in the same county. Two settlers were hunting for oxen when attacked by a band of Indians. One of the men, mounted on a fleet horse, made his escape. The other, riding a slow mule, had to dismount and seek

shelter behind a tree. His arrow-pierced body was found the following day. Mueller¹⁴ sums up the situation:

"Not less than 83 arrows had been shot at him, that many being lodged in the tree * * * in the ground nearby, and in his body—which was struck over 40 times. * * * The Indians left hurriedly without taking their own dead with them. Arhelger's * * * right hand was shot full of arrows, but his left hand still grasping the six-shooter, with which he had held the Indians back until his ammunition was gone. One of the arrows had struck him in the back of the neck."

In January, 1868, 15 Comanches—from a reservation in the Indian Territory—attacked two settlers in San Saba County, Texas. W. J. Miller and A. W. Morrow, with a four-horse team, were returning from a water mill. They were armed with two dragoon pistols. Miller, who received 23 arrow wounds, says:

"The Indians, in their excitement, had shot away most of their arrows. The chuck box, fastened to the end of the wagon, bristled like a porcupine. I believe that a double armful of arrows were sticking in the wagon and ground."

Penetrating Power of Arrows

Arrows, under favorable conditions, had remarkable penetrating power. The extent to which they might penetrate, when shot from a given bow, was influenced by several factors:

1. Force with which shot.
2. Distance from object shot.
3. Resistance of wind and of the substance struck.
4. Loss of power, due to wet bowstrings, etc.
5. Size, shape and sharpness of arrowpoint.

The force with which an arrow was propelled sometimes was altered by war conditions. An Indian, while shooting arrows, was wounded by a gunshot. He continued for several minutes discharging arrows, but the missiles came with less and less force until he finally fell dead.

PLATE 8

A MUTE STORY OF TRAGEDY

The remains of the arrow-pierced skeleton of a man and the carcass of his horse tell of a tragic end, such as often befell one who traveled alone. Arrows that killed a man were not used again. (From a drawing by Frederic Remington.)

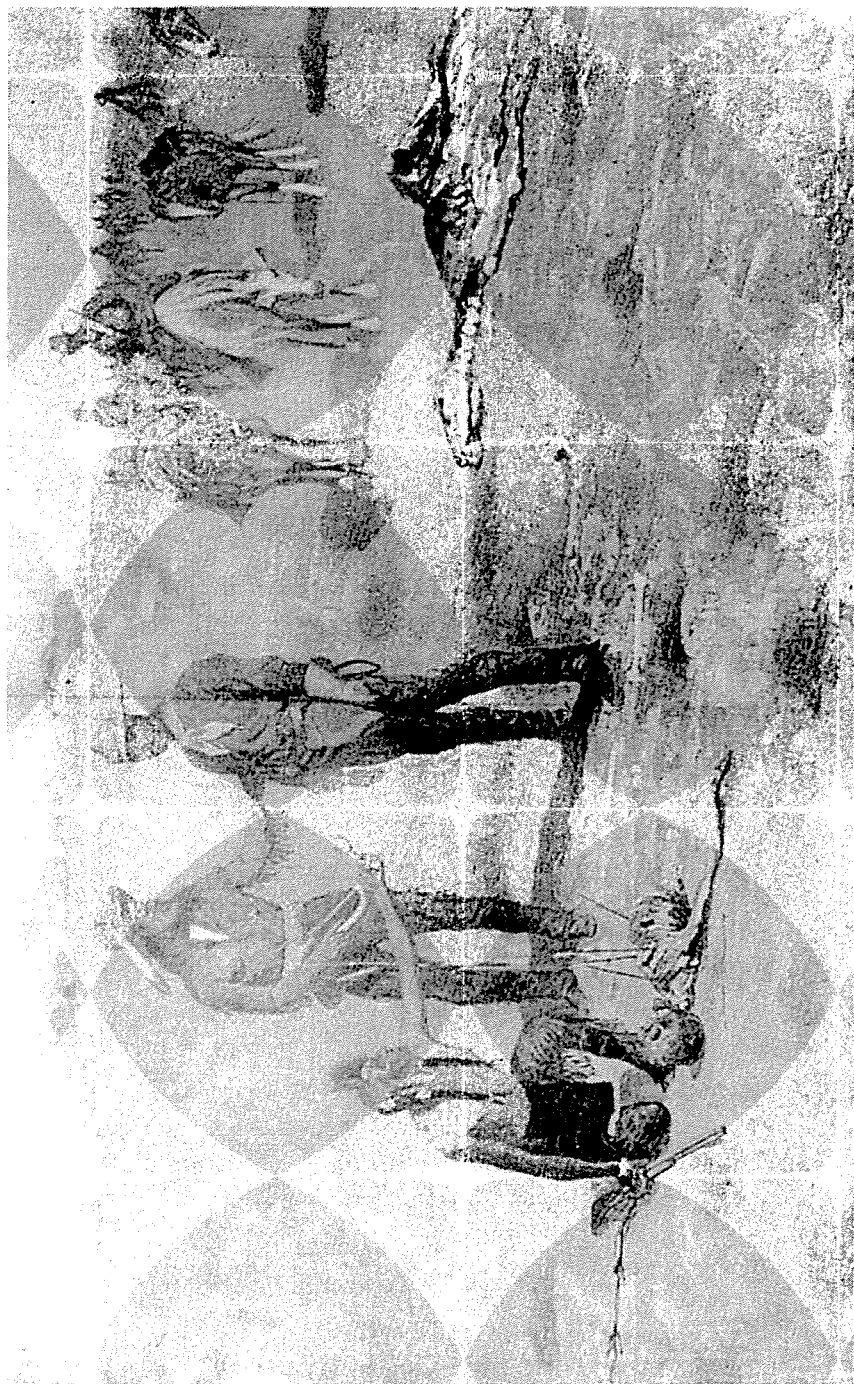


Plate 8

Where the target was too distant the arrow spent much of its force before striking. A man was shot from a distance of more than 150 yards. The arrow struck him in the stomach but barely broke the skin. On one occasion the attacking Indians were too close for their arrows to acquire sufficient speed to be deadly. The most effective range was from 50 to 75 yards.

Lehmann says when their bowstrings became wet they often built a fire to dry them. In one fight "the Comanches made the arrows fly, but their bowstrings were wet from rain and they could not shoot with much force."

The penetrating power of arrows was well displayed by the depth to which they sank in woods of various kinds. In one case arrows penetrated an oak tree for more than two inches. In 1858, according to Franks,¹⁵ Indians put 18 arrows into a tree behind which William Clements was standing. It is not stated how deeply the arrows penetrated.

Captain John G. Bourke,¹⁶ says Apaches in the mountains of Arizona in 1871 shot a number of arrows at whites, and that two of them penetrated pine trees to a depth of six inches.

But a thin piece of wood might act as a protector for an individual. Mrs. Thompson of Hays County, Texas, tells of an arrow that struck a woman, but was deflected by a wooden stave in her home-made corset.

In several cases individuals actually were shot through the body, but sometimes they only thought they were. Linceum¹⁷ quotes Charles Milburn, a former soldier at Fort Davis as saying:

* * * "Berg Johnson was driving a stage. The Indians * * * killed a couple of passengers, but Berg managed to escape in the hills, finally making his way to the army post. They had him up here trying to cut an arrow out of his chest. Berg kept cursing and telling them to get it out on the other side, as it had gone clear through him. * * * The surgeon turned him over; and sure enough there was an arrow sticking out of his back. But it hadn't gone through him; it was another arrow."

A. W. Morrow had an arrow strike him in the left ear; and, while Miller was pulling it out, another penetrated his right ear. Miller adds: "He could see both shafts and imagined that one

arrow had passed entirely through his head. He groaned and said that he was killed."

Even pointed wooden arrows, without a separate head, sometimes were fatal. Mason says: "in July, 1870, * * * M. T. Kennedy was mortally wounded by an Apache arrow which pierced his chest. The autopsy disclosed the fact that the arrow had no head."

Arrows frequently penetrated bone. Miller relates: * * * "Another hit me squarely in the middle of the chest, sticking in the bone and standing out as straight as if it had been shot in a tree."

Mason quotes Oliver Marcy as saying:

"I have * * * the sixth dorsal vertebra of a buffalo, the spine of which contains an iron arrowpoint. The arrow * * * penetrated the bone, .82 of an inch. * * * The animal was mature and the bones well ossified. * * * The arrow must have penetrated several inches of flesh"—as well as the thick hide and matted hair—"before striking the bone."

A number of writers relate that iron-tipped arrows sometimes were shot through the body of a large buffalo. There also are a few accounts of arrows going through a horse.

In an engagement soldiers had with Comanches in 1856, Bugler Tofolla had an overcoat rolled and tied on the front of his saddle. An arrow struck the roll, making about 50 holes in the thick coat, then entered the soldier's body just at the hip bone. The wound was slight.¹⁸

Quotation is made from the *Relacion* of Don Antonio Espejo that "the wild tribes living in the drainage of the Rio Grande could pierce a coat of mail with their arrows."

Lehmann declares that arrows would not penetrate negro skulls; and that he once heard a chief instruct his warriors not to shoot negro soldiers in the head, as a "buffalo soldier's" head was too hard and would turn the arrows.

Projectile Points Remain in Wounds

It was not uncommon for an iron projectile point to become detached from the shaft and remain embedded in the flesh. Some that required special attention will be discussed later. Other cases are

considered here. There were several causes of this detachment of points:

1. Point loosely attached to shaft for that purpose.
2. Point struck bone, causing the tip of hoop-iron point to bend back.
3. Shaft hastily jerked out.
4. Shaft broken by accident, or purposely cut off to get out of way.

Frequently points struck a rib, femur or other bone and curved back, or "bradded," so that an unusually strong pull was required for removal. The head often became detached. Even when the point was not bent, a sudden jerk often resulted in bringing out the shaft without the head.

Cross¹⁹ tells of a settler near old Fort Gates who, about 1854, was shot in the foot with an arrow. He was dismounted and struck his foot against a bush, breaking the arrow a few inches above the metal point. The point remained in his foot for about eight hours.

Gray²⁰ relates an unusual incident. At the Salt Creek fight, May 16, 1869, George Lemley was wounded in the eyebrow with an arrow. The point remained in his head. He is said to have blown the arrowpoint out through his nose 10 years later.

In telling of a Comanche raid into Kerr County, Texas, in 1857, Sowell²¹ states:

"William Kelso was shot * * * through the small of the back with an arrow, but jerked it out, and shooting an Indian down he made his escape into the brush. * * * He did not notice * * * that the spike failed to come with the shaft. For 20 years the wound would not heal, until by a surgical operation the iron arrowhead was discovered and removed. The wound then healed."

In discussing the numerous wounds he received, Miller declares:

"I carried a steel barb in my right thigh till 1874 (six years), when Dr. Dowell at Galveston removed it. * * * In pulling an arrow from my left side, the head slipped from the shaft and remained in my lung. It is still there." This was in 1901, 33 years after the battle. "Surgeons in Kansas City," he continued, "located the arrowhead with an X-ray machine, but declined to remove it, say-

ing that the operation would be more dangerous than to allow the arrowhead to remain."

Arrowheads Pinning Men to Saddle, Etc.

Arrows sometimes "nailed down" their victims. In 1851 a pioneer raised his carbine to fire at an Indian. An arrow struck his right forefinger, passed through the last joint and penetrated the breech of his gun. The wood splintered, releasing his hand.

In July, 1857, Lieut. John B. Hood and 25 men of the 2nd Cavalry, with an Indian guide and supplies for 30 days, left Fort Mason on a scouting trip. After 12 days an Indian trail was struck, and the chase began. It lasted three days, ending in a battle near Devils River, not far from the Rio Grande. The battle, at close range, was very fierce. Lieut. Hood²² writes of his wound as follows:

* * * "I was pierced in the left hand with an arrow, which passed through the reins and fourth finger, pinning my hand to the bridle. I instantly broke the spearhead and threw it aside. Unmindful of the fact that the feather could not pass through the wound, I pulled the arrow in the direction it had been shot; and was compelled finally, in order to free myself of it, to seize the feathers in lieu of the barbed end." * * *

Deaton, quoted by Holmes,²³ gives an interesting account of a happening in Comanche County, Texas, in the winter of 1864:

"Don Cox was wounded in a fight with Indians. An arrow struck him in the thigh, going through and completely pinning his leg to the skirts of his saddle. * * * Don was getting very sick and blinded with pain. * * * They were compelled to * * * dismount and extract the arrow. * * * This they did by cutting off the spike on the inside and then drawing the arrow out the way it went in." * * *

Under command of Colonel R. S. Mackenzie, U. S. troops in September, 1872, attacked and destroyed Mow-wis Comanche village of over 250 lodges. Other engagements took place on the North Fork of Red River and elsewhere in the Texas Panhandle. In one of these, Sergeant J. B. Charlton, 4th Cavalry, received a severe arrow wound in his leg. Captain R. G. Carter²⁴ says:

* * * "One of these arrows pierced Charlton's thigh, midway between hip and knee, going through the saddle leather and pinning

him to the saddle. * * * When he reached the command, his leg was so swollen that his trousers had to be cut away. He could not dismount until the doctor lifted his leg away from the saddle, cut off the barb of the arrow and removed the shaft." * * *

Taboo Against Arrows That Killed Men

There seems to have been a Comanche—and perhaps an Apache—taboo against using arrows stained with human blood. Lehmann declares that the band with which he was a captive "never used an arrow the second time which had killed a man, enemy or friend."

Poisoned Arrows

Although an occasional reference is made to poisoned arrows, their use in Texas is hazy. Brainard,²⁶ in 1854, in the *Nature and Cure of Bite of Serpents and Wounds of Poisoned Arrows*, states:

"Dr. George Johnson * * * told me that several tribes of Indians on the Rio Grande employ the venom of the serpent for this purpose and that there is a species known to them which have the vesicles receiving the venom so large as to contain a quantity sufficient to poison a great number of arrows.

"There is reason to believe that the poison used by the Indian tribes on their arrows is, in many cases, nothing else than the venom of the serpent preserved in a peculiar manner. * * *

"The plan of treatment which I recommend for the bite of serpents and wounds from poisoned arrows is: 1—To wash the part with a solution of iodine and iodide of potassium, and apply cupping glasses over the wound, or ligatures around the member, so as to prevent absorption. 2—If the wound be deep, or if absorption has already taken place, I recommend injecting the solution under the skin, beneath the cupping glass, and disseminating it by friction about the wound." * * *

Mason in 1893 said arrow poisoning was a "vexed" problem: some saying it was not practiced; others, including Captain Bourke, insisting that it was practiced. Mason accepts Bourke's account and adds: "The toxic effect of putrid flesh was known, whether or not bitten freely by rattlesnakes."

Outstanding among Texas references is the statement of Lehmann: "In a separate quiver we carried a few poisoned arrows to use in battle. The venom of the rattlesnake was used on these spikes."

I have found no record of anyone on the Texas frontier being

wounded by a poisoned arrow. It is possible that some of the "instant" deaths were hastened by poisoning. But an arrow through the heart did not need to be poisoned. It also is possible that the sickness and vomiting mentioned in certain cases may have been aggravated by poison. Most such wounds were not fatal.

Stabbing With Arrows and Lances

Projectile points sometimes were used for stabbing and cutting. Such use was facilitated by having the double-edged metal points very sharp. There are references to sharpening arrowpoints, and to "a point as long as the finger and sharp as a knife."

Marcy relates an incident that happened, prior to 1854, along the Rio Grande near Laredo, Texas. Lieutenant Hudson with a detachment of soldiers had overtaken a band of Indians in an arroyo. Being unable to escape, they fought desperately, several attempting to kill the lieutenant.

"One," Marcy says, "approached him very close and discharged several arrows at him, when the lieutenant ran and seized him by the hair of the head and attempted to cut him down with his saber. But unfortunately the arm was so dull that he was unable to inflict much injury upon him; and the savage turned upon him with an arrow, and stabbed him so severely that he died in a few days."

In August, 1865, after stripping and ravishing a white woman they had captured, six Comanches cut her body with lance thrusts and made a long gash in her abdomen.

Lances and Their Uses

Lances played a prominent part in many encounters. The lance, often referred to as a spear, was one of the favorite weapons of the plains Indians. Lances ranged in length from five to 14 feet.

Walter Hough, in the *Handbook*, states that "the plains Indians, whenever possible, used two distinct varieties for war and for hunting, the hunting lance blade being shorter and heavier." The war lance, with its metal blade, was standard equipment on Comanche expeditions; and was intimately associated with the horse.

I have seen three steel lance points, found in historic Indian sites. They were five to eight inches long and $1\frac{1}{2}$ to $2\frac{1}{2}$ inches wide. One was made of an old file; another from a butcher knife; and

the third, the end of a sword blade. They had rounded shoulders and no barbs. The stems were long, probably because the weight of the point required deep insertion to make it secure.

Writers mention lance shafts of ashwood and of hickory. Other woods probably were used.

In most cases the lance was not thrown but used in the hand. When thrown, it was for short distances.

Catlin²⁷ tells of a swift Kiowa man, seven feet tall, who ran alongside a buffalo and killed it with a lance. The *Handbook* mentions a Kiowa lance in the U. S. National Museum that is headed with a sword blade and reported to have killed 16 enemies.

Major George H. Thomas,²⁸ summer of 1860, set out from Camp Cooper and scouted for several weeks. Finally a fresh Indian trail was found and chase given. Closely pursued, a warrior in the rear dismounted and began to fight a delaying action, that other members of his band might escape. The gritty warrior, wounded by 20 or more shots, rallied and rushed with drawn lance upon a dismounted soldier. Only a slight wound was inflicted. He then struck a bugler in the left breast.

In August, 1865, a white man was shot with an arrow, then killed by driving a lance through his back. Comanches committed the act.

In 1866, while on the ill-fated Schnively expedition, Colonel W. C. Dalrymple received a lance wound in his arm just below the shoulder. His assailant tried without success to withdraw the lance. Dalrymple's gun and pistols empty, he ran with the lance dangling from his arm. Six Indians pursued him, while two white men followed them. After the Indians gave up the chase, the whites released the dangling lance and tied up the wound with a soiled handkerchief.

In 1873 an elderly lady in Bandera County, Texas, was killed by Comanches, who struck her between the shoulders with a lance. The sharp steel head passed through her body and protruded from her breast. Her slayers left the lance in her body and failed to scalp her.

Gibson²⁹ gives a good description of this lance. The head, made

of a piece of steel about a foot long and $1\frac{1}{2}$ inches wide at the base, tapered to a sharp double-edged point. Just below the stem were two barbs. The point was imbedded in the end of a seasoned hickory shaft about four feet long, making a total length of five feet.

In the plains area the lance became an accessory of ceremonies, and underwent a change from utilitarian to ceremonial weapon.

It seems the Comanches had a less disfiguring punishment than the Apaches for infidelity among their women. Instead of cutting off the nose, the Comanche husband punished the offending wife by inflicting wounds in her feet. Prior to securing firearms, the man dashed a sharp lance into one foot of the woman. Later the lance was carried in the ceremony, but the wound actually inflicted by firing a rifle ball through the woman's crossed feet. Marcy gives an account of such a ceremony, related to him by Jim Ned, a Delaware Indian for whom a Texas stream was named.

Damage to Indian Weapons

Bows, arrows and even shields sometimes suffered from the gunfire of whites. One account tells of a bullet cutting a bow in two near its middle. In June, 1860, six cowboys engaged a number of Comanches. Bows, bowstrings and arrows were damaged. With a shotgun, George W. Baylor split a bow from end to end.

According to Allen,³⁰ in January, 1869, there was a fight in which the arm loops of a shield were cut by bullets. The shield was dropped.

White Versus Indian Weapons

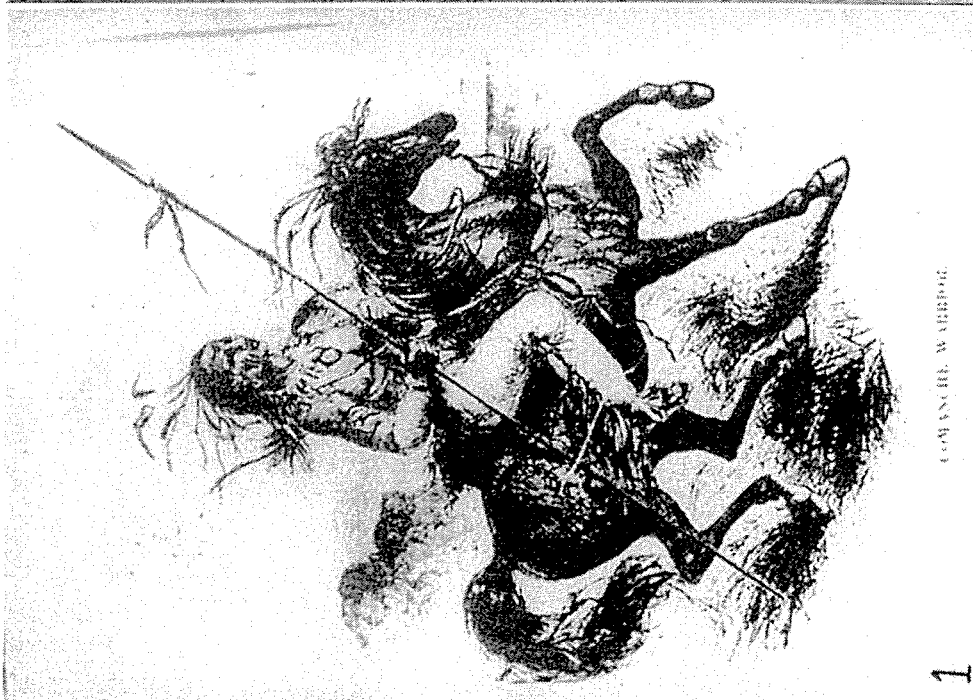
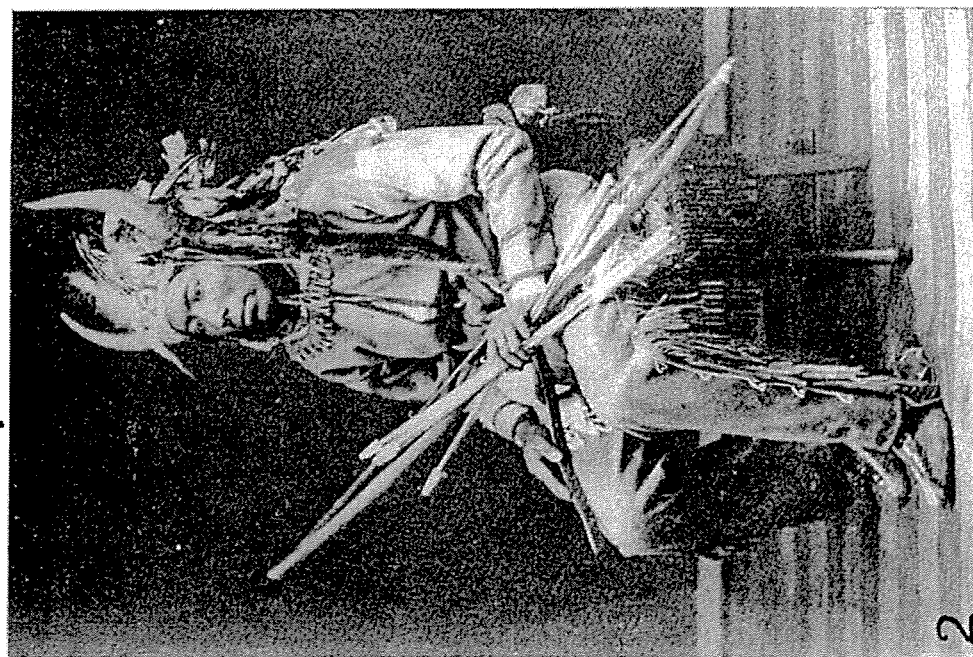
Cross declares that prior to 1860 five well armed white men could defeat 30 Indians armed only with bows and arrows. Perhaps overstated, there is some truth in what he says. But a few years later

PLATE 9

COMANCHES WITH LANCE, BOW AND ARROWS

No. 1. Mounted warrior with lance. Shaft about 10 feet long, steel point a foot in length. (From Thrall's "Pictorial History of Texas," 1879).

No. 2. Friendly "brave" in deerskin attire and buffalo horn head-dress. Metal arrowpoints made from barrel hoop. (From A. B. Stephenson Collection, 1876).



U. S. N. C. H. M. A. 1880-1881

Plate 9

the situation was very different, the plains Indians being as well armed as the white settlers and soldiers. Often they were better armed.

There are numerous references in 1868 and 1869 to the Comanches, Apaches and Kiowas being armed with fine rifles and an abundance of ammunition. Yet they carried their bows and arrows. When the ammunition was exhausted they discarded the pistols and began shooting with bows and arrows.

In a battle with raiding reservation Indians in July, 1870, the whites had two killed and 14 wounded. Only one man, McConnell³² relates, was hit by an arrow, the others being struck by balls from large caliber rifles.

Officers Received Arrow Wounds

Many of the officers stationed at the frontier posts received arrow wounds. Several of these, including Lieut. Hood,³³ and Maj. G. H. Thomas, have been mentioned.

Major Earl Van Dorn³⁴ of the 2nd Cavalry was seriously wounded on October 1, 1858, in a battle with Comanches. Eleven days later he wrote his wife:

* * * "My first wound was in the left arm; the arrow entered just above the wrist, passed between the two bones and stopped near the elbow. The second was in my body; the arrow entered opposite the ninth rib on the right side, passed through the upper portion of the stomach, cut my left lung, and passed out on the left side between the sixth and seventh ribs. * * * I killed the Indian that shot me. * * * I gasped in dreadful agony for several hours, but finally became easy." * * *

Captain Jenkins³⁵ relates how Lieut. Van Camp received a death wound in the same engagement. "In his left hand was the fatal arrow, which he had pulled from his heart in the unconscious moment that preceded his death."

In October, 1871, in a skirmish with Indians in the Texas Panhandle, Col. R. S. Mackenzie was wounded by an arrow. According to Captain Carter, he was taken to Fort Richardson in an ambulance. Turner³⁶ says he saw "Mackenzie shot through the leg with an arrow. A soldier standing near * * * pulled the arrow from his leg, and promptly Mackenzie shot the Indian."

Care of the Wounded

Many of those wounded in fights with Indians received belated and often inadequate treatment. This was unavoidable. Seemingly serious wounds sometimes gave little trouble, while some that appeared to be trivial proved fatal.

Lieut. Maury³⁷ tells of the unusual arrow wound received by Captain Van Buren. On the seventh day it proved fatal.

"It seemed a mere incision, so slight that neither Van Buren nor the surgeon felt any anxiety about it. He was sitting up, laughing and talking * * * when an artery burst and he died in a few minutes."

A noteworthy instance of rapid recovery of what at first seemed a serious case was that of a soldier, named Mattock, at Fort Chadbourne in September, 1854. Major General David S. Stanley³⁸ in his *Personal Memoirs*, relates the case. Col. M. L. Crimmins³⁹, ⁴⁰ and Captain R. G. Carter⁴¹ make available additional information. General Stanley says:

"Lieut. George B. Anderson and myself occupied one room in the unfinished hospital. * * * We were both awakened by some strange noise like someone groaning and calling. Going out we found a soldier * * * who was just being helped to the hospital * * * Mattock had been over the creek to the hut of a Dutchman who sold liquor. Having filled up, he was on his way home * * * and at the crossing of the creek, which was in deep banks, five or six Comanches waylaid him, and as he passed commenced shooting at his back with bows and arrows. Mattock shouted and ran until he met with the soldier * * * who brought him * * * to the hospital. * * * Mattock had 14 arrows in him. * * * Three of these arrows had gone so far through him that the surgeon extracted them by cutting off the feathered part of the arrows and pulling them through the man's body. In two weeks time Mattock was walking around, and his only disability was finally from a superficial wound, which had lacerated a nerve. Assistant Surgeon Eben Swift, who treated this man, said he feared a truthful relation of the case would result in his being put down a Munchausen. I relate this case to show that arrow wounds do not compare with those made by bullets in fatality."

As told by Captain Carter, Assistant Surgeon Swift saved the arrows which he extracted from Mattock.

"At the opening of the Civil War in 1861, upon being ordered to Council Bluffs, Iowa, and from thence to Hannibal, Missouri, the

freight car in which the family was traveling was set on fire by the Confederates, and these Comanche arrows—so long packed away as surgical curios—were burned.”

After Lieut. Ed Burleson and his band of Rangers had a fight with Comanches, a courier was sent to Laredo for ambulances. Several men were unable to ride on horseback. They reached Fort McIntosh the following day. Captain Sidney Burbank saw that the wounded had proper care.

From the site near Devils River where Lieut. Hood’s men made their stand, the wounded were taken, after a delay, to Camp Hudson. There they received medical aid.

Van Dorn was carried 80 miles on a litter swung between two mules. He traveled comfortably.

After Lieut. W. B. Hazen and his party had a battle, October, 1859, Judge McCormick went 80 miles to Fort Clark after surgical assistance for the wounded. It took three days and nights to get back with a hack and the surgeon. The scarcity and the crudity of surgical instruments is illustrated by the fact, as related by Sowell, that the surgeon pulled a number of arrowheads out of the men by using a bullet mold.

W. F. Robinson—son of Dr. W. H. Robinson, surgeon at Fort Belknap—gives an excellent insight into conditions prevailing on the frontier in 1864.

* * * “Peever was in the act of mounting. * * * An arrow pierced the back of his neck and penetrated his throat to the extent that he could not swallow. When he reached home father was called in and a brief diagnosis revealed the fact that the arrowhead * * * when the shaft was withdrawn, had remained partially imbedded in the neck bone, the rear or larger end of the missile pressing against the esophagus. Father had no forceps with him at the time. * * * But there was a small forge and a few blacksmith’s tools on the ranch. An unskilled worker in iron chanced to be present. Father stood by and showed his smithy how to make a pair of pincers. The instrument was rudely fashioned, but it answered the purpose for which it was intended and the spike was removed. Later blood poisoning set up and the patient died.”

After the Indian raid in Young County, settlers sent a courier for Dr. Robinson. The messenger arrived late in the evening. The

doctor did not go until the following morning. He found Bragg had been shot in the breast with an arrow.

"On striking the breast bone the shaft had glanced, following the course of a rib to the back, where the spike was located just under the skin between the shoulder blades. Father ordered a blanket spread out upon the floor and on this he made the old man lie flat on his face. Making an incision in the flesh he removed the spike. * * * Mr. Bragg recovered."

At the Fort Davis hospital a stage driver, previously mentioned, was in pain while having two arrows removed. But no chloroform was administered, as it was very scarce and the case was not considered serious.

During the attack on Miller and Morrow, their wagon went into a ditch and one horse was killed. They then cut the traces and made a run on horseback, escaping into the timber.

"Both of us," Miller states, "were terribly nauseated and burning with fever. We remained hidden until about nine o'clock next day. * * * Wild with thirst, I tried to reach Brady creek, but grew so sick I could go no further. * * * Morrow crept back to me with one of his boots full of water. * * * Next day rescuers got a wagon and hauled us home. * * * Both recovered after a number of surgical operations. I was compelled to use crutches for two years."

After the Salt Creek fight the wounded white men lay on the ground all night. One man carried water in the crown of his hat to the wounded. A colored man volunteered to go ten miles to a ranch for a wagon and team. The post doctor from Jacksboro met them, probed their wounds and permitted them to return to their homes.

When Major George H. Thomas and several of his men were wounded, Lieut. Lowe attended to the wounded and soon had them in condition to be moved. Two days later they were met by a spring wagon and the hospital steward. After another two days they reached Camp Cooper, where better care was accorded them.

Recovery Attributed to Empty Stomach

In writing of his arrow wounds Major Van Dorn said: "The doctor says that if my stomach had been full, instead of being perfectly empty as it was, I would have died. I don't know how true this may be, but I am certainly in a fair way to get up now."

In discussing the important battle with the Indians in Palo Duro Canyon, September 28, 1874, Captain Carter writes: "One man was shot through the bowels, but he got well; his recovery, the doctor said, being due to the fact that he had been without food so long." 508 East 46th Street, Austin, Texas.

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THE WATERMELON ISLAND SITE IN ARKANSAS

BY DR. AND MRS. T. L. HODGES

The Mid-Ouachita¹ region of Arkansas, situated on the edge of the Ouachita Mountain Range and contiguous to the Coastal Plain, offered the prehistoric inhabitant many of the lures which draw the admiring tourist to it today. The Ouachita River, after its mountain meanderings, is broad, clear and banked by rich alluvial bottoms. Beyond these rise the picturesque, timbered, rocky hills. A perfect setting for a relatively permanent Indian inhabitation. Settled on the fertile banks in communities, he could pursue agriculture to supply vegetable wants, look to the wooded hills for protection and as an infinite storehouse of animal food, clothing, mineral and timber necessities. An abundance of everything was here, as well as a mild climate and natural beauty.

We thus are not surprised to find numerous Indian sites along the Ouachita River in Arkansas. Until recently few archaeologists of national repute had focused their attention on this theatre of prehistoric Indian cultures. Harrington and Moore recorded the findings of their work, which represent the best archaeological efforts of their time. Recently Arkansas archaeologists, mostly amateurs, stimulated by out-of-the state trained experts and prodded into scientific activity by the destruction of irreplaceable data by flood, plow, and the commercial dealer, finally became aware of Arkansas' many valuable evidences of aboriginal cultures. This state presents many prehistoric horizons especially of the pottery-making Indians. Least clarified as yet is the Mid-Ouachita complex, which is intricate and indicative of many ages and influences. As an example of this melting-pot, we chose Watermelon Island of Hot Spring County, Arkansas, as a site representing many variant forms of aboriginal cultures.

This eleven hundred acre alluvial bottom-land island is formed by the Ouachita River on the east, and a bayou on the west. It

1. This nomenclature was first assigned by Phillip Phillips in a Special Report to the National Park Service on behalf of the Central Mississippi Valley Archaeological Survey, on "Menard Site on the Lower Arkansas River."

lies at the base of a sandstone bluff fronting the Midway Community in Hot Spring County. Its sandy soil is rich in loam but also mixed with considerable clay, resulting in a hard compactness which the planters term tight soil. The whole island is subject to at least six inches of overflow every spring, but soon drains and dries. Overlooking it from the old Military Road skirting the one hundred fifty feet high bluff, the island appears as a vast plain merging into two successive plateaus on which are located Indian mounds. Indian village sites abound everywhere.

On the island are two mounds. One is on the eastern higher plateau and near the present river channel; this rises about twenty feet above the surrounding sand and is oblong in shape. The second Indian mound is on the west side of the island on a second terrace from the present boundary-bayou; this is about six feet high and badly eroded by overflows. It crowns a fertile black section of land commonly referred to as Dutchman's Garden because of an early pioneer's cultivation of fruits and vegetables on this portion.* This elevation, rich in artificats, middens, and burial plots probably fronted the main Ouachita River channel in prehistoric times, for the river has changed² beds since 1804 when Dunbar and Hunter³ traveling upstream recorded the "Isle de Mellon" as sighted on their right! A slough-bed ten feet below this plateau is reminiscent of ancient shore-lines. Regardless of the shift in channel, the island was the home for a long period of a group of prehistoric agricultural communities of unusual resources. Salt licks prevailed on the neighboring mainland; mussels and fish abounded in the river; deposits of finest pottery clay were convenient nearby; upstream, within easy distance were the healing vaporous waters and also the novaculite quarries of today's Hot Springs district.

A surface observation of the island's middens reveals signs of a conglomeration of chronological material to which can be added a wealth of excavated evidence. Square-bottomed grit tempered sherds suggest Marksvillian occupancy. A six foot square trial

* Today all this land belongs to Judge Henry Means of Malvern, who so kindly granted permission for investigation, not only to us, but also to the Arkansas State Archaeological Survey of 1939.

2. Hodges, Dr. T. L. and Mrs., "Watermelon Island," Anniversary Edition of Malvern Daily Record (1941).

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pit was carefully excavated to a depth of six feet⁴ in 1939. The location was near the base of Dutchman's Garden mound. Findings confirmed the belief in Marksvillian occupancy of Watermelon Island, but no associated burials were found. About forty feet from this spot there had been found on the surface a hard, miniature jar identified as Yokena Incised of the Marksville complex. Overflow had exposed it in the midden debris of these early people, but its unusual hardness and two and a half inch size were fortuitous factors in its perfect survival. The pot is urn shaped, of buff grit-tempered paste, very smooth and hard, possessing a squared, thickened rim below which is a band of Yokena Incised motif of Ford's marker-type. This site fronting the Dutchman's Garden mound and on the brink of a slough-bed had been badly eroded by plow and overflow, and the top soil containing aboriginal refuse washed into the slough.

The intermediate stage of Coles Creek complex is merely suggested by the plain ceramic sherd-types which are easily confused with the undecorated Marksville potsherds in this state. The close resemblance renders diagnostic chronology ineffective. To date Coles Creek evidences have not been found on the island. However, the artifacts found indicate two Caddo horizons--the late Caddo and an earlier, thus far unclassified complex.

No trade-material of white man's contact was ever found on the surface or in burials.⁵ The eastern slope of the Dutchman's Garden mound yielded a lodge with a fire-place and several burials in which were typical Caddo-ware. Adjacent to the south were found great numbers of plain sherds, which were especially abundant in square bottoms. Finds were at an approximate depth of four feet. After the State Survey completed excavating its partial site, our private investigation found a burial spot about a hundred yards southwest on the flat-land. Fifteen burials were exhumed, all were furnished with pottery but lacking in skeletal remains except an occasional lime-line. The human remains are usually completely disintegrated because of either the acidity of soil, or general moisture of earth. Interments are located at an average depth of two and a half feet. The original depth can only

4. Arkansas State Archaeological Survey: 1939.

5. Arkansas State Archaeological Survey: 1939.

be conjectured for the surface is subject to change by overflow yearly, sometimes losing inches of top-soil and often gaining a new layer. The top foot of earth is sandy and friable, but changes to a tightly packed, half-clay consistency at the level of grave offerings.

Seven ceramic vessels constitute an average votive offering to the dead. The pottery was commonly grouped in a curve following the top of the head and arms; at times specimens were also at the feet and by the hips. Placement of artifacts and discoloration of grave-earth indicated extended burials but in no symmetrical arrangement with respect to the rising and setting sun. When the pottery was very numerous it was often stacked. Much of it was broken in the grave and surfaces were badly leached. The contour of burial placements outlined by about one hundred and fifty exhumations followed a diagonal curve across the lesser plateau paralleling the old slough bed at its base. Within this peripheral curve were scattered groups of burials and large middens of refuse-earth well filled with mussel shells.

The findings in individual graves were consistently patterned; a water-bottle, collared jars, several cazuelas, often a seed-jar and in unusual cases, an effigy vessel. Pipes were rarely found. Shell beads and bone implements had decomposed in the soil. Singularly few stone implements and ornaments were with the mortuary furniture. No bundle burials and not a sign of cremation were observed. Grave-earth is filled with red pigment lumps. One burial contained a small bowl from whose original contents a green coloring had diffused into the surrounding earth. White chalky pigment, occurring as filler in ceramic decorations, was absent in interments. Often caches of pretty water-washed pebbles were with ceramic offerings. Thus the variations add interest to the common pattern.

The most common vessel found is the cazuela, more often of the sand-tempered red Bayware than the shell-tempered Caddo brown drab. Rarely the intricate Caddo-type rim motif is white-paint filled; only one vessel suggests red-paint filler. This bowl is very common in the Caddoan Red River complex. On Watermelon Island the bowl types run the gamut of sizes and designs from minatures four inches in diameter to capacious cazuelas twelve

inches across. Even a salt-pan was found which was huge, thick and flat, but almost crushed. Semi-conical bowls with narrow brims neatly engraved in curvilinear motif sometimes reinforced with symmetrical applied notches, represent the Natchitoches interpretation of Caddo design. An interesting specimen is a roll-brimmed globular bowl with body decoration of interlocking bands of solid confluent curvilinear lines and neck banded in an imitation roulette. Spearling replaces Caddo cross-hatching on a few specimens. All bowls are highly polished inside and out. The general design conforms to Caddo origination.

The multiplicity of water-bottles, so often found in an upright position with a cazuela, are either plain or engraved. Never have we seen them topped by either a pebble or a pottery disk in situ. The broken-line engraving is the most repeated motif. Engraved bottles trend to red-paint filling. The original high polish of the drab brown to black, shell-tempered paste is frequently badly leached. Necks vary with designs, which are many. Represented are broad bands of cross-hatching emphasizing ovals, all-over curvilinears, applied notched strips, applied vertical bands, annular decoration at base of neck, four lobed stars, and others which are hard to adequately describe. Bases are round and flat. The all-over engraved bottles fall into the Natchitoches standardization. Glendora bottles of graceful design and well executed combed geometric motifs are included. Two unusual forms occur: the compound and the tripod forms. One plain compound form has an eight-holed partitional disk inside the constriction between compartments, similar to a modern dripolator! One three-legged (tripod) bottle is enormous. Each rounded leg is two inches in diameter and the vessel is eleven inches high. It was found associated with typical Caddo grave offerings. Carinated bases are not unusual. One neckless water-bottle of Glendora origin has a capacity of about three gallons. An engraved loop-bottle is another unique specimen. However, of greatest surprise and unusual interest, was a cameo bottle of concentric, red painted broad circles on

PLATE 10

No. 1. Marksville miniature jar with Yokena-incised motif. Height $2\frac{1}{2}$ inches, width $2\frac{1}{4}$ inches.

No. 2 Caddoan pottery pendant-container with engraved motif white-paint filled. Diameter 4 inches, depth 2 inches.

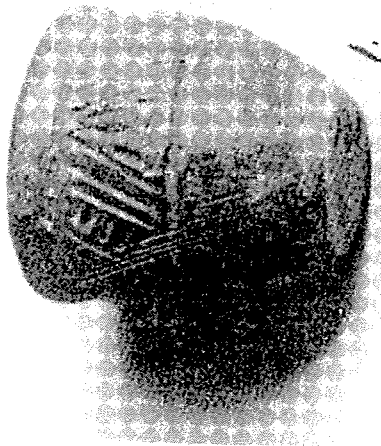
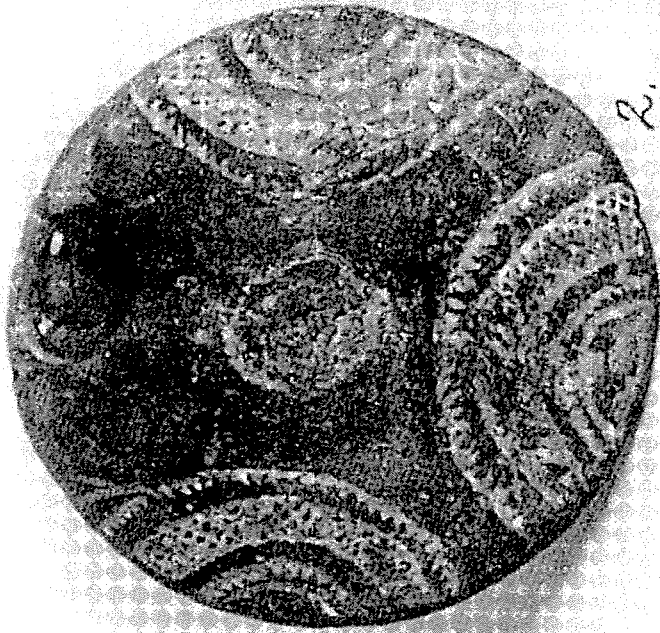


Plate 10

buff background. This specimen belongs to Eastern Arkansas, but it was found in a Caddo grave with Caddo associations. A middle Mississippi bottle in a late Caddo grave!

Jars offer variants of the Caddo pattern. One roll-brimmed heavy vase has a broad band of body decoration of heavy interlocking curved lines with a seemingly rouletted solid background! It presents features of the Caddo and Marksville complexes.

Collared jars are numerous, of similar silhouette, varying in size, but the combination of incised motif on collar and body of urn is seldom alike. On a twelve inch high and eleven inches broad vessel, the design is the common deeply incised meander alternating with finger-nail decorated bands. The better specimens are of reddish paste and are of all-over meander motif. These are very attractive and heavy. These reddish vessels are not washed ware. The firing-temperature alone produced the color of the outside surfaces. An exceptional vessel of this type is a lavenderish shaded one, which is sooty inside, as if it might have been used as a flare-torch. The surface is badly leached and the outside collar and body decoration is brush-marked. The soil taken from the body of the pot was very slimy; we have not yet subjected it to chemical assay. In this collared class occur most of the soot-stained cooking vessels. We like to imagine that the largest twelve inch high collared jars, which are not carbon-stained, might have been used for storage purposes. Applique and three-noded decorations sometimes reinforce the meander or concentric circle motif. Bottoms are always flat.

Effigies are well represented on this island. Human effigy water-bottles have been found in Caddoan shell-tempered ware. One is a Glendora bottle, very nicely fashioned of a conventionalized human-head design. Two turtle effigies represent the hard and soft-shelled varieties. A bear-effigy bottle commands interest. A gondola-shaped boat-effigy banded by Caddoan engraving is handsome. Among the effigy-rim decorative class were found likenesses of fish, fox, deer, tortoise, quail, frog, and rattles. Also in this class are the three sided and four sided boat bowls. Many Eastern Arkansas animal effigies seem to have been duplicated in Caddo ware.

The most specialized and unique ceramic type in our locality should have a scientific name and classification. On Watermelon Island, this type of specimen is well represented. This kind of Mid-Ouachita ceramic art is the seed-jar or seed-urn. Its distribution seems limited to four or five counties centering in Hot Spring County. To date on Watermelon Island there have been found the greatest number of these interesting receptacles. A complete census would require extensive excavations but a surface-sherd survey might solve the problem of the restricted locale of the seed-jar. From personal observation only, the seed jars have been found in the Ouachita River valley, as far north as Buckville and south in the vicinity of Ozan. It is odd that a vessel of such utilitarian design and artistic balance should have been manufactured in such a limited area. The criteria of a seed-jar are: (1) the completed, circular, small orifice measuring from $1\frac{1}{4}$ inches to $1\frac{1}{2}$ inches on top of the vessel; (2) the semi-cylindrical, cylindrical, or spherical body. These pots occur in two types; plain and engraved. The plain seed-jars are consistently shaped like a beehive, flat-bottomed, and the upper portion of the body tapering to an arch and topped by the typical small opening. The appellation, neckless bottle is a misnomer, although the image is suggested by that term. In the graves, the seed-jars are associated with Caddoan pottery and with exhumations usually of two to three feet depth. One exceptional cache of four seed-jars was found four feet below the top-soil.

Plain seed jars are polished, thick walled, and range in color from cinnamon to drab black. They have no lugs (perforated ear-like handles) except one unusual find. They vary in height from six to ten inches; in body-diameter the squat ones average eight inches, although some tall, slim and very tapering seed-jars are only four inches across.

The finest examples are the artistically engraved seed-jars, most of which are round-bottomed and four-lugged. Two of these

PLATE 11

No. 1. Caddoan engraved seed-jar. Height 10 inches, width 6 inches, round bottomed.

No. 2 Caddoan plain seed-jar. Height 7 inches, width $5\frac{1}{2}$ inches, round-bottomed.

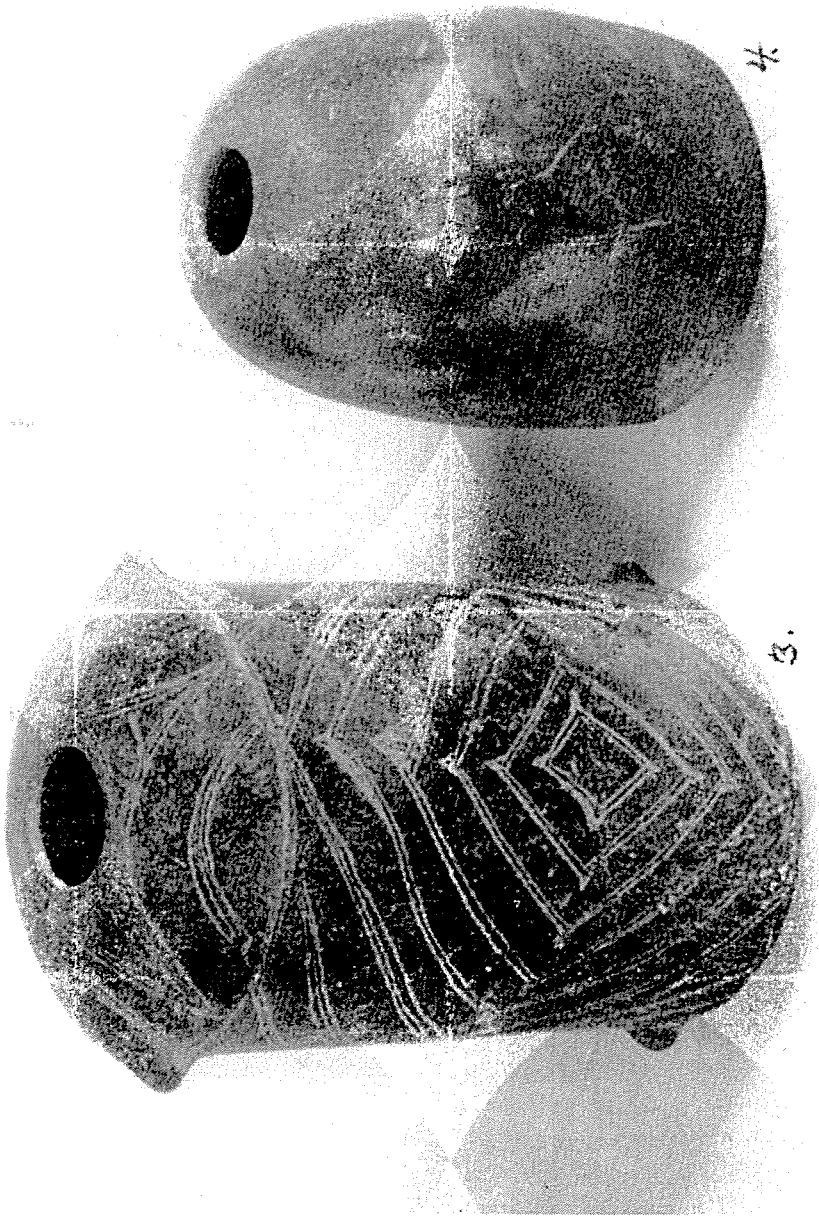


Plate 11

handles are near the upper rim and two near the lower margin, dividing the body of the vessel into halves. The decoration predominates on the cylindrical body but is gracefully complemented on the inverted-saucer like top portion of the vessel. The resulting silhouette is a cylinder enclosed by arching planes. The curve of the upper surface is peaked by the typical circular orifice of small size.

The decorations of the seed-jar are not highly diversified. The lug handles all have a perforation for a thong. Workmanship in engraving is usually neat, though not perfect. Parallel lines waver and equal angles vary, but the general effect is pleasing. The most common engraving encloses the body in chevron-like parallel triangular lines. Motif is invariably included between marginal lines parallel to the rim and is symmetrically divided into hemispheres created by the paired lugs. Nested diamonds is a pleasing variation in decoration. Concentric horse-shoe shaped festoons beautify several seed-jars. A beautiful brown-drab specimen eight inches high and a matching five inch miniature with notched bevelled rims are engraved pleasingly in a double-lined and interlocking curvilinear vertical decoration. One spherical seed-jar and three vertical applied bands and heavy interlocking circular lines. We wonder if the so-called plain gourd-effigy which is so similar to the plain seed-jar but which has the orifice slant-wise on top might not be included in seed-jar types. The most unique engraved seed-jar from this island is a pinkish-red flat-bottomed and concave topped and sand-tempered four-lugged container. A most rare receptacle, an off-shoot of this category, is a reticule-like round vessel with an inch long orifice near the rim on the engraved face and two perforations in line on the opposite wall. It resembles two facing saucers, which are glued together at the rims with openings left. The engraved side is in typical Caddoan combination of cross-hatching and circular lines. Thongs could have been threaded through the perforations and the pocket become a convenient duffle-bag for the shaman or the chief to hold his precious and mysterious amulets. The faces of this old receptacle resemble the top and bottom circular portions of the engraved seed-jar. The object

appears to be a pottery replica of the modern Caddo's beaded skin charm bag.⁶

A rock or a pottery disc carefully fitted over the orifice of a seed-jar would exclude damage to the contents by rodents or weevils. Logically, seed must have been stored in covered, dry jars until needed for planting. These seed-jars certainly are a perfect answer to that need. However, neither a rock nor a disc cover has ever been found for the orifice in any exhumation. Seed was precious to these agricultural Indians. The seed-jars do artistic justice to the valued contents. Suggested by an authority has been a similarity of these Mid-Ouachita seed-receptacles to those of Ancient Peru. We, however, are only describing this interesting Mid-Ouachita manifestation and hope for a future clarification of its interpretation in the ceramic art of our prehistoric peoples.

Ceramic surface finds include two semi and one completely perforated plain discs; one Caddo loop-ended pipe; two pottery trowels; rim and animal effigy-heads. Sherds are plentiful.

Some surface finds include many projectiles of all types and sizes (novaculite is the usual material); double-bitted sandstone axes; celts of every form; Caddoan perforated breast gorgets (some notched); boatstones, discoidals, hammer stones, smoothing rocks, chipping stones; a few stone beads; net-sinkers; charm-stones; paint-pots. A stone tubular pipe augments the confusion of the prehistoric picture.

On Watermelon Island the Caddoan complex predominates in both the ceramic and stone artifacts. The pottery on this island alone would bear out Swanton's statement that the Caddoan ceramic art had no superior short of the Pueblo country. But more significant is the correlative material of continuous occupancy of the early peoples of the Mid-Ouachita Basin, and the suggestion particularly in the Caddoan period, of peripheral cultural admixtures of alien influences. According to Swanton,⁷ in this region lived the historical Cahinnio Caddo (region about Hot Springs), the

6. Swanton, John R.: Source Material on the History and Ethnology of the Caddo Indians. (1942) (Bull. 132, B. of Am. Ethnology).

7. Swanton, J. R.: Source Material on History and Ethnology of the Caddo Indians, (Bull. 132, B. of Am. Ethn.) (1942).

Soutel, Henry: Journal of La Salle's Last Voyage (1684-1687).

most remote tribe of the Caddoan Confederacy. The common Caddo heritage is obvious, but intermingled are evidences of extensive cultural exchange. In the Caddo variants are possible factors of the horizon of the tentatively called Early Caddo, the predecessor of the historic Caddo. Watermelon Island has also served to extend the horizon of the Marksville culture to the north and east, as Ford had predicted,⁸ linking the South's Marksville to the North's Hopewellian culture. Watermelon Island, as a typical unit of the Mid-Ouachita archaeological region has the earmarks of an important link in the ethnological chain of the Arkansas aborigines.

Bismarck, Arkansas.

8. Ford, James A.: *Analysis of Site Collections from Louisiana and Mississippi*, Anthropological Study No. 2, (1936).

SOME ARCHAEOLOGICAL MATERIAL IN THE MUSEUM OF THE AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS

BY CURTIS J. HESSE

In the development of any Museum some unexpected acquisitions of material occur. The Museum at A. & M. does not have extensive collections of archaeological material, nor are such collections planned as part of its future development. Nevertheless, some such material has been obtained through both gifts and collecting. The following three items seemed to be worth recording since they are unusual enough not to be found in ordinary collecting nor to be seen commonly in the smaller Museums in this area.

1. A cache of unusual lithic artifacts.

The collection of large artifacts described here was obtained from the discoverer by the late Dr. Mark Francis, a few days after they had been found. The collection was found in 1931 while Mr. C. W. Manning was breaking some newly cleared land when his plow struck the cache. The site is on the farm of Mrs. Emory, situated four miles northeast of Bryan, Brazos County, Texas. The large artifacts were in a conical pile, and the plow struck the topmost stones. Mr. Manning stopped at once and began to gather the implements which he exposed by digging with his hands; in a foot or so of the loosened soil he collected 13 large artifacts. These were carried home and two given away before the rest of the collection (eleven pieces) was turned over to Dr. Francis.

The site of the find is in an area drained by Wickson Creek, but lies about a quarter of a mile from the creek itself. The field slopes to the north toward the western branch of the creek, and up until 1930 the south, or upper end of the field, was covered with a growth of post oak (*Quercus stellata*). It was a small hill or knoll, a part of which was cleared for a field. Neither Mr. Manning, nor those farming the ground at present, have found any other material in this spot. A half to three-fourths of a mile away in the Wickson creek bottom are camp sites. It would seem that these

artifacts were buried or cached in this spot and not abandoned on a former camping ground.

Often one finds such accumulations in and around springs or other places where offerings were left by the Indians, but at this locality there is nothing to indicate that such was the case. The knoll is topographically a local high, and there are no signs that a spring ever existed there. Since these were the only artifacts found, the cache idea seems to be the most sound explanation of their location; perhaps the owner died or for some other reason was unable to return for his possessions.

Description of the Collection:

The eleven artifacts in the collection are made of gray (probably Edwards) chert. Two of the series are slightly lighter in color than the rest, suggesting that they probably were made from weathered fragments. The remaining specimens are dark and very fresh, with no signs of patination. It seems very unlikely that these implements were made of materials picked up locally. Chert pebbles do occur in the gravels on the Brazos River and throughout the county, but none are large enough for the manufacture of such large implements. This coupled with the freshness of the chert itself strongly suggests that it was obtained and probably fashioned at the outcrop of the formation. It is likely that this location is in Falls County, 75 miles to the north, where chert horizons occur in the late Cretaceous.

Group I

The largest of the implements (see plate A) T. A. M. C. Museum No. 2507, pl. 12 No. 1, is 288 mm. long and 174 mm. wide. It averages 35-40 mm. in thickness throughout, except at the trimmed edges, and weighs 2172 grams. Over most of the surface the shaping was done by the removal of large flakes, some as large as 100 mm. by 90 mm. and was apparently accomplished with few blows and considerable skill. The edges were then trimmed by the removal of smaller flakes and finally sharpened by working the edge. This final shaping seems to preclude the idea that these were blanks to be broken up and used later in the manufacture of smaller points. On the back of this blade is an area of well-cemented, weathered, gray sand, much lighter in color than the

main body of the artifact, showing that it was made from a fragment at the surface of a chert mass. In outline this artifact is very symmetrical and well balanced; it shows no trace of any use or wear. It is more than twice as heavy as any of the rest of the specimens.

T. A. M. C. Museum No. 2509, pl. 12 No. 3, is 188 mm. long and 140 mm. wide at its base. It is made of a chert somewhat lighter in color, but of the same excellent grade. This blade also has been shaped by removal of a few large flakes and then working of the edge, although this last has been less carefully done. It weighs 896 grams, and it is of a true leaf shape with a wide, though sharpened, base.

T. A. M. C. Museum No. 2508, pl. 12 No. 4, is made of somewhat impure chert, apparently also from the surface of a chert mass. It is 173 mm. long by 128 mm. wide weighing 855 grams, edge not carefully sharpened.

T. A. M. C. Museum No. 2510, pl. 12 No. 5, is somewhat more celt-like in shape. It is 180 mm. long by 110 mm. wide and weighs only 640 grams.

T. A. M. C. Museum No. 2577, pl. 12 No. 2, is similar to the above in shape but is a thinner blade. It is 220 mm. long and 116 mm. wide, with a somewhat elongate leaf shape.

Group II

This group is also made up of five blades, all of the same material and workmanship as the above but with a distinctive and characteristic shape.

T. A. M. C. Museum No. 2512, pl. 12 No. 8, is 195 mm. wide and weighs 853 grams. It has been sharpened around the entire edge. This and the following blades are peculiar in that one side of the long axis is nearly straight and the other convex. Each apex is pointed to a degree, but the entire implement is distinctly one sided. A careful inspection of the large flakes shows that this

PLATE 12

Groups (1) and (2) are of large flints found in a cache near Bryan, Texas. Groups A. and B. are of microliths.

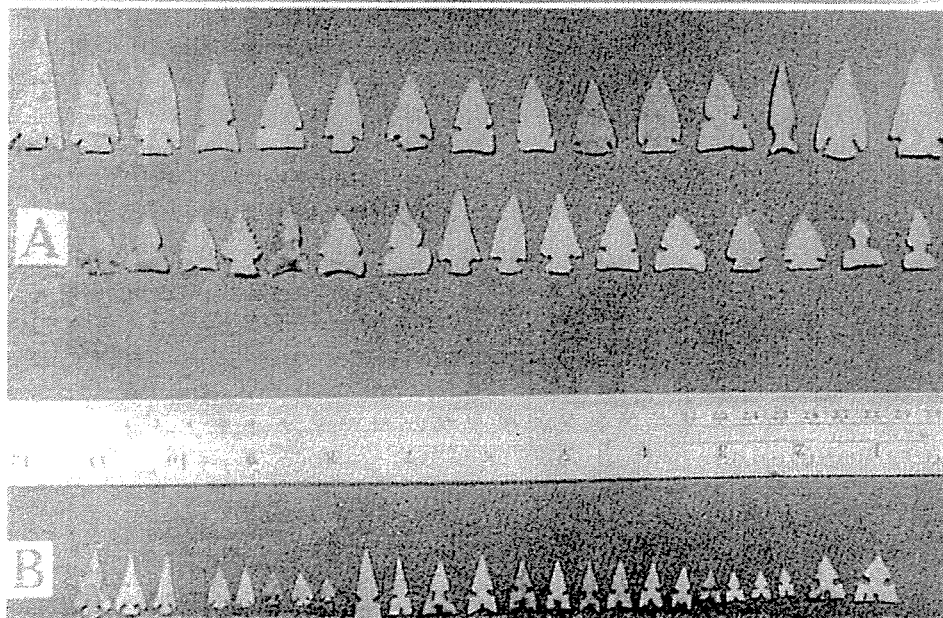
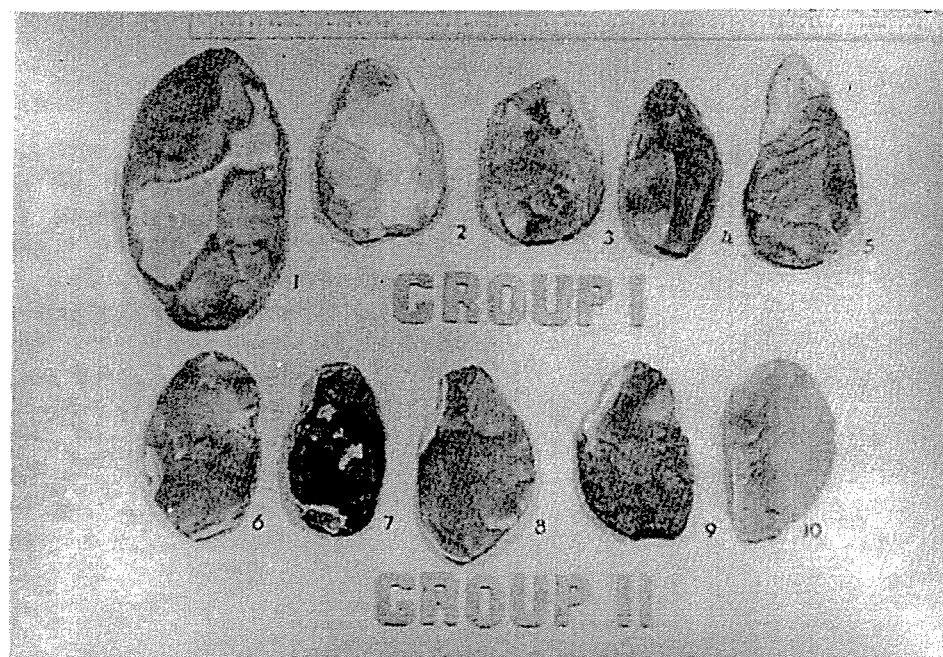


Plate 12

was an intentional shaping which is also borne out by the appearance of the other four artifacts in this group.

T. A. M. C. Museum No. 2515, pl. 12 No. 9, deserves special mention since the back or straight side has not been sharpened, nor has one of the flat sides been worked at all. It is made of very dark chert, almost an agate, and was evidently a thin weathered flake that was picked up. It is 180 mm. long, 90 mm. wide and weighs 718 grams.

T. A. M. C. Museum No.'s 2511, pl. 12 No. 7; 2513, pl. 12 No. 6; and 2514, pl. 12 No. 10 are all similar in shape to 2512 and need no special comment.

Classification and Use

Large lithic artifacts such as those described above have been known for many years from the eastern United States. They have been classified by various authors as of different uses, although the real purposes of such implements is somewhat doubtful. The largest artifact of all (2507) would be called an agricultural implement or hoe. These large, flat blades were hafted or used in the hands to break small areas of ground such as a corn hill. Often these blades have a high polish at one end from the abrasion of the soil.

The next two of Group I, 2509 and 2508, might also be classed as hoes or possibly, as a cutting tool such as an adze. (See Renaud, 1938, p. 62).^{*} They seem small for use in breaking ground and yet too large for anything else.

2577 and 2510 must certainly fall into the celt or adze grouping of Renaud. Their leaf shape and blade-like outline strongly suggests such is the case.

Group II is less easy to identify, they do not fall readily into any of the better known classes. They resemble, in many ways, scrapers, yet their size would seem to make them unhandy. No. 2515, with its flat back could readily be used as a chopper (Renaud, p. 61). The other four, since they are sharpened entirely around

^{*}"Renaud, E. B. The Typology of Lithic Artifacts, Bull. Texas Arch. Paleo. Soc., Vol. 10, pp. 41-76, 1938."

the edge, would not be so easy to use and it seems more likely that they were scrapers.

None of these artifacts bear the slightest trace of use, which forces the consideration of still another classification of them. Sometimes large partly roughed-out pieces such as these have been regarded as blanks, or materials of convenient size for carrying, to be broken up later and worked into smaller points, scrapers, etc. This may have been done in areas where good flint or chert was not available but there seems little reason for it in this part of Texas. It is true that no local formations carry suitable stone for manufacture of flint implements yet pebbles and even cobble stones of chert are abundant along the streams. Such materials were used extensively by the Indians as local collections prove, but such large flints as those described above are rare. It seems very unlikely that these would have been so carefully shaped and chipped if they were to be broken up at a later time.

Part II An Arrow Point in the Skull of Bison bison

Since the North American Indians were notable hunters, and their cultures rich in weapons of the chase, it is strange that we find so few existing evidences of the power of those weapons. It would seem that injuries to both animals and man would be commonly found in both burials and in camp sites. Yet such is not the case; evidences of wounds, either fatal or healed, are so rare as to excite interest whenever they are found.

The specimen figured and described here was brought to the Museum by Mr. G. C. Everett for the owner, Mr. Sam S. Hanover, Jr., of Stephenville, Erath County, Texas. The skull was found about three years ago, two miles east of De Leon just off highway 67. It was found by Mr. J. A. Owens who stated that it was exposed in a field after a heavy rain. It had, according to information furnished, been buried beneath about three feet of soil. The discoverers were unable to say whether any of the rest of the skeleton was there, or if other Indian artifacts were found in the immediate vicinity.

PLATE 13

Shows a bison skull which has been pierced by a flint projectile point.

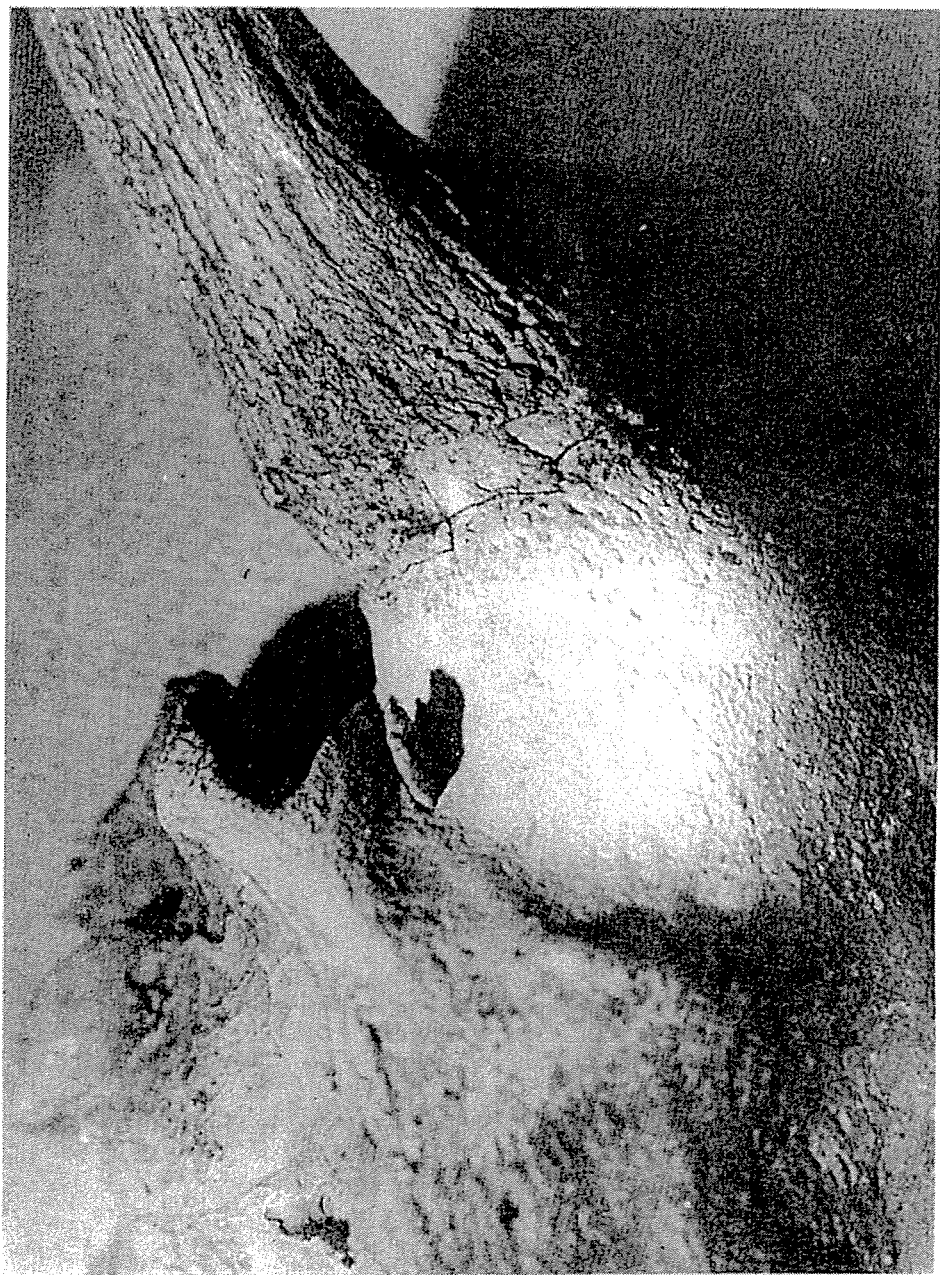


Plate 13

The skull (T. A. M. C. Museum No. 2880) pl. 13 is that of a recent bison, probably of a bull. The maxillaries, nasals, etc., are all missing, the basicranium, as is usual, being all that is preserved. The skull is that of an adult, the sutures are almost obliterated and all parts preserved are well ossified. The bone is well preserved but bears no trace of fossilizations nor were the circumstances of its discovery indicative of any great antiquity.

The arrow point is of gray chert somewhat roughly chipped and is a stemmed point. It was discharged from the left side of the animal and from slightly above the position in which the head was carried. This strongly suggests that the attacker rode a horse, which would give him approximately this position. The point pierced the left parietal just behind and slightly below the frontal expansion of the base of the left horncore. The point is imbedded firmly in the bone for over one half its length, about 18 mm. is left above the bone surface and approximately 25 mm. is buried in the cranial roof. The tip of the point did not penetrate the brain cavity due to the great thickness of the bone at this point. It could in no sense be regarded as causing a fatal wound. Nevertheless, there are no signs of healing at the edges of the bone, and it seems probable that the animal was killed within a short time after this point was driven into the skull. This may have been the result of another arrow discharged at the same time, the hunter being unable to remove this point from the skull.

The point itself is somewhat smaller than one would expect to see used against bison. It is 25 mm. across the base, 16 mm. across the stem and 6 mm. thick on the exposed part. It is definitely not one of the larger, heavy kind so often called hunting points. While the roof of the skull here is over an inch and a half thick it was not solid bone, but is made up of large air cells which lighten it considerably. However, living bone is said to be comparable to green oak or ash in strength and resiliency so the arrow must have been driven with great force from the bow. Judging from the power of the bows in use by archers today, the arrow must have been fired at close range from at least a 50 pound bow.

If the surmise that the hunter was on a horse is correct, then the arrow must have been discharged sometime after 1520, the

date of the reintroduction of horses. It is also likely that it was discharged prior to 1850, for by that time the bison had become very rare in this area, and firearms had largely replaced the bow.

Part III An Unusual Collection of Microliths

In the summer of 1939, Mr. J. E. Crabtree brought a collection of interesting points to the Museum. These had been picked up during the "dust bowl" days in Dallam, Hartley, and Sherman Counties in the Texas panhandle. Mr. Crabtree said that the points were easily found in the "blowouts" which were common in that area a few years ago, and during the course of his regular duties as County Agricultural Agent, he had picked up the entire collection.

The points were made of a considerable variety of flint and chert, probably from the pebbles so common in the gravels of the Ogallala formation widely exposed in that area. They are of a superior type of workmanship, possibly due to the excellence of the materials from which they are made, the flaking is fine and even and the collection contained many beautiful examples of the small points often found in this region.

With this material, was a series of points so small and delicate that they were most outstanding (Plate 12, B). In size they were as small or smaller than any other points on record. Their size and perfection was enough to excite curiosity and suspicion, but a hasty check of their surface markings, etc., failed to disclose any of the markings usually seen in spurious flint work.

Mr. Crabtree left three of the small points at this museum and at a later date his entire collection was loaned to us for further study. At this time Mr. Crabtree informed us that the small artifacts were made by a boy in Dalhart, Texas.

A careful examination and comparison of these points with authentic material (see Plate 12, A) from the collection discloses the following criteria upon which they may be distinguished.

1. Smallness of size.
2. Perfection of shape.
3. Freshness of appearance.

4. Unusual or nontypical shapes.
5. Metal marks or a few.
6. Suspicious looking *flat* surfaces on some.**

Should one or two such points become mixed with the smaller points from this area they would readily pass for authentic specimens. Unfortunately, such spurious work is not uncommon in Texas but most of it is so crude that it is readily recognized. Often points, etc., are made merely as a test of skill by someone, and the result tried out on some local collector. Many amateur collectors are not difficult to fool, and often buy such material from the maker. Thus, without intending to do more than try one's hand at flint chipping, the picture changes to the perpetration of a fraud.

True microliths are found within this area, but are not common. These small points are often called "bird-points" and were possibly used in blow guns. While the true points might exhibit one or more of the above six criteria, it is unlikely that they would be characterized by all.

Spurious work has caused considerable trouble within our state, and was one of the immediate causes of the passage of legislation in the spring of 1939 to cover such cases. The act passed by the 46th Legislature makes it unlawful to reproduce or forge any archaeological or other object, representing same to be original, selling, or exchanging the same, etc.

The writer in no way wishes to discourage those interested enough to try their hand at flint chipping, but the idea of fooling the public or the collector is one to be discouraged. Still more so is the sale of such material as authentic, for only the amateur can be fooled indefinitely.

Curator of the Museum,
The Agricultural and Mechanical College of Texas,
College Station, Texas.

**Editorial note: A flat surface on one face is a common development of the small pine-tree shaped and of the side notched triangular arrow points of the Abilene region's Valley Creek or Pottery Culture. The side notched triangular points shown are of Abilene region types. C. N. R.

A PUEBLO POT FOUND NEAR PARIS, TEXAS

BY GEORGE T. WRIGHT

A few miles south of Paris, Lamar County, Texas, lies Aud's Creek. It flows into Sulphur River across interlocking fingers of gray and black land toward the broader prairies farther south. Here the buffalo once roamed and our nomadic Indians followed them. Westward, toward New Mexico, stretch hundreds of miles of other buffalo range; other wild Indians hunted there. Although artifacts, including potsherds abound in the neighborhood, no whole specimens of clay pottery had been found nearby until the spring of 1937.

In that year, a small group of boys, were crossing a field near Aud's Creek. Down the middle of the eroded surface of this field a rather shallow ditch had washed. In crossing the ditch, one of the boys noticed a peculiar object in the bottom of it, half buried in earth, which proved to be an Indian pot. This was secured by the writer who, at the request of Mr. A. T. Jackson, sent it to the University of Texas for study and photographing. Since it was evident that the pot belonged with the western Indians, pictures of it were sent to Dr. H. P. Mera of the University of New Mexico by Mr. Jackson, asking for information as to its origin and a possible explanation of how it happened to be found in east Texas. Extracts from Dr. Mera's letters to Mr. Jackson and myself follow:

June 13, 1939.

The very interesting prints and color sketch of the vessel from Lamar County arrived yesterday. If this specimen is from the County named, which I have no reason to doubt, it is a most surprising occurrence.

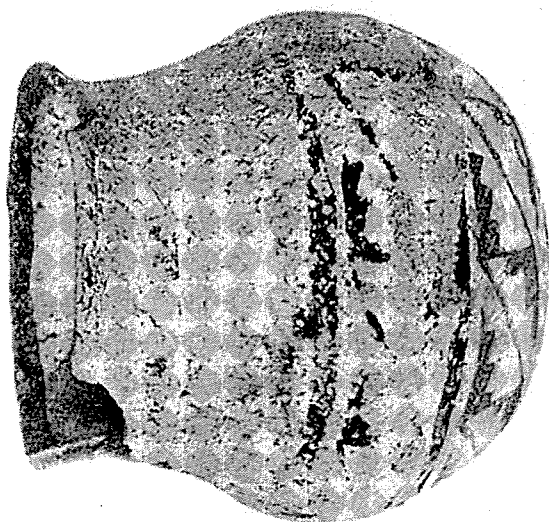
One is apt to hesitate in definitely naming a pottery type without first examining the physical properties, such as paste, slip and paint but aside from this lack I feel reasonably sure that your

PLATE 14

Nos. 1, 2. are two views of a pueblo pot found near Paris, Texas.



2



1

Plate 14

jar is of Zuni manufacture. Its decorative style is representative of a fashion in use circa the middle of the 19th century.

Your photographs are so clear that the dark granular core in the light grayish paste seen in a cross-section of the vessel's walls appears to be typical.

June 21, 1939.

Thank you very much for permission to keep the prints and also for copies of the letters from Mr. Wright. The latter appear to clear up the circumstances surrounding the discovery in a satisfactory manner.

The vessel's occurrence so far east may well be accounted for by trade through several hands. It is unlikely that raiders from the eastern plains could have reached as far west as Zuni and, unless it had previously reached the Rio Grande, such an idea seems untenable.

The period in which the pot was produced was one of considerable unrest in the plains area and hence there would be little chance of tracing its course. I fear we are going to have to leave the matter to our individual imaginations.

June 23, 1939.

Many thanks for the offer to send the pot for examination, but I feel that as there is no hope of identifying the tribe that had it last, thus perhaps helping to trace a trade route, not enough would be gained to take the chance of shipping.

There are only two possible sources of origin, the Pueblo of Zuni or the Pueblo of Acoma, both in the same cultural area. Although I hesitated to make an exact identification I feel certain that the former village is where it was made. Either way it is a very interesting circumstance to find an example of Pueblo pottery as far from home without having been broken in transit.

(Signed) H. P. Mera.

While, as stated above, the artifact in question was not found by the present owner, there is no reason to doubt the story of the

boy, which was well substantiated. A trip to the site of the find, personally conducted by the discoverer, showed things as he had described them. However, this was over a year after the find. In the interim, the old field had been made into a pasture and vegetation covered not only all the field but the ditch itself and hid whatever evidence there might have been that could have thrown light on the strange occurrence of a Pueblo pot in Caddo lands. There is no house closer than a half-mile to the spot and no sign of there ever having been one near.

The pot measures $5\frac{1}{2}$ inches high by $5\frac{1}{2}$ inches at its widest diameter and is painted white, both inside and out. Four black bands, $\frac{1}{4}$ inch wide, divide the outer surface into equal segments. Between these the spaces are taken up by connected stairs which are alternately red and black. The painted decoration covers the whole side of the vessel and overflows for $\frac{1}{4}$ inch into the interior. See Plate 14 Nos. 1-2.

Apparently, it had been near grass roots and was washed up by spring rains. It is still in fairly good condition despite the fact that it must have been carried from its place of origin a thousand miles away.

190 Bonham St.,
Paris, Texas.

GROUND SANDSTONE BALLS OF UPPER ELM CREEK BED GRAVEL

BY CYRUS N. RAY

At a place in the Henry Sayles Ranch situated on Elm Creek twenty-five miles southwest of Abilene and at a distance of about two miles west of Highway No. 158 The Hamlin Sand and Gravel Company is engaged in removing great quantities of gravel for commercial purposes from the bed of Elm Creek. At this place there is considerable water flow under and through the gravel bed. The gravel mainly consists of broken up cretaceous limestone pebbles which have washed into the stream from the surrounding small mountains. The immediate banks of the creek here are composed of rather compact sandstone which contains many very much harder nodules which are of an almost quartzite hardness. These sandstone beds also extend for some distance up the hillsides, which erosive forces have worn down and gullied considerably.

The hard nodules of these sandstone beds take various peculiar forms which persons with good imaginations often take to be fossils. In their natural state many nodules are of oval or almond shapes, some are shaped roughly like turnips, and carrots and various other natural features. Some occur in rounded pairs joined. Some are quite large and roughly resemble fossil tree trunks.

Many of the nodules while embedded in the matrix have a rounded outline in one diameter, but most of these are flattened in the other. The writer does not recall seeing any round balls embedded in the sandstone matrix, although they may occur.

During the removal and the processing of the gravel from the stream bed the gravel is taken out from below the water level by drag-line and then carried in trucks to a screening machine which sorts it for various sizes. As the gravel is carried over a conveyor belt to the moving screens a man is stationed to remove the oversized stones which will not pass through the rock crusher. This man has seen and removed a great number of quite round and very hard sandstone balls from the conveyor belt. During the summer of 1943 the superintendent of the work, Mr. Otto Deats, brought

three of the balls to me for an opinion as to their origin. (See Plate 15).

These balls vary in size considerably and as I write, there are nineteen of them spread out before me. The largest is $5\frac{1}{2}$ inches in diameter. The next largest is $4\frac{1}{8}$ inches in diameter, one is 4 inches, one is $3\frac{11}{16}$ and one $3\frac{9}{16}$ inches in diameter. Seven range from $2\frac{13}{16}$ to $2\frac{9}{16}$ inches in diameter. Seven others range from $2\frac{3}{16}$ to $1\frac{13}{16}$ inches in diameter.

While the balls are more rounded than natural objects usually are, they are not perfectly so, and the diameters vary more in some than in others. There are indications in some that their rounded forms may have been derived from the grinding down of apple shaped, oval and almond shaped nodules. None of the stones are polished, but most have a ground down appearance.

Some balls are pitted all over as though they were once subjected to percussion all around in a conscious effort to round their surfaces down. The balls are of far harder stone than the great bulk of the gravel in which they lie; which consists mostly of limestone. Nearly all of the balls have whiter spots on them which appear to be marks where something struck them fairly hard blows.

Occasionally a similar shaped sandstone ball of about baseball size has been found in surface Indian campsites, but the writer has not thought this to be of much significance because Indians brought unusual colored or shaped stones into their camps much as we do today. The first time the writer's attention was directed to the balls was in 1927 when Mr. J. F. Cunningham who owned a ranch two or three miles west of this site brought one to the writer and

PLATE 15

Collection of seventeen ground down balls from Elm Creek gravel bed.

PLATE 16

No. 1. Largest ball 9 by 10 inches in diameter. Note three holes in it. The two upper holes are almond shaped with the large ends to center.

No. 2. Side view of the largest ball.

No. 3. Collection of seventeen ground down balls from Elm Creek bed gravel.

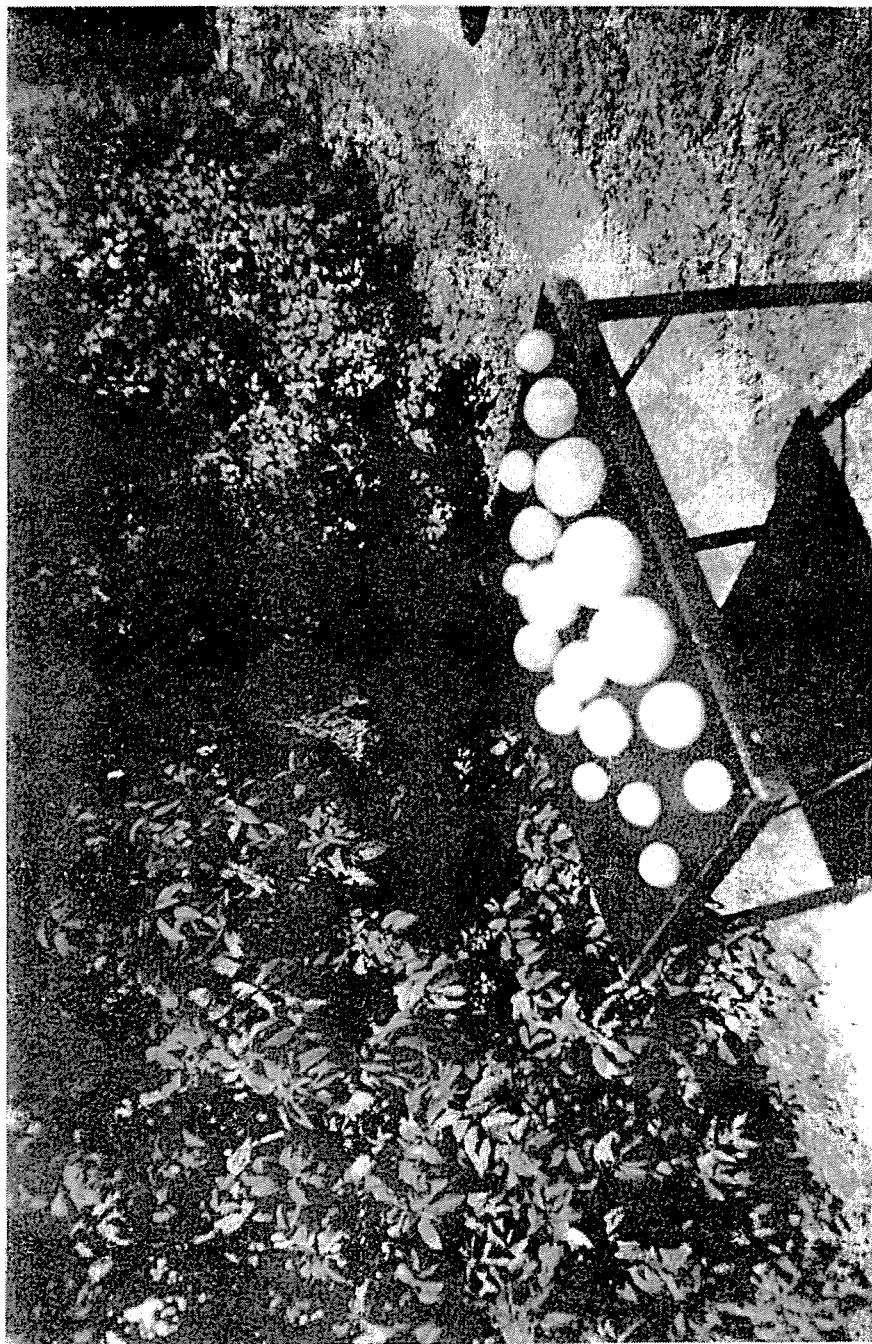


Plate 15

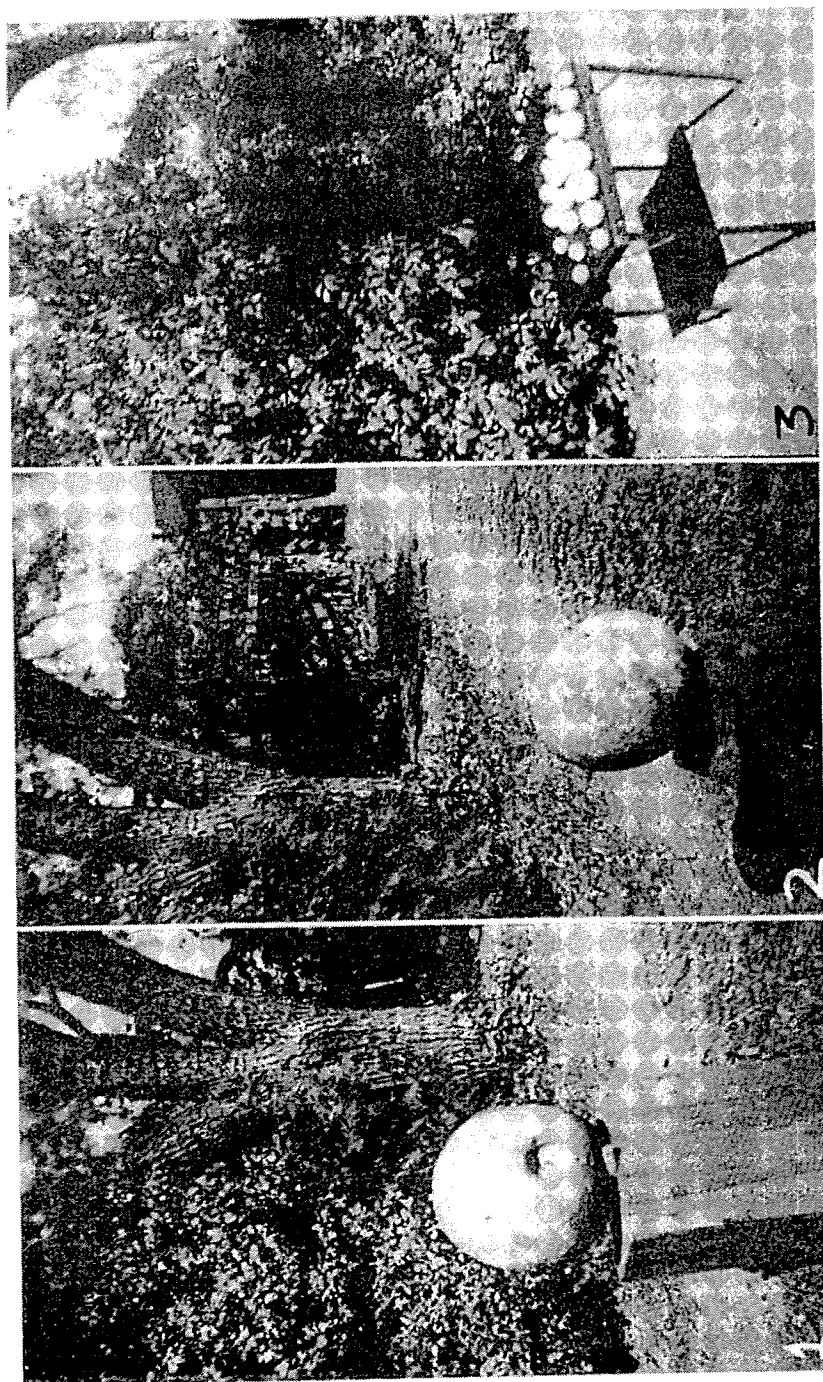


Plate 16

stated that such balls occurred in the bed of Elm Creek. The one he brought in seemed to be of limestone and was of the size and shape of a croquet ball. Mr. Deats stated that there probably had been several hundreds of the balls found in the gravel he had screened and that most visitors had carried some away. A tremendous amount of gravel has been screened however, from which these were picked. In a visit to the portion of river bed gravels situated above water level, I was unable to find any of the balls.

In addition to the rounded ground off balls there were many of both large and small sandstone nodules which had been little if any affected by the grinding action noted on the round balls. Most of the ground off balls were of sizes which a man could conveniently throw in a game, or use as war missiles. The banks are high and vertical for a considerable distance above the gravel beds, and a permanent spring flow and pools of water always existed there. It might have been possible for expert throwers to use these balls as missiles to kill game or as war weapons. Above the creek bed at this place is a high vertical sandstone bank and on top of the bank is a large flat area which was covered by an old Indian campsite.

On the opposite side of the valley in the gullies of the high eroded sandstone slopes of the hills artifacts of the ancient Clear Fork Culture are found.

A puzzling feature is that there is an occasional quite large stone which seems to have been subjected to the same type of grinding.

One of the latter which measures roughly 9 by 10 inches in diameter is also rounded off by some agency and there are three indentations in it, one round one at the bottom, and two oval ones opposite each other higher up. Any rough resemblance which it may have to human features probably is purely fortuitous I believe. (See Plate 16, Nos. 1 and 3). There are no discernable tool marks on the openings. It seems that the stone balls have been found in the stream bed and present valley floor of upper Elm Creek for at least a distance of five or six miles.

The son of the ranch owner, Mr. C. M. Sayles, stated to the writer that he had noticed the stone balls in Elm Creek gravel

during a period of years. He also stated that the same kind of stone balls had been found in gravel test pits off to the sides of the valley floor, as well as in the present stream bed where those described above were found. Mr. Sayles did not know whether or not this type of ground ball could be found in the older high stream terraces. It would be interesting to determine in how old terraces they may occur.

If the ground down, and in some instances, pecked surfaces, were formed by stream action, the present current of Elm Creek would seldom reach a violence sufficient for such water action; and if natural agencies caused the rounding off, this must have been under other conditions than exist at present. The abundance of the balls and large area covered by their distribution would suggest a natural causative agent. On the other hand the same region has been inhabited into a rather remote period by primitive man.

What caused the action the writer does not know, and local geologists are of no assistance as they claim no such natural action exists. It is hoped that this paper will stimulate discussion of the probable cause.

Box 62, Abilene, Texas.

WIND BLOWN OIL SANDS

BY H. H. ADAMS

The term oil sand originated in Pennsylvania where petroleum oil was first produced commercially from wells. The oil was found in a fine grained brownish sand that resembled brown sugar. Thus brownish sand became the pattern that was used as oil sand for many years, and is still looked upon by the old school of operators as the true oil sand. Oil sand was considered the source of oil as well as the reservoir for it. This theory has long since been dropped and it is known now that oil is produced from shales, or any carbonaceous material that is broken down by heat and pressure.

Oil was found in shales in Colorado, in and around the town of Florence. One well in this pool produced over a million dollars worth of oil. This was the first oil to be produced commercially from shales.

The states of Texas, New Mexico, Oklahoma, Kansas, Illinois, Indiana, Ohio and many other places have produced oil from limestone.

In Montague County, Texas, and in South Central Texas oil is produced from a metamorphic formation known as serpentine and volcanic ash.

Oil is also found at the southern end of the Green Horn Mountains in Colorado in an igneous dyke that cuts through the Pierre shale which is a very carbonaceous formation. Oil is not produced commercially from this dyke but the oil is of high grade and is free.

Oil may be found anywhere. But a trap is necessary in which it accumulates. These traps are known as anticlines, sealed faults, and lenticular sand.

It appears that oil formation has in some way been connected with salt water or sea water. Oil is very rarely found associated with fresh water. This theory has the support of most geologists.

The purpose of this paper is to discuss wind blown oil sands,

and the above paragraphs are written as a background for the reader unfamiliar with petroleum geology.

In West Texas, New Mexico and Oklahoma there is a geological formation known as the White Horse Sandstone. This is a series of sands, redbeds, anhydrites and other salts of the evaporite type.

This formation is a part of the Guadalupe group of Permian age. This entire series was deposited under desert conditions, that is, the sea in which these formations were laid down was surrounded by very dry barren country.

Just before the deposition of the White Horse series in Central West Texas, the area known as the West Texas Central basin opened out to the southwest into the ocean. This is established by the fact that marine life existed there as shown by the fossils. Then at the beginning of the White Horse period a barrier reef of some kind cut this area off from the ocean and formed a great landlocked sea. Evaporation was rapid and beds of the evaporate type were deposited, except that a great amount of sand was also deposited. This sand came from some source either from the southwest or the north, according to the opinion of many geologists. The land surrounding this great inland sea was low, and the water that came from the surrounding areas and evaporated undoubtedly carried in a great amount of this sand. There is also another theory and that is that this sand was blown into the area from the surrounding hills. The formations in the Marathon area are of a type that would furnish this kind of sand. The important fact about this sand is that it was subjected to wind erosion.

In the Libyan desert and in many other parts of Africa and western Asia sands are carried for as much as one hundred and fifty miles as sand dunes. The grains of these sands, particularly in the Libyan desert are rounded and polished. These sands come from a plateau in which much of the material is limestone and shale, but the sand dunes in their present condition carry no limestone or shale. This material has been completely ground into dust and blown away. Possibly the grinding of this material assisted in the polishing of the sand grains. The wind in its act of transportation and erosion, has graded or assorted the sand with relation to size. These sands in the Libyan desert have never been subjected to water

erosion, and they are all equally well polished. Many of the sand grains are perfectly spherical and vary from very fine small grains to as large as three or four millimeters in diameter.

In examining the cuttings from wells in the West Texas basin, it is observed that there are two kinds of sand grains; one highly polished and the other frosted.

A study of these sands reveals the fact that the larger grains are frosted, and the smaller ones are highly polished. Another observation is that the fine or smaller grains of sand are on top of the sand strata, and the larger in the bottom. It appears that at the end of the White Horse period an invasion or encroachment of water reworked the sands that had been brought in and polished them as found in the Libyan desert today, and they were left in the position we find them now.

The interesting thing is that the small grains are polished and the large ones are frosted. It is a fact that sand grains less than one-tenth of one millimeter in diameter take on by surface tension a film of water that protects them against attrition or wearing. If there is any movement whatsoever in the water, these smaller grains of sand are held in suspension. While the sand grains larger than one-tenth of one millimeter in diameter have no water film to protect them and carry them, thus they hit each other in any movement that might occur, and by attrition become frosted.

In the Somo field in Crockett County both oil and gas are found in the White Horse sandstone, the sand described above. This sand is undoubtedly not the source of the oil, but by migration or contact with shale bodies in the same section derives its supply.

285 Amarillo Street,
Abilene, Texas.

NEWS NOTES AND EDITORIALS

NOTES ON THE BIG BEND REGION OF TEXAS

During the summer of 1943, the writer was employed by the U. S. Bureau of Mines, and worked with a field party with headquarters in Terlingua, southern Brewster County, Texas. A brief archeological reconnaissance of the contiguous area was made during spare time with special emphasis upon the high stream terraces along Terlingua Creek and the Rio Grande.

Geological and Climatic Background

The district explored lies deep within the big bend of the Rio Grande and is adjacent to the newly created Big Bend National Park. The rainfall is scant: the soil thin and stony with ocotillo, creosote bush, lechuguilla, sotol, cacti, and other harsh semi-desert flora dominating the mesas and valleys. Evergreen forests of pine, spruce, fir, and cedar are found high up in the Chisos Mountains. Both Upper and Lower Cretaceous formations are exposed as well as a large number of different types of igneous rocks, trachyte, andesite basalts, etc. The country rock is in many places displaced, distorted and covered by great faults, intruding sills, dykes, lava flows, etc. Despite the present dry climate and geologic background, the evidence shows that primitive man apparently liked the region and occupied it for a long period of time.

Rio Grande and Terlingua Creek Gravels

Old stream terraces on the Rio Grande near the Mexican town of Lajitas and lower down the river from the St. Helena Canyon outlet to the village of Castolon, were studied in some detail. Terlingua Creek which drains into the Rio Grande, was examined. Mesa-like gravel capped hills are especially well developed near the crossing of the Study Butte road. No Indian middens were discovered but the chipper's debris in some workshops might be fairly recent. Thick, crude axes, scrapers, blades, and graters were noted in some abundance in various places along the terrace summits and slopes. The interesting thing about many of these stone tools was that they were well patinated and resembled artifacts from the Brazos, the Trinity, Red River and other river drainage areas in

Texas. The stone materials utilized include chert, quartzite, agate, jasper, silicified wood, etc. Probably all of these various tool-maker's materials were collected by the Indians in the nearby gravel deposits. Chert nodules occur in the Devils River limestone, the massive escarpment forming the rock along Long Draw, St. Helena Canyon, etc. Semi-translucent logs of chalcedony and jasper in contact with Cretaceous dinosaur remains are found weathering from the Aguji formations along Terlingua Creek. These beautiful stones were much utilized by the Indians. Colorful agates, moss, banded and other types used by the Indians were observed weathering from amygdaloidal boulders along washes on the flanks of the Chisos Mountains.

Adolph H. Witte,
Henrietta, Texas.

SHOULD WAR STOP CULTURAL AND SCIENTIFIC RESEARCH

In times of public clamor, such as war entails, there is always a thoughtless minority who seek to stop all cultural and scientific research not directly connected with war making. Perhaps they inherently dislike culture and ignorantly fear scientific research at all times, and war gives them an excuse to vent their dislikes in moves of suppression.

Such persons, if they should give thought to the matter would know that even during war all the people cannot make war directly, and that the majority have to carry on their usual civilian activities to enable them to pay the heavy income taxes and to buy the bonds necessary to pay for the munitions and support the operations of war.

When you have once destroyed a people's culture and its science you have little left on which to rebuild a nation, and the notion that when institutions are allowed to decay it is easy to rebuild them, after some emergency has passed, is erroneous.

Into most flourishing scientific and cultural institutions some one has put a vast amount of labor, thought and care to bring them to their present productive phase. Someone has nursed them like a little child through their formative years until now when they seem to run without much effort, the painful toils of their founders are forgotten.

There are those who believe that the activities of the Texas Archeological and Paleontological Society should cease and that The Society would be easy to resurrect after the war is over, but your officers do not share that view. The Society never has been in better financial condition. We have on hand enough cash to print a much larger Bulletin than this one. The reason the Bulletin is not so large this year is because five persons who promised to write articles for it did not do so for various reasons.

There are enough men above military age who have done anthropological research in the past and who have accumulated enough materials for scientific articles to keep the Bulletin going during the war years. Your Editor's time is fully taken up during his day-time hours with essential civilian activities and if he chooses to devote his recreational periods to scientific and cultural activities rather than to mass spectator entertainments, it is his own business, and this course will be continued.

This Bulletin will go on so long as good articles can be obtained, and the writer continues to be its editor.

C. N. R.

HUMAN BURIAL COVERED BY TWENTY-ONE FEET OF SILT

Late in June 1943 while a boy was swimming below an almost vertical Brazos River bank he noticed some human skull bones projecting from the bank eleven feet above the water. The boy, James Putnam, and a companion dug out the skull with pocket knives and

PLATE 17

No. 1. This shows skull mold hole, above handkerchief, and foot-holds cut into steep bank below, preparatory to doing excavation. No. 2. This shows the partly excavated long bones in place in the bank. No. 3. Beside the excavation is the finder, James Putnam, and below is J. C. Putnam, who brought the skull to Abilene.

PLATE 18

No. 1. In the center of the picture is the skull mold and dimly in it may be seen portions of arm bones. No. 2. Boy stands beside excavation. The sloping apparent top of bank shown here is not the real one which is much higher up. Dr. Frank H. H. Roberts, Jr., stands below on a pile of excavated earth. No. 3. This shows a general view of the 32 feet high bank, to the far left Dr. Roberts is shown standing in the excavation from which the skeleton was removed.

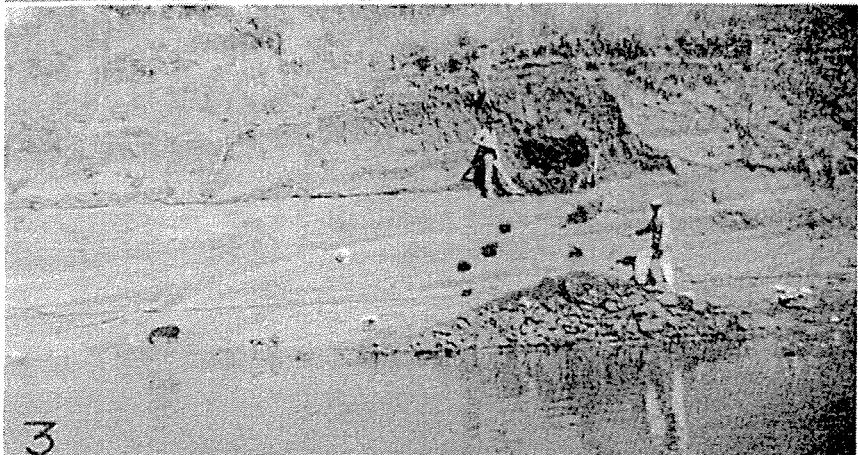
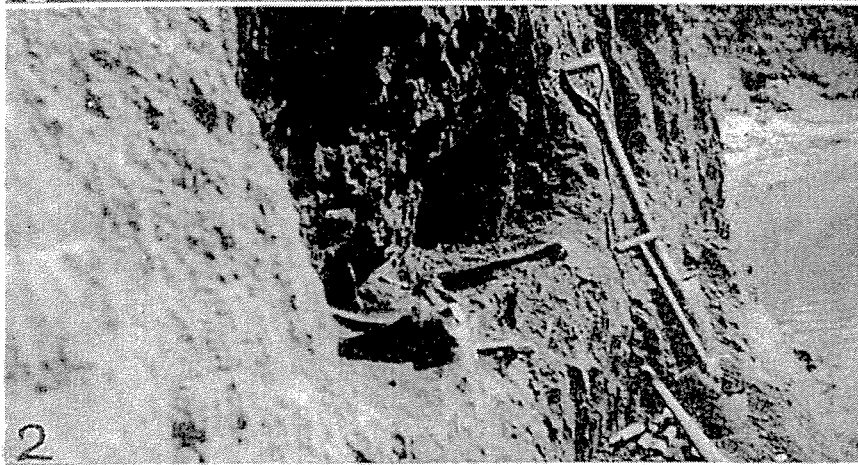


Plate 17

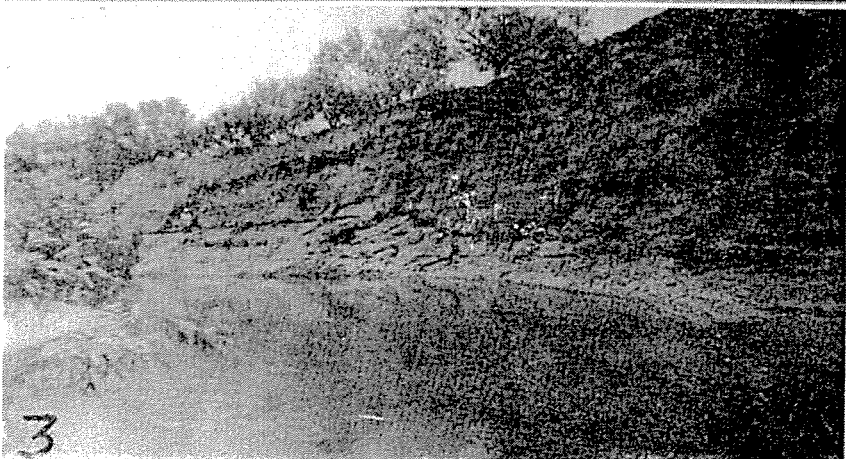
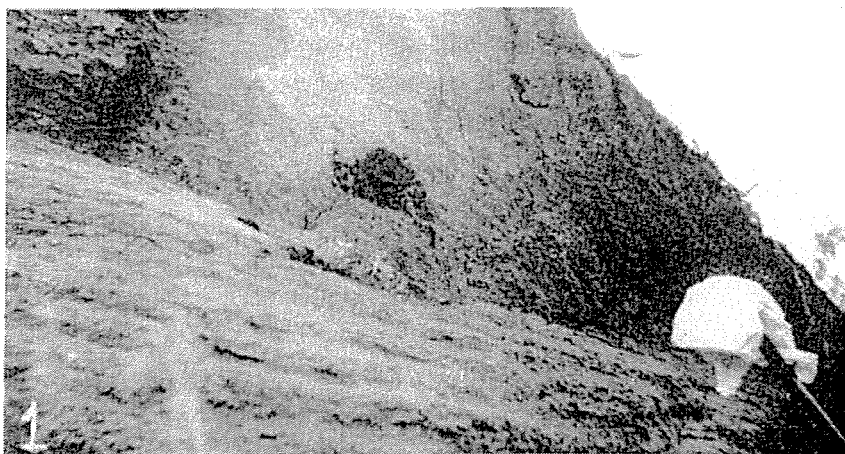


Plate 18

the finder's uncle, Mr. J. C. Putnam, brought the bones to the writer in Abilene.

The location of the site is sixty miles northeast of Abilene and near where the writer found two peculiar skeletons buried about 6½ feet deep in 1929¹ and another skeleton buried below nine feet deep, which was also excavated with Mr. J. C. Putnam's assistance in 1939².

The 1943 discovery is the deepest buried human remains thus far found in the Abilene region of Texas,³ although much deeper buried camp debris deposits have been found in the same region.⁴

The site was visited with Mr. H. H. Adams, a local geologist, on June 27, 1943, and the remainder of the skeleton was removed with the assistance of the boy finder's father, James P. Putnam, and his uncle, J. C. Putnam, and H. H. Adams. The skeleton had been buried in flexed position lying on the left side.

There were no artifacts, shells, or stones with the burial; but the bones were surrounded by considerable amounts of ashes and charcoal.

The bones and skull resembled some of the long headed types previously found by the writer in the Abilene region.

Several anthropologists were notified of the find and invited to see the site before more high water could cave the bank off again. The skull had originally been exposed by a bank cave-off due to a high rise of the Brazos River. Dr. Frank H. H. Roberts, Jr., of The Smithsonian Institution came on July 7th and remained for five days studying the site and a number of other deeply buried stream bank sites on three different water courses of the Abilene region.

The skeleton was sent to Dr. Roberts so that it could be examined by physical anthropologists working with The Smithsonian Institution. When the bones have been carefully studied a complete report will be issued on the findings.

The burial evidently had originally not been made very deep but since the body was buried the whole valley floor has filled to a depth of twenty-one feet. The river bank silt was banded horizon-

tally and unbroken from a short distance above the bones up twenty-one feet to the present soil surface. Eight feet below the burial is a band of ashes and charcoal which is only three feet above the ordinary water level.

The total height of the nearly vertical river bank at the burial locality above low water level is thirty-two feet.

Cyrus N. Ray.

(1) Cyrus N. Ray, *New Evidences of Ancient Man in America*, Scientific American, May 1929.

(2) Cyrus N. Ray, Plate 52, Vol. 11, 1943, Bulletin of Texas Archeological and Paleontological Society.

(3) Cyrus N. Ray, *A Texas Skeleton*, Science, p. 344, October 15, 1943.

(4) Cyrus N. Ray, *The Deeply Buried Gibson Site*, Vol. 12, 1940, Bulletin of Texas Archeological and Paleontological Society.

REPORT OF THE SECRETARY-TREASURER OF THE TEXAS ARCHEOLOGICAL AND PALEONTOLOGICAL SOCIETY

Report for the period from the annual meeting on October 31,
1942, to October 1, 1943:

RECEIPTS

Balance on October 31, 1942	\$492.93
Fifty-nine memberships, 1941-42	177.00
Fifty-three memberships, 1942-43	159.00
Thirty-eight Bulletin sales	114.00
Warrants in hand	9.00
Bridwell Excavation Fund	20.00
<hr/>	
Total	\$971.93

DISBURSEMENTS

Paid on printing of 1942 Bulletin	\$256.00
Paid on cuts for 1942 Bulletin	119.00
Expenses for the 1942 annual meeting	3.25
Paid from the Bridwell Excavation Fund	15.00
Stationery and office expenses for president	17.64
Office expenses for secretary-treasurer	14.55
<hr/>	
Total	\$425.44
Balance for October 1, 1943	546.49

Accounts payable:

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BULLETIN
OF THE

Texas Archeological and Paleontological Society

Volume Sixteen
For 1944-1945

Printed
September
1945

Published
by the
Society at
Abilene,
Texas

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PALEONTOLOGICAL SOCIETY

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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 and minor 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.

BULLETIN
of the
**Texas Archeological and
Paleontological Society**

TABLE OF CONTENTS

1. A Deep Burial on the Clear Fork of the Brazos River, By Frank H. H. Roberts, Jr.	9
2. Report On the J. C. Putnam Skeleton From Texas, By T. D. Stewart	31
3. Some Suggestions On Archeological Terms, By Alex D. Kreiger	41
4. A Second Historic Caddo Site at Natchitoches, Louisiana, By C. H. Webb	52
5. Bone Implement Burial, Collin County, Texas, By R. K. Harris	84
6. Boat-Shaped Objects From Val Verde and Bosque Counties, Texas, By Carl Chelf	91
7. Suggestions For Identification of Certain Mid-Ouachita Pottery as Cahinnio Caddo, By T. L. and Mrs. Hodges	98
8. Stream Bank Silts of the Abilene Region, By Cyrus N. Ray	117
9. News Notes and Editorials	148
(1) No Bulletin Printed in 1944, C. N. R. (2) Organiza- tion of the Shreveport Society for Nature Study, C. H. Webb. (3) Concerning the Bulletin's Contributors, C. N. R.	
10. Secretary-Treasurer's Report, 1944-1945	154
11. Membership List	155

Vol. 16, 1945, Price \$3.00
Abilene, Texas

LIST OF ILLUSTRATIONS

- Plate 1 Page 11
- No. 1. When the finder, James Putnam, removed the deeply buried skull from the Brazos River bank silt it left a mold of the skull in the bank. This picture of the mold, taken soon afterward by Dr. Cyrus N. Ray, shows hand and wrist bones which were embedded inside the mold.
- No. 2. This picture shows the long bones in place after the earth had been removed.
- No. 3. This shows two sides of the flint artifact with drawings of longitudinal and cross sections.
- Plate 2 Page 15
- No. 1. This shows the skull mold hole above the handkerchief, and footholds below, cut into the steep bank preparatory to doing excavation.
- No. 2. This picture shows the partly excavated long bones still in place in the bank.
- No. 3. Beside the excavation is James Putnam, and below it is the ranch owner, Mr. J. C. Putnam, who brought the skull sixty miles to Abilene to report the discovery.
- Plate 3 Page 19
- No. 1. This shows another picture of the skull mold in the center.
- No. 2. In this picture Dr. Frank H. H. Roberts, Jr., is shown standing on the pile of earth excavated from around the skeleton. James Putnam stands to the left of the excavation.
- No. 3. This shows a general view of the full height of the bank which is difficult to show in a close-up picture of the grave, on account of a slope at the top of the bank produced by recent erosion. At the far left of the picture Dr. Roberts is shown standing in the excavation.
- Plate 4 Page 23
- This picture shows the bones from the twenty-one feet deep river bank burial, after they were removed, and the long bones mended.
- Plate 5 Page 27
- No. 1. General view of burial site. Dip in strata at left indicates former stream bed. Grave is in bank at the left of the upper figure, James Putnam one of the discoverers of the bones. Mr. H. H. Adams is standing on the pile of earth dug from the bank when the skeleton was removed.
- No. 2. Stones forming deep level hearth are on the low bench at the left of the standing figure, Dr. R. H. Tull of Abilene, while upper level hearth is indicated by stones projecting from bank in upper left corner of picture about midway between the high water mark and the top of the bank.
- Plate 6 Page 33
- Side and front views of J. C. Putnam skull as restored. Frankfort plane approximated with the aid of landmarks in the sagittal plane. Note the presence of only 2 incisors in the lower jaw.
- Plate 7 Page 35
- Drawing of norma verticalis made with the Schwartz stereograph. Interrupted line represents mirroring of the right side. Dotted line suggests a probable occipital outline. The midline passes through nasion, bregma and basion.

Plate 8	Page 39
Cross section of 4 Texas tibia, including one from the J. C. Putnam skeleton, to show the quadrilateral shape. All sections are oriented as viewed from the proximal end and with the anterior border upward.	
Plate 9	Page 55
Map of the Natchitoches area showing location of Fish Hatchery and Lawton sites.	
Plate 10	Page 61
No. 1. Sketch of Lawton site showing location of burials.	
No. 2. Trade beads from Lawton site.	
No. 3. Pottery cup, first burial group.	
No. 4. Pottery jar or bottle, first burial group, with suggested outline.	
Plate 11	Page 65
No. 1. Natchitoches Engraved bowl, first burial group.	
No. 2. Keno Trailed bottle, Burial 2.	
No. 3. Natchitoches Engraved bowl, Burial 2.	
No. 4. Keno Trailed bottle, Burial 3.	
No. 5. Natchitoches Engraved bowl, Burial 4.	
No. 6. Natchitoches Engraved bottle, Burial 4.	
Plate 12	Page 71
No. 1. Design from Natchitoches Engraved bottle, Burial 4.	
No. 2. Design from Natchitoches Engraved bowl, first group.	
Plate 13	Page 75
No. 1. Design from Keno Trailed bottle, Burial 2.	
No. 2. Design from Natchitoches Engraved bowl, Burial 2.	
Plate 14	Page 81
No. 1. Design from Keno Trailed bottle, Burial 3.	
No. 2. Design from Natchitoches Engraved bowl, Burial 4.	
Plate 15	Page 85
Diagram of burial showing skeleton in flexed position. This burial contained eight large bison scapulae bone implements.	
Plate 16	Page 89
This plate shows photographs of eight large bone implements made from bison scapulae.	
Plate 17	Page 93
Drawings of boat shaped objects from Val Verde and Bosque Counties, Texas.	
Val Verde County: 1a. Plane or upper surface. There is only a faint suggestion of a trough.	
1b. Side view, showing 3-4 notch or groove.	
1c. Convex or base view showing notch or groove.	
Bosque County: 1a. Plane or upper surface. Boat-like appearance is evident.	
1b. Side view.	
1c. Convex or base view.	
Plate 18	Page 105
No. 1. Engraved cazuela from site near Friendship, Hot Spring County, Arkansas.	
No. 2. Meander incised collared jar from site near Friendship, Hot Spring County, Arkansas.	
Plate 19	Page 111
Panel 3. Four geniculate engraved bottles, from Hot Spring and Clark Counties, Arkansas.	
Panel 4. Two seed jars, from Hot Spring and Clark Counties, Arkansas.	
Panel 5. Loup pipes, from Hot Spring and Clark Counties, Arkansas.	

- Plate 20Page 119
Composite or idealized drawing showing all of the seven Clear Fork and Nugent Silts in their relative placement if all were to be found intact in one site.
- Plate 21Page 121
Gibson Site drawing, showing the lower and upper Clear Fork Silts, and the five Nugent Silts, and the hearths found in the different levels.
- Plate 22Page 125
Hodges Site drawing, showing the Clear Fork and Nugent Silt strata, and the artifacts found in them.
- Plate 23Page 129
Young Site drawing, showing the three old Pleistocene strata, the extinct fauna found in them, the line of unconformity, and the latest Nugent Silt 5 stratum above them.
- Plate 24Page 133
This picture of the Gibson Site and those of Plates 25 and 26 were made to record the facts by an Abilene photographer in January, 1930, shortly after the writer found the Gibson Site. The writer is pointing at the hearth level just below the eight inch thick gravel stratum. Below the gravel layer is the Lower Clear Fork Silt. The gravel stratum is the base of, and is a narrow remnant of, the Upper Clear Fork Silt, which in this site has been nearly all removed by ancient erosive forces; above the gravel are the five Nugent Silts. This picture was previously published in the Volume II, 1930, issue of this Bulletin.
- Plate 25Page 137
This is a close up view of the gravel stratum, and the Lower Clear Fork Silts below it, at the Gibson Site. Picture made in January, 1930.
- Plate 26Page 139
This picture shows the Gibson Site silts and a flint artifact embedded in gravel at the base of a bank situated about a thousand feet south of the bank shown in Plate 24. This picture was made in 1930.
- Plate 27Page 143
This shows the Matthews Ranch Site where two skeletons were removed from the hole shown at the top early in the winter of 1929. (See Scientific American, May, 1929). Members of Dr. J. Alden Mason's, University of Pennsylvania expedition of July, 1929, are shown in the foreground.
- Plate 28Page 145
No. 1. The hearth under the man's pick axe contained a square based flint knife at a depth of eight feet below the soil surface, in the black stained zone of Nugent Silt 4. This is the first found site at a depth of eight feet, situated on the Will Myatt place. The silt above the dark line is Nugent Silt 5. Date, October, 1929.
No. 2. This is a picture of the writer's 1930 excavation in the Gibson Site. The gravel layer below the pick axe is the base of the Upper Clear Fork Silt. The deposit below where the trowel lies, is the Lower Clear Fork Silt. This picture was first printed in the writer's article in the 1930 issue of this Bulletin, (Plate 11, No. 4), and again in 1934 in Gila Pueblo's Survey of Texas, (Plate VII, B.).
No. 3. This is a picture of the Gibson site, showing an Abilene Point projecting just below the gravel stratum in Lower Clear Fork Silt.

A DEEP BURIAL ON THE CLEAR FORK OF THE BRAZOS RIVER

BY FRANK H. H. ROBERTS, JR.

Discovery of the deepest buried human remains thus far found in the region of Abilene, Texas, was reported to the Smithsonian Institution on July 1, 1943, by Dr. Cyrus N. Ray. The information contained in Dr. Ray's telegram indicated that an investigation of the occurrence was warranted and arrangements were made for the writer to go to Abilene. Arriving on July 7, he spent the following five days studying the place where the bones were uncovered, visiting other deeply buried sites exposed in the banks of streams, and examining the numerous artifacts and skeletal material collected from them. The nature of these sites and the character of the implements and associated objects which they yield are well known through the writings of Dr. Ray and because they bespeak a certain antiquity are important in the study of the early occupation of North America. Coming as it did from one of the older levels, the present skeleton gave promise of throwing additional light on the physical type of the people inhabiting the area at that time.

During the latter part of June, 1943, high water in the Clear Fork of the Brazos River did considerable damage to its banks, especially those along that portion of the stream traversing the Putnam Ranch some 60 miles northeast of Abilene. After the water had subsided to about its normal level three boys, James Putnam, Jack Tucker, and Don Tucker, were swimming in a pool at the base of the east bank some distance below the ranch buildings. In the almost vertical wall several feet above their heads, where a large block of earth had fallen away, they noticed what appeared to be a cavity lined with something that extended slightly beyond its edges. By cutting places in the hard clay for their feet they were able to climb to the hole and discovered that the projecting material was bone. Using a pocket knife, James Putnam and one of the other boys dug around the bones and saw that they had part of a human skull. Carrying the pieces home James turned them over to his uncle, J. C. Putnam. This was on June 24. Two days later Mr. Putnam took the pieces of skull to Dr. Ray and the following day, June 27, the

Doctor and Mr. H. H. Adams, a geologist living in Abilene, went to the Putnam Ranch.

After photographing the skull mold, which was still intact, Dr. Ray and Mr. Adams assisted by J. C. and James Putnam, with young James and several other boys as an audience, proceeded to remove the skeleton, which extended back into the bank. They were afraid to leave the remains in place until others could be called to see them as the caving condition of the bank and the possibility of a new rise in the stream made their situation precarious. It was found that the body had been buried in a tightly flexed position, lying on the left side with the head toward the south.^{1, 2} Most of the hand bones were missing. In the Abilene region flexed burials generally had the hands placed at the head on each side of the face² and in the present case they probably were carried away with portions of the skull when the section of the bank fell off and into the water. All of the long bones, scapulae, innominates, vertebrae, and most of the ribs were present and in fairly good condition. Some of the bones were damaged in the process of removal, yet are suitable for study purposes.

The pit in which the body was placed had been filled with earth containing an admixture of ashes and charcoal, evidently dirt scooped up from around the hearth of the camp occupied by the deceased and his companions. Just why such material was used instead of that dug from the pit is not known, of course, but many of the so-called primitive peoples often followed such a practice and it is possible that it may have had something to do with beliefs pertaining to the spirit's needs in the world beyond, perhaps it was in a sense a connecting link between the here and the hereafter. There were no stones or shells in the grave and apparently no artifacts. While

PLATE 1

No. 1. When the finder, James Putnam removed the deeply buried skull from the Brazos River bank silt it left a mold of the skull in the bank. This picture of the mold, taken soon afterward by Dr. Cyrus N. Ray, shows hand and wrist bones which were embedded inside the mold.

No. 2. This picture shows the long bones in place after the earth had been removed.

No. 3. This shows two sides of the flint artifact with drawings of longitudinal and cross sections.

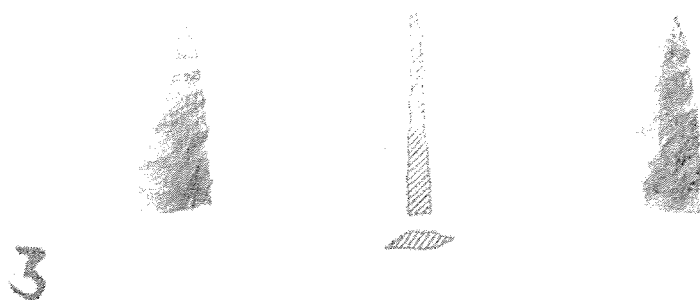


Plate 1

cleaning the bones and bone fragments in the laboratory, however, the tip end from a chipped instrument was discovered. It was so thoroughly caked with clay that it appeared to be a small piece of bone and no doubt was mistaken for such in the field. Because of its fragmentary condition this bit of worked stone probably was not a mortuary offering, as a matter of fact none of the deep burials in the region have had artifacts with them and this has complicated the problem of determining the cultural affinities of the remains. The type and possible significance of the present specimen will be considered more fully in a subsequent paragraph.

In the interval between the removal of the bones and the writer's first visit to the site, in company with Dr. Ray, Mr. Adams and Dr. R. H. Tull of Abilene, there had been no new flood in the stream nor additional caving of the bank. Hence it was possible to judge satisfactorily conditions existing at the time the disinterment took place. There is no doubt that the skeleton came from that location because a few fragments of bone found in the loose earth that had been dumped on the talus below, there were some metatarsals still in situ at the back of the pit, and the lower half of a fibula that fit a piece previously obtained was embedded in the bottom of the grave. The fill in the pit had not been completely worked out and in the back portion it was quite evident that an undisturbed series of strata, layers that were clearly in evidence for a considerable distance up and down the stream, had risen above it to the top of the bank and present surface. This demonstrated that the burial was not a relatively recent penetration and that there had been a long period of alluviation in the valley, prior to the present channel-cutting era, after the body had been placed there.

A portion of the southern and western periphery had been broken out by the caving of the bank during the high water and the digging when the bones were removed, but it was possible to follow and uncover the remaining sides of the grave to determine its approximate size and shape. The pit had been roughly oval in contour with diameters of about 2 and 3 feet. It was rather shallow, the measurements naturally being taken from the top of the stratum that was the surface of the ground when the grave was dug. The uneven bottom sloped upward from a depth of 15 inches at the north end to 1 foot at the point where it was broken away at the south. The depth at the south end, however, probably was even less, as Dr. Ray observed

that the head had lain somewhat higher than the body.² No stones were used either as a lining for the grave or to cover the remains. In this respect the interment differed from others previously noted in the area as they had, at least, a few stones over the bones.^{3, 4} In this connection it might be mentioned that there appears to be a definite progression in grave types in this district. The oldest, as exemplified by the present example, was a simple pit. This was followed by a pit with stones over the top of the fill and it, in turn, by one lined with stones and covered with similar material, a slab cist form of grave. The order is indicated by the depths at which they occur and the nature of the strata in which they were dug. That they were not the product of different peoples is shown by the fact that the skeletal remains suggest a single group. The different styles of burial probably represent development over a long period, one in which other cultural elements probably passed through comparable changes.

The grave was 11 feet above the normal low water level, and 21 feet below the present valley floor. The vertical wall rising directly above it measured 10 feet 8 1-2 inches. Recent erosion and gullying had carried away the additional 10 feet 3 1-2 inches, leaving a sharp upward slope to the valley floor proper, but a few feet upstream there was a vertical bank from the latter to the water and it was obvious that all of the strata it contained originally had extended across the area directly above the pit. The deepest burial found prior to this was one lying 9 feet 2 1-2 inches below the surface.⁴ It was on the Matthews Ranch several miles upstream from that on the Putnam property.

The profile of the deposits exposed by the present stream showed clearly that the interment was made on the south bank of an old

PLATE 2

No. 1. This shows the skull mold hole above the handkerchief, and footholds below, cut into the steep bank preparatory to doing excavation.

No. 2. This picture shows the partly excavated long bones still in place in the bank.

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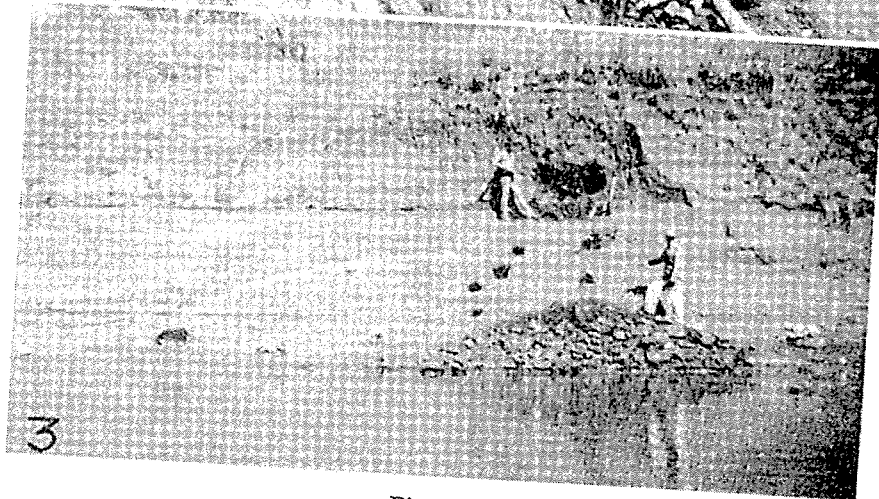
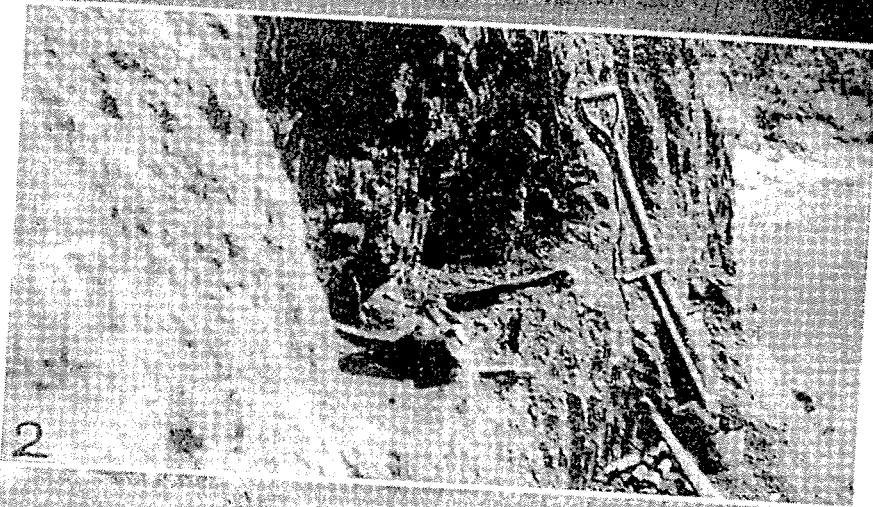


Plate 2

stream, Plate 5, Number 1, one that had flowed at approximately right angles to the existing water course and that had been largely silted up prior to the burial, although a shallow channel 20 to 25 feet north of the grave probably contained water at the time when the pit was dug. Streaks of sand and gravel in its bottom indicated a flowing stream and the over-lying stratum of silt extending across and beyond the top of the grave suggested that it had not been deposited until some time subsequent to the digging of the pit and the stoppage of water in the stream bed. The group of which the deceased was a member probably was camping along the old stream when misfortune overtook that particular individual.

The earth in which the grave was dug, as well as the strata above, appears to belong to a series of silts designated Elm Creek in one study⁵ and called Nugent by Dr. Ray. These silts underlie the valley floors of the Clear Fork and some of its larger tributaries, possibly also portions of the main Brazos Valley. For the most part they are thick and horizontally bedded and consist of almost uniformly-textured clayey silts and sandy silts. There are few large gravel lenses. Humus-stained zones, from a few inches to a foot or two in thickness, usually mark the tops of the silt layers but they are not true soils and are cracked in such a fashion as to suggest that they developed under alternating moist and dry conditions. In general they indicate deposition by slack-water sheet floods spreading over the broad valley floors when conditions were more humid than the present. A climate suitable to such phenomena probably has not prevailed in the region since the closing days of the Late Glacial, the Wisconsin substage, or the pluvial period which in more southerly precincts corresponds to it. For this reason the silts have been judged to be late Pleistocene in age.⁵ Yet it is possible, as some authorities maintain, that the humid period in this area did not parallel the ice stage farther north but lagged somewhat and the deposits attributed to it actually had their beginnings in the Early Recent rather than in the terminal Pleistocene. At all events the fact that the burial was in the lower part of the silts places it fairly early in the period of their formation.

It was hoped that there might be some additional evidence, beyond that of the stratum in which it was buried, to indicate the possible age and cultural affinities of the skeleton. Careful inspection of the banks for some distance up and down stream, at all levels

from the water line to the valley floor, failed to produce either artifacts or animal bones that might have a bearing on the problem. Elsewhere in the Abilene area implements of the Clear Fork Culture Complex, some examples of the Durst-Abilene type artifacts, and sporadic Folsom and Yuma points have been found in the lower Elm Creek silts* and the presence of a burial here indicated that it should be a good location for man-made objects as well. None was forthcoming, however. In the study of the banks several interesting manifestations were observed, but they offered no help in correlating the human remains with known cultural materials. Eight feet beneath the burial was a thick layer of ashes, with some admixture of charcoal, that extended a considerable distance down stream. There was nothing to indicate whether it was the result of human or natural agencies, although its dimensions suggest the latter. About a half mile farther down stream were some evidences of human occupation in the remains of hearths occurring at two different levels. The upper one was 14 feet 10 inches below the present surface, while the lower was at a depth of 27 feet 4 inches, Plate 5, Number 2. Along the top of the stratum that had been the surface when the upper hearth was in use were numerous fragments from cut and split animal bones. A number showed the effects of fire. None of the pieces was complete enough or from the proper bone to determine the exact species of the animal, but most of the fragments can be identified as coming from deer and bison.

The lower hearth had been entirely exposed by the washing away of the bank. Many of the rocks were still in situ, however, and there is no doubt that they at one time formed a fire place on a definite surface of occupation. Neither of these levels yielded any artifacts and it was not possible to determine their cultural horizon.

PLATE 3

No. 1. This shows another picture of the skull mold in the center of the picture.

No. 2. In this picture Dr. Frank H. H. Roberts is shown standing on the pile of earth excavated from around the skeleton. James Putnam stands to the left of the excavation.

No. 3. This shows a general view of the full height of the bank which is difficult to show in a close-up picture of the grave, on account of a slope at the top of the bank produced by recent erosion. At the far left of the picture, Dr. Roberts is shown standing in the excavation.

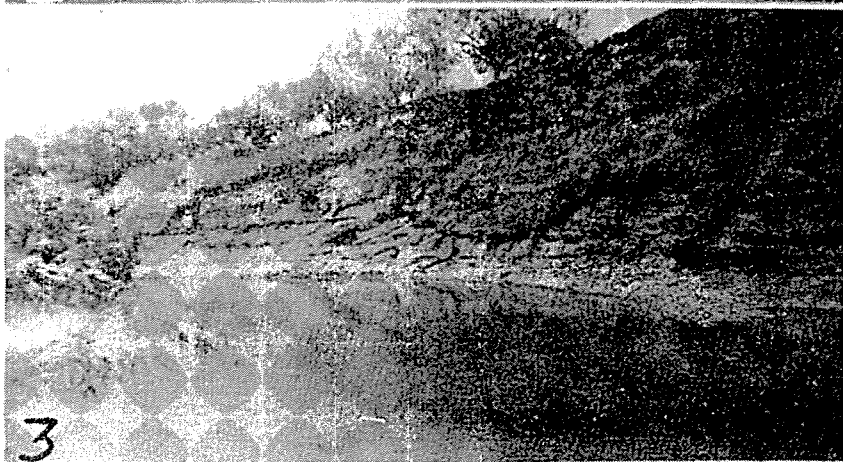
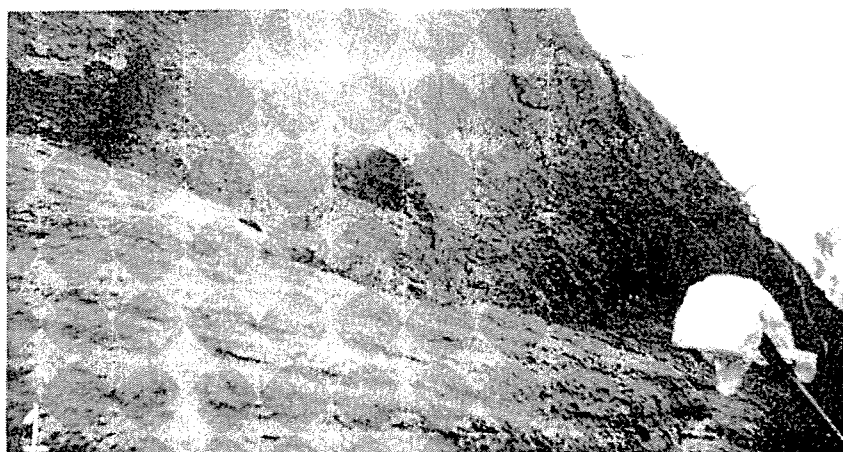


Plate 3

The lower hearth obviously antedated the period of the burial and the upper one was considerably later. There did not appear to be any habitation level at this location corresponding to that where the burial occurred, although there was a dark-stained zone marking an old surface and top of one of the silt layers that did correlate with it. Neither were there traces of the old stream bed along which the burial was made.

The only possible clue to the cultural horizon of the skeleton is the small piece of worked stone found with the bone fragments in the laboratory and it is far from being good, clearcut evidence. As a matter of fact it is quite disappointing. In the first place there is definite question as to its actual provenience. Whether it was in the grave in direct association with the bones, was merely a fortuitous inclusion in the earth used in the fill, came from the old surface above the pit, or was dislodged from one of the superimposed layers is not known. The lack of such material in any of the levels in the area adjacent to the grave would seem to discount the latter contingency but offers no suggestions on the other alternatives. If it had been in direct association with the bones there is the intriguing possibility that it might be the tip end from the projectile point that killed the individual, while if it simply was in the fill it would only indicate a broken and discarded implement that happened to be there.

The type of the object itself is about as unsatisfactory from the standpoint of significance as the conditions under which it was found. It was made from gray chert and while it has no patina, the color has bleached considerably as the result of age. Although relatively fine, when compared with specimens from the older cultures in the area, the flaking appears to have been done by percussion rather than by pressure. A few of the facets left by the removal of the flakes extend obliquely downward and entirely across the face of the blade, suggesting the technique used in the manufacture of the finer types of Yuma points, but most of them expand either vertically to about the longitudinal midsection or slant somewhat toward the tip. At first glance it was thought that the pieces might be from one of the smaller, finer Yuma types but further examination showed this not to be the case. The edges are bevelled to the left. This feature is not so apparent when the blade is viewed full face as it is in cross section, Plate 1, Number 3, *section*, when

it is quite evident. The bevelling is fairly narrow with a sharp slope to the edge. This, together with the slender character of the point, suggests that it probably is the tip from an awl or drill rather than from a projectile. The left-handed bevelling indicates that it was an implement to be used with a clockwise direction in drilling. If it is part of a drill the postulation that it was a piece of the weapon employed against the individual buried there would, of course, be negated. Bevelled projectile points at an early period are not unknown in the area. As a rule, however, they are heavier and thicker in form and the bevelling is on the right side of the blade instead of the left.⁶ It could be part of one of the slender, smaller projectile points from one of the relatively late cultures, yet its apparent inclusion in the Elm Creek Silts would argue against that possibility. The whole matter could be dismissed, of course, with the conclusion that it merely was a late penetration into an old horizon. Under the circumstances this does not seem to be warranted, hence it is more likely that the present specimen should be regarded as a portion of a drill.

Because drills are rather ubiquitous in their cultural and chronological occurrence and are so basic in their general features that there is little to differentiate them or to indicate what horizon they may represent, such an identification adds to the difficulty. Implements of the Clear Fork Culture are found consistently in the Elm Creek Silts and for that reason it might be concluded that the fragment belonged in that category were it not for the fact that drills or awls of stone are quite rare in that complex.⁷ However, it may well be that it is an example from one of the stages of that culture and the burial was that of one of the men who made Clear Fork implements. The artifact measures 23.8 mm. (15-16 of an inch) in length, is 8.7 mm. (11-32 of an inch) in width at the broken end, and is 2 mm. (5-64 of an inch) thick.

Several features about the skeleton impressed Dr. Ray and the writer as being indicative of a somewhat primitive form of recent man. This was especially true in the case of the very heavy brow

PLATE 4

This picture shows the bones from the twenty-one feet deep river bank burial after they were removed, and the long bones mended by Dr. Ray.

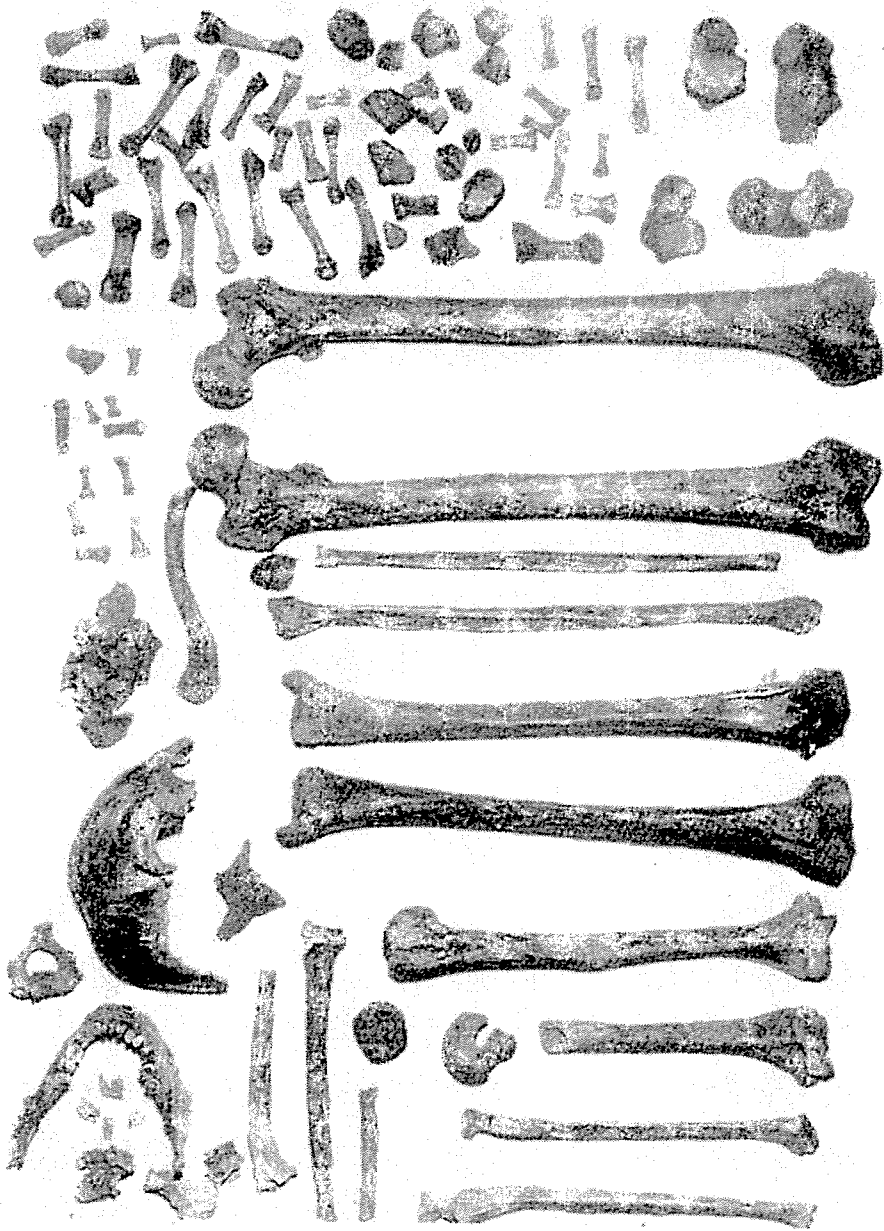


Plate 4

ridge, the thickness of the frontal bone, the apparently sharply receding forehead, the lower border of the nasal aperture, and the conformation of the long bones. In the latter a certain bowing of the femora and the manner in which they and the tibiae articulated suggested the possibility of at least a slight bent-knee gait. It also appeared that the articulation at the elbow was somewhat peculiar and that it might have produced an outward turning of the lower arms. Not being sufficiently familiar with these conditions to pass on them properly, however, conclusions were held in abeyance awaiting expert opinion. After the writer's return to Washington the bones were shipped to him by Dr. Ray and arrangements were made to have them studied by physical anthropologists versed in the characteristics of the American Indians. They were first sent to Dr. Harry L. Shapiro, Chairman of the Department of Anthropology, the American Museum of Natural History, New York, with mention of the features, listed above, that appeared to be significant. Upon the completion of his study Dr. Shapiro sent the writer the following memorandum:

"It is unfortunate that the Clear Fork skeleton is so fragmentary, particularly in its cranial parts which, of course, are the most critical. I have examined the bones and the fragments that survive and I confess that I do not find anything of exceptional interest. The long bones are moderately robust and suggest a tallish individual. The tibiae have a marked degree of platynemia and the femora of platymeria. Both of these characteristics are common enough in modern types of man although apparently more frequent in earlier phases of recent man. The femora are not especially bowed and I discover no evidence (unless platynemia and platymeria be so taken) for a bent knee gait. The elbow joint seems equally unexceptional.

"What remains of the vault of the skull is too scrappy to provide solid basis for judgment, but the frontal does have an exceptionally heavy brow ridge and an apparently sharply receding forehead. This suggests a primitive form of recent man. The lower border of the nasal aperture also is on the primitive side. The jaw is fairly broad with everted gonial angles and gives an impression of strength and ruggedness. From these characteristics it seems fair to say that while the skull might be approximated by occasional recent Indians,

it does agree more frequently with the more primitive forms of neolithic man found in America.

"The mending of the broken and fragmentary portions represents a considerable job and it is hardly justifiable for a great many of the bones. But if it is possible to leave the skeleton with me for a while, I should be interested in doing some reconstruction and measurement. Even if a more detailed study should also fail to uncover anything unusual, it might still be worth recording the characteristics of a find presumably of some antiquity."

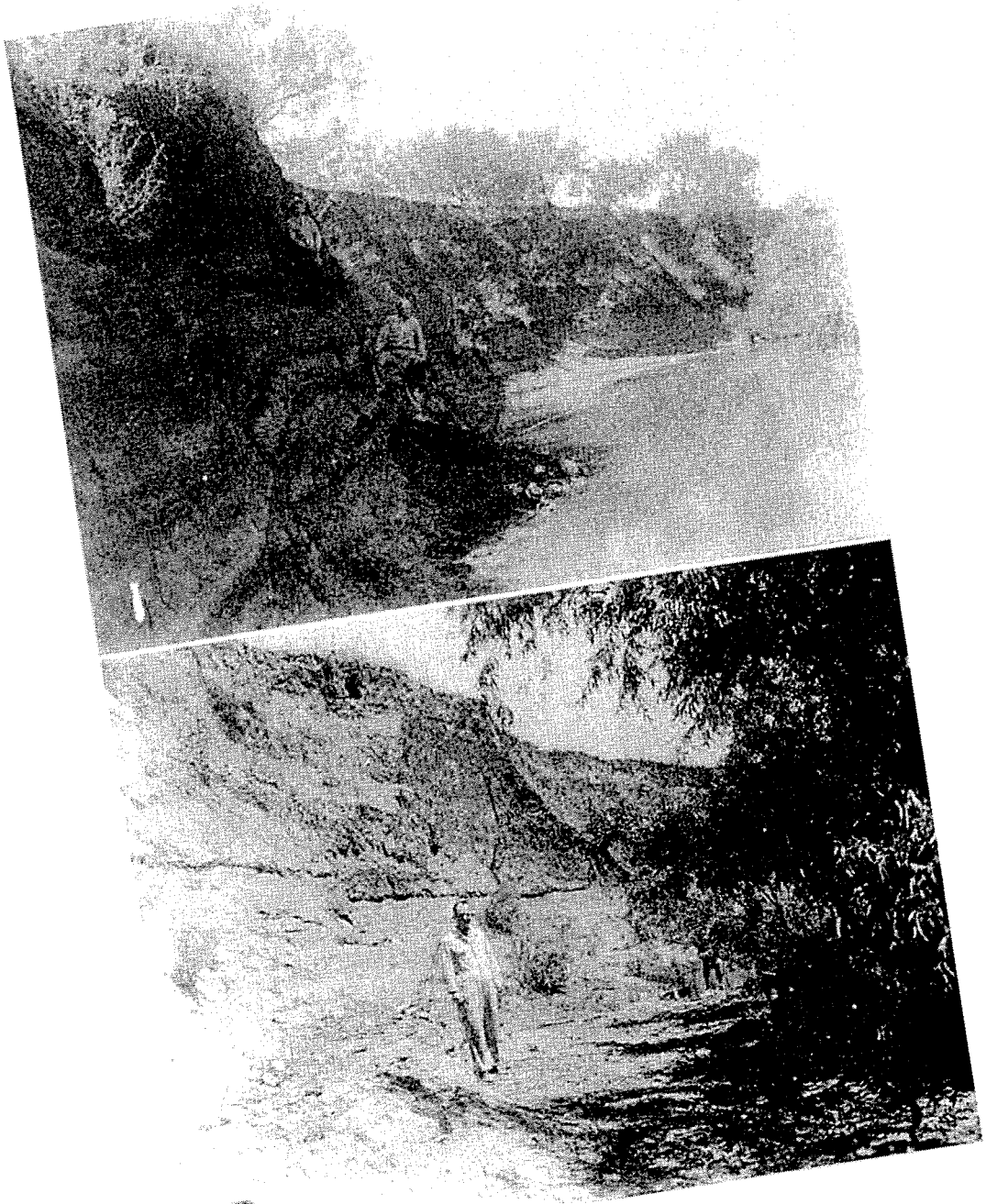
The skeleton was left with Dr. Shapiro for several months but, because of the pressure of work involved in the installation of a new exhibit hall at the American Museum together with other official duties, he was unable to give further attention to it. After it had been returned to the writer it was taken to Dr. T. D. Stewart, Curator of the Division of Physical Anthropology, U. S. National Museum, who spent considerable time in an effort to reconstruct the skull and in repairing some of the other bones. The results of Dr. Stewart's studies are incorporated in the report which appears elsewhere in this number of the Bulletin.

It is interesting to note in passing that both he and Dr. Shapiro agree that the skeleton could be that of an early Indian. Hence there would be nothing anachronistic in its being found in deposits that are late Pleistocene or Early Recent in age. In discussing other and similar remains found by Dr. Ray a number of years ago Dr. E. A. Hooton of the Department of Anthropology at Harvard University reached a similar conclusion. He expressed the opinion that the crania from the deep burials in the Abilene region exemplified a very primitive type of American Indian and probably repre-

PLATE 5

No. 1. General view of burial site. Dip in strata at left indicates former stream bed. Grave is in bank at the left of the upper figure, James Putnam, one of the discoverers of the bones. Mr. H. H. Adams is standing on the pile of earth dug from the bank when the skeleton was removed.

No. 2. Stones forming deep level hearth are on the low bench at the left of the standing figure, Dr. R. H. Tull of Abilene, while upper level hearth is indicated by stones projecting from bank in upper left corner of picture, about midway between the high water mark and the top of the bank.



2

Plate 5

sented one of the earlier strata of the American population. He also pointed out that while they were a neoanthropic or morphologically modern type it was not impossible for them to date back to the end of the Pleistocene because physically modern types of men were in existence in the Old World before the end of the Glacial Period.⁸ Since, as is generally believed, the New World was populated by migrations from northeastern Asia, conditions in the Old World have a direct bearing on the problem and it is significant to know that modern types of man had a respectable antiquity in that region.

All three authorities, Shapiro, Stewart, and Hooton, agree that the geologic age of such skeletal remains must be determined by that of the stratum in which they are found, rather than by their morphological features, although the determination is more convincing when some of the latter tend to the primitive side. Associated archeological and paleontological objects, of course, are a help in fixing an approximate or relative date but like morphological features they too may not be conclusive. In the present instance there was no paleontological evidence and, as already noted, the single archeological specimen is of little assistance. Because of this the most that can be said is that the deeply buried skeleton is of a type that could be early, that it was buried in silts that seem to be late Pleistocene or Early Recent geologically, i. e. 10,000 to 15,000 years ago, and that the individual may have been one of those who made implements of the Clear Fork Culture Type.

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Smithsonian Institution,
Washington, D. C.

*Editorial Note: The statements published by others, to which Dr. Roberts refers, that Yuma, Folsom, Abilene and Clear Fork Points are ever found in the so-called Elm Creek Silts are inaccurate. The Editor has found nearly all of such points collected in the Abilene region, and never yet has found one in the Nugent or so-called Elm Creek Silts. The Yuma, Folsom, Abilene, Jones, Gibson, and Clear Fork Points have all been found in the deepest buried silt of the two Clear Fork Silts or the Lower Clear Fork Silt, termed Durst by Leighton. Clear Fork Points are found in the top section of the Lower Clear Fork Silt and extend up into the Upper Clear Fork Silt.—Cyrus N. Ray, Editor.

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REPORT ON J. C. PUTNAM SKELETON FROM TEXAS

BY T. D. STEWART

This skeleton was found upon receipt to consist of an incomplete skull, all of the long bones more or less complete, such bones as the innominates, scapulae and vertebrae in fragments, and many of the smaller bones in good condition. Some repairs had already been made and all the parts had been treated with a hardening solution. The bones are dark brown in color, but become a light brown when brushed with acetone. The weight of the individual bones is about average, thus suggesting freedom from mineralization. Sex characters clearly indicate a male. Age changes, especially in the pubic symphysis, are compatible with an age of about 40 years.

Since the skull is most useful in establishing relationships, an effort was made to reassemble the parts. This necessitated certain assumptions, chiefly because all connection between the upper alveolus and the base of the skull proper, except through the mandible, had been lost. These assumptions include the length of the nose (53 mm.) and face (76 mm.) and the distance between the alveolar point and basion (102 mm). The figures used for this purpose approximate the averages for male Texas crania given by Hrdlicka.¹ The two views shown in figure 1 indicate the reasonableness of the reconstruction arrived at in this manner.

The reconstructed skull was next oriented in the Frankfort position on the Schwartz stereograph and a drawing made of the norma verticalis (fig. 2). Assuming this skull to have been symmetrical, the missing left side was restored in the drawing by mirroring the right side. This procedure was aided by the fact that three landmarks in the median plane are preserved; namely, nasion, bregma, and basion. The missing occiput was next drawn in freehand to represent extreme but reasonable dolichocrany. According to this reconstructed norma verticalis, the maximum length did not likely exceed 185 mm and the maximum breadth 135 mm. The cranial

index thus would be about 73, with the error being probably on the side of dolichocrany.

The following measurements obtained on this skull are regarded as accurate:

Basion-bregma height	142 mm
Biporionic vertical height	118 mm
Basion-nasion	102 mm
Diameter frontal minimum	97 mm
Nasal width	27 mm
Bigonial diameter	113 mm

The only significant index derived from these measurements is the Mean Height Index. This is figured on the basis of the reconstruction to be 88.8, which indicates a relatively high head.

It should be mentioned that the teeth of this skull are extremely worn, so that there was some difficulty in securing a good articulation between the jaws. An interesting anomaly is the presence of only two lower incisors. Presumably the lateral incisors are the missing ones. There is also a small ear exostosis in the one auditory meatus present.

Unfortunately, the skulls collected earlier by Dr. Cyrus N. Ray in this same region and deposited in the National Museum (Hrdlicka, 1938) are not at present available for visual comparison. Because of the earlier danger of air raids, these valuable specimens were evacuated from Washington and have not yet been brought back.

PLATE 6

Side and front views of J. C. Putnam skull as restored. Frankfort plane approximated with the aid of landmarks in the sagittal plane. Note the presence of only 2 incisors in the lower jaw.

PLATE 7

Drawing of norma verticalis made with the Schwartz stereograph. Interrupted line represents mirroring of the right side. Dotted line suggests a probable occipital outline. The midline passes through nasion, bregma and basion.

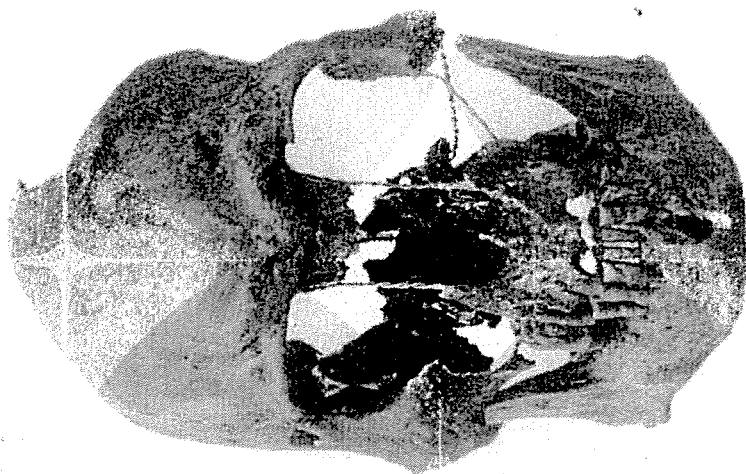


Plate 6

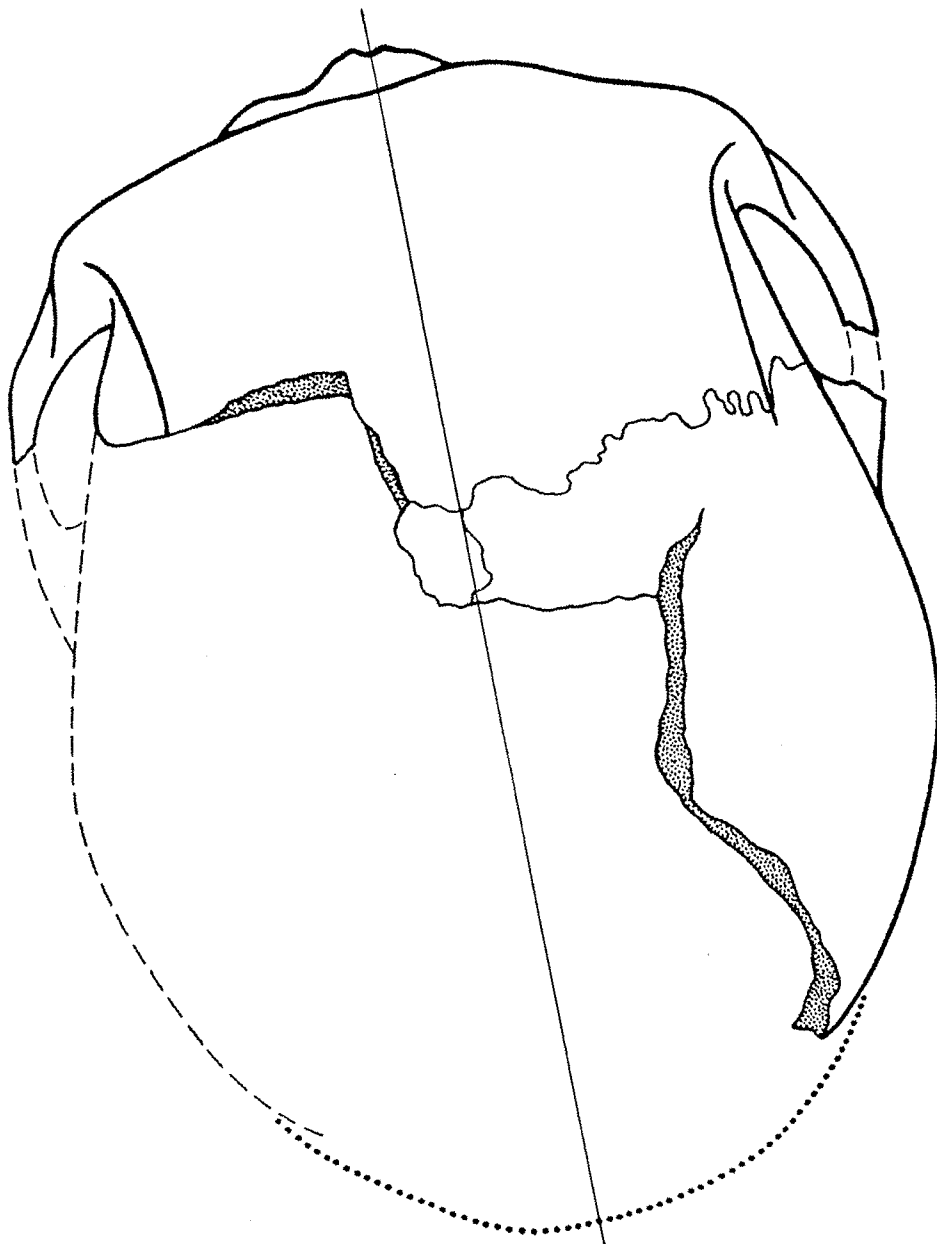


Plate 7

Evidently, however, the J. C. Putnam skull is not so long-headed, although equally high-headed.

The long bones sufficiently well preserved for study yield the following measurements:

Humerous:

	R	L
Length maximum	311 mm	313 mm
Diameter major at middle	23	21
Diameter minor at middle	17	17
Index	73.9	81.0

Radius:

Length maximum	—	252
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Ulna:

Length maximum	277	—
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Femur:

Length bicondylar	456	454
Length maximum	459	456
Diameter a-p at middle	30	29
Diameter lateral at middle	27	28
Index at middle	90.0	96.6
Diameter maximum at upper flattening	34	34
Diameter minimum at u. f.	24	25
Index at upper flattening	70.6	73.5

Tibia:

Length bicondylar	385	380 (near)
Diameter a-p at middle	35	34
Diameter lateral at middle	20	21
Index	57.1	61.8

Fibula:

Length maximum	377	—
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Stature is estimated at 166 cm, or about 5' 5".

The humeri do not have septal apertures; the right femur has a medium sized third trochanter (left?). In view of Hrdlicka's earlier

observations² that other tibia from this region are almost invariably quadrilateral in cross section at the middle, it is of interest to point out that the present specimens likewise show this feature (Plate 8). Hrdlicka had made an extensive study of this subject and there is every reason to believe that he was correct in pointing out the unusual frequency of quadrilateral tibia in the skeletons from this region. He explained this finding on the basis of a peculiar function and fell back upon the Lamarckian viewpoint that the results of this function had become hereditary. Any such explanation must be regarded as speculative at the present time. It seems more important to note that Hrdlicka's unpublished data show the quadrilateral tibia to be the most common type among all American Indians.

It would appear from these observations that the J. C. Putnam skeleton presents no unusual features setting it apart from other remains of known American Indians from this region. Being relatively long-headed and high-headed, the skull could have belonged, so far as our present knowledge goes, to an early type of Indian. However, it is impossible to establish the antiquity of this individual on the basis of the bones alone.

Curator, Division of
Physical Anthropology,
U. S. National Museum.

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PLATE 8

Cross section of 4 Texas tibia, including one from the J. C. Putnam skeleton, to show the quadrilateral shape. All sections are oriented as viewed from the proximal end and with the anterior border upward.

Left



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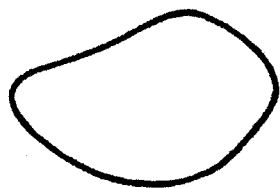
U.S.N.M. 377983

Right



PUTNAM

U.S.N.M. 377982



SOME SUGGESTIONS ON ARCHAEOLOGICAL TERMS

BY ALEX D. KRIEGER

A number of terms in common use by professional and private archaeologists alike are very inaccurate, and in some cases positively misleading. These terms are quite widely employed without, apparently, much concern for their implied meaning. Their origins are for the most part obscure, but probably for reasons of convenience, or for want of better terms, they became perpetuated until they were used habitually even by those who realized their inaccuracy. It is the purpose of this paper to review some of the more serious abuses, and to attempt to clarify their use and meaning.

In Texas it is particularly urgent that archaeologists make a real effort to adopt accurate terminology for certain kinds of sites and classes of artifacts. This is because the interpretation of Texas archaeology involves several of the major culture areas of the continent; its connections lie with Southwestern, Southeastern, and Plains cultures, and with the eastern parts of Mexico and Middle America. Texas has long been a center of interest to those concerned with possible connections between Middle American civilizations and some of those of the eastern United States. Thus the following suggestions emphasize those terms which have more than local significance.

"Mounds"

"Mound" is a name applied to virtually every kind of accumulation above ground level, whether it be a few inches or several feet high. In the aforementioned problem of possible relations between Middle America and some cultures of the eastern states, the prevalent loose usage of the term "mound" has some rather dangerous implications.

First of all, a distinction must be made between *intentionally built structures* and so-called "mounds" which are purely incidental heaps resulting from extended occupation on the same spot. Obviously, if the hundreds of sites called "mounds" in various parts of Texas were actually the result of a definite practice of building eminences

for some purpose, this matter would be of great importance in understanding the origins of true mound-building in the eastern United States. Let us examine briefly the prevalent applications of this term.

Along the Texas coast are many accumulations of camp midden and broken shell called "mounds" or "shell mounds." Sometimes they lie on fairly level ground and attain a height of two or three feet; when found as caps on natural knolls or sand dunes the total height may be much greater. In central Texas (principally the Edwards Plateau and surrounding regions from the upper Brazos to the Nueces River) there are hundreds of "rock mounds" or "burnt-rock mounds." These represent heaped accumulations, often vast in extent, of the remains of limestone hearth slabs, used until broken by heat and then discarded and replaced by new slabs or complete new hearths. As these "mounds" occur near almost every spring in the region, and on the level terrace lands along the streams and river confluences, they represent occupation in certain favored spots for long periods of time. Where the camp sites were exposed to occasional overflow they often were repeatedly buried by silt and gravel before much refuse and rock could gather. In other, less exposed spots, the discarded rocks and midden refuse collected to heights of as much as seven feet. Therefore, those which attain some height, a more or less definitely humped center, and a fairly definite perimeter, are traditionally called "mounds," while shallow or buried deposits are called "sites" or "camps." There is no reason to suppose that the great rock heaps were the result of any conscious building trait. Neither does the inclusion of occasional burials in such rock middens lend reason to their being called "burial mounds."

An excellent example of the dangers of such terminology may be seen in the case of the so-called "Morhiss Mound" (also called "Waelder-Joshua Mound") in the Guadalupe River bottoms near Victoria, Texas. This site was excavated in 1938-1939 by the WPA-University of Texas Archaeological Survey, W. A. Duffen, Field Archaeologist. While the site was called the "Morhiss Mound" in all the field notes and catalogs, the actual dissection showed no evidence of any conscious attempt to erect a mound. Rather, the site appeared to be composed of a huge midden capping over a gravel bar left in the bend of an old course of the Guadalupe River. This

gravel bar rose several feet above the surrounding flat bottomland and doubtlessly provided a convenient dry spot for Indian tribes; it also contained bones of many extinct animals. It was used as a camp site until a great cap of refuse from two to six feet thick had accumulated. Burials were made in it, over 200 being found by the excavators. In this case, for many years before the main excavations, the site had been known as a great "mound" and had been interpreted as evidence of mound-building practice about midway between the Mexican border and the Mississippian cultures of east Texas. This assumption was based mainly on the size and shape of the site, without regard to whether it could have been erected purposely. Thus, references to "Morhiss Mound" or "Guadalupe River burial mound" are not only inept, but have been falsely inferred as evidence of the diffusion of mound-building practices between Middle America and the "Mound-Builders" of the eastern United States.

"Mound" has even been applied to some puebloan ruins in the Southwest, to puebloan-like masonry ruins in the Texas Panhandle, and to large refuse piles associated with village ruins. When walls are badly collapsed and the ruins more or less filled with dust and wash, the resultant pile of rubble might attain considerable area and height. Perhaps no one would seriously consider a relation between such a heap and actual mound-building, but why is it necessary to employ such an ambiguous term as "mound" at all in such circumstances?

In the so-called "Caddo area" of northeast Texas, northwest Louisiana, southwest Arkansas, and southeast Oklahoma, the current usages of the term "mound" are even more confusing than elsewhere. For this area lies on the frontier of the vast eastern region in which several forms of mound-building are positively known to have been practiced, with certain developments traceable through several distinct culture periods. Largely due to the extraordinary influence of Harrington's "Certain Caddo Sites in Arkansas," which appeared in 1920, a very large number of sites in this area have been called "mounds." In a few cases this label is rather obviously correct when applied to certain large eminences which rear up from flat bottomland along the Red River and other major streams with wide valleys. On the other hand, the same term is commonly applied to hundreds of other localities which turn out to be small heaps of

camp midden perhaps 30 feet across and six inches to two feet high. These prove to be composed of sand or clay, ash, char, animal bone, mussel shells, potsherds and other artifacts, and may or may not include burials. Thus, the level sites are called "camps" or "camp sites," while those of the same origin and composition but which rise to a slight elevation, are known as "mounds" or "burial mounds."

One of the best known localities in northeast Texas is the so-called "Sanders Burial Mound" on the T. M. Sanders place south of the Red River in northwestern Lamar County. Excavations by the University of Texas did not reveal any substantial evidence of intentional building, but rather the "mounds" (there are two adjacent eminences) seemed possibly to be nothing more than midden cappings over natural knolls. The larger of these eminences yielded 21 graves containing 62 individuals, and hence was classed as a "burial mound" by the excavators. Yet the field notes clearly state that the bulk of the occupational refuse formed a cap over a small natural ridge. Without satisfactory details on the internal structure of such sites, the unconsidered label of "burial mound" again has misleading implications.

Fully as serious is the use of "domiciliary mound" in the Caddo field, as employed by Harrington and many of his followers. In many instances this name was given to a very small knoll formed on more or less level ground by the collapse of an earth-covered house. To call such a heap, usually but a few inches high, a "domiciliary mound" is stretching the imagination and provides a direct conflict with the intended meaning of this term in eastern archaeology. For elsewhere this term is considered to apply to an earth structure or platform which can be shown to have been built up with loads of clay taken from nearby "borrow pits." If the superimposed building conforms to dwellings, the platform becomes a "house mound" or "domiciliary mound"; if evidence of perpetual fire, altars, or unusually large buildings is present, the earth structure becomes a "temple mound."

Naturally, there is not always sufficient evidence on which to classify artificial eminences. Nonetheless, careful dissection and examination of the trench walls can usually reveal the difference between intentional building (pockety construction as though earth had been dumped by the basket-load) and growth incidental to oc-

cupation (lenticular construction, midden and ash layers, etc.). It does not help to read in a report that such and such "mounds" are "man-made." This can be interpreted in two ways: *man-made* could mean either that the eminence was built by hand for a purpose, or it could mean merely that the "mound" was not natural, i. e., was due to human occupancy. Wherever there is any possibility of doubt or misunderstanding, the author should include a few sentences on the composition of the site. If trench walls can be photographed or diagrammed, this should by all means be done and included with the published account.

It appears that in site terminology there are three principle alternatives. First, "mound" might be continued in the present loose sense, simply to indicate that the site has some height to it. Or, second, we could confine the term "mound" to just those eminences which give satisfactory evidence of intentional construction. Third, the old term *tumulus* could be revived and applied to those particular sites which reveal intentional building, whether to cover large graves, to provide platforms for buildings, or to fulfill some other function, perhaps unknown. The use of *tumulus* would then carry this definite meaning and could not be confused with the loose and ambiguous label of "mound."

Over most of the state, such labels as shell heap, burnt-rock midden, midden site, camp site, burial site, village site, etc., can serve perfectly well in nearly every case. Why confound the picture with the word "mound" where it is ambiguous and other terms will do as well or better?

Regarding the distribution of purposely built mounds or tumuli in Texas, there seem to be very few of these indeed. They are, moreover on the basis of available evidence, completely restricted to the northeastern corner of the state. In examining the field notes and photographs of over three hundred east Texas sites, and visiting some personally, my opinion is that only five of them contain good evidence of intentional building. These are: the A. J. Hatchel Mound¹ 12 miles N. W. of Texarkana, Bowie County; George L.

1. Excavated by the WPA-University of Texas Statewide Archaeological Survey, 1938-39; W. C. Beatty, Field Archaeologist.

Keith² Mound near Mt. Pleasant, Titus County; Pace McDonald Mound³ N. E. of Frankston, Anderson County (west side of Neches River); George C. Davis Mound⁴ 6 miles S. W. of Alto, Cherokee County (east side of Neches River); and a burial mound⁵ on Mustang Crook near Sulphur River in southern Red River County. The first four mentioned are large and imposing, and of the rectangular, flat-topped variety usually supposed to be temple platforms. Several other sites appear to bear possibilities but have not been carefully examined. The point is, that extreme caution must be exercised in the whole question of mound-building in Texas; and in that section where this practice was definitely present, only a very small fraction of the total sites known are of this sort.

Proceeding northward toward the Arkansas river system and northeast Arkansas, and eastward toward the Mississippi valley proper, true mound-building becomes a much better established and more general trait. In the opposite direction, there is no authentic case on hand of an intentionally constructed eminence west of the Neches river, or anywhere between the large Davis Mound near Alto in the Neches valley and the region about Tampico, Mexico.

"Bird Points," "Arrow Points," etc.

Certain terms for projectile points have very wide usage over large parts of the United States. The most curious is that of "bird point" for the small, thin, light projectile points which occur in the latest archaeological horizons almost everywhere. The term is usually applied to points less than about 1½ inches in length, but occasionally the same light construction and fine pressure chip-

2. Excavated by the University of Texas, Anthropology Department, 1935; see Walter R. Goldschmidt, "A Report of the Archaeology of Titus County in East Texas," *Bulletin of the Texas Archaeological and Paleontological Society*, vol. 7, pp. 89-99, 1935.

3. Notes on test pits made by University of Texas are in Department of Anthropology files.

4. Excavated by the WPA-University of Texas Statewide Archaeological Survey, 1939-1941; Perry H. Newell, Field Archaeologist; full report in preparation.

5. Notes and specimens donated to Anthropology Museum of the University of Texas by T. N. Cole in 1931.

ping are seen in specimens up to 2 inches or even greater length. In Texas everyone seems to recognize a sharp distinction between these light "bird points" and the great numbers of heavier, longer, thicker, and broader points found widely over virtually the whole state. The latter projectile points are thus called "arrow points" and it is rarely indeed that one finds anyone who questions that the heavy points were used on arrows.

There appear to be two general interpretations of the "bird points." One is that they were used on small arrows for small game and birds, and thus constitute a special class of points used in connection with the bow. The other is that "bird points" were not used with the bow and arrow at all, but were attached to the tiny darts shot with a blowgun! Surely no one familiar with the blowgun would believe for a minute that stone heads, even tiny ones, could or would be attached to its darts. There is, moreover, no reason to believe that a blowgun of any kind was used over the vast areas of North America in which "bird points" are found.⁶

Now, it is of great importance toward understanding the history of the bow in native American culture that this matter of projectile-point terminology (and functional interpretation) be placed on a realistic basis. If it is true that light "bird points" and heavy "arrow points" do indeed represent nothing more than two specialized uses for the bow and arrow, then the bow must be of considerable antiquity in America, for the heavy "arrow points" are found in the earliest definable horizons. Various persons have built bows of different weights, and with them shot arrows of different size and length, and concluded that all the stone projectile points (except the very heavy ones probably used on spears) *could* be shot with bows without weighting down the arrows too much. These assumptions and experiments, while interesting and challenging, nevertheless do not conform to commonly known archeological facts.

6. Another curious term for light, thin projectile points is that of "microlith." As originally used in the Mediterranean area, this term is sometimes used to designate small chipped stone teeth fitted into sickle blades, or as a general term for a small-artifact industry. Certainly, it is completely meaningless as a projectile-point term in any area.

It is very easy to demonstrate, both by archaeological and by ethnological data, that *the so-called "bird points" are in fact true arrow points*, and that they are, furthermore, *the only points that can be positively associated with the bow* in American culture history. For example, anyone interested in the subject can examine arrows collected from various American tribes in the larger ethnological museums, and he will find that arrows, if they bear any stone heads at all, will have very light, thin heads which, found archaeologically, would unhesitatingly be called "bird points." Not all arrows have chipped stone heads, of course, for many of them are merely sharpened sticks, or are constructed of cane with pointed hardwood foreshafts. On the archaeological side, whole and fragmentary arrows have been removed from dry caves in many parts of the country; again, where the projectile can be positively identified as an arrow, the point will either be a sharpened stick or will have a light "bird point" attached or associated in the same deposit.

As for the heavy, broad, thick points commonly called "arrow points," it can be equally demonstrated that they were *not* used on arrows and their presence does not indicate the use of the bow. Again, in dry caves and shelters in all the western states, *whenever a heavy point is found still attached to its shaft, and the shaft can be identified, it proves to belong to an atlatl dart*. Thus, in Basket-maker cave sites, where we know positively that the atlatl was used and the bow was not, such chipped points as are found still hafted to their shafts belong to the heavy, broad category. Conversely, the "bird point" class are never found attached to atlatl dart shafts. There are enough specimens from the dry western areas to prove this association almost beyond doubt. Ethnologically, the point can not be proved as in the case of arrows, for nowhere in the United States did the native tribes continue the use of the atlatl into modern times.

Except among a few persons directly interested in the subject, the atlatl has been greatly underrated in American archaeology. If one accepts the interpretation that the vast numbers of heavy projectile points found over nearly the entire continent are indeed atlatl points and not arrow points, then it is certain that the atlatl

was a very old and widespread propelling instrument in America. Actually, arrows and darts⁷ are very similar projectiles—so similar, in fact, that the bow may possibly be regarded as a new way of projecting the same sort of missile. To judge from cave specimens, both arrow and dart were feathered in the same way, and both were made either with sharpened wooden foreshafts or chipped stone points. On the whole, the dart is a longer and heavier projectile than the arrow. It usually ranged from $4\frac{1}{2}$ to $5\frac{1}{2}$ feet in length, as against 20 to 30 inches for the arrow. In diameter the dart ranges from $\frac{1}{2}$ inch to $\frac{5}{8}$ or even $\frac{3}{4}$ inches, the arrow from $\frac{1}{4}$ to $\frac{3}{8}$ inches. The most certain diagnostic feature lies in the butt of the projectile, the dart having a small cup to fit against the hook at the distal end of the atlatl, the arrow having a nock for fitting against the bow string.

I do not mean to imply that there is invariably a clean distinction between the size and weight of chipped points used with the arrow and dart. There are several intermediate sizes which might have belonged to either, and in some cases some proof would be needed in the form of hafted specimens to reach a decision. Then, too, there is ample evidence that when the bow and arrow entered various sections of the country, the atlatl was continued in use along with it. This contemporaneity of the two propelling instruments probably led to experimentation in point styles best suited to certain uses. Possibly some dart point styles were modified to suit the strength and carry of the bow, and this circumstance would have varied locally according to the type of bow in use. Among various tribes the bow itself ranged from a very simple and weak form to the powerful sinew-backed varieties.

Be this as it may, there is also a very decided chronological distinction between "bird points" and the heavier dart points. The true arrow points with their light construction definitely appear at a relatively late time in all sections of the country. In Texas, as well as to the west, south, and east, arrow points appear in the latest horizons, along with agriulture and pottery making. This

7. "Dart" is itself a rather poor term for the atlatl missile. Some such term as "javelin" might be more appropriate. However, archaeologists are well agreed on the meaning of "dart" in the atlatl complex.

association varies in different areas but in Texas itself there is a very close (if not absolute) agreement in the appearance of arrow points, pottery, and agriculture, in all parts of the state. Dart points, on the other hand, are very numerous in the cultures which precede this general horizon, but continue to appear sporadically in the late horizons. For some reason, however, they do appear (on present evidence) to have passed out of use with the beginning of historic cultures.

In Texas archaeology, as elsewhere, it is time that more consideration be given to the possibilities of the bow-atlatl relationship and its connections with the habits and economy of the various native peoples. In a recent paper by Ray and Sayles the terminology of projectile points has been given very accurately and should be continued by other workers.⁸ They correctly use the term "arrow points" instead of the obsolete "bird points" in their latest culture periods, and "dart points" for the heavy varieties which have long been incorrectly termed "arrow points" by other workers. Ray has, in fact, been using the term "dart" for certain types of Abilene projectiles for many years.

Burial Terminology

In the various reports on Texas archaeology, burials are described by such terms as "flexed," "folded," "doubled," "sitting," "bunched," "bundle," etc. As several of these are ambiguous, it might be well to suggest that only those terms commonly accepted by American archaeologists be used. Thus "flexed" should be used for any burial placed in a horizontal position with the knees drawn up toward the abdomen. "Sitting" should not be used as synonymous with "flexed" unless the body was actually placed upright in the grave in a true sitting position, a very rare practice anywhere and probably unknown in Texas. "Bunched" has been used to describe both "flexed" and re-buried skeletons. If the bones are actually so mixed that they must have been gathered from one grave and dumped into another, the term "bundle" is the commonly accepted one, and "bunched" should not be used at all. For all

8. C. N. Ray and E. B. Sayles, "An Agreement on Abilene Region Terminology," *Bulletin of the Texas Archaeological and Paleontological Society*, vol. 13, pp. 176-176, 1941.

burials laid at length, the term "extended" has common acceptance.

"Metate" versus "Seed Slab"

Much needless confusion has been caused by the too prevalent use of the name "metate" for any kind of a grinding slab. Over vast areas of America a grinding process was used by many tribes who had no knowledge of corn growing, but who used a simple, unshaped, flat stone for a platform and any convenient stream pebble for a hand stone in order to smash and grind seeds, berries, bulbs, etc. This hand stone was used with a rotary motion, and this method of grinding was known to many American natives before agriculture and corn grinding appeared. Corn grinding, on the other hand, as practiced by the Puebloan and Mexican Indians, involved a back-and-forth motion on a fairly flat slab or one with a rectangular depression in which the mano was pushed back and forth. Such a mano was used with either one or two hands, and the slab itself was generally brought to a rectangular shape by chipping its edges.

At the Third Round Table Conference in Mexico City in the summer of 1943 it was generally agreed that the term "metate" should be applied only to the corn-grinding implement of roughly rectangular shape and a back-and-forth motion with either one or two hand mano. The simple unshaped slabs in which round or oval basins are worn with a rotary motion should, accordingly, not be called "metates" at all, but by such a term as "seed slab." Thus, of all the grinding implements found in Texas from one end to the other, true metates are known only in the west, Panhandle, and north-central parts. Moreover, they are probably confined to the relatively late horizons and reflect influence from the Puebloan Indians. This matter requires further study. The tendency to treat "metate" as synonymous with grinding is only obscuring an important archaeological problem.

It is hoped that the above notes will aid in bringing greater coordination into Texas archaeology and its relations with surrounding areas.

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A SECOND HISTORIC CADDO SITE AT NATCHITOCHES, LOUISIANA

BY C. H. WEBB

Comparatively few sites have been found in the historic Caddo territory which exhibit the association of native artifacts and European trade materials, despite the extent of this territory and the existence of trade contact with Caddo tribes for over a hundred years in the eighteenth and early nineteenth centuries. This is particularly true of historically identified sites. The obvious importance of such materials in delineating the artifact types of the historic Caddo tribes and establishing their relationships to the materials found at the hundreds of pre-historic sites in the area justifies the present report of a second Natchitoches site.

In 1935 Walker¹ described the burials and artifacts which had been discovered during construction of the Fish Hatchery on Cane River one mile below Natchitoches, Louisiana, noting that in all probability the site was that of the Natchitoches Indians during the existence of the French fort at this town, which was established in 1714. Trade beads and metal tools were found in burials with native pottery. A marked similarity was noted by Walker between the engraved Natchitoches ware and numerous vessels illustrated by Moore² from the Keno and Glendora sites on Bayou Bartholomew and the Ouachita River above Monroe, Louisiana. He states that this similarity is explained historically by Henri de Tonti's account of finding the "Ouasita" and "Nachitoches" together at the latter's village and also by La Fon's map of the Territory of Orleans in 1806, on which the old trading path from Natchitoches to the villages on the Ouachita is shown. Walker cites other historical details of the early white contacts with the Natchitoches Indians and the Doustionny, a related tribe, both of whom lived at various places on Cane and Red Rivers near Natchitoches until after 1805.

Walker quotes Dunn³ as explaining the maze of rivers and bayous in this vicinity (Plate 9) by stating that the Natchitoches island known to the early French explorers, about 50 miles long by

3 or 4 miles wide, was formed by Cane River on the west and Rigolette de Bon Dieu on the east. Originally flowing through a channel now referred to as Old River (see Plate 9) Red River cut through into Cane River about 1765 and then in 1832 broke into Rigolette de Bon Dieu, which it follows today as far as the town of Colfax.

Nicholas King's⁴ map of Red River in Louisiana, embodying the findings of the Freeman-Custis expedition of 1806, shows the main channel of the river at that time to course through the present Cane River in agreement with Dunn's statement. A north branch is shown corresponding to the Rigolette mentioned by Dunn and following the present channel of the Red River.

Walker¹ states that St. Denis described the old village of the Natchitoches as being on an island formed by the separation of the river into two branches which reunited farther downstream. No indication is given whether this island is the early "Natchitoches Island" between the present channels of Red River and Cane River or the island between Cane and Old Rivers (Red River channel before 1765). It will be noted on the map (Plate 9) that the Fish Hatchery site and the Lawton site to be described are to the west of Cane River, hence on the island between it and Old River, but not on "Natchitoches Island."

The Lawton Site

During the summer of 1944, Mr. A. G. Lawton of Natchitoches was engaged in constructing a cotton gin on his plantation situated on the west bank of Cane River, eight miles below Natchitoches, between Natchez and Bermuda (Plate 9). Excavations for the foundation struck some six or seven burials, several of which contained Indian pottery or glass beads. These were found only across the southwest corner of the gin (Plate 10, No. 1) almost paralleling the shore of Cane River and about 200 feet from the stream. Mr. Lawton states that the burials were almost in direct line, with practically all of the heads directed toward the southeast. One vessel was stated to have been alongside the chest, the others all near the heads. Several groups of beads were found, generally at the neck, although a workman states that a few were found at the wrist of one skeleton.

About ten days later I had the opportunity, through the kindness of Mr. Lawton, of being present and salvaging artifacts during further excavations for a scale platform on the northwest side of the gin, where three additional burials were found. Unfortunately the season was advanced and haste was necessary in getting the gin completed before harvesting season, hence a tractor and scraper were used in excavating for the scale pit, resulting in serious damage to the burials. When burials were struck, however, I was permitted to work out the details while grading continued elsewhere, so that a majority of the artifacts, though damaged, was saved. The skeletal material, especially the skulls, was beyond reconstruction and only gross details could be observed under the circumstances. Permission has been granted to conduct more leisurely excavations in the adjoining areas after the crops are gathered and we have hopes of securing skeletal material for study.

The burials were found at an average depth of 2 to 3 feet, within or just beneath a heavy layer of clay, which is overlaid by some 18 inches of sand, undoubtedly deposited from overflows when this stream was a main channel of Red River.

A cursory examination of the surrounding area showed no evidence of surface artifacts, although grass on the gin plot and crops in the adjacent fields interfered. It is possible that overflow sands have covered all surface materials. I am told that human bones were struck by the plow in an adjoining field and that other bones have been plowed up in a field some three or four hundred yards downstream.

Burials

The upper portion of Burial 1 (Plate 10, No. 1) had been removed during the original excavations for the gin, only a few trade beads having been found at the neck. The intact leg bones indicated the extended burial of an adult in the supine position, the head directed southeast. The right femur was markedly thickened in its upper portion, with very roughened surface, giving the appearance of a

PLATE 9

Map of the Natchitoches area, showing location of Fish Hatchery and Lawton sites.

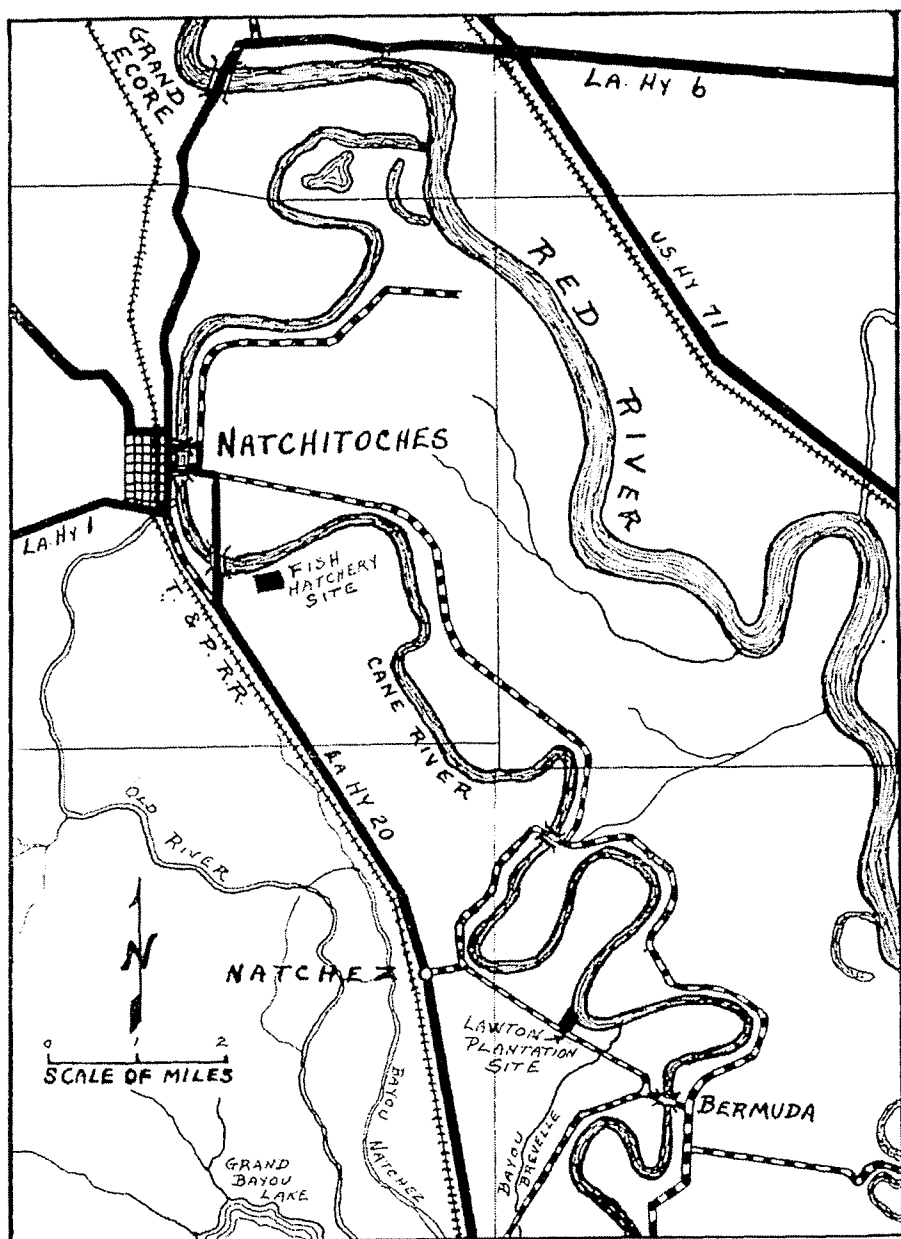


Plate 9

healed osteo-periostitis or infected fracture. The tibiae showed no evidence of syphilitic infection.

Burial 2, an adult (probably female), 62 to 64 inches in length, was about 8 feet west of the gin wall, lying supine and fully extended with the head toward the southeast. The skull was struck and badly crushed. Above and to each side of the skull were a small bottle (Plate 11, No. 2) and fragments of a bowl (Plate 11, No. 3).

Burial 3 was that of a child, apparently 3 to 4 years of age, fully extended in the supine position with the head directed northwest. A group of 12 trade beads was found at the neck and a single pottery vessel (Plate 11, No. 4) was above and to the right of the skull. The vessel had been intact but the neck was carried away by the scraper and could not be found. The bones which remained showed no evidence of disease.

Burial 4 was that of an infant, found near Burial 3, and was so badly disturbed that details of artifact placement are not definite. Fragments of two pottery vessels, both showing old breaks, were found near the skull. These were a redware bowl (Plate 11, No. 5) and the body of a bottle or jar (Plate 11, No. 6). A group of 20 beads was found at the neck.

Artifacts

It is to be noted that no objects of metal, stone or shell were found, differing from the Fish Hatchery site, where Walker¹ reports the finding of shell beads, stone arrow points and celts, metal scissors, hawkbells, bracelets and an iron spike. The limited number of burials so far uncovered at the Lawton site may account for this difference.

The beads (Plate 10, No. 2) have not been submitted to experts but none has the appearance of native beads, some being evidently glass, others possibly are of a porcelain compound. Of the 36 which I have seen, 27 are of various shades of blue, sometimes with longitudinal white stripes; 7 are white, 4 of these having stripes of various colors; and 2 are red. The cut or worn ends of the red beads show that the body is made of a very dark material with a thin red sur-

face coating. Most of the beads are round or oval, but two are oblong, 12 to 15 mm. (1-2 to 5-8 inch) in length. Diameters generally average 6 to 8 mm. (1-4 to 5-16 inch) with extremes of 2 mm. and 1 cm.

The eight pottery vessels are all shell tempered, as are four sherds which were found in the soil near a burial. The paste is generally firm or slightly brittle, with surface leaching of the shell to produce a porous or roughened appearance in some instances. Two of the bowls and one bottle are of softer paste, so that they break or suffer leaching more readily. The vessels are light, with wall thickness of 4 to 5 mm., and are comparatively small, the greatest diameter being 16 cm. (6¼ in.). Surface coloration varies from an orange tinted buff to a dark brown, except for the red slipped vessel described below.

One entire vessel and portions of two others were saved by Mr. Lawton from the first burials and were kindly loaned to me for study. The unbroken specimen (Plate 10, No. 3) is a cup, 9.2 cm. in height, 8 cm. in diameter, of firm, slightly porous ware which has a tan surface color. The base is circular and flat; the body is decorated with vertical incised lines; the narrow rim flares moderately. The short neck has a projecting rounded collar bearing two parallel rows of punctates. Vessels of similar shape, often larger, with vertical incised lines have been found at several sites in the hills bordering Red River Valley above Natchitoches, although such vessels or sherds are clay tempered and in association with a punctate-incised ware typical of these sites. Similar vessels, both shell and clay tempered, were found at the Belcher Mound site in Caddo Parish.⁵

A second vessel (Plate 10, No. 4) is represented by the basal half which is 16 cm. in diameter. The small part of the decoration present consists of parallel, curving, roughly engraved lines. It is very similar in appearance to that illustrated by Walker¹ in Plate 5 b, which has a sub-globular body, narrow neck and wide, cup-like rim.

Sufficient sherds of a third vessel (Plate 11, No. 1) were present to warrant its reconstruction. The diameter is 14.8 cm. at the lip, the height 8.7 cm. The paste is firm and very little of the shell

temper shows on the surface, which is smooth but not highly polished, and is dark brown in color. The base is circular and not flattened; the narrow rim curves outward and is separated from the body by a rounded collar. The engraved decorations cover the rim and body, the chief motif, five times repeated, being a scroll with recurved ends formed by a medially bisected band. Spaces bordering the scrolls are filled by negative discs and hatched or cross hatched triangles. The rim bears a negative meander, outlined by small arcs and also medially bisected by a spurred or dentate line. Details of the decoration appear in Plate 12, No. 2.

Vessel 1 (Plate 11, No. 2) of Burial 2 is a small bottle, 8 cm. in height, 6.5 cm. in body diameter and 3.8 cm. at the orifice. The paste is firm with fine shell tempering, the surface is pitted or vacuolated from leaching of shell particles, the surface color is orange tinted tan with black areas from differential firing. The base is small, circular and flat; the body is globular with flattened shoulders; the neck is short with rounded collar and flaring rim. Parallel lines encircle the shoulder and base, while the body surface between these lines bears a design (Plate 13, No. 1), four times repeated, of interlocking scroll bands above and below a meander, all formed by trailed lines. The interlocking scroll bands are formed by three parallel lines.

Vessel 2 (Plate 11, No. 3) of Burial 2 is an open bowl, 16 cm. in diameter at the lip and 8 cm. in height, with 3 to 4 mm. thickness of walls. The paste is inferior, being porous and badly leached, splitting easily. A few surface areas evidence a former polish. The small circular base is semi-flattened; the body is a modified hemisphere; the rim continues the outward flare of the upper body to terminate in a rolled lip. The engraved decoration, three times repeated, features a double scroll (Plate 13, No. 2) with folded ends and joined at a right angle at the vessel base. The adjacent scrolls interfit and the intervening spaces are filled by negative discs. The rim has a rectilinear stepped pattern, the steps corresponding to spaces between the body scrolls. Spurred or dentate lines bisect the feature bands on both body and rim.

Vessel 1 of Burial 3 (Plate 11, No. 4) seems to be the body of a short-necked bottle, similar to vessels from Glendora and Keno

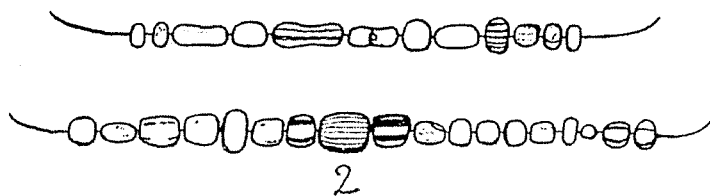
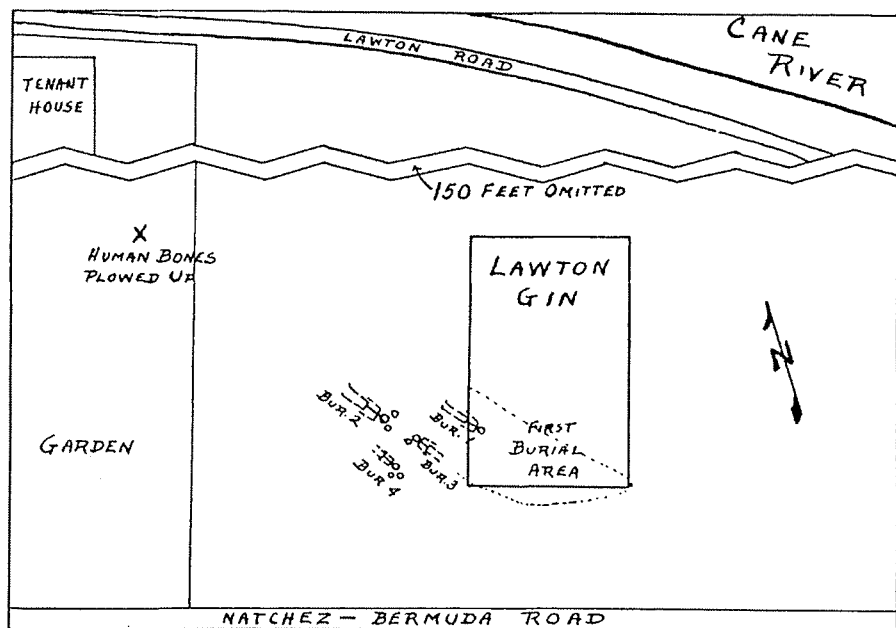
shown in Figs. 9, 10, 11, 129, 130, etc., in Moore's report,² which vessels it closely resembles in shape and decoration. It is 9.3 cm. high, 11 cm. in diameter, made of dark, shell tempered paste, 5 mm. thick, with a smooth orange-tan surface which shows a few dark areas of irregular firing. The decoration (Plate 14, No. 1) of closely spaced parallel trailed lines forms a figure repeated five times on the body, three times on the shoulder, of combined meander and interlocking scrolls, the chief element being a three line scroll. Spaces above, below and between the scrolls are filled by parallel vertical arcs.

Vessel 1 of Burial 4 (Plate 11, No. 5) is a beautiful small bowl of yellow paste covered with a bright red slip which has flaked off in some areas. The diameter is 14 cm. the height 6.8 cm. The small circular base is flat; the body semi-globular; the rim flares outward slightly and terminates in a rolled lip. The engraving shows the yellow paste through the red background, but is slightly irregular, the design being unbalanced. The chief design motif is a folded meandering band, the meanders being five times repeated around the vessel (Plate 14, No. 2). A second meander is pendant from the shoulder and a third appears on the rim, each of the three being medially bisected by a spurred line. Intervening spaces are typically filled by discs, ovals and hatched areas.

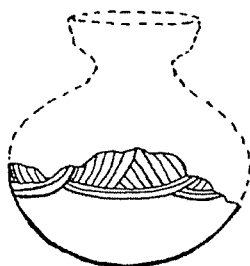
Vessel 2 of Burial 4 (Plate 11, No. 6) is the globular body of a bottle, 9.5 cm. in height and diameter. One small neck sherd shows an outward convexity, indicating the typical bulbous neck found on similar vessels at Keno and Glendora. The paste is soft with brown surface coloration, the surface smooth but not burnished. The engraved decoration (Plate 12, No. 1) is comparatively simple, a three line curving panel featuring interlocking scrolls, five times repeated, and outlined above and below by vertical or diagonal arcs.

PLATE 10

1. Sketch of Lawton site showing location of burials.
- No. 2. Trade beads from Lawton site.
- No. 3. Pottery cup, first burial group.
- No. 4. Pottery jar or bottle, first burial group, with suggested outline.



3



4

The similarities of shape, size, temper and decorative patterns between this pottery and the vessels described by Walker¹ from the Fish Hatchery Site, as well as the presence of trade materials in each instance, indicate cultural identity. The historical evidence outlined by Walker certainly justifies the presumption that they are to be attributed to the Natchitoches Indians, an historic Caddo tribe, or to the closely related Doustionny who lived along the river in this same area, remaining here even when the Natchitoches temporarily moved south to reside with the Acolapissa (Swanton⁴) and uniting with the Natchitoches in later years.

Natchitoches Pottery Types

On the basis of comparative study of the vessels from the Fish Hatchery and Lawton sites at Natchitoches and the culturally—as well as historically—affiliated Keno and Glendora sites on the Ouachita, we may safely delineate certain pottery types which are characteristic of these historic Caddo tribes. Using decorative method and design elements as the chief criterion, and vessel shape as a lesser, two types may be distinguished. In the first type, which Ford and others⁶ at Louisiana State University have called Natchitoches Negative Meander, but which Krieger⁷ and the writer prefer to call Natchitoches Engraved, may be grouped the engraved bowls, platters and bottles, featuring as typical motifs the meander and the scroll—interlocking, folded, redoubled—both usually formed by negative bands which are medially bisected by a spurred (dentate) line. These major motifs are flanked or outlined by negative discs, arcs, hatched or cross-hatched areas, the decoration covering the entire or major part of the external surface. A high percentage of the vessels has shell tempering although some vessels show absence of recognizable temper. Vessels of this type are often covered with red slip or pigment (red or white) may be inserted into the engraved lines. The major design elements may be repeated three, four or five times around the vessel.

The typical bowl is open and shallow, with moderately flaring rim, although bowls with vertical walls or vertical rims are occasionally seen. Insulating rims are rare, the one vessel of this type (Moore², Fig. 149) which appears at Keno having the characteristics of Belcher Engraved⁵ and probably representing a pre-

historic burial or trade vessel. The bottles of Natchitoches Engraved, illustrated in Plates 10, No. 4, 11 No. 6, and 12 No. 1 of this report, Plate 5 b of Walker's report¹ and Figs. 16, 17, 20, 21, 71 and 131 and Plate II of Moore's report from the Ouachita² are globular or squat, with short bulbous necks and slightly flaring rims. The several long-necked bottles from the Ouachita sites do not have characteristic decorations and are suspected of being prehistoric or trade pieces. It is certainly evident at these sites that intrusive vessels from at least the Natchez (Figs. 58, 80, 154) and Belcher (Fig. 149) types occur.

The bottles have the complicated meander and scroll patterns described for the bowls, covering most of the body surface, although the necks are undecorated. The spurred line does not appear so regularly as on the bowls. Tripod bottles (Moore Fig. 71) are rare. Effigy bottles are illustrated from Glendora (Moore, Plate I) and Keno (Moore, Plate VII), both red-slipped and the latter a tetrapod vessel. Pot shapes bearing the Natchitoches Engraved type of decoration are unusual (Moore, Fig. 65 and Plate IV). Many of the bottles from the Ouachita sites are highly polished and red filming was frequent. Such highly ornate bottles have not been found at the Natchitoches sites, but Walker¹ describes three such vessels, illustrated in articles by Beyer and Jones, found in sites between Natchitoches and Shreveport.

The second pottery type, which we call Keno Trailed, is typically a small to medium size bottle, with bulging or cylindrical neck, decorated with numerous closely placed trailed lines, featuring meanders, scrolls, concentric circles and arcs, and other curvilinear designs. Numerous examples are illustrated by Moore² from Glendora (Figs. 9, 10, 11, 14, 15, 18, 19, 22-26, 81) and Keno (Figs. 129, 130, 141). They are not illustrated by Walker in the Fish

PLATE 11

- No. 1. Natchitoches Engraved bowl, first burial group.
- No. 2. Keno Trailed bottle, Burial 2.
- No. 3. Natchitoches Engraved bowl, Burial 2.
- No. 4. Keno Trailed bottle, Burial 3.
- No. 5. Natchitoches Engraved bowl, Burial 4.
- No. 6. Natchitoches Engraved bottle, Burial 4.

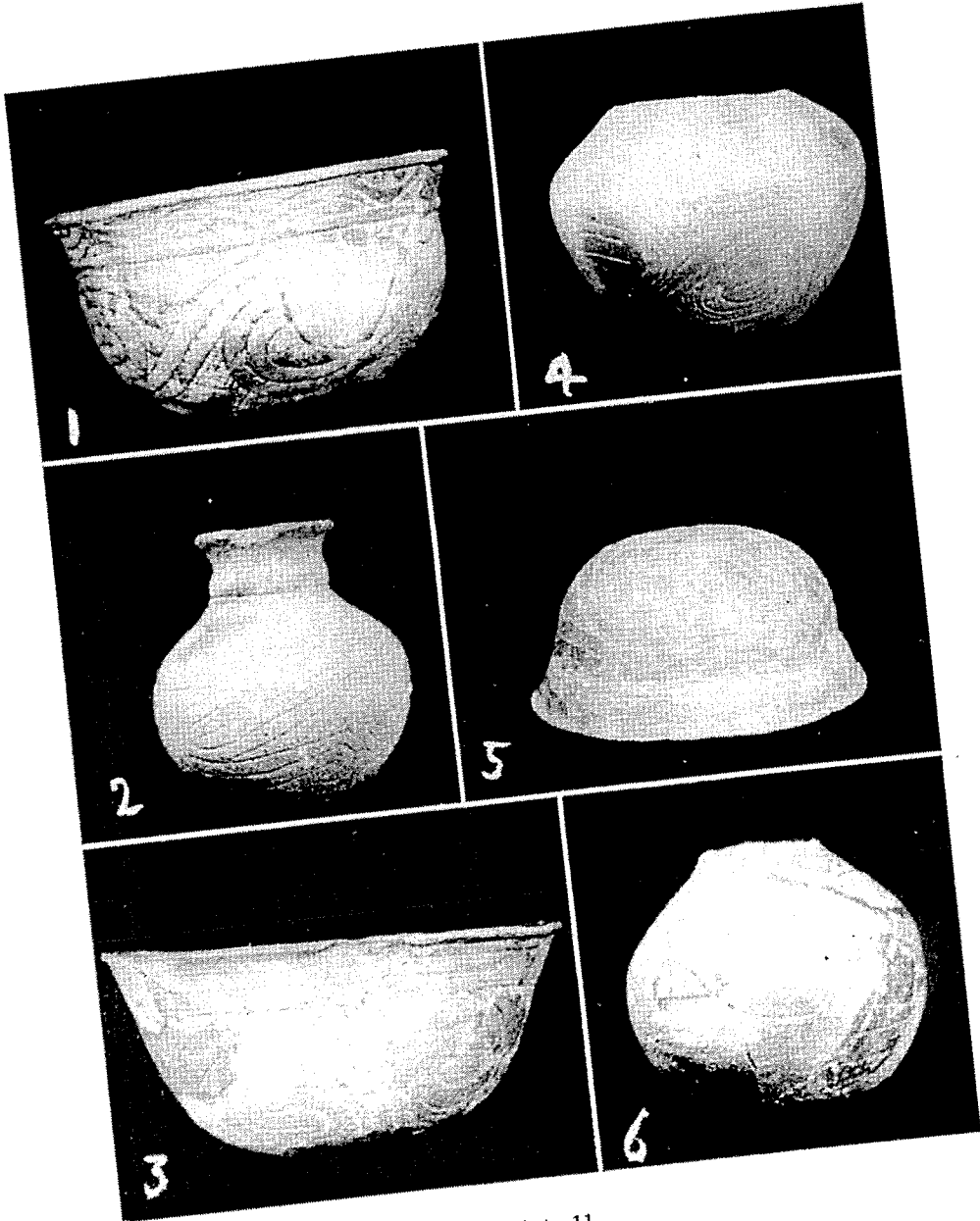


Plate 11

Hatchery report, but the two specimens from the Lawton site (Plates 11, No. 2, 11 No. 4, 13 No. 1, and 14 No. 1) establish this type at Natchitoches. Other vessel forms which have Keno Trailed designs include the open bowl (Glendora Fig. 55) and the vase (Greer site on the Arkansas River, Moore¹² Figs. 62 and 67).

Other Sites Showing Natchitoches Pottery Types

Ford¹⁰ excavated at the Allen Plantation and Wilkinson place in the western fringe of hills bordering the Red River Valley above Natchitoches. Both sites showed trade materials, either with the burials or in surface finds. Most of the decorated vessels from both sites bore incised or punctated designs, but at the Wilkinson place, Neild had previously secured the typical Natchitoches Engraved bowl illustrated by Ford¹⁰ in his *Analysis of Village Site Collections from Louisiana and Mississippi* (Fig. 17, page 92).

Dickinson⁸ described several vessels from the Clements site in Northeast Texas, where trade contact was evidenced by the presence of glass beads with the burials. Two of the vessels (Plate 19) could be classed as Natchitoches Engraved, a third has deeply trailed lines forming a geometric instead of the curvilinear designs of Keno Trailed. He quoted Jackson⁹ who described other vessels from the same site:

"The designs include sun symbols, interlocking scrolls, one swastika, raised lines, fingernail imprints and incised triangular designs. The workmanship shows a fair degree of excellence. Certain designs show a marked similarity to some from Louisiana and Arkansas, as pictured by Moore."

Dickinson states "Inasmuch as the Clements place was not a great distance from the Cadodachos settlements which Bolton locates in the vicinity of Texarkana, one would expect the pottery to be representative of the Great Caddo."

Jackson⁹ mentions six other sites in East Texas at which trade materials were found. At the Womack site on Red River, in Lamar County, numerous metal objects as well as glass beads were found. Most of the pottery was crude but two large bowls were well made. One had cross hatched triangles pendant from band lines; the other is described as having intricate interlocking scrolls between

bands, similar to a number of bowls from a prehistoric site in Harrison County, Texas.

Moore¹¹ illustrates three bottles and several bowls (Figs. 58-60, 62, 63) from the Battle Place on Red River which in shape and decoration conform to the type Natchitoches Engraved. M. P. Miroir of Texarkana has a large number of vessels from this site, all (like those illustrated by Moore) coming from burials in the fields surrounding the large mound. Most of these vessels duplicate the pottery types described by Webb and Dodd⁵ from the Belcher Mound, including Belcher Engraved, Foster Trailed-Incised, Cowhide Stamped (originally called Belcher Stamped), and Belcher Ridged. However, there are two typical Natchitoches Engraved vessels and one Natchez type (Fatherland Incised) from the same cemetery.

At the Douglas and Greer sites on the lower Arkansas River, Moore¹² illustrates Natchitoches Engraved and Keno Trailed vessels (Figs. 46, 54, 58, 59, 61-67). It is to be noted that some of the vessel shapes are atypical, and that two bowls (Figs. 69 and 70) have the shape of Belcher Engraved bowls, and have no body decoration, although the rim designs suggest Natchitoches Engraved. One or two other vessels from these sites represent types found at the Belcher Mound. Trade materials appear at the Douglas site and probably at Greer.

Hodges and Hodges¹³ recently described pottery from the Watermelon Island site on Ouachita River in Hot Spring County, Arkansas. Two mounds and a large number of village sites on the 1,100 acre island have afforded pottery of numerous types, but the authors state "The Caddoan complex predominates." From burials on the village sites they secured a number of vessels, some of which they describe as having typical Natchitoches or Glendora decorations, while the descriptions of other vessels tallies with several types described by Dodd and myself⁵ from the Belcher site (Belcher Engraved bottles and bowls, Cowhide (formerly Belcher) Stamped and Foster Trailed-Incised). They state that no trade objects have been found on the island.

Krieger⁷ states that the A. J. Hatchel mound on Red River just west of Texarkana, entirely free of trade materials, had one in-

trusive burial with vessels similar to Natchitoches Engraved, and 50 sherds from the topmost level which were classified as Natchitoches Engraved, Keno Trailed and Menard Punctate. The latter is a type which sometimes is found with Natchitoches Engraved and Keno Trailed and is illustrated in Figs. 14, 18, of Moore's¹² Arkansas River report and in Figs. 61 and 68 of his Ouachita report.² Krieger states that these findings indicate a brief occupation of the Hatchel site by protohistoric Caddo of the Glendora Focus (the classificatory name under which he groups Natchitoches, the two Ouachita sites and others with identical materials). In his opinion the Hatchel site could quite possibly have been the upper Nasoni village and tribe shown by Swanton⁴ (1942, Fig. 1) in approximately the same position on Red River.

The prehistoric pottery at the Belcher Mound site in Caddo Parish, Louisiana, (Webb and Dodd⁵) shows interesting relationships to the later Natchitoches and Glendora wares. The engraved and trailed types at Belcher rarely have shell temper, more frequently having clay, tufa or no recognizable temper at all. The paste is more homogeneous and generally darker in color than the Natchitoches wares. Among thirty odd bottle forms, two small specimens have pedestal bases, short tubular necks and a smoothly trailed curvilinear design typical of Keno Trailed (see Webb and Dodd, Plate 17¹); all of the others have long necks, and globular or sub-globular bodies with engraved designs. Three of the bottles have scroll or meander designs with spurred lines and negative discs, suggestive but not typical of the Glendora bottle designs. Of the five prevalent bowl types, two (formerly part of Belcher Engraved, but now separated as Taylor Engraved as also is the type shown in Plate 15, 4) have inslanting rims which are decorated with scroll bands or meanders, outlined by negative discs and sometimes by cross hatched spaces (Webb and Dodd, Plate 15, 2 and 3). Most of these vessels have undecorated body surfaces, but three show decoration with trailed concentric circle or spiral motifs. Shell temper is absent in these Belcher carinated bowls and the walls are very thin, often 2 to 3 mm. thick. Spurred line bisection of the scroll bands is frequent and white or red pigment is usually inserted into the lines. One vessel is red filmed. One small flat bowl, differing from any of the others, has a three line interlocking

scroll design covering most of the body surface outlined by punctates. It is clay tempered, fired black and has white pigment in the lines. One would class it definitely as Natchitoches Engraved.

Two tall jars (Webb and Dodd, Plate 15, 6) have high vertical rims decorated with engraved interlocking scrolls, outlined by negative discs. The shapes are entirely atypical of Natchitoches Engraved, but the decorative features are very similar. This vessel is also listed at present as Taylor Engraved.

There is a conceivable relationship between Foster Trailed-Incised vessels (Webb and Dodd, Plate 17, 2) and Keno Trailed vessels. The vessel shapes are entirely different, but there is a similar conception of parallel curvilinear trailed lines covering a major part of the vessel, with the design motifs repeated 3, 4 or 5 times around the vessel.

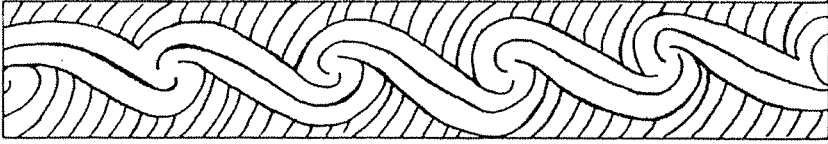
We may conclude, then, that the Belcher Mound affords one typical Natchitoches Engraved and two Keno Trailed vessels (clay tempered) and shows numerous other possible relationships to or influences on the later Natchitoches-Ouachita types.

Discussion

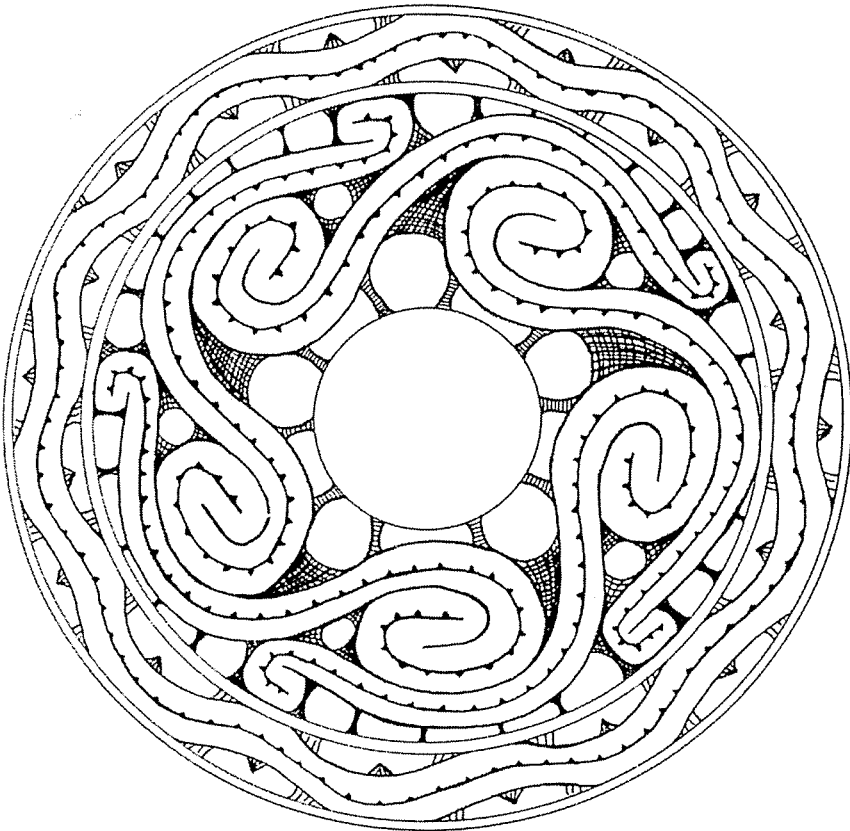
Considerable progress has been made in the past few years toward bringing some order out of the welter of confusion concerning the artifacts, and especially pottery, found in the area inhabited by the historic Southern Caddoan tribes, which covers northwest Louisiana, southwest Arkansas, east Texas and portions of Oklahoma. Until a few years ago everything from this area was likely to be ascribed to the Caddo Indians, with little areal or temporal discrimination. The chronological studies of Ford¹⁰, 14 and his associates at Louisiana State University were of considerable help, but they primarily involved central Louisiana and Mississippi, and only a few north Louisiana sites were considered. Lemley¹⁵ and Lemley and Dickinson¹⁶ first gave definite indication of a Pre-Caddo culture (later identified as Coles Creek) at the

PLATE 12

- No. 1. Design from Natchitoches Engraved bottle, Burial 4.
- No. 2. Design Natchitoches Engraved bowl, first group.



1



2

Crenshaw Mound site on Red River in Arkansas, and later identified Marksville and Coles Creek cultures at the Kirkham place in Clark County, Arkansas. Goldschmidt¹⁷ had previously suggested a chronological sequence of Caddo pottery types in northeast Texas on the basis of differences in pottery types, burial customs and the fortuitous finding of an intrusive burial pit which transected a previous placement.

Since this time excavations have been conducted by the Universities of Texas and Oklahoma in these states, some others under government projects and others by individuals in the four state area. Conferences and exchange visits helped to clarify interrelated problems. Krieger⁷ of the University of Texas, after study of the very large collection at this institution, field notes of archaeological projects especially at the Hatchel and Davis sites, visits and conferences in each of the related areas, has recently suggested a classification based on the McKern System, to be used as a basis for further study and clarification. It has been my privilege to consult with him on a number of occasions, particularly concerning the classification of sites and typology of artifacts from northwest Louisiana, as well as to visit the major collections of the four state area, and it is my opinion that his summary will be immensely valuable to future workers.

Krieger establishes two aspects, the earlier Gibson and the later Fulton. The Gibson Aspect includes the Spiro Focus, of which components besides the Spiro Mound are present in six Oklahoma and two northeast Texas counties; the Haley Focus, components of which include the Haley and one component of the Crenshaw Mound on Red River in Arkansas (Moore¹¹ and Lemley¹⁵), stage I of the Hatchel Mound on Red River west of Texarkana and the Mineral Springs, Washington and Site 1 of Ozan, described by Harrington¹⁸; the Gahagan Focus, including the Gahagan Mound (Moore¹¹ Webb and Dodd¹⁹) in Red River Parish, Louisiana, and possibly smaller sites in the same area; the Alto Focus, including the Davis Mound site in Cherokee County and several other sites in McLennan, Nacogdoches, Angelina and San Augustine Counties, Texas; the Sanders Focus, including the T. M. Sanders site in Lamar

County and other sites in Van Zandt, Hopkins and Wood Counties, Texas.

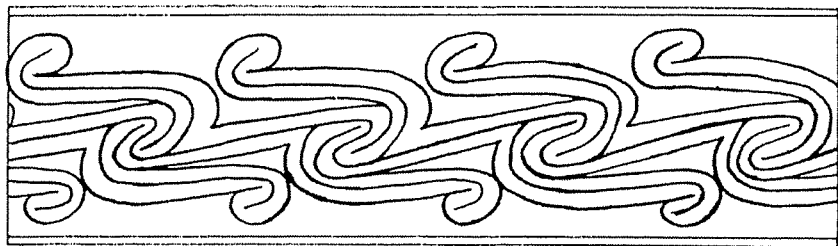
To a varying degree in the different foci, the Gibson Aspect is reported by Krieger to exhibit such traits as: construction of platform tumuli, more frequently rectangular; burial tumuli; burial complex of multiple burials, often in very large pits, with large group offerings along walls or in corners of pits; pottery with clay, sand or bone (no shell) temper, including fine line engraving of polished vessels, curvilinear incised wares, varying plain or punctated wares, square-bottomed vessels and frequent evidence of Coles Creek as a precedent, accompanying or influencing pottery type; long stemmed pottery pipes; effigy pipes of stone or pottery; carved or incised conch shell dippers and gorgets; copper plaques, ear spools, masks or beads; ear spools of shell, wood, pottery or stone; spatulate celts; quartz crystals and galena nodules; white sandstone hones; finely made bone pins and awls; Copena type blades; small (arrow) points more common than larger (dart) points.

The Fulton Aspect as outlined by Krieger, includes the Texarkana Focus, with components at stage II of the Hatchel Mound, nine others in Bowie, Cass, Titus, Franklin and Red River counties in Northeast Texas and the Ozan sites 11 and 15 described by Harrington¹⁸; the Belcher Focus, including also the McClure, Friday and Foster mound sites on Red River in Arkansas (Moore¹¹), one component each at the Battle and Crenshaw sites in the same area, and one component of the H. R. Taylor, Cash and J. M. Riley sites in East Texas; the Titus Focus, including eleven sites in Titus, Morris and surrounding counties in Northeast Texas; the Frankston Focus, prehistoric and historic Asinai, in a large number of sites in Anderson, Cherokee, Nacogdoches and surrounding counties in central east Texas; the Glendora Focus, including Glendora, Keno, Natchitoches, and the last occupational component at Battle, Greer and Douglas sites in Arkansas, Clements, Hunt and Womack sites

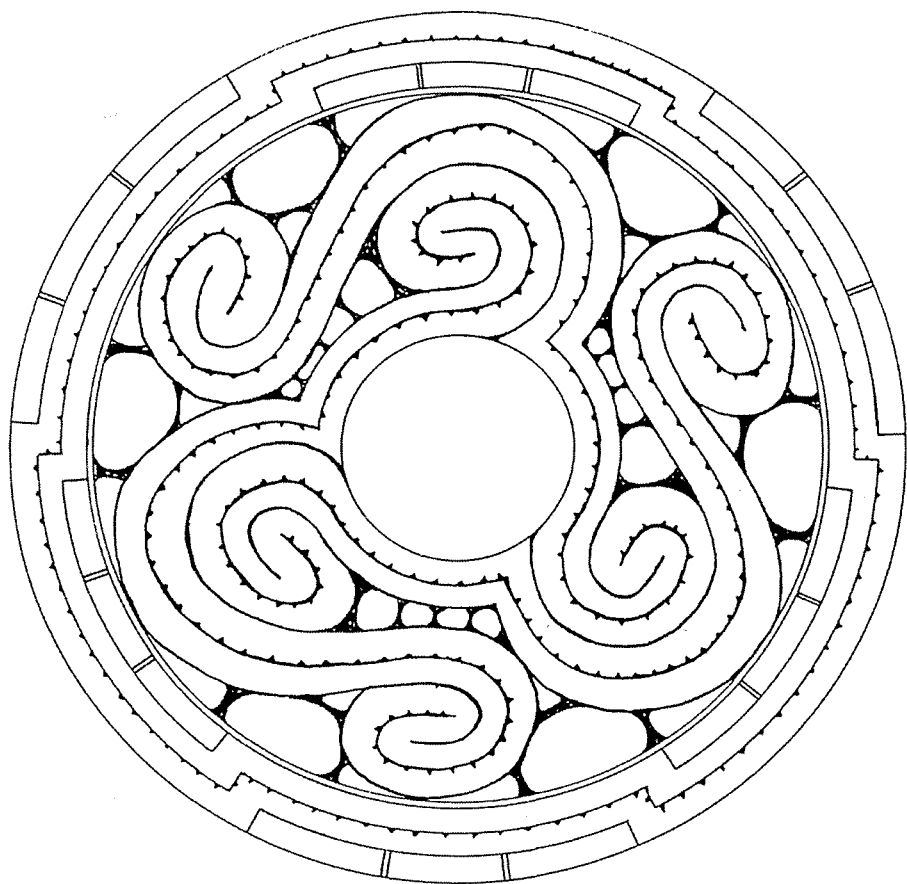
PLATE 13

No. 1. Design from Keno Trailed bottle, Burial 2.

No. 2. Design from Natchitoches Engraved bowl, Burial 2.



1



2

in East Texas. Suggested as probable additional foci in the aspect, although not well delineated as yet, are the McCurtain, in southeastern Oklahoma, and the Bossier, in northwest Louisiana and extreme east Texas (hillside sites containing incised, punctated and a few engraved pottery types).

Traits which in varying degree characterize the Fulton Aspect sites are: rare construction of tumuli; use of preexisting tumuli in some instances; burial complex of single extended burials with vessels around head, shoulders and occasionally around legs; pottery showing increasing frequency of shell tempering and red filming, numerous types of engraved, trailed, incised, punctated and brushed wares; square-bottomed vessels rare or absent; rattle bowls (hollow knobs) and effigies on rims in the pottery of most foci; scroll design motifs in all except Frankston Focus; design predominantly repeated four times; elbow pottery pipes; conch shell and mussel beads; brown sandstone hones; spall scrapers with edge retouch; perforated bear and canis teeth; small (arrow) points more prevalent than large (dart) points; circular house patterns with grouped inner posts and projecting entrance-way (not invariable).

Krieger estimates that the Gibson Aspect existed approximately between 1400 and 1540 A. D., contemporaneous with the latter part of Ford and Willey's¹⁴ Temple Mound I (Coles Creek) period, while the Fulton aspect covered the period from 1540 to the historic era. The Titus, McCurtain, Texarkana and Belcher Foci would occupy the earlier part of this period, intermediate between the Gibson Aspect and the protohistoric-historic Caddo groups of the Glendora Focus. The Frankston Focus would also reach the historic era as the Asinai tribes of east Texas.

While granting that the Fulton Aspect represents prehistoric and historic Caddo tribes in a continuous physical and cultural sequence, Krieger questions the backward extension of such sequence to include the Gibson Aspect peoples as remote physical and linguistic ancestors of the Caddos, despite evidences of continuity in the potteries.

With respect to the Glendora Focus, he states "The origins of Glendora Focus pottery, omitting the filming and shell temper features, apparently are to be found in the wares of the prehistoric

Belcher and Titus Foci. The typical meandering band of Natchitoches Engraved, which doubles back on itself four times around the vessel and is flanked with discs or cross hatched areas, seem to have been anticipated in the four-times repeated scrolls of Ripley and Taylor Engraved. Individual vessels of Glendora pottery are sometimes difficult to distinguish from specimens of Taylor Engraved and certain Belcher site vessels."

Historical evidence has recently appeared which more definitely established the Belcher Focus sites as prehistoric Caddo sites. Swanton's⁴ valuable contribution of source material on the History and Ethnology of the Caddo Indians (page 79) quotes the records of the Freeman-Custis expedition of 1806, which with Caddo Indian guides, proceeded up Red River until turned back by Spaniards above the great bend (Fulton).

"On the evening of the 19th they passed a beautiful prairie, on the north-east side of the river, 125 miles* from the Coashutta Village. This prairie was the site of an old Caddo village, deserted by that nation in consequence of a surprise, and the massacre of the greatest part of the inhabitants, by the Osage Indians. The Caddos with the exploring party, expressed a wish to visit this place when they were approaching it; and shewed a remarkable hill in its rear, on which their old chiefs used frequently to meet in council. . . . This remarkable mount or hill stands on a level plain about two miles from the river, having the prairie on which the Caddo Village stood in front, or between it and the river. It is about two miles in length, 250 or 300 feet in elevation, very narrow at the top, in many places not exceeding two or three paces, and so steep, that it is with difficulty it can be ascended. . . . This hill is an irregular mass of iron colored porous rock, in which there are a great number of small round pebbles. . . . In front of this mount lies a beautiful and rich meadow, extending from its base to the river and downwards for about two miles. It is interspersed with small clumps of trees and has a small pond or lake in its centre. Around and near to this pond, are to be seen the vestiges of the Caddo habitations; it was the largest of their villages and their

*By river travel, not direct.

cultivated fields extended for five or six miles from it in every direction."

The site is marked on the Nicholas King map reproduced by Swanton and checking with Moore's¹¹ map of sites visited on the Red River showed it to be in the vicinity of the Foster, Moore and Dooley Ferry sites. In company with Mr. M. P. Miroir of Texarkana, who has collected from this area of Red River for years, I went over this region last year, inquiring of local residents as to such an unusual hill. It was readily found, being a local landmark, and corresponds to the description given by the expedition in all respects except as to height, which was somewhat exaggerated, as often occurred in the early narratives. It is the only hill in this region presenting an unbroken front of two miles on the valley; I can attest to its steepness, having climbed it, and from the narrow crest one has an unbroken view of the valley for miles.

In front of the hill is an old river cutoff, almost silted in, which must be the lake referred to (the only type of lake which occurs naturally in the Red River Valley) and at the junction of this old river and the present river channel, two miles from the hill, is the Foster mound site with extensive surface finds. A limited search by us and statements by local residents indicate the absence of other sites in this immediate vicinity. This would reasonably identify Foster site (a pure Belcher Focus component) as the deserted Caddo village described in the Freeman-Custis report.

The Belcher Focus also, it seems to me, serves to bridge the gap back to the Gibson Aspect in a line of cultural continuity, as we see in this focus a carry over of distinctive Gibson cultural traits: mound building; multiple burials in large or small pits; piling of artifacts in the corners of pits; pearl beads; the use of copper (limited to covering of ear plugs); large stone ear plugs; engraved conch shell cups; carved shell gorgets; socketed antler-tip or bone projectile points. These, with the obvious evidences of relationships in ceramics, indicate a more gradual and progressive transition of culture than we would anticipate from the sudden influx of new peoples.

Conclusions

A second historic site near Natchitoches may be added to the previously described Fish Hatchery site, to the Glendora and Keno sites on the Ouachita River and to the final component at the Battle, Greer, Douglas and Watermelon Island sites in Arkansas and the Clements, Hunt and Womack sites in Texas to constitute the Glendora Focus of historic or protohistoric Caddo sites. The typical culture traits which distinguish this focus are: absence of mound construction; residence directly on or near major streams in fertile valleys; presence of trade artifacts in most instances; single burials, extended in the supine position; pottery placed by head or upper body; head deformation; pottery types include Natchitoches Engraved, Keno Trailed and possibly Menard Punctate Banded; intrusions include Natchez (Fatherland 3-lined Incised), Belcher Engraved or Taylor Engraved; shell temper and red slip frequent; diminishing frequency or absence of stone artifacts. The Caddo tribes represented by this focus are thought to be derived directly from those whose prehistoric remains constitute the Belcher and Titus Foci and possibly others of the Fulton Aspect. Relationship with the more distant (culturally and temporally) Gibson Aspect cultures is less evident, but may have occurred through those of the Belcher Focus.

The Children's Clinic,
1560 Line Ave.,
Shreveport, La.

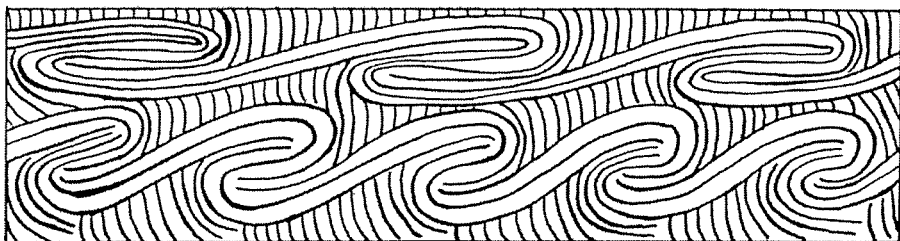
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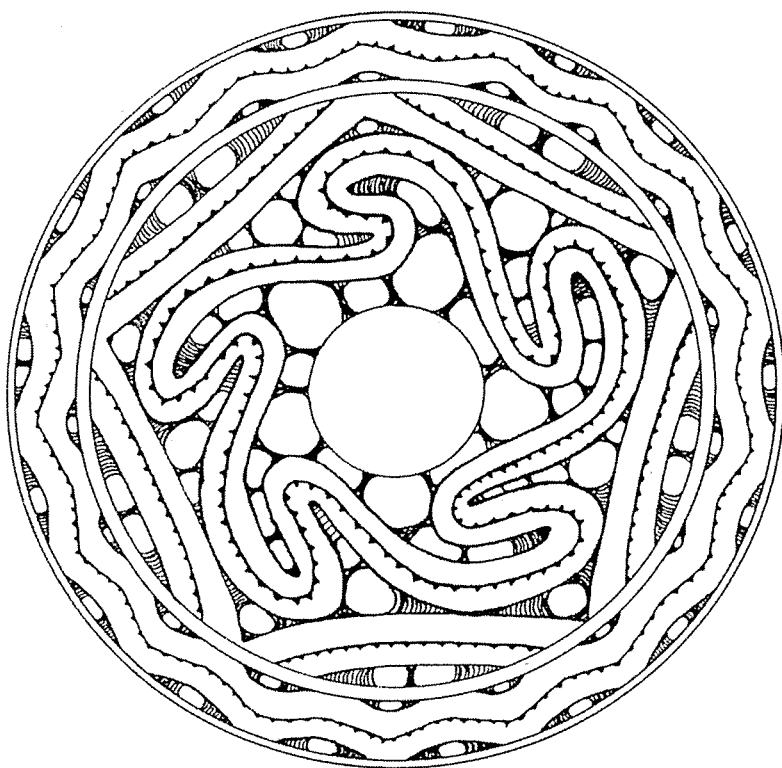
PLATE 14

No. 1. Design from Keno Trailed bottle, Burial 3.

No. 2. Design from Natchitoches Engraved bowl, Burial 4.



1



2

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BONE IMPLEMENT BURIAL, COLLIN COUNTY, TEXAS

By R. K. HARRIS

While on a field trip to the upper part of Pilot Creek in May, 1942, the writer noticed the end of a bone protruding above the surface. Pilot Creek had just been out of its banks and had washed the soil down to plow level. On reaching down to pick up the bone, it was found that it would not move because of being embedded in hard earth which had not been disturbed by cultivation. Investigation proved the bone was part of a group of eight digging implements belonging to a burial.

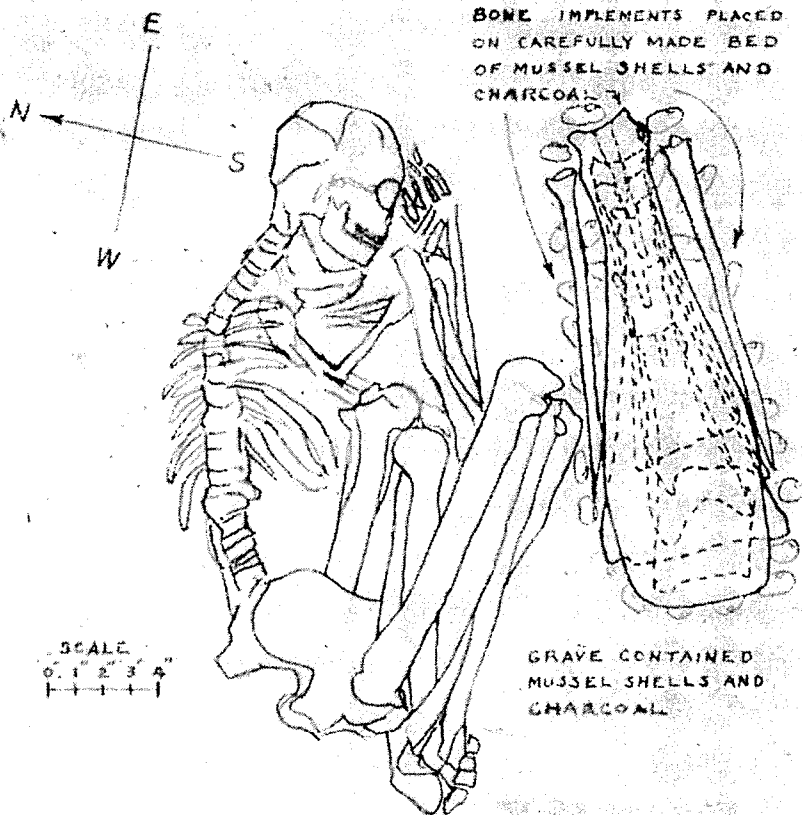
Description of Site

This village site is located on the west side of Pilot Creek, about eight miles above the junction of Pilot Creek and East Fork of the Trinity River. It is located on a small rise covering about five acres of land. Flint, mussel shells, and bone debris indicates that the site was occupied over a long period of time. In places, evidence of camp debris extends to a depth of two feet.

Many fine projectile points, and scrapers have been found over the surface of the site. They are of the same types as found in all East Fork pottery sites. Several nice bone awls and bone beads have been found. There are two peculiar facts concerning this site which were also noticed at the Ragland Site, situated about 20 miles down East Fork of the Trinity. (The Ragland site was excavated in January and February, 1942, by members of the Dallas Archaeological Society). The pottery sherds, which were found at this site, and at the Ragland site, run about 95 per cent plain undecorated sherds, and are heavily shell tempered. At both sites pottery is scarce, while at other East Fork pottery sites pottery is more plentiful and runs about 40 to 50 per cent decorated. Bone work at each of these two sites is very plentiful, while at other East

PLATE 15

Diagram of burial showing skeleton in flexed position. This burial contained eight large bison scapulae bone implements.



BURIAL DIAGRAM
P.C.B. 1 COLLIN COUNTY

Fork pottery sites it is found, but is scarce. These two sites are different from other East Fork pottery sites, and probably are related to each other. Further work at this site probably will show a still closer relation to the Ragland site.

Burial

Many burials have been plowed into by the farmer who cultivates the land. The writer has observed several of these and all have been buried in flexed position with no burial offerings. One burial with shell beads has been reported from this site, but the writer has been unable to interview the person who did the excavation. Upon uncovering this burial it was found that the skeleton was in flexed position, lying on the left side; the head was to the east and the hands were covering the face. Throughout the grave were many mussel shells and fragments of charcoal. The burial offering was placed at the knees of the skeleton. In the burial construction first a carefully made bed of mussel shells and ashes was built. Then the eight bone implements were arranged on the bed of shells and ashes. Of all the burials the writer has excavated on East Fork, this one seems to have been the most carefully planned of any. (See Plate 15)

The bone implements were placed in the following manner: Plate 16, No. 1 (the discovery piece) was on top; then five were underneath this one in the following order, Plate 16, Nos. 2, 8, 5, 6, and 7. Then one (No. 4, Plate 16) was placed on edge on the north side and one (No. 3, Plate 16) was placed on edge on the south side of the others. (See burial diagram, Plate 15).

Description of Bone Implements

All eight implements found with this burial were made from scapulae of the bison. They are of two types: one type was made to be used in the hand unhafted, and the other has a hole worked in the top so that a handle could be inserted.

Type I—Unhafted

Of the eight implements, two are of this type. They are plain at the top and were probably used in the hand. Plate 16, Nos. 3 and 4. No. 3 is $12\frac{3}{4}$ inches long and 5 inches wide at the cutting edge.

No. 4 is $13\frac{1}{4}$ inches long and 5 inches wide at the cutting edge. Both are well polished from use.

Type II—Hafted

Of the eight implements, six are of this type. Each one has a nice hole worked in the top end. Plate 16, Nos. 1, 2, 5, 6, 7, and 8.

The implement shown on Plate 16, No. 1 is 18 inches long and $4\frac{3}{4}$ inches wide at cutting edge. The hafting hole is 1 inch in diameter and $3\frac{1}{2}$ inches deep. No. 2 is $13\frac{1}{2}$ inches long and 6 inches wide at the cutting edge. The hafting hole is $1\frac{1}{2}$ inch in diameter and $3\frac{1}{2}$ inches deep. The hole was broken out on the back side and was used after the break occurred as a hand implement. Plate 16, No. 5 is $12\frac{1}{4}$ inches long and $4\frac{1}{2}$ inches wide at the cutting edge. The hafting hole is 1 inch in diameter and 3 inches deep. Figure 6 is $10\frac{1}{4}$ inches long and 4 inches wide at the cutting edge. The hafting hole is 1 inch in diameter and $2\frac{1}{2}$ inches deep. As may be seen in Plate 16, this implement has a small piece broken off of the top. This break leaves part of the hafting hole visible. No. 7 is 10 inches long and 4 inches wide at the cutting edge. The hafting hole is $\frac{3}{4}$ inches in diameter and 2 inches deep. No. 8 is 11 inches long and $4\frac{1}{2}$ inches wide at the cutting edge. The hafting hole is $1\frac{1}{2}$ inches in diameter and 3 inches deep. The hole was broken out on the back side and was used as a hand implement after the break occurred. All six of this type are well polished from use.

The method of making the hafting hole on all six is plainly visible. Fire (probably live coals) was used to burn through the solid part of the bone. After this was burned through, the spongy part of the bone was chipped away until a nice smooth hole was made to take the handle.

9024 Roanoak Street,
Dallas 18, Texas.
August 1, 1944.

PLATE 16

This plate shows photographs of eight large bone implements made from bison scapulae.

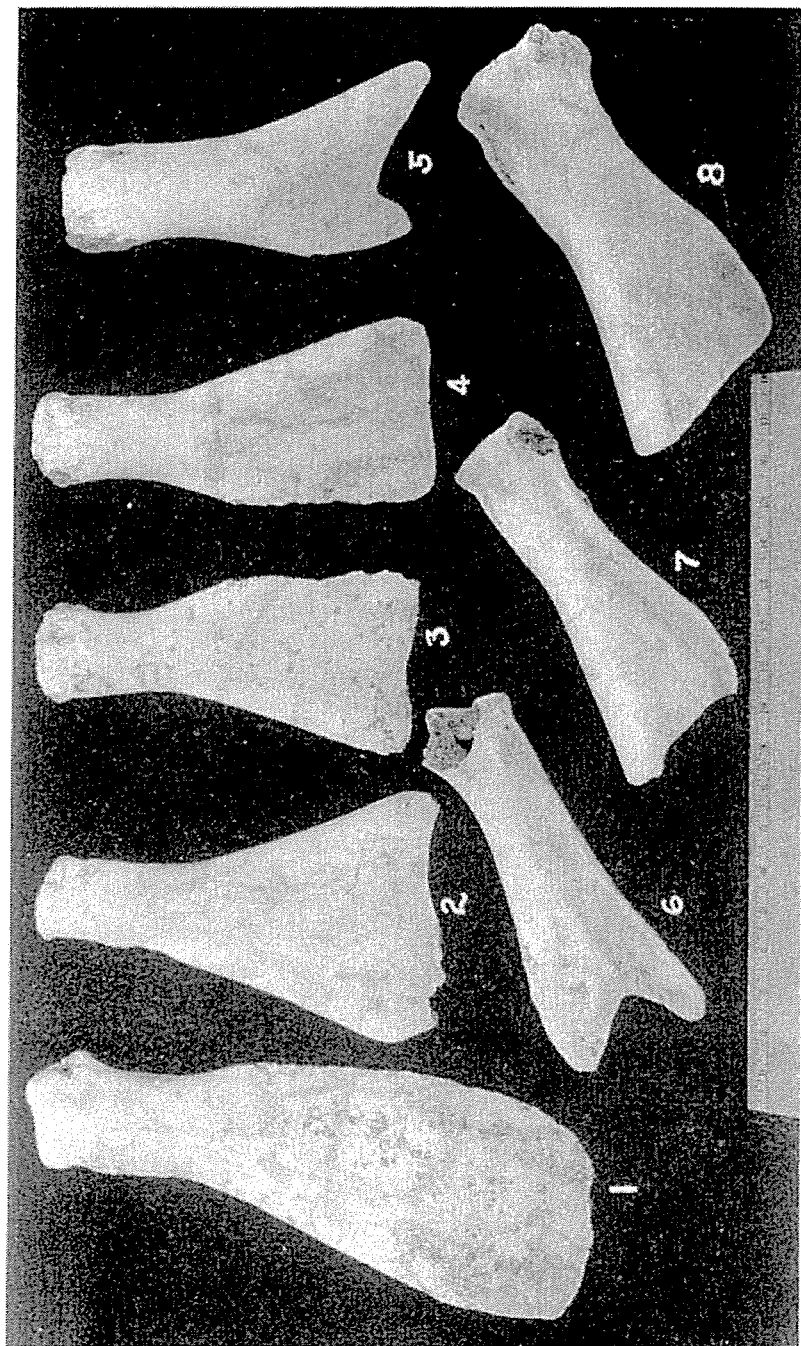


Plate 16

BOAT-SHAPED OBJECTS FROM VAL VERDE AND BOSQUE COUNTIES, TEXAS

By CARL CHELF

In 1939, at the suggestion of Dr. E. H. Sellards, Director of Texas Memorial Museum at Austin, a small party was sent to the region of the lower Pecos River for the purpose of excavating one or more small rock shelters. Through the courtesy of Mr. Jess Cox permission was granted to explore his ranch on the Pecos River in an area north of the town of Langtry. One small shelter was located and completely excavated and a long stretch of the river was scouted. In searching the thick and scattered refuse heaps located along the lower edges of the limestone cliffs which are hardly above the present stream level, a boat-shaped stone object was found on the surface. As a surface find, its association with a definite focus, whether intrusive or not, is not known. Surface artifacts in the site appear to represent projectile points of both the Pecos River and Chisos foci.¹

The second specimen described in this paper is from Bosque County, Texas, and is from the Jesse James Howard collection. Both specimens have been found in recent years and represent finds in counties in which boat-shaped stones or atlatl weights were not known at the time of publication of Patterson's² monograph on boat-shaped objects of the Gulf Southwest States.

Terminology

In an attempt to use a terminology in describing boat-shaped objects which is in keeping with the evidence which has accumulated in recent years, the normal position or functional orientation of the stone should be considered. In this regard, it will be apparent that the writer has essentially reversed the portion of Patterson's² terminology in which he terms the plane or flat side the base and the opposite the convex surface. On the basis of proper orientation or position of the stone with respect to the under side of the atlatl it appears that the flat or plane side would be regarded as the upper or top surface and the convex surface the bottom or

lower surface. This is also in general agreement with the manner in which the stones are oriented in many publications.

Val Verde County Stone

This is a well polished specimen made of a green and white banded lime silicate rock. The narrow white bands are calcium carbonate marble and the wider dull green bands are composed of vesuvianite. The stone is a metamorphic rock and could have come from one of the several pre-cambrian areas of Texas or possibly from some similar area outside of Texas. The base or plane view is sub-quadrate or roughly elliptical in outline. A side view is an isosceles triangle, base upward, with its ends truncated at right angles to the base of the triangle. The upper or plane side is slightly concave but the concavity is not pronounced. The stone has a pronounced groove that passes around it at right angles to the long axis. This groove is cut around the base and both sides but does not traverse the upper or plane side. This feature indicates that the groove was cut in the object to facilitate its attachment to some other object.

It is 2 inches in length, 1 inch wide at the center or widest point, and 15-16 of an inch high.

Bosque County Stone

This is a skillfully made boat-shaped object and suggests the name boatstone. The upper surface has been carved into a sym-

PLATE 17

Drawings of boat shaped objects from Val Verde and Bosque Counties, Texas.

Val Verde County: 1a. Plane or upper surface. There is only a faint suggestion of a trough.

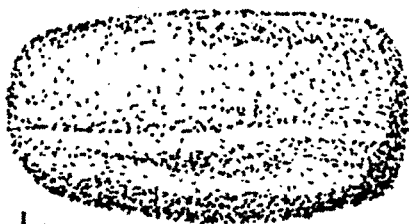
1b. Side view showing 3-4 notch or groove.

1c. Convex or base view showing notch or groove.

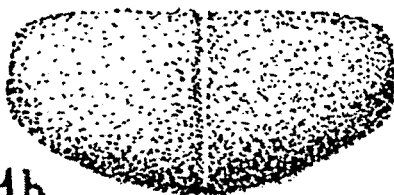
Bosque County: 1a. Plane or upper surface. Boat-like appearance is evident.

1b. Side view.

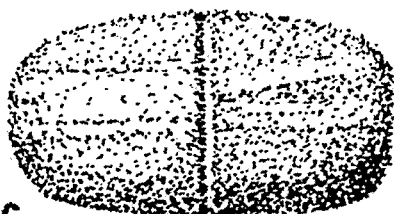
1c. Convex or base view.



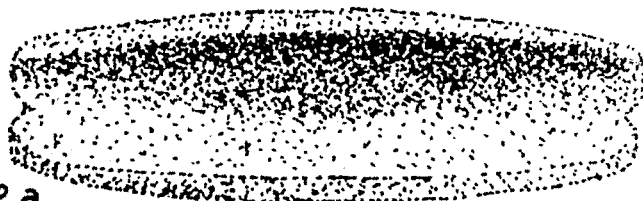
1a



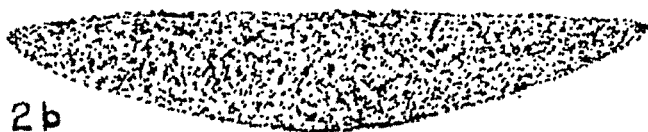
1b



1c



2a



2b



2c

metrically rounded trough. The ends are gently notched. The sides are almost vertical and the base is convex and flat. The material is a close-grained travertine (calcium carbonate) or algal limestone.

The specimen is $3\frac{1}{8}$ inches in length, 15-16 of an inch wide at the center or widest point, and $\frac{1}{2}$ inch high. The trough is $\frac{1}{4}$ of an inch deep at the center of the stone.

Atlatl Weights

Evidence accumulates to show that the distribution of the atlatl in the Americas was very widespread at one time. Indeed, it varied a great deal in form although the basic principle remained the same. In recent years a great deal of the mystery surrounding many of the problematical stone objects such as boatstones, butterfly or banner-stones, prismatic stones, and bar weights, has been cleared due to careful observation and new discoveries. The connection between the problematical forms named and the atlatl has become apparent.

As early as 1893 Otis Mason³ described some atlatls from the Southwest and stated that one had several objects attached to it by wrappings.

In 1898 Starr⁴ described an additional atlatl from Utah that had a luckstone or charm attached to it. The "charm" was of translucent quartz, flat on the atlatl contact side and convex on the opposite side.

In 1919 Kidder and Guernsey⁵ described additional specimens from their excavations in Arizona. In some cases the stones were attached to the atlatl. In this article they stated that they believed the stones were intended to serve as weights to improve the function of the atlatl. Their work⁶ described in a later publication (1921) is even more interesting. Two atlatls were found which had three stones each attached to their backs.

In 1931 Guernsey⁷ described another specimen that had three objects attached to it. Two of the three could be called weights.

In 1933 George Martin⁸ described an object from a cave in Val Verde County which he called, and it appears rightly so, the spur of an atlatl. His was the first specimen of this type found in Texas.

In 1937 Patterson² wrote his monograph on boat-shaped objects from the Gulf Southwest States. This is an exhaustive study of all of the available literature and artifacts up to that date. His thorough study led him to the conclusion that such objects were in most instances attached to the underside of the atlatl but he stated that "There is no way of knowing whether this practice had as its object a purely utilitarian purpose, or also carried with it the idea of luck or charm."

In 1939 Fenenga and Wheat⁹ described the first atlatl that has been found in Texas with a stone attached to it.

In the same year Webb and Haag¹⁰ published the results of careful excavation and study of some graves in Kentucky which had atlatl spurs in them. Of extreme importance, however, was the position of the spurs with respect to the assorted shaped weights in the graves. Their work showed that the drilled weights were mounted on the atlatl shaft with the spur. Their reconstructions are noteworthy.

Purpose of Weights

This point is not clear. That there is some doubt concerning the actual usefulness of the stones of various shapes and weights is reflected in the writings of several authors. They are considered to be strictly utilitarian weights by some, and others look to them as both a balancing weight and charm. To quote Patterson:²

"In the judgment of the writer, however, the general import of these stones in the American Indian life is that they were used primarily as weight stones bound to atlatls to give the weapon additional weight and efficiency, and that in some instances, at least, the motive of charm may be assumed."

With the evidence that has accumulated in the past few years, a study of good copies of some of the specimens of various types would, in all probability, aid in settling the question from the standpoint of actual or intended benefit. The employment of

stone attachments to at least two very different types of atlatls should indicate in experiments whether the stone would actually improve the efficiency or performance of the weapon.

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SUGGESTION FOR IDENTIFICATION OF CERTAIN MID-OUACHITA POTTERY AS CAHINNIO CADDO

BY T. L. AND MRS. HODGES

Within the tentative confines of the Caddo¹-linguistic family of the Lower Mississippi Valley Indians, the area of the Mid-Ouachita² basin has been archaeologically neglected heretofore. However, recent activities in this section have revealed much archaeological evidence of the historic horizon of its aboriginal occupants. Confusing is the prevalent dearth, almost absence,³ of associated objects of European origin. This apparent anachronism however is justified in the record of the earliest history of this region; such Old World products as axes, knives, guns, glass beads and brass ornaments trickled very slowly into the northeastern Caddo territory, even after the stimulation of colonization by the French possession of the Mississippi Valley in the late seventeenth century. Especially slow was such contact in the valley of the Middle Ouachita River where the rugged hilly terrain obstructed the progress of the exploring Spanish, French or English. In the interval between the earliest Lower Mississippi Valley discoveries by the Europeans, and the later ones, Caddo cultural complexes had changed in both geographical location and physical aspects. Within the Caddo Confederacy, for instance, by 1687⁴ the Kadodacho (Cadodacho, Cadadoquis) had established themselves on the big bend of the Red River (Sabloniere⁵); the Tula,⁶ centering along the headwaters of the Caddo River in 1541-1542 when DeSoto encountered them, had then disappeared; and the Cahinnio Caddo had emerged in the Middle Ouachita River basin within a province which apparently had formerly embraced in part both the provinces of the Cayas and the Tula-Caddo of DeSoto's passage.

The earliest documentation of the lower Mississippi Valley history presents both a false and true beginning of European incursion into the native cultures of southwest Arkansas. In 1541-1542, the DeSoto Expedition established the first European contact with the eastern provinces of the Caddoan Confederation, but only one

member, a deserter,⁷ lingered to settle within the Caddo country. Colonization was not DeSoto's motive. This initial brief impact was followed by a historical blank of more than 140 years, which was finally broken by the French exploring from the north. LaSalle, particularly, nurtured plans of future colonization to reinforce France's claim to the Mississippi Valley. In 1687, M. Cavelier,⁸ brother of LaSalle, and his party of six survivors, passed through the Kadohadacho and Cahinnio provinces from the Cenis country, to report the ill-fated LaSalle expedition to their superiors in the Illinois country. This journey, recorded by Joutel, marked the true beginning of European intrusion into the Mid-Ouachita area of Caddoan culture. The interlude between the DeSoto and LaSalle explorations, although proto-historic, is for the archaeologist an uncharted chronological blank within which may be rooted the beginnings of the later known historic phases of the Arkansas Caddo. Lack of associated European trade-material is therefore no criterion of the prehistory of an Arkansas Caddo relic.

At an unknown time after DeSoto's passage through the Mid-Ouachita region, the Cahinnio tribe emerged as the most eastern ally and probable member⁹ of the Kadohadacho (Real Caddo), leading tribe¹⁰ of the Caddo Confederacy who centered upon the upper Red River. Historical data is very meager on this independent frontier tribe of Kadohadacho affiliation. The frontal head-deforming¹¹ Tulas fought by DeSoto in the region of Caddo Gap and identified by him as Caddo, seem to have lost their identity before the historical horizon of the Cahinnio. The Tula's obliteration as a tribe, or possible absorption¹² into Cahinnio identity remains to be determined from future mass data of regional archaeological surveys. In 1687, however, M. Cavelier and Joutel⁸ on their return journey from the assassination of LaSalle, left the town of the Kadohadacho in the company of two Cahinnio Indians who were there seeking osageorange bows. Led by these friendly Cahinnios, the French party visited Cahaynohoua, the Cahinnio village on the Ouachita River apparently in the vicinity of the present Arkadelphia.¹³ Here they saw a Spanish sword, hawkbells and two horses in Cahinnio possession. They also witnessed the ceremonial dance of the calumet for the first time. The Red River Caddo used pipes but had no such ceremony; yet the French party were again

to be subjected to the calumet ritual among the Quapaw (Uzutuhi) at the mouth of the Arkansas River. The French also observed that the village consisted of a hundred separate cabins. Guided by Cahinnios carrying bows and arrows and Tonica salt-cakes for barter with the Quapaws, M. Cavelier's party continued their passage over difficult hills and swamps to DeTonti's Post on the lower Arkansas River. Joutel chronicled the Cahinnio Chief's name as *Hinma-Kiapémiche*¹⁴ (Big Knife). This name is definitely Caddo¹⁵ and supports the Caddoan ethnology of the firmly established Cahinnio of 1687.

Documentary historical excerpts support evidence of a continuous Cahinnio¹⁶ existence. Sometime between 1690 and 1692, Fray Francisco Casañas de Jesus María, a Spanish missionary, was carried northward to a settlement believed by Espinosa to have been called Cainio¹⁷ and its people Canigua. Casañas also enumerated in his list of tribes of Hasinai and of the Caddo group, the Caynigua¹⁸ (Cahinnio). In 1700, d'Iberville, founder of the French colony at the mouth of the Mississippi River, received reports of the names of tribes in the Red River region. Among them was Cachaymons,¹⁹ which Swanton interprets as Cahinnio. On De l'Isle's²⁰ map of 1718, Cahinnio is located on the Ouachita River, on the north side and parallel to the upper Cadodaquios villages above the great bend of the upper Red River. By 1763²¹ the Cahinnios, decimated by the incursion of white men, had finally moved northwest on the upper Arkansas River near the Mentos, and there they eventually became extinct. In 1771,²² the Spanish governor at New Orleans, Unzaga, through the negotiations of Anathanase De Mézierés, diplomat and Indian agent among the Nachitoches, succeeded in making a peace compact among the Caddos and nations of the north. The Canniones²² are recorded for the last time among the signators. Thus ended the scant historical sequence of the Cahinnio Caddo.

Archaeologically we presume to attempt to interpret certain types of pottery in the mass of Mid-Ouachita data, heretofore casually called late Caddo, as representing the Cahinnio pottery complex of Caddo culture. To conform with the archaeological custom of avoiding historic tribal names, we suggest that this complex be

known as the Mid-Ouachita focus. The regional material under consideration occurs within the Ouachita basin from above Hot Springs to the mouth of Terre Noir Creek, traversing Garland, Hot Spring, and Clark Counties in southwest Arkansas.

In recent years local²³ archaeological activity in this region has removed about two thousand pottery specimens from burials. Most of the burial pits were one to two and a half feet in depth. The exhumations were single, contained extended skeletons, and were ordinarily grouped on the periphery or near a village midden, rarely a burial mound. Certain artifacts found in deeper strata presented a difference of appearance and were tentatively labeled old Caddo or early Caddo. We considered these terms very unsatisfactory classifications.

Although the archaeological material under discussion shows a minor sprinkling of culture material from Marksville to the historic horizon, a large portion appears to be late Caddoan. Any pre-Caddo phase is absolutely excluded in the evidence under consideration.

The chief argument in favor of Cahinnio Caddo identification with the predominant types of the late Caddo Mid-Ouachita ceramic ware, is the incredible multiplicity of certain types and decorations within that region. Surely duplication of form and often of decoration in great numbers is of sufficient archaeological significance to indicate a close organization of the aboriginal possessors. Commonness is a positive factor in an analysis of unification and hence a determinant. Also the correlation of a particular ware to its proper co-existent historical neighbor assists in coinciding the archaeological entity with historical sequence.

The inserted tabulation indicates the count of outstanding ceramic types as indicated by private²³ collections representing findings from sites in the area under study. The territory archaeologically studied extends from Social Hill in Hot Spring County to the mouth of the Terre Noir Creek into which drains the Little Missiour River. The Hodges collection blankets the Ouachita Valley north of Arka-

ENUMERATION OF PREDOMINANT POTTERY TYPES

As observed in Hot Spring and Clark Counties, Arkansas, Collections.

Collection	Total							
	Total Vessels	Total Cazuelas	Type I	Type Collared Jars	Type II	Total Bottles	Type III Engraved Plain	Type Seed-jars, Type IV
Dr. T. L. Hodges, Bismarck	1053	278	170	203	76	157	24	70
94								
Prof. R. Proctor, Arkadelphia	359	56	26	49	18	59	3	23
26								
Artist Charles Richardson, Arkadelphia	132	14	10	9	7	37	0	2
5								
Mr. Vere S. Huddleston, Arkadelphia	400	64	21	57	18	73	3	2
15								
17								
Total	1944	412	227	318	119	326	31	111
142								
Percentage		21%	12%	17%	6%	16%	1.6%	5.7%
7.3%								

delphia and three Arkadelphia collections cover the terrain in the vicinity* of Arkadelphia and south in Clark County.

TYPE I—*Friendship Engraved*

Within the Mid-Ouachita regional confines, the unequivocally predominant pottery form is the cazuela with its deeply engraved rim. In instances these vessels have been found stacked in the graves of the populous Caddo sites of the Middle Ouachita region. That cazuelas are functional is shown by the remains of pieces of animal bones found in the gravel-earth of some.

Among the cazuelas of the Friendship and Arkadelphia vicinity, a characteristic Mid-Ouachita variant emerges from the masses. (See Plate 18, No. 1). The rim decoration is typically engraved with a motif featuring banded links combined with cross-hatched fillets. The links are formed by segmenting a horizontal band into equal adjacent rectangles by deeply scratched vertical lines. The band of links is often a straight finished unit or may curve to adapt itself into combination with the cross-hatched fillet. A frequent negative motif of key²⁴ figures and negative discs results from the combined elements of the design. Sizes vary from 3 inch miniatures to 12 inch diameter bowls. The paste is fine, homogeneous, usually sand and clay. This highly polished, vertical rimmed, round bottom, shallow bowl is red-brown to brown-black in color. The rim frequently has a tiny marginal roll. The engraving is rarely white-paint filled, and cross-hatching is almost exclusively produced by crossing slanting lines.

The proportion of this banded-link variant of the Red River cazuela diminishes below Arkadelphia (Clark County), and progressively decreases as the center of Red River Caddo culture at Fulton is approached. If the above described cazuela rim decoration centers in the neighborhood of the confluence of the Ouachita and the Caddo rivers, this recession of the link-banded cazuela rim decoration is logical.

*The Caddo River empties into the Ouachita about three miles above Arkadelphia.

TYPE II—*Military-Road Meander Incised*

The next type is purely culinary, namely the collared jar. These are found in all sizes from an inch across-diameter toy to the giant 12 inches across-diameter containers of a five gallon capacity. This pottery form is urn-shaped, rough ware, which has heavy incisions on both the collars and bodies of the vessels. Most of these pots retain the soot of cooking fires on their surfaces. They are of a seemingly poor grade of ware, usually broken within the grave and difficult to excavate in perfect condition. Their very friable texture was probably found adaptable to temperature changes, and therefore became the practical ware to withstand the uneven expansion and contraction contingent to cooking. Tempering includes sand and grit, clay, shell and fiber. The late Caddo of Mid-Ouachita area certainly were plentifully equipped with these culinary objects. Shattered small bones have been found in this type of pot. However remains of funerary offerings of animal origin usually decompose completely in the clay and sand soil of the river-bottoms where even skeletal human remains are often entirely obliterated. This type of Caddo ceramic ware is so plentiful as to become monotonous.

The predominating pattern of the collared jars is the all-over meander, a deeply incised decoration on the body and collar which combines repeated vertical lunar punctates in curvilinear bands with rows of horizontally curvilinear parallel incised lines. (See Plate 18, No. II). Bands of multiple rows of upright lunar punctates alternating with deeply incised meandering lines are repeated compactly on the entire modified globular vessel body and the broad, outcurving collar. This domestic type resembles in shape the Foster²⁵ Trail-Incised vase of the Belcher Mound. The vessels range in size from 3 inches diameter and 3 inches height to 12 inches diameter and 15 inches height and possess thick walls (in larger vessels $\frac{1}{4}$ inch thick), made doubly heavy at the circular flat base.

PLATE 18

No. 1. Engraved cazuela from site near Friendship, Hot Spring County, Arkansas.

No. 2. Meander incised collared jar from site near Friendship, Hot Spring County, Arkansas.

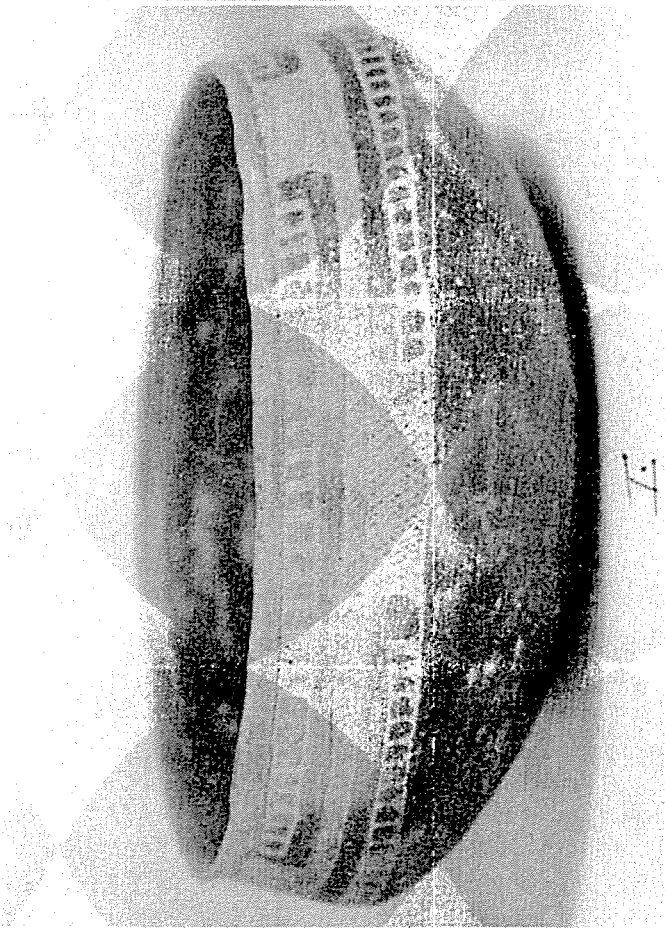
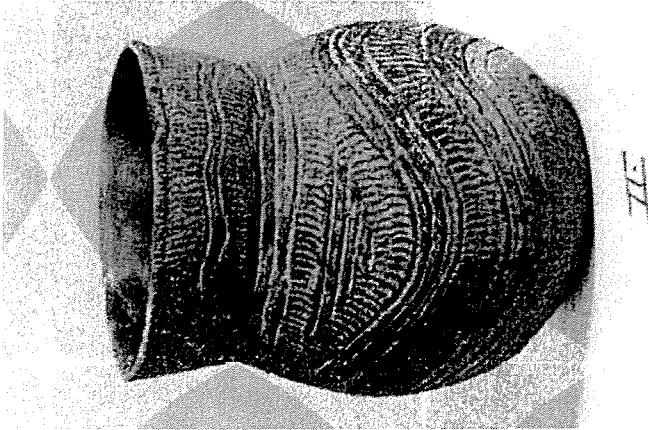


Plate 18

Some of these vessels are large and have capacity of about three gallons. Their color ranges from pale tan to a smoke-mottled greyish light-brown.

TYPE III—*Blakelytown Engraved Bottle*

The two described common types are found in their late Caddo graves with Type III bottles. The great number of bottles found in Mid-Ouachita burials is noteworthy. The range of variation in decoration appalls the classifying archaeologist. Prevalent characteristics of the Mid-Ouachita bottle are that it is highly polished, black drab in color, globular in shape and is commonly engraved. The engraving is often red paint filled. Decorations include: the simple broken-line, involved interlocking scrolls and cross-hatched fillets, nested chevrons, concentric circles. Plain bottles are comparatively scarce. Eccentric forms add their personality to the complex and include effigies, tripod, compound, the rare loop and the equally rare cowed.

However, the characteristic bottles of the Mid-Ouachita valley are the broken-line or geniculate-engraved. (See Plate 19, Panel III). Three main variations are apparent. On the body of a highly polished, black drab bottle, are engraved with equal spacing:

1. Geniculated line variants using vertically—
 - 2 groups of geniculated (a) 3 parallel lines;
 - 2 groups of geniculated (b) 3 parallel lines alternating with
 - 2 groups of 3 straight parallel lines;
 - 2 groups of geniculated 3 parallel lines alternating with
 - 2 groups of 3 parallel lines kinked in middle;
 - 4 groups of straight 3 parallel lines;
 - 3 groups of 5 centrally kinked parallel lines.
2. Two bands of 6 parallel lines engraved diagonally across body of bottle, ending at double spurred rings at base of neck. Lines are broken in center by symmetrically curved linked-bands balancing away from main band on either side.
3. Diagonally curved band of 5 parallel lines fringed at center with balanced arc effect of curved line and linked-band.

Band of links and spurred ring at base of neck. This decoration is present on a tripod bottle as well as a flat bottomed one.

The paste of the geniculate-types described is fine and homogeneous. Necks are straight, plain, and often have a spurred ring engraved at the base. The bottles are flat bottomed.

TYPE IV—*Watermelon-Island Seed-Jar*

The seed-jars, both plain and engraved, appear *localized* to the territory of the Middle Ouachita. (See Plate 19, Panel IV). These unusual pottery vessels with their thumb-sized apertures, are found most abundantly on Watermelon²⁶ Island near Social Hill and at Friendship, Hot Spring County, Arkansas. In this vicinity their occurrence with highly polished engraved Caddo ware is common. In the light of contemporary excavations, the seed-jar thus far stands out as a critical type of ceramic ware in the region under discussion.

The banded link engraved cazuela, the broken-line engraved bottle, the all-over meander incised collared jar, and the outstandingly unique seed-jar are frequently found together in the Mid-Ouachita graves. Yet bowls and bottles, artistically executed, of the late or known historic²⁷ Kenø, Glendora and Natchitoches phase of Caddo culture occur in burials with the former described pottery forms. Many of the burials are unmistakably late Caddo. Moreover, their contents indicate a specific historic phase of Caddo culture. The pottery shows peripheral and trade influences as well as local variations in types and decorations.

Corroboration of historical and archaeological coincidence is suggested by the following data:

1. The presence of prehistoric novaculite²⁹ mines near Hot Springs, Arkansas, for arrow making material bears out the evident prowess of the Cahinnio in bow and arrow manufacture used in their exchange with the Otsote Quapaw. A unique site exists near the Friendship Mound on the Ouachita River in which a half acre is literally blanketed with flint chips and broken projectiles, suggestive of a workshop.

2. An insignificantly low, sandy burial mound near Gum Springs, Clark County, yielded 200 pieces of engraved polished pottery, 80% of historic Glendora and Natchitoches type. However both cazuelas and incised collared jars were associated therewith. Burials were single, extended, with funerary offerings about the head and arms, skulls natural and no apparent sign of head deformation.

3. Another Caddo site near Friendship Mound yielded nests of collared jars. A Keno bottle and two engraved small circular platters were found with one burial. Also a typical Caddo loop pipe surmounted a stack of incised collared jars in another. Skeletal remains were almost obliterated by decomposition.

The loop-pipe (See Plate 19, Panel V) appears to be the frequent form of pottery pipe associated with the previously classified Mid-Ouachita pottery types. Eleven of the sixteen earthenware pipes in our collection have the looped end, three of which have a deep notch or ratchet decoration in the loop. In literature, only C. B. Moore records finding a related specimen at Kent, Arkansas. (*Antiquities of Ouachita Valley*, Fig. 99). The loop pottery pipe is of hard texture, buff to red in color and precisely fashioned. An extension of the stem, curved and neatly joined to the front margin of the bowl, makes a graceful and practical handle for the well-balanced pipe which appears to be an exclusive product of the Middle Ouachita aborigines.

Projectile points, celts, heads, bone implements, and bone ornaments are lacking or very rarely found in the burial pits with the heretofore described pottery complex. Neither are copper nor are polished stone artifacts found in the grave furnishings with these ceramic types.

Approximately 200 burials, scattered and in groups in Hot Spring County (in Ouachita River bottoms eight miles above Friendship), had mixtures of many types of Caddo ware in the extensive exhumations. Yet an inclusive survey of the artifacts identical with or similar to Caddo, presents many ceramic types of the Belcher²⁸ Mound including the engraved, incised and stamped ware.

Since the historic Cahinnio and Kadohadacho of the Red River were Caddo provinces, their ceramic forms would be expected to

bear a striking similarity. Thus the typical Caddo³⁰ pattern remains the same: highly polished and engraved pottery, as well as the rougher wares featuring incising, punctate, appliqué and brushing. However changes become apparent as the area approaches the Red River great bend. Spurred lines become more prevalent and exaggerated in both cazuela and bottle engraving. Motifs change slightly and are bordered near the top of bowl rims by one, two or three horizontal lines. Bottle forms change to taller body, more angular shoulder and shorter neck. Again, approaching the center of the Red River³¹ Caddo culture, collared jars sometimes develop four peaks on the rim, the body decoration often occupies only the upper two-thirds of body space, and herring-bone linear incised decoration predominates. The seed-jar type almost disappears. These changes begin to appear in pottery forms below Arkadelphia in Clark County, the fringe of the contact belt between the historically coeval tribes, the Red River Kadohadacho and the Cahinnio Caddo.

In conclusion, within the Mid-Ouachita basin:

1. Four definite pottery types are well defined in this area;
2. These types occur in profusion in the approximate geographic area occupied by the historic Cahinnio;
3. The historic temporal lateness is borne out by corresponding archaeological associations;
4. These four pottery types show relationship with the Red River Caddo.

For these reasons we suggest the designation of the pipe and four pottery types as Mid-Ouachita focus. We further believe this can be identified historically to represent the pottery complex of the Cahinnio Caddo.

PLATE 19

Panel 3. Four geniculate engraved bottles, from Hot Spring and Clark Counties, Arkansas.

Panel 4. Two seed jars, from Hot Spring and Clark Counties, Arkansas.

Panel 5. Loup pipes, from Hot Spring and Clark Counties, Arkansas.



A.

B.

III

C.

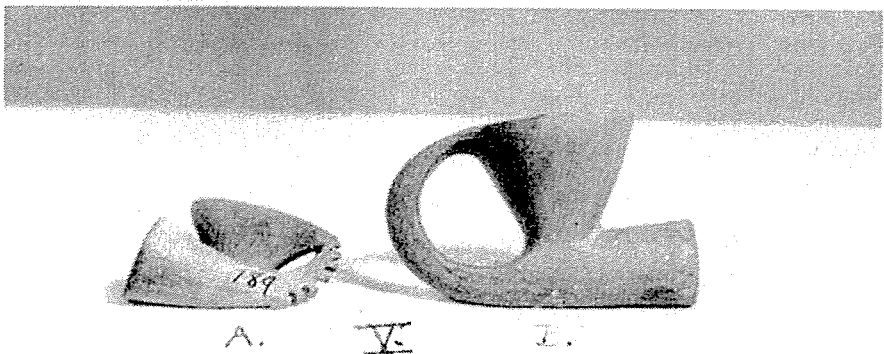
D.



A.

IV

B.



A.

V

B.

History and archaeology apparently correlate in the Mid-Ouachita Valley and suggest the identification of the region's historic aborigines as Cahinnio, the firmly established tribe of the northeastern outpost of the Caddo Confederacy.

We are grateful to Dr. Robert Proctor, Artist Charles Richardson, and Mr. Vere L. Huddleston, all of Arkadelphia, Arkansas, for the use of data pertaining to their excavations. Also, to Major and Mrs. Earl W. Foizie of Army and Navy General Hospital, Hot Springs, Arkansas, for their accurate translations of pertinent passages in Margry's *Descouvertes*, etc. Finally, we express our indebtedness to Dr. C. H. Webb, The Children's Clinic, Shreveport, Louisiana, for his critical review and generous assistance in completing this hypothesis.

Bismarck, Arkansas.

September 3, 1945

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STREAM BANK SILTS OF THE ABILENE REGION

BY CYRUS N. RAY

Early in the fall of 1927 the writer began a systematic search of the vertical caved off banks of all of the streams of the Abilene region for evidences of ancient man's occupation and has continued this research as a scientific hobby throughout the intervening eighteen years. Prior to that time no archeological research had been done in the immediate vicinity of Abilene, and with the exception of Harold Cook's excavation of bison bones and flints at Colorado, Texas, situated seventy-five miles west of Abilene, none had been done previously in a region several hundred miles in diameter. The early reports were published on these sites in 1929 and 1930. (1), (2), (3), (4), (5), (6), (7).

Various persons have assisted the writer during brief periods in small excavations in the sites, but with the exception of those done by Mr. Joe Ben Wheat in 1940, on W. P. A. funds, for Texas Technological College of Lubbock, no large excavations have been made. (8) Mr. Wheat was called into the Army a short time after he finished this work and no report has yet been published on a large part of it. In 1934 Mr. E. B. Sayles wrote a report on some of the writer's sites, which was printed by Gila Pueblo, Globe, Arizona. This was done after spending most of the summer of 1934 in Abilene. (9) Mr. Sayles previously had lived in Abilene up to the year 1931 and had then assisted the writer in some small excavations in the sites. Also during the summer of 1934 Gila Pueblo sent Dr. Ernst Antevs and Dr. M. M. Leighton to examine the sites for a few days with Mr. E. B. Sayles. Then Dr. Leighton later issued a report based on their brief period of inspection of the sites. (10) In the Leighton report were some erroneous conclusions and inferences which could have been avoided had he spent more time in examining the geology of the sites, and then in some first hand consultation about the fossil fauna and artifacts which had previously been dug out of the various sites during a long period of years. Then on very insufficient data, and no right of priority to name the formations, Dr. Leighton applied the general term "Elm Creek Silts" to the whole top twenty-four feet of the

local stream bank silts. These are the silts situated above the dark red deposit at the Gibson Site, which site the writer found in January, 1930, and has studied ever since. The dark red deposits beneath the so-called Elm Creek Silts at the Gibson Site Mr. Leighton then termed the "Durst Silts" after the name of an old real estate survey of the Abilene Region. The writer had collected, and had published reports in the Society's Bulletins on, Abilene Points and other flint artifact types which he had dug out of the dark red deepest layer of silt at the Gibson site at intervals since 1930. It then would naturally be expected that he would reserve the right to name his own discoveries. At no time has excavation of any consequence been done in the upper or so-called Elm Creek Silts on Elm Creek, and there seem to be relatively few hearths and artifacts at those levels situated in the banks of Elm Creek.

All of the early discoveries of midden levels in the upper series of stream bank silts in the Abilene region were made by the writer on the banks of the Clear Fork of the Brazos River in 1929 and 1930, and the early excavations in them were made near Nugent, Texas, in the fall of 1929. In these excavations, made on the Will Myatt place, the writer was assisted in excavation by Dr. Otto O. Watts and E. B. Sayles.

The upper section of river bank silts varies in total thickness in different sites from twenty to twenty-five feet and varies in color and texture as one goes up or down its five distinct zones of deposition. To lump the whole upper silt section which required many thousands of years to form simply as "Elm Creek Silts" seems to be very indefinite terminology. To locate a human skeleton or an artifact by use of such indefinite terminology one would be compelled to resort to measurements down from the present soil surface to any object described, and much previous experience in doing so

PLATE 20

Composite or idealized drawing showing all of the seven Clear Fork and Nugent Silts in their relative placement if all were to be found intact in one site.

PLATE 21

Gibson Site drawing, showing the lower and upper Clear Fork Silts, and the five Nugent Silts, and the hearths found in the different levels.

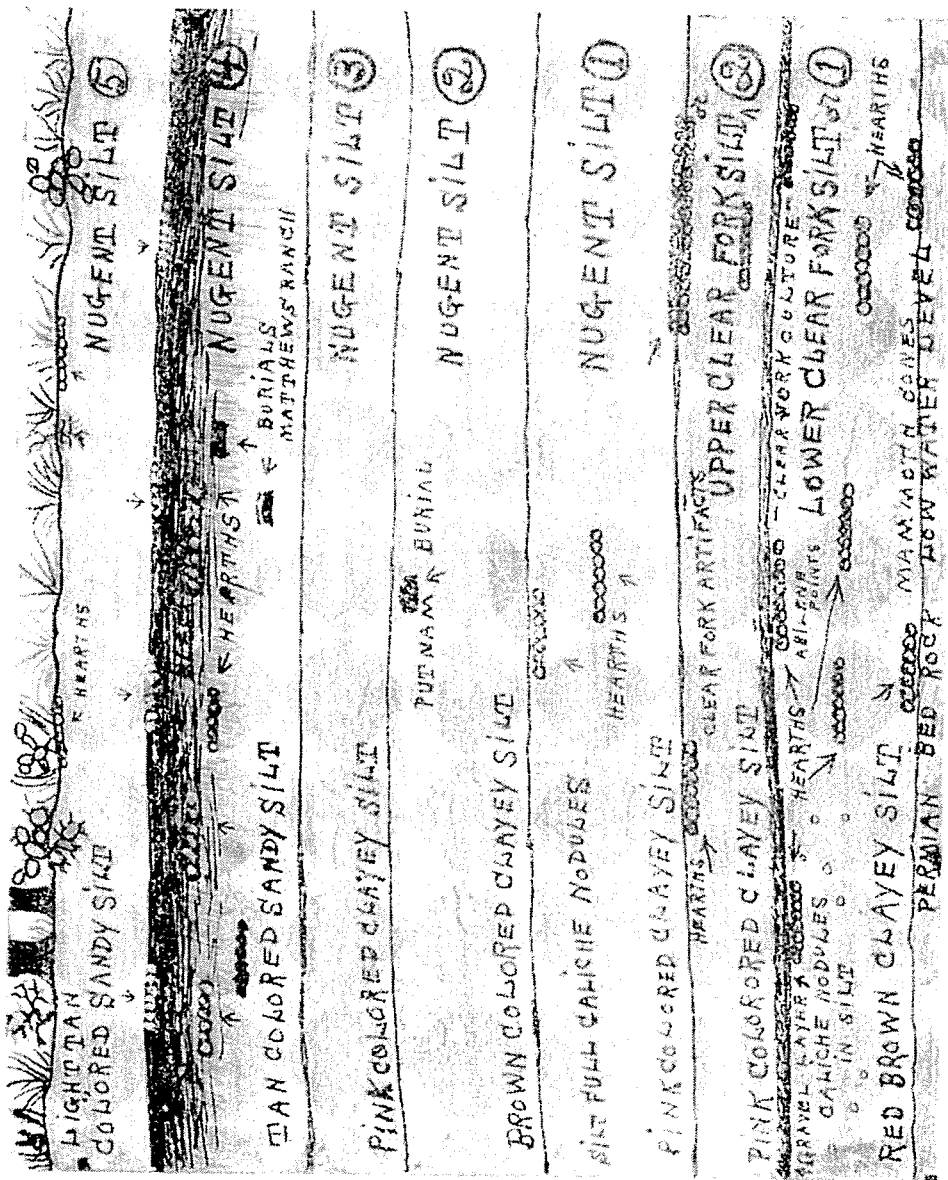


Plate 20

4 FEET LIGHT TAN COLORED SANDY SILT. → HEARTHS → NOGENT SILT ⑤

5 1/2 FEET TAN COLORED SANDY SILT → HUMUS STAINED ZONE → NOGENT SILT ④

2 1/2 FEET, CONSISTING OF FIVE PINK COLORED, NARROW, LIGHT AND DARK BANDS OF SILT. → NOGENT SILT ③

8 FEET LIGHT BROWN SILT. NOGENT SILT ②

4 1/2 FEET PINK, CLAYEY SILT. → GRAVEL STRATUM → NOGENT SILT ①
 CLEAR FORK POINT ② → ABILENE POINTS → HEARTHS → CLEAR FORK
 6 FEET DARK RED CLAYEY SILT WITH GRAVEL HEARTHS → GIBSON POINT → LOWER CLEAR FORK SILT
 → JONES POINT → HEARTH → LOW WATER LEVEL
 GIBSON SITE

has taught the writer that such a method is likely to be very inaccurate. While it is true that there was a rather uniform deposition of silts along all of the streams of the region, and that the different zoned deposits hold their relative positions everywhere, the counteracting geological forces which aggrade and those which degrade sedimentary deposits have in different sections of the same stream operated to produce some differences in the relative thickness of the same aged deposits in different sites. While in one site a silt layer might be relatively thin, and the next one below it thick, in another site the reverse might be true. Despite all of these conditions which are likely to trap the unwary there yet remains over the whole region a general uniformity of color and texture and relative placement, in each of the zones of silts, which enables an experienced observer to outline them. In a few sites there are older remnants of solidified Pleistocene gravels which remained in place during a period of the late Pleistocene when most of the stream beds of the region were scoured out down to Permian bed rock.

At a time near to the close of the Pleistocene the low lands along the banks of the streams began to aggrade or fill up with stream deposited silts and as these gradually built up apparently certain levels remained stationary, or nearly so, during long enough time for men to move onto them and live through periods sufficient to create layers of ashes, burnt rocks, mussel shells, bones, and flints and also to somewhat darken the old soil surfaces. These old darker soil levels mark the upper surfaces of the different layers of silts at the places where the changes took place into silts different in color and in texture from those below. Hearths usually are more numerous in the darker areas at the tops of silt layers.

It would seem that each time during the stationary period while the upper surface of a silt stratum was being lived on that something happened to the region's climate, its wind movements, its rainfall, or scarcity of it, sufficient to change the texture and color of the next zone of silt deposited above it, so that the difference can be seen from across the stream. There usually is some darkening of the upper surface of each silt stratum, but this is very marked on the top surface of the second one beneath the present soil surface. To get the real evaluation of the color changes of the different silts it is necessary to view a bank from across the stream, standing

on the bank opposite, for in a close up view the line of demarcation often is not apparent.

In most sites the older Hawley gravels have been removed down to bed rock, and since then seven different layers of silts have been deposited to a total depth of between thirty and thirty-five feet above bed rock. These seven silts will herewith be named and described from the bottom or first formed, upward to the present soil surface of the stream bank. On the present soil surface above these buried sites are stone age hearths, which contain no indications of contact with white men. In Plate 20 we see a composite or idealized drawing showing the placement of the seven silts if all were intact in the same site.

The Lower Clear Fork Silt

This is a dark red colored, dense clayey silt which contains some gravel and caliche nodules of medium size. In most places along the larger streams of the region this silt has been either entirely eroded away or is represented by a thin remnant located down on the bed rock. At the Gibson Site on Elm Creek however there is a stratum of Lower Clear Fork Silt six feet thick, (See Plate (21), lowest stratum). In this stratum are several zones of hearths which contain quantities of charcoal, burnt rocks, ashes, thin man made flint flakes, and artifacts. Down near the water line at about thirty feet below the soil surface of the stream bank a very crude flint dart head which the writer designated as a Jones Point was found in 1939 while Dr. Clifford Jones, former president of Texas Technological College, and Dr. W. C. Holden of the same institution were present. Crudely percussion made, thick leaf shaped Abilene Points, were found in this dark red silt in the 24 1-2 feet deep level in 1930 and subsequently. (11).

In 1940 a Gibson Point, which has a bevelled point and a base somewhat like a crudely made Folsom Point, was found embedded at a depth beneath the soil surface of twenty-five feet in this silt. (12) Near the top of this deposit and just under an eight inch thick layer

PLATE 22

Hodges Site drawing, showing the Clear Fork and Nugent Silt strata, and the artifacts founds in them.

of gravel a Clear Fork Type (2) dart head was found embedded. Nine hundred and sixty-seven feet up the creek bank in similar formation a proboscidian leg bone was found embedded in 1938. (13), (14) Also a mano stone was found embedded in Lower Clear Fork Silt at the Gibson Site in 1940. (15), (16)

At the Hodges Site on the Brazos River near Nugent, Texas, this silt has been removed by erosion, and the series begins on top of a layer of gravel, which probably is the basal gravel layer of the next silt stratum above or Upper Clear Fork Silt. There is a hearth there on top of the gravel, and in this hearth the writer found a Clear Fork Gouge embedded. This hearth lies very near low water level of the Brazos.

Several different types of flint cultures were used during the forming of Lower Clear Fork Silt; and the time period of its deposition was a long one. The best preserved beds of this deposit occur in the bottoms of dry mountain valleys west and south of Abilene, where the deposit is often from four to six feet in thickness. The men of the Clear Fork culture began using those types of implements toward the close of deposition of Lower Clear Fork Silt and used them throughout the period of deposition of Upper Clear Fork Silt, and this flint culture probably evolved out of the Abilene Point type of the Lower Clear Fork Silt. The Lower Clear Fork Silt is the silt termed Durst by M. M. Leighton. At two different sites, the McLean and the Gibson, mammoths bones were found in Lower Clear Fork Silt, in the McLean site with a Folsom point, and at the Gibson site on a level with a mano, hearths and a Jones Point.

The Upper Clear Fork Silt

This silt is red, but is not so dark, nor so dense in texture, as Lower Clear Fork Silt and it has more sand and less gravel in it and there are many small caliche nodules in Upper Clear Fork Silt. At the Gibson site this silt is represented by an eight inch basal layer of gravel and a thin layer of red silt adhering to its upper surface (See Plate 21). At the Hodges site this silt deposit is about eight feet thick, and has a large hearth outcrop at its line of juncture with the next silt above, Nugent Silt (1). There is another row of hearths at some distance below, and a third row of hearths down near the bottom of the deposit. A mano and metate and a Clear

Fork culture hand axe were found in the upper line of hearths. There is some doubt in the writer's mind as to whether the lowest hearth shown in this drawing (see Plate 21) which lies in and on a bed of gravel in a thin remnant of dark red silt is a remnant of an otherwise eroded Lower Clear Fork Silt or is a hearth in the basal gravel deposit of the stratum of Upper Clear Fork Silt which lies above it.

A Clear Fork culture gouge was found embedded in the hearth, but men began to use that culture before the close of the deposition of the Lower Clear Fork Silt. In 1938 while accompanied by Dr. Kirk Bryan and Samuel Vaughan the writer found a crude knife embedded near the bottom of the Upper Clear Fork Silt stratum at the Hodges site. This somewhat resembled the Abilene blades found in the Lower Clear Fork Silt at the Gibson site.

Nugent Silt (1)

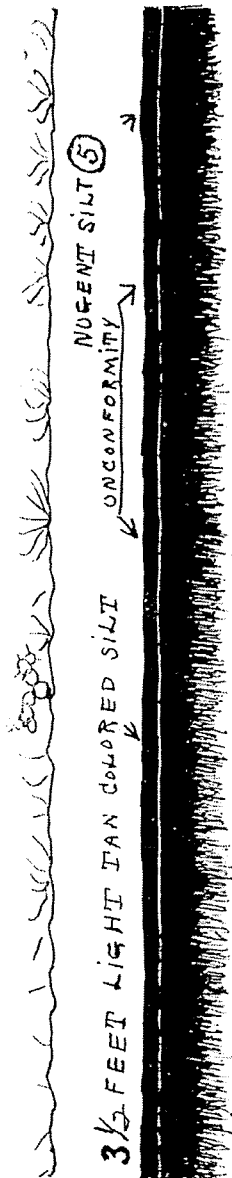
At the Hodges Site on the Brazos River, Nugent Silt (1) contains hearths at two levels, one at the line of juncture with the next silt above and another series at about its middle. Other than burnt rocks and man made flint flakes no artifacts were found in the hearths. At the Hodges Site this stratum is about 5 1-2 feet thick and at the Gibson Site about 4 1-2 feet thick. The Nugent Silt (1) is pink colored clayey silt of lighter color than the Upper Clear Fork Silt. There are no discernable hearths in Nugent Silt (1) at the Gibson site, but it is difficult to examine closely on account of the almost vertical bank.

Nugent Silt (2)

This silt is of a reddish brown color and clayey in texture, and the thickness of Nugent Silt (2) is 8 feet in the Gibson Site and 2 1-2 feet in the Hodges Site. There are no discernable hearths in this silt stratum either at the Gibson or Hodges sites. The deepest buried human skeleton yet found in the region was excavated from the top level of Nugent Silt (2) on the Putnam Ranch at depth of 21 feet below the present soil surface. (17)

PLATE 23

Young Site drawing, showing the three old Pleistocene strata, the extinct fauna found in them, the line of unconformity, and the latest Nugent Silt 5 stratum above them.



NO ARTIFACTS AND NO HEARTHS
BELOW UNCONFORMITY

MAMMOTH BONES TUSKS
AND TEETH

PLEISTOCENE SILT

10 FEET TAN, HARDENED SANDY SILT, FILLED WITH CALICHE NODULES.
TOP SECTION COLORED BLACK, HUMUS STAIN, FROM LONG SURFACE DURATION. (4)

6 FEET PLEISTOCENE GRAY SANDY CLAY AND RUST COLORED ZONES.
CONTAINS MANY MAMMOTH'S BONES (3)

5 FEET PLEISTOCENE CONGLOMERATE.
CONTAINS MAMMOTH'S BONES (2)

2 1/2 FEET DARK RED TERMIAN DEPOSIT, FULL OF CLAYSTONES.
YOUNG SITE LOW WATER LEVEL (1)

Nugent Silt (3)

This silt is a light pink colored clayey silt which has a thickness of 3 feet at the Hodges Site and of 2 1-2 feet at the Gibson Site, and at the latter site there are five narrow bandings in which darker zones alternate with lighter pinkish zones. There are no hearths visible at either site.

Nugent Silt (4)

Nugent Silt (4) has a distinctive broad dark humus stained zone at its top which is always darker than that in any other stratum. This dark zone is darkest at the line of demarcation between it and the bottom of Nugent Silt (5) and shades out downward into one of the characteristic light pinkish tan shades of the upper Nugent Silt series. Nugent Silt (4) probably has more hearths exposed in it than any other silt of the region. Evidently this level either remained stationary longer than any of the others, or it represents a period when there was a much more abundant rainfall which produced more vegetation and heavier staining of the old ground level. Hearths are abundant along the old surface level and all through the black stained zone. The two first Matthews Ranch burials found in 1929 were at between 6 1-2 feet and seven feet deep in Nugent Silt (4) as also was the burial found in 1939 (18) at below nine feet deep on the same Ranch and situated about two miles south of the others. The latter burial was actually buried at 10 feet below the surface, but the earth had been disturbed up to below 9 feet in depth. The latter burial had been made from below the black zone, which at that site was about two feet thick, and the burial was done evidently before the zone was formed. The black zone above the burial at the Matthews Ranch was thickly studded with burnt hearth rocks, mussel shells and flint flakes.

Nugent Silt (5)

This silt varies considerably in thickness in the different sites, and is a rather uniform light pinkish tan in color and in texture is rather sandy. Nugent Silt (5) has a thickness of four feet at the Gibson Site and five feet at the Hodges Site, but farther down the Brazos on the Myatt, Matthews and Putnam ranches, and at many other sites, the usual thickness of the silt varies between six and eight feet. There are a few scattered hearths at various depths

in this silt and these are more commonly found at a depth of about four feet below the surface. There also are many hearths embedded in the top soil surface which contain flint scrapers, arrow heads, manos and metates and hammerstones, but there are no artifacts showing any trade relations with white men.

Lower Clear Fork Silt Pleistocene in Age

The writer has evidence from three sites in the form of remains of mammoths that the Lower Clear Fork Silt was laid down at about the close of the Pleistocene Period, and it perhaps is twenty-five or thirty thousand years old. The Upper Clear Fork Silt may be Pleistocene in age, but no definite evidence of it has been found, and it is probable that the silt was formed immediately after the extinction of the Pleistocene fauna. In eighteen years of examination of the stream banks of the Abilene region the writer never has seen any reliable evidence that the mammoth or any other Pleistocene animal's bones have ever been found in the so-called Elm Creek silts, or in more definite terminology, in any of the five Nugent Silts. One occasionally sees in print the statement that the "Elm Creek Silts are Pleistocene in age" and evidently this idea was derived from an erroneous evaluation of the age of the deposits in a site which the writer found in 1928 and has studied ever since. This is a site on the Brazos River a few miles east of the village of Hawley, Texas, in Jones County, on the farm of Mr. R. G. Young. In this site during past years many teeth, bones and several tusks of mammoths, have been found.

In 1934 Gila Pueblo sent Dr. M. M. Leighton, Chief of the State Geological Survey of Illinois, to Abilene to examine the deeply buried sites of the Abilene region, and he and others examined these sites without the writer's presence or knowledge of it until

PLATE 24

This picture of the Gibson Site and those of Plates 25 and 26 were made to record the facts by an Abilene photographer in January, 1930, shortly after the writer found the Gibson site. The writer is pointing at the hearth level just below the eight inch thick gravel stratum. Below the gravel layer is the Lower Clear Fork Silt. The gravel stratum is the base of, and is a narrow remnant of, the Upper Clear Fork Silt, which in this site has been nearly all removed by ancient erosive forces; above the gravel are the five Nugent Silts. This picture was previously published in the Volume II, 1930, issue of this Bulletin.

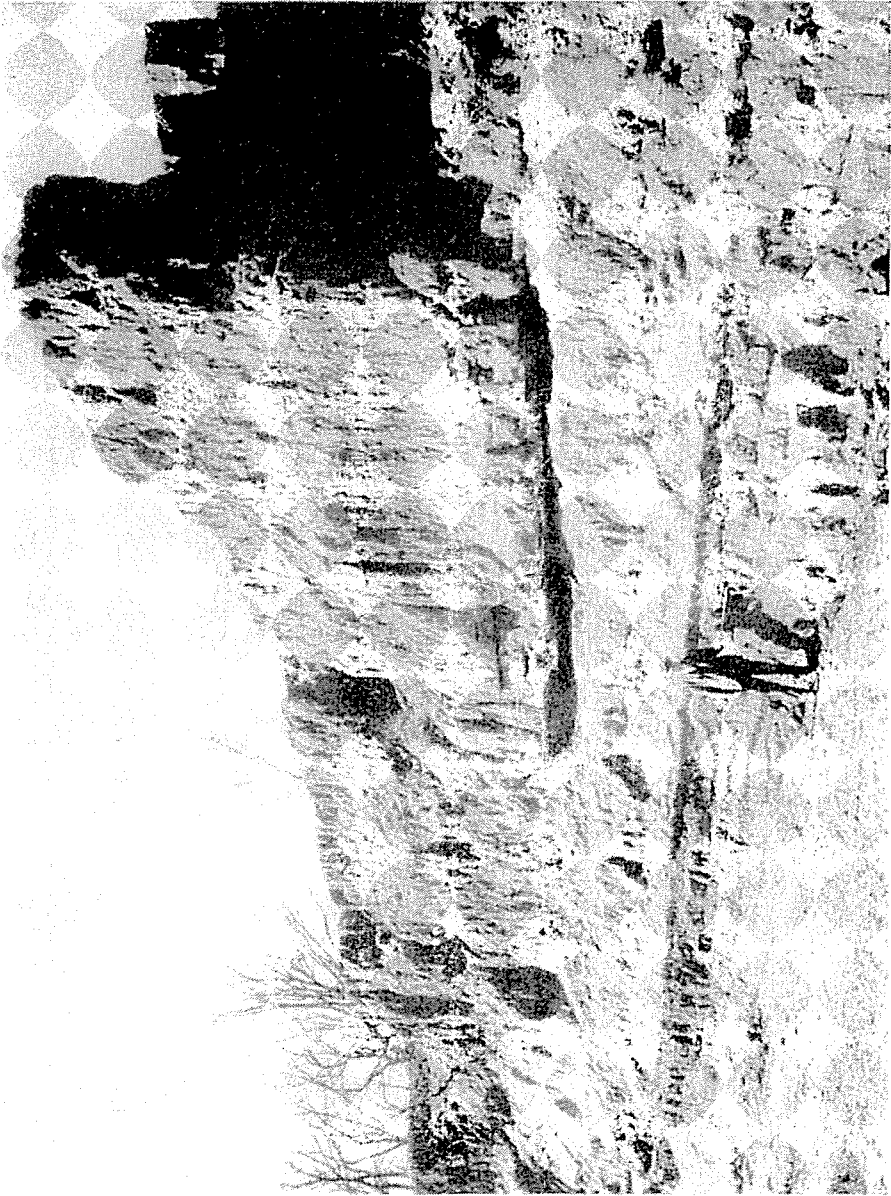


Plate 24

afterward, and then did not ask him for any opinions he might have had about his sites, nor about the results of his researches in them, extending over a period of many years. In 1936 Dr. Leighton issued a report on his visit of a few days to these sites, and apparently he had not read any of the many previously published reports on them in various national scientific publications, and in the annual *Bulletins of The Texas Archeological and Paleontological Society* from the years 1929 and 1930 onward, or at any rate he failed to mention them in his bibliography.

This report was entitled *Geological Aspects of the Findings of Primitive Man, Near Abilene, Texas*. Medallion Papers No. XXIV Gila Pueblo, Globe, Arizona. On page 15 of that report there is shown Plate V which has two panels, and the top panel (a) is a picture of the R. G. Young site and this shows the writer pointing to the highest level of those from which he had excavated mammoth bones. Here there evidently was a whole mammoth skeleton originally, as two tusks, two teeth, a shoulder blade, and a complete leg bone were excavated. The formation even that high up on the bank has the same color of light gray, spotted with rust colored zones, which is found not in the latest Pleistocene deposits, but in far older deposits. On a line just above the writer's head in Plate V (a) of Leighton's Report may be seen a line of unconformity below which the picture shows a wide band of humus stained earth. On the page opposite to Plate V of Dr. Leighton's Report we find a reader under (a) as follows "Elm Creek Silts along Clear Fork of Brazos River at Station 12. Three mammoth teeth were found by Dr. Ray, of Abilene, the discoverer of this site, at about where the man is shown in the picture; also a bone of equus in the lower gravel, which may correlate with the Durst Silts."

In reference to the above statement, at least ten mammoths teeth of several different sizes of mammoths, including some small ones, and many bones of mammoths have been found there. The bone referred to as "equus" was later definitely identified as a bison leg bone. In the lower panel of Plate V of Dr. Leighton's Report, Panel (b), is shown a site located about three miles lower down the Brazos River beside the Delk country road, a short distance north of the bridge across Mulberry Creek and near its mouth. Panel (b) carries the following title under it "Elm Creek and Durst (?) Silts" and the reader on the opposite page (14) is as follows

"Elm Creek Silts along Clear Fork of Brazos River at Station 14, near the base of these silts, at the top of what appears to be Durst Silts, on the same level as the man is standing, were found hearths, charcoal, and flint chips. The bluff is approximately thirty feet high."

This writer has seen no evidence that the site shown as Panel (b) in Dr. Leighton's report is anything more ancient than the five Nugent Silts which contain a recent fauna, and it is doubtful that either of the Clear Fork Silts are to be found there. The stream probably began to deposit this bank in Nugent Silt (1) time, and as such it is all of recent deposition down to the waters edge. The writer has examined the site many times and has found some groups of naturally embedded water laid stones, but no hearths, although the formation should contain them.

On page 27 of Dr. Leighton's Report he stated as follows concerning "Station 13 on the Clear Fork of the Brazos River, These silts differ strikingly from those at Station 12 in having no caliche and also in being finer with sparse small pebbles; yet the prominent humus band is at the same horizon." In this and other comment on the heavy humus stained zones of local sites Dr. Leighton several times compared the recent humus stained zone at the top of Nugent Silt (4) in the regular deposited silts along the banks of Elm Creek and the Brazos River, with the ancient Pleistocene deposits in the Young Site, which also have a broad humas stained zone at the top of the Pleistocene deposit. This zone is less than four feet beneath the present soil surface.

Much study of the Young Site, or Station 12 of Dr. Leighton's Report, indicates that the deposit was formed far back in Pleistocene time and not a fragment of evidence has been found that man ever visited it. The writer would estimate the age of all of

PLATE 25

This is a close up view of the gravel stratum, and the Lower Clear Fork Silt below it, at the Gibson Site. Taken in January, 1930.

PLATE 26

This picture shows the Gibson Site silts and a flint artifact embedded in gravel at the base of a bank situated about a thousand feet south of the bank shown in Plate 24. This picture was made in 1930.



Plate 25

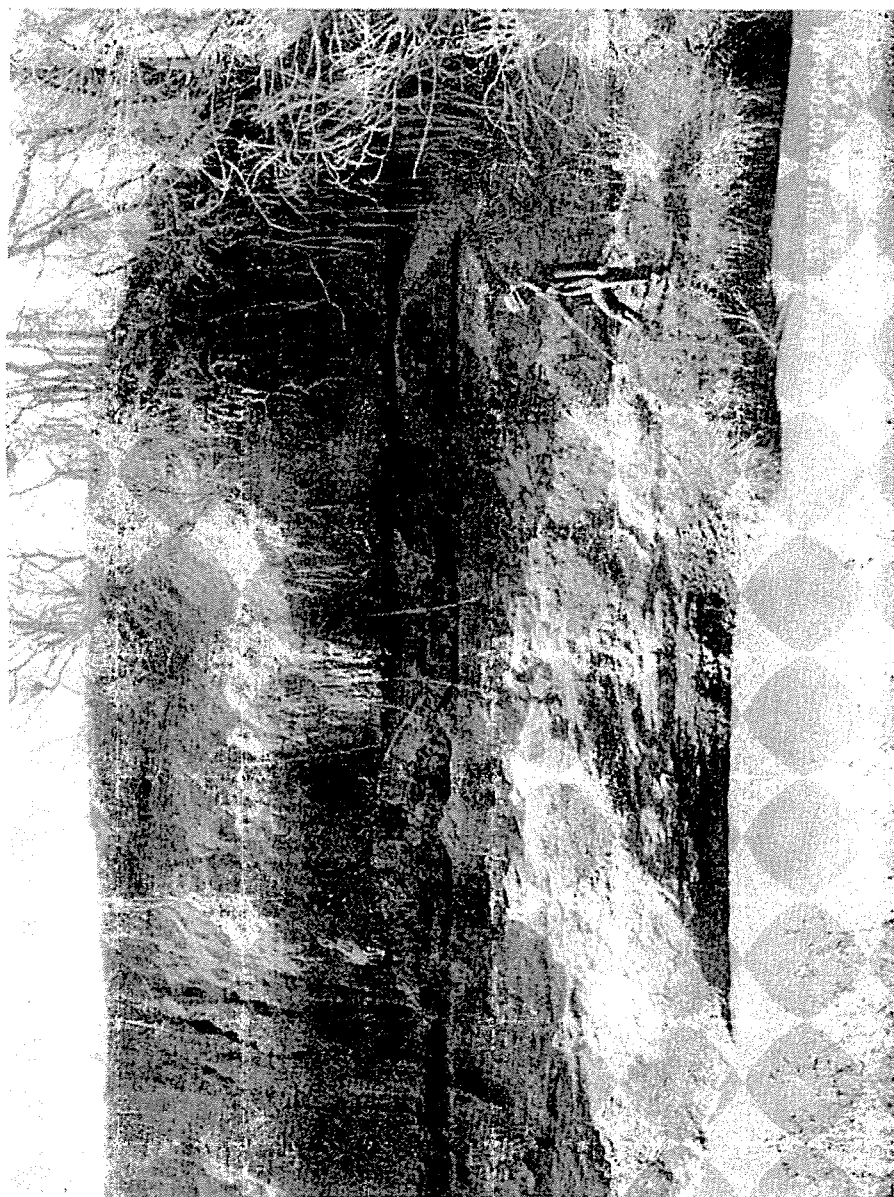


Plate 26

the Young Site deposits below the unconformity as undoubtedly many thousands of years older than the lowest level of the Lower Clear Fork Silt, or the "Durst" according to Dr. Leighton's terminology.

The writer has prepared a sketch of the Young Site, or the one shown in Dr. Leighton's Station 12, panel (a) to illustrate his own findings in that site. (See Plate (23) of this article.

In describing the Young Site we will begin at the bottom of the site at low water level. Stratum (1) is of dark red color and of undisturbed Permian age, and is full of large red claystones, and is 2 1-2 feet in thickness.

Stratum (2) is composed of 5 feet of Pleistocene conglomerate stone and this contains Pleistocene forms of mussels and gastropods and many mammoths bones and teeth.

Stratum (3) is composed of 6 feet of old Pleistocene gray sandy clay, and rust colored zones. In the rust colored zones are many mammoths bones and teeth.

Stratum (4) is composed of 10 feet of pinkish tan colored, hard and caliche filled deposit. There are streaks of light gray sand and gravel in this layer also. The top portion of this stratum which extends up to within less than four feet of the present soil surface is stained black with humus.

Stratum (5) Separated by a slightly lighter line is a narrow band of very dark silt just above Stratum 4, and then there is a complete break with the silt above; which has the light pinkish tan color of the top or last deposited stream silt of the Abilene Region or Nugent Silt (5).

Evidently the true explanation of this site is that at a time while the Pleistocene fauna was still very abundant, all of the three strata of Pleistocene deposits up to within less than four feet of the present soil surface were laid down, and that their heavy infiltration with caliche so hardened them that they remained as an earlier Pleistocene remnant long after the time when most other such deposits were removed by stream erosion, and that this bank so remained intact, and its upper portion as a top soil surface, until about the close of Nugent Silt (4) time, when its top took on the dark humus coloration of Nugent Silt (4). Then unconformably over this was deposited the latest formed silt of the Abilene region, Nugent Silt

(5), to a depth of 3 1-2 feet on up to the present soil surface. The evidence would indicate that both the Upper and Lower Clear Fork Silts and Nugent Silts 1, 2, 3 and 4, never had a chance to form because of the persistence into recent time in this bank of over twenty feet of ancient Pleistocene deposits. (See Plate (23)). *See Plates 24, 25, 26, 27 and 28 for photographic evidence concerning these deeply buried sites.

P. O. Box 62, Abilene, Texas.

*The last two years of this research, including this report, and the four site drawings with it, were done with the aid of research funds of the Anthropology Department of Texas Technological College, Lubbock, Texas.—Cyrus N. Ray.

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PLATE 27

This shows the Matthews Ranch Site where two skeletons were removed from the hole shown at the top, early in the winter of 1929. (See Scientific American, May, 1929). Members of Dr. J. Alden Mason's, University of Pennsylvania Expedition of July, 1929, are shown in the foreground.

PLATE 28

No. 1. The hearth under the man's pick axe contained a square based flint knife at a depth of eight feet below the soil surface, in the black stained zone of Nugent Silt 4. This is the first found site at a depth of eight feet, situated on the Will Myatt place. The silt above the dark line is Nugent Silt 5. Date, October, 1929.

No. 2. This is a picture of the writer's 1930 excavation in the Gibson Site. The gravel layer below the pick axe is the base of the upper Clear Fork Silt. The deposit below where the trowel lies is the Lower Clear Fork Silt. This picture was first printed in the writer's article in the 1930 issue of this Bulletin, (Plate 11, No. 4), and again in 1934 in Gila Pueblo's Survey of Texas, (Plate VII, B.).

No. 3. This is a picture of the Gibson Site showing an Abilene Point projecting just below the gravel stratum in Lower Clear Fork Silt.

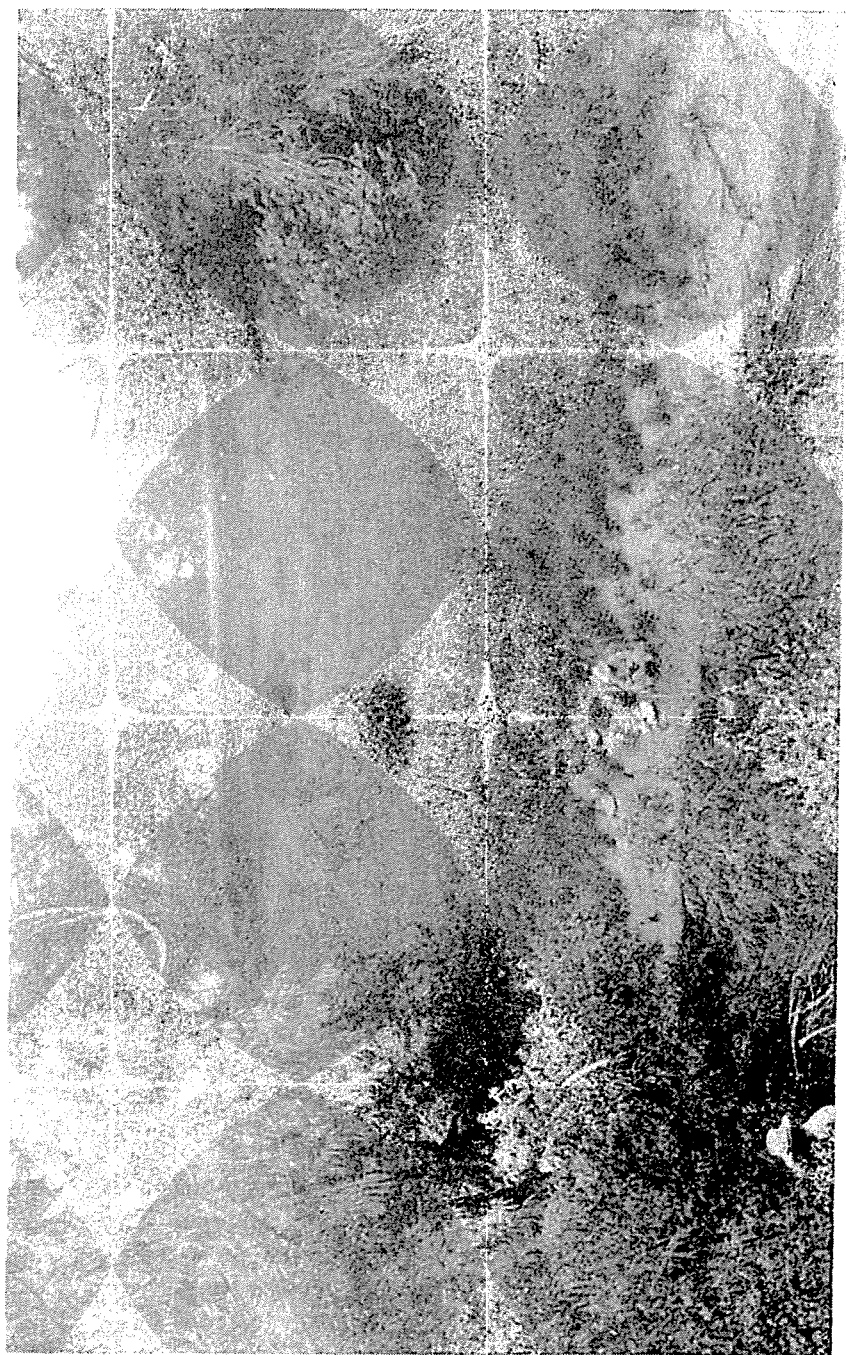


Plate 27

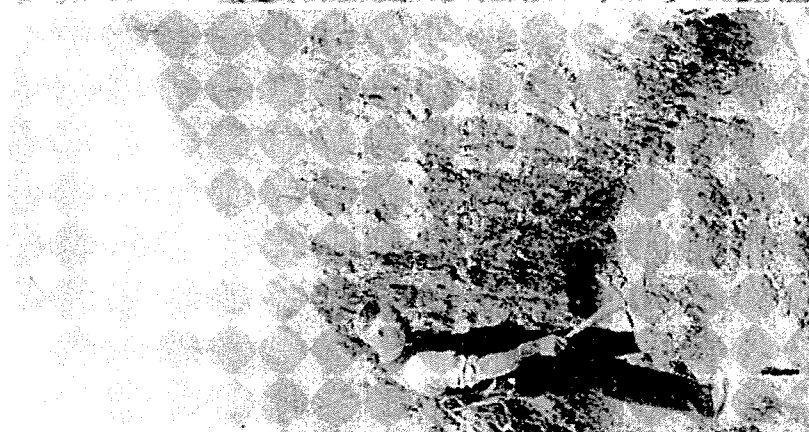
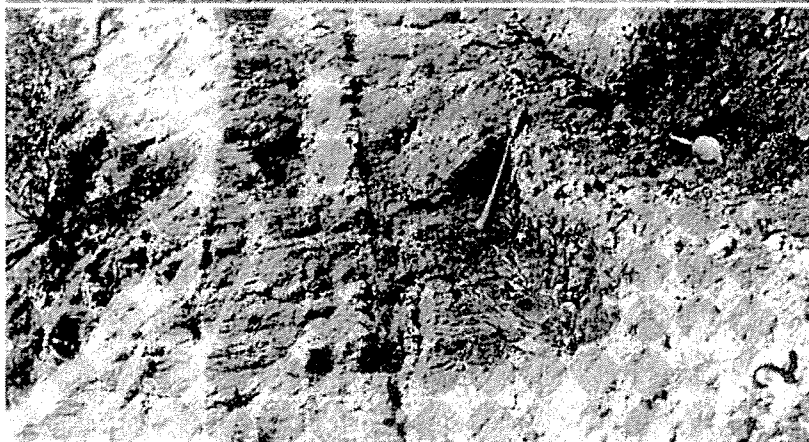


Plate 28

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13. Cyrus N. Ray, New Evidences of Ancient Man in Texas, Reports, Bulletin of Texas Archeological and Paleontological Society, Vol. 10, 1938, p. 269, Plate 37, No. 1.
14. Cyrus N. Ray and Kirk Bryan, Folsomoid Point Found in Alluvium Beside a Mammoth's Bones, Science, Sept. 16, 1938, Vol. 88, No. 2281.
15. Cyrus N. Ray, Was the American Mano and Metate an Invention Made during Pleistocene Time? Science, Feb. 23, 1940, New Series, Vol. 91, No. 2356.
16. Kirk Bryan and Cyrus N. Ray, Long Channelled Point Found in Alluvium Beside Bones of Elephas Columbi, Bulletin of Texas Archeological and Paleontological Society, Vol. 10, 1938, Plate 35.
17. Cyrus N. Ray, A Texas Skeleton, Science, October 15, 1943, Vol. 98, No. 2546.
18. Cyrus N. Ray, Some Unusual Abilene Region Burials, Bulletin of Texas Archeological and Paleontological Society, Vol. 11, 1939, pp. 237-241, Plate 52.

NEWS NOTES AND EDITORIALS

NO BULLETIN PRINTED IN 1944

There was no Bulletin of the Society printed in 1944, for the very good reason that too few articles of any kind were received by the Editor to enable the Society to publish a book during that calendar year. By January, 1945, enough material was on hand to make a small book, and the Society intended to issue this during the spring of 1945. When the time allotted to do the Bulletin editing arrived, all of the printing company's printers, except one, were engaged in War activities. There was a shortage of civilian workmen everywhere at that time. During the summer of 1945 enough additional good material was sent in to insure the publication of a Bulletin of a quality up to the standards of the organization. The Society's finances never have been in better condition, and sufficient resources are on hand for payment of the costs of larger books, if enough good articles could be obtained. If an article details some essentially sound and constructive work, and has either good photographic records or black ink drawings as illustrations, even though it may be the work of an untrained writer, it can be made to fit after some alterations of text are made. The Editor does not have the time available, however, to rewrite indifferently written articles. If any of the members know of unpublished articles which meet the Society's standards, the Editor would like to have the opportunity to read them. The Society pays no salaries to its officers, nor does it pay for manuscripts other than allotting a few copies to the writer of each article. Of most Bulletin issues, only three hundred copies have been printed, and no year's issue has exceeded four hundred copies. Permanent files of these books are in the possession of most of the great museums and university libraries of America, and those of some foreign countries. When a member's book has been read, and then provided he does not plan to retain it, the copy should be donated to a reputable scientific library as these volumes come in the category of rare books, even when newly printed.

The Bulletins are the main foundation literature records of the original archeological research done in Texas and some adjoining

states during the past eighteen years, and as such should not be carelessly destroyed.

This volume of the Bulletin will be sent to all of those who paid dues in either 1944 or 1945, and only one dues payment of \$3.00 will be collected for those two years, and this volume is numbered the sixteenth in the series of annual bulletins. The Society prefers to print articles on original research, rather than compilations of work already done, and to use original photographs and drawings wherever possible, but it has been found advisable to reprint two pages of pictures in connection with Dr. Roberts article which were used in the preliminary report of the site in 1943.

CYRUS N. RAY, *Editor.*

ORGANIZATION OF THE SHREVEPORT SOCIETY FOR NATURE STUDY

The Shreveport Society for Nature Study was organized in May, 1945, with an initial membership of approximately fifty individuals. A Board of Directors consisting of twelve members was elected to conduct the affairs of the Society until the first annual meeting in September, 1945, and was empowered to submit a constitution and by-laws at this meeting. Temporary officers chosen by the Board were as follows: Chairman, Dr. Clarence H. Webb; Vice-Chairman, William C. Spooner; Secretary, W. Brainerd Wright, all of Shreveport, Louisiana.

This society has for its purposes the study of any field of natural science, the establishment and maintenance of museum collections and exhibits, and the furthering, by all educational means, of interest and knowledge concerning the natural sciences and resources of the area. Membership in the society is open to all interested persons in the Tri-State area of North Louisiana, East Texas, and South Arkansas. The organization, including its exhibits, library and properties, will be housed in the Louisiana State Exhibit Building on the State Fair Grounds at Shreveport, Louisiana. Special educational memberships will be established and it is planned to foster a Junior Society to encourage interest and participation of faculties and students of the various schools and colleges of the area.

Several preliminary meetings were held, at the first of which a distinguished guest, Dr. Kirk Bryan of Harvard University, encouraged the formation of the society. He spoke flatteringly of the splendid work done by the Texas Archeological and Paleontological Society as an example of the effectiveness of a properly organized group.

Two projects in natural science fields are now engaging the interests of the society. One of the charter members, Mr. Alfred Glassell of Shreveport, who is also president of "Ducks Unlimited," is collecting a comprehensive group of waterfowl from the coastal marshes. The archeological group, with the technical assistance of Curator Brainerd Wright, is preparing a panoramic display of the Indian cultures of Louisiana, arranging the artifacts, with explanatory notes and drawings, by culture periods from the earliest Folsom-Yuma to the historic Caddo, Tunica and Chitimacha.

Any visitors to Shreveport who are interested in natural sciences are invited to visit the State Exhibit Building and to contact Curator Wright or the other officers of the society.

C. H. WEBB, M. D.

The Children's Clinic,
Shreveport, Louisiana.

CONCERNING THE CONTRIBUTORS

There are eight main articles in this issue of the Bulletin and of these the writers of only three are professionally engaged in either archeological or anthropological work, the others derive their incomes from different professions and have only amateur status in archeology, however, Mr. Carl Chelf was formerly connected with the Texas Memorial Museum at Austin, Texas, and Mr. R. K. Harris with the Hall of State, Dallas, Texas, but both are now otherwise engaged.

Three physicians and surgeons of two different schools of medical practice have written articles for this issue, covering interests in geology, paleontology, anthropology, and archeology. C. H. Webb, M. D., of Shreveport, Louisiana, and J. L. Hodges, M. D., and

Mrs. Hodges, of Bismarck, Arkansas, have written very scholarly articles concerning the Caddoan remains of their respective states. This is in accordance with the old Southern tradition that a physician's education eminently fitted him to appreciate scientific and scholarly hobbies. It would be far better for the progress of the world, and for the welfare of their patients if more of the modern doctors cultivated an interest in hobbies connected with science and culture. A physician's education gives him at least a reading knowledge of many different sciences, each of which opens gates into a multitude of by-paths which can be followed. One of the most fascinating of all of these to a doctor is physical anthropology, which simply expands his knowledge of modern human anatomy, and attempts to explain why our bones are as they are, and how they got that way. Drs. Stewart and Shapiro who have reports in this Bulletin are such anthropology experts. Dr. Shapiro is connected with the American Museum of Natural History, in New York, and Dr. Stewart with the Smithsonian Institution. The ordinary doctor who has to devote most of his time to his vocation perhaps may never get to be rated as an expert on prehistoric physical anthropology, but he nevertheless can enjoy many thrilling moments digging up ancient man's remains and then digging out the secrets of the beetle browed skulls which he finds.

Dr. Ales Hrdlicka of the Smithsonian Institution, Dr. Robert Broom of South Africa, and Sir Arthur Keith were all first trained as physicians and surgeons, and the latter two practiced. Dr. Charles H. Mayo, Sr., was a member of this Society for many years before his death, and often wrote letters to the Society's officers commending the work. In one of these letters he stated that every man would live longer and be happier if he had one, or better, two hobbies, of a nature different from what he did to earn his living.

Prof. Alex Krieger of Texas University has written a very much needed article on exactness in terminology. There perhaps is no professional or amateur group so careless and inexact in their terminology as archeologists, and the national journal contributors and editors are as inexact in expression as the amateur, if not worse.

This Editor once had some comments to make on the subject in *The American Antiquity Quarterly*. *Writers in scientific publications should beware of the inaccurate so-called English terminology of newspapers. It seems that many newspaper writers never consult a dictionary for exact word meanings, but flounder around either in localisms or in a special jargon of their own. The purpose of writing is to be understood by the greatest number of readers, and to the extent local slang phrases, or other such forms of uncommon speech are used, by that much one limits reader understanding to the areas where such provincialisms are current. Scientific writing especially is likely to be read on several continents where different English dialects are used. To be understood generally one should use terms defined in some dictionary of the English language and primary definitions wherever possible (unless it is a question of naming newly discovered objects). Preferably an Englishman should use English works of reference and an American writer the standard dictionaries of his own country, and then one can determine his probable meaning. It might be in order to list here some characteristically inaccurate terminology used by archeologists in articles printed in our leading national journals. We there learn that skeletons are "accompanied" by such inanimate objects as beads, axes, and pottery, and also that John Smith "recovered" flint knives, arrow heads, and scrapers, which perhaps were two thousand years old. If John Smith is of Indian ancestry and "recovered" some of his patrimony, then perhaps the term might be correct, but if he is European in ancestry, it might be difficult to prove that his ancestors lost the artifacts which he "recovered." Again the word "possible" is no substitute where probable is intended, according to any available dictionary. Ignorance in high places is also no substitute for a dictionary. A French king's ignorance coupled with high office, served to create and to perpetuate on down into modern times, an error in the form of the Roman numeral four on clock faces. Another

*Cyrus N. Ray, *Accuracy in Terminology*, Correspondence, *American Antiquity Quarterly*, Society for American Archeology, January, 1936. It would seem that this article was not altogether appreciated in some quarters, because some one who failed to sign, appended some unusual, partial definitions from far down the column, (not primary definitions), to the end of my correspondence. If a definition is quoted on this comment, let us hope that it will not be tailored to fit, that it is a primary definition, and all of that definition.

example from the decadent era after World War I was the embalming in English of a terminological abortion, which should have been promptly buried, in the term "normalcy." There are adequate terms in English dictionaries to express this idea, but immediately afterward all of the newspapers blossomed forth with a nauseous superfluity of "normalcy."

But newspaper and radio carelessness should have no part in scientific writing. Fortunately primary definition dictionary English has about the same meaning everywhere, regardless of which end of a word the accent is placed upon by the inhabitants of different regions. There is one American news magazine which picks unusual, obscure, or obsolete words out of the dictionary and scatters them lavishly through its pages for a time. There is no good reason why these should be used in scientific writing when more generally used words of the same meaning are available. Such words are as grass, they spring up today and are gone tomorrow.

Another tendency in some archeological writing is to an overuse of quotation marks on questionable words which the writer seeks to use, but yet wishes to disavow responsibility for. If the word or phrase is quoted from another this is alright, but if not, and a paper is too thickly starred with unnecessary quotation marks, the reader is given the idea that the writer's attitude is too apologetic.

The paper of Mr. R. K. Harris is a short but interesting description of some very unusual bone tools. In April, while in Dallas, Texas, to address the Texas Geographic Society, the Editor inspected these very large bone artifacts at the home of Mr. Harris, where he has fitted up a very interesting private museum collection.

Mr. Carl Chelf is now a man of mature years, but many years ago when the Editor first met him he was an enthusiastic boy collector of arrow heads, aged twelve. Mr. Chelf has continued his valuable work since then. Much research still needs doing on questions concerning the atlatl, the spear, and the bow and arrow.

Mr. A. H. Witte is an amateur archeologist like many of us, and has done some good work both in the field of prehistoric archeology, and in the study of a famous historical site of his region.—C. N. R.

REPORT OF THE SECRETARY-TREASURER OF THE TEXAS ARCHEOLOGICAL AND PALEONTOLOGICAL SOCIETY

Report for the sixteenth year from the annual meeting on
October 29, 1943, to December 2, 1944

RECEIPTS

Balance on October 29, 1943	\$549.49
Collected Dues and Bulletin sales	429.00
Bridwell Excavation Fund	20.00
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Total	\$998.49

DISBURSEMENTS

1943 Printing Bill for Volume 15	\$212.00
1943 Engraving Bill for 18 plates	71.10
Office Supplies	2.30
Postage, Typing, Office expenses	23.25
Bank Maintenance50
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Total	\$309.15
Balance December 2, 1944	\$689.34
Dues and Bulletin Sales, 1944-1945	240.00
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Balance on hand September 15, 1945	\$929.34

OTTO O. WATTS,
Secretary-Treasurer.

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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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