BULLETIN

OF THE

Texas Archeological Society

(Formerly Texas Archeological and Paleontological Society)

VOLUME TWENTY-FOUR

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Published by
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Foreword

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

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

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SPELEOTHEM AGE DATING

PHIL C. ORR

In the constant hunt for methods of determining the age of archeological or paleontological material, little attention has been paid to the growth of speleothem—"cave formation" including stalactites, stalagmites and dripstone, etc. A few short papers have appeared on the rapid growth of these forms, usually in mine tunnels, dams or concrete works, but of these most are of material other than crystallized travertine, which is usually associated with old human bones or those of prehistoric animals in natural caves.

Epsom salts, for instance, grows very rapidly. In the construction of a simulated mine—a life size replica in the Nevada State Museum, we utilized epsom salts to make crystal growth, but these later had to be removed, for their growth could not be controlled. *Calcanthite,* a copper sulphate, occurring as a secondary mineral, forms rapidly under artificial conditions, but does not appear to occur in nature, except in Chile. Other salts, including calcium carbonate, form rapidly under ideal conditions, particularly in hot springs.

The growth of fast forming minerals is little understood and for the purpose of this paper will not be gone into, as the present study is concerned with the growth of crystallized calcium carbonate upon human bone and is limited to an effort to determine the relative age of archeological cave deposits in Moaning Cave, Calaveras County, California.

The Truman Expeditions of the Western Speleological Institute, excavating for the Santa Barbara Museum of Natural History in Moaning Cave, unearthed hundreds of human, dog and small mammal and bird bones in the floor of the large room, which posed a problem of determining their age.

Bones were found to depths of eleven feet under speleothem capping interlaid with broken rocks, cave earth and other speleothem layers. A total of 420 mm. of speleothem lay over the oldest of the bones which are chalky white in color inside and stained a light red on the surface (Plate 1).

The mineralization is such that had they been the bones of extinct mammals, there would be no hesitation in placing them in the Pleistocene Age; but being *Homo sapiens*, the ghosts of Hrdlicka and Holmes would rise up and point out a dozen reasons why and how these human bones became imbedded in solid rock in a matter of a few thousands of years.

Moaning Cave was first discovered by white men some time in the '49er era. One of the first white visitors to the cave left a miner's pick and a whiskey bottle. It is believed by some that the cave was visited by Trask, State Geologist in 1851, but it was not entered again until 1922, when Addison Carley, the present owner, descended the 210 feet from the surface and found a "coyote skull," the whiskey bottle and the miner's pick.

It seems probable in the light of the recent excavations that the "coyote skull" may have been that of a dog, for many bones of Indian dogs were uncovered, but no coyotes. However, the skull has disappeared along with the whisky bottle and only the miner's pick has been recovered and has been presented to the Western Speleological Institute's collections at the Santa Barbara Museum of Natural History.

Moaning Cave is a large trap cave, with relatively small opening of some four by ten feet, dropping down a straight fissure about thirty feet to a small shelf and beneath this is a huge room of 165 feet sheer drop and roughly 90 by 30 feet at the bottom, which originally was in the form of a cone of debris coated with speleothem.

Excavations by Mr. Carley in this cone, in an effort to find hidden passages, led to the original discovery of human bone beneath the cone.

In prehistoric times a second entrance to the cave existed through another fissure and this has been reopened and is utilized today as the main entrance to the cave. Therefore, the prehistoric cone has been supplied from two different entrances.

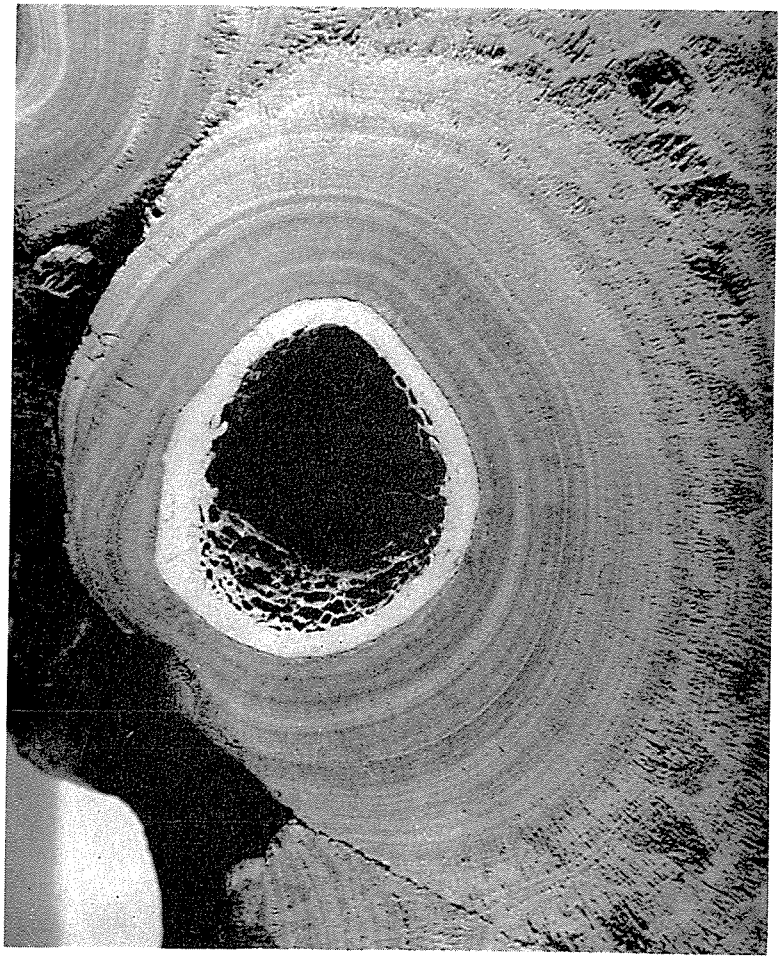

PLATE 1

Cross section of human femur from Moaning Cave, Calaveras County, California, showing growth of speleothem. White ring in center is the original bone.

Wallace (1951, p. 38), working on the side of the cone supplied by the present artificial entrance, estimated the age of human bone by the artifacts at 3500 years. Orr (1952, p. 11) made a fortunate discovery of some common nails, which it was determined entered the cave in 1922 during the construction of the stairway and were removed in 1951, making 29 years during which they received their coating of speleothem in the cave. On the basis of the accumulated speleothem on five of these nails, he postulated a minimum age for the oldest of the human bone as 12,180 years (Orr, 1952, p. 14) and a maximum age, disregarding the several feet of red clay deposits, as about 50,400 years.

With the discovery of the miner's pick, which appears to have been left in the cave between about 1850 and 1922, or roughly seventy years, we secure an additional check against the evidence of the nails for a period of twenty-nine years.

The iron pick (Plate 2, B) at one time was in part heavily encrusted with speleothem. Other portions received a lighter coating. Measurements made by Mr. O. H. Truman, President of the Institute, show a maximum deposition of 2.5146 mm. accumulated in 70 years. The minimum deposition measured was 1.016 mm., and the average of nine measurements was 1.8034 mm.

The question of which measurements are of importance arises. The *minimum* deposit of speleothem will give the *maximum* age in years, while the *maximum* deposit will give the *minimum* number of years. Inasmuch as the maximum deposit and the minimum number of years is somewhat older than any Carbon-14 date for early man, we may assume that the maximum deposit or minimum number of years is of value as an indication of the age of the deposits.

The minimum time period for the oldest of the deposits is indicated as being in the vicinity of 12,000 years. Depending on the method used to determine this mathematically and the number of decimal places the rate of growth in millimeters per year is carried out, there is a variation in the answer of a few hundred years in 12,000. For ex-

ample, calculating the rate of growth per year from the accumulation of speleothem in 29 years gives us .0345 mm. divided into the total deposition of speleothem of 420 mm. gives 12,174 years to accumulate this amount. Yet, if we figure as Orr did (1952, p. 14) on the number of years to accumulate one millimeter, we get the figure 12,180 years, a variation of six years due to the number of decimal places the calculations are carried out. In the case of the minimum deposits, but maximum years, there is a slight increase to a maximum of 50,755 as against 50,400 years.

From the measurements made of the miner's pick, which lay in the cave some 70 years prior to the accumulated speleothem on the nails, we secure the minimum deposition of 1.0160 mm. or an accumulation of .0145 mm. per year for the 70 years, which gives us a maximum age of the 420 mm. of speleothem deposit as 28,965 years as against 50,755 years derived from the nails.

However, the 2.5146 mm. maximum deposition on the pick in 70 years results in a rate of growth of 0.359 mm. per year, or 11,699 years to make the total deposition of 420 mm. This figure agrees fairly well with the *minimum* age, secured from the nails alone, of 12,174 years.

If we were to average the two sums—11,699 and 12,174 years, we get 11,961 years as represented from the data of the past 100 years, instead of merely the last 29 years, as reported by Orr. This is a minor difference from his estimate of 12,180 tending, on the basis of the data available, to substantiate his original estimate of a minimum age.

On the matter of the maximum age of 50,000 years derived from the nails, and of only about 29,000 years secured from the pick, the difference can be explained only in the habit of speleothem to grow on different surfaces at different times.

One consideration must be made, and that is the condition of the surface of the object to be deposited on. Greasy, dense, or highly polished surfaces will not hold the mineral-carry-

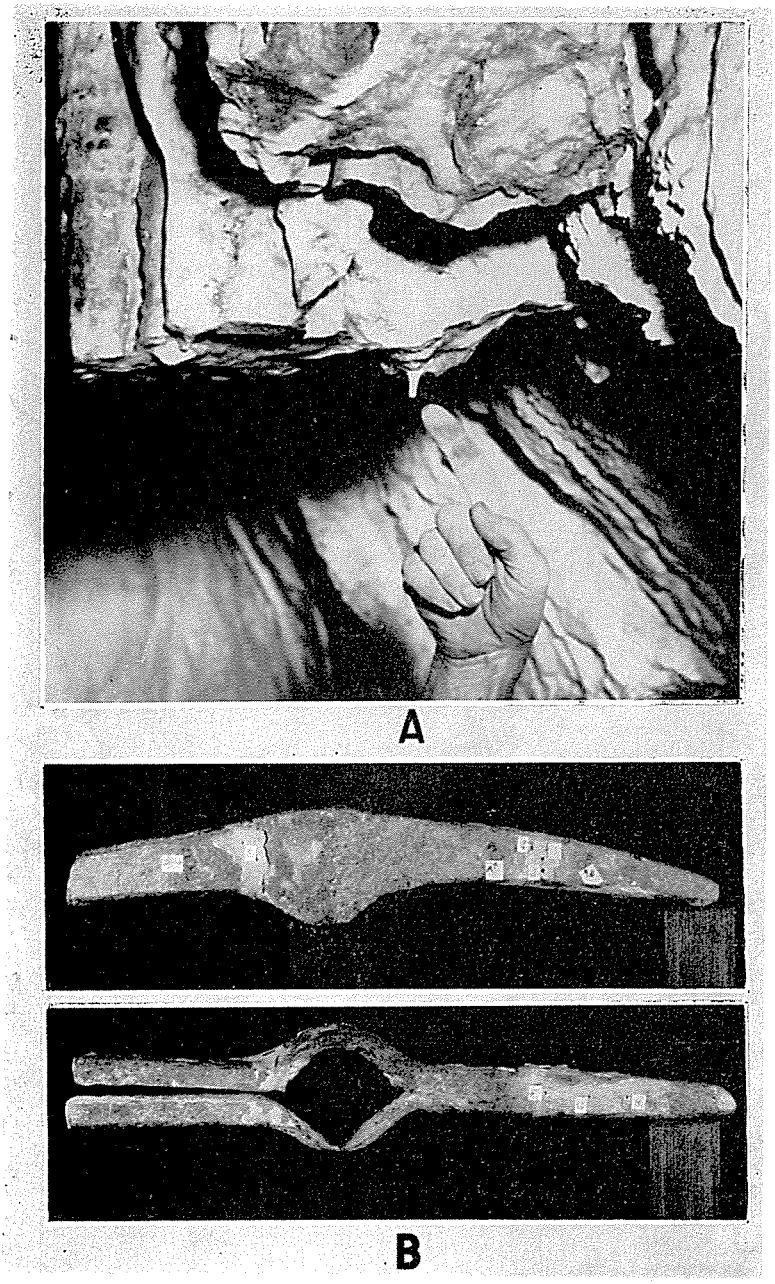

PLATE 2

A, stalactite growth in Cave of Skulls, Calaveras County, California. Note new stalactite growing from stump of one broken off in 1853, thus representing 98 years growth. B, two views of miner's pick from Moaning Cave, Calaveras County, California. showing amount of speleothem coating from 1850 to 1922.

ing water long enough to make its depositions of salts. Consequently, the 1953 investigations found other nails, dropped at the same time, but which had accumulated virtually no speleothem in that period.

The point of the pick shows no deposition, while the region near the eye has the heaviest deposits. This is doubtless due in part to the condition of the pick when left in the cave. It is usual with such tools to find that the used point is inclined to be smoother, and to have rust and other porous conditions removed, and hence speleothem deposition could not be started until after a coating of rust had developed.

Porous bone also accumulates more speleothem than that found on the more dense portions, and likewise, green bone containing grease would resist the action of the crystallization longer than dry bone subject to the same condition.

During the construction of the stairway, electric lights were strung and the waste of the rubber insulation fell to the floor of the cave with the discarded nails and were subject to the same conditions of humidity and mineral loaded waters, yet the pieces of rubber insulation after 29 years show virtually no accumulation of speleothem.

Efforts were made to compare the record of speleothem growth to rainfall records from the area. It was hoped that, like tree rings, a wide and narrow band might indicate climatic changes, but so far this has not produced fruit.

Unlike tree ring growth in which climatic conditions are reflected in the next season, there is a considerable lag in the results in speleothem growth due to the necessity of restoring the water table after dry years, and during wet years there is an excess of solution, not deposition, of already existing speleothem.

It is possible, however, from a study of cross sections of banded, crystallized speleothem, to select periods of time of excessive rainfall as against arid conditions. Contrary to general belief, there is a greater growth of fine rings during the arid conditions than during the humid.

There is much to be desired about the above study of speleothem growth as a method of dating archeological deposits. At this time it appears reasonable to suppose that the human remains in Moaning Cave date back at least 12,000 years, with the possibility that they may be as much as 50,000 years. There will be many eyebrows raised at both figures, but let us point out that from Carbon-14 determinations we know that man had already reached various parts of America by 12,000 years ago, that man in Nevada was trading with the Pacific Coast for sea shells as long as 9,000 years ago, and that hundreds of different cultures had developed throughout America to the southern tip of South America before the time of Columbus.

No Carbon-14 dates have been secured from this material. It is decidedly questionable as to whether its value would be great for the reason that for the most part only small specks of water-soaked charcoal are available and these, if collected in sufficient amounts for a test, might well come from points several thousand years apart. Furthermore, the question arises as to what effect, if any, the carbonated waters carrying modern Carbon-14 might have on carbon deposited a thousand years before. This is a wonderful opportunity for contamination, tending to give a lesser age than the true age.

Nevertheless, it would be exceedingly interesting to secure a Carbon-14 date on any of these deposits.

That speleothem growth in the mother lode caves of California is slow is shown by a stalactite which the Western Speleological Institute and the Stanford Grotto determined was broken off in 1853. From it a very small stalactite has grown about three quarters of an inch in 98 years (Plate 2, A). Another similar new stalactite occurs at the top of the stairway in Moaning Cave, which has been growing since 1922. Yet in this same cave we have 420 mm. of speleothem over human bone plus several feet of earth deposits.

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Western Speleological Institute

Santa Barbara Museum of Natural History

Santa Barbara, California

THE BELLEVUE MOUND: A PRE-CADDOAN SITE IN BOSSIER PARISH, LOUISIANA

ROBERT L. FULTON AND CLARENCE H. WEBB

Little is known of the pre-Caddoan pottery cultures of the northern part of Louisiana. Attention has been called (Webb, 1948 b) to certain evidences of pre- or non-pottery cultures of the area and mention has been made of the Fredericks site in Natchitoches Parish, from which surface collections demonstrate Marksville or Troyville to be the major culture period (Ford, 1951; Webb, 1948 a). Occasional sherds of these periods have been reported from sites which represented later horizons (Webb, 1948 a). The major emphasis has been on the numerous sites of the Caddoan time levels and there has been no previous report of excavations in this part of the state which demonstrated an early pottery horizon.

Description of the Site

The Bellevue mound site is located approximately two miles west of Bellevue, in the central part of Bossier Parish and about 20 miles northeast of Shreveport (Fig. 1, B). It is situated on a hill overlooking the western bank of Bodcau Bayou, the solitary mound capping the hill about 150 yards from the stream and some 60 feet above its present normal water level (Fig. 1, A). A secondary highway, State Route 181, cuts through the village site immediately south of the mound. A house is situated on the stream bank a few feet east of the mound; a small amount of surface material was collected from the clearing around the house and from the access road which impinges on the northern and southern edges of the mound. (Fig. 1, C).

The extent of the village site is difficult to determine because the area is densely wooded except for the clearing around the house; some evidences of a thin midden cover several acres along the stream. No burials, post molds or other village features were found apart from the excavated portion of the mound. The banks of the bayou are almost completely engulfed in a heavy growth of cypress and un-

derbrush; the surrounding flora consists of oak, ash, elm, pine, willow, cedar, sycamore, locust, sassafras, hickory, cottonwood, persimmon and many other tree varieties, in addition to thick underbrush and vines which give a jungle-like appearance along the water edge. The native fauna includes opossums, raccoons, squirrels, rabbits, armadillos and even some deer, while larger animals such as bears, cougars and wolves must have been common in former years.

The original size and contour of the mound were uncertain because of the road cuts on the slopes and the several pits which had been dug into the crest. It appeared to be oval in outline, approximately 80 feet in diameter and about 10 feet in height, with a flat top 20 to 30 feet in diameter. Lifetime residents of the area have stated that prior to the digging of intrusive pits the mound was not flat-topped but had a rounded contour. Excavation was hampered considerably by the presence of eight large trees, three of them near the crest, and four stumps, two of which were old and evidently represented very large trees.

The Bellevue site was chosen for excavation because of its accessibility, its comparatively small size which permitted exploration in one summer's work, and because it represented a type of mound in this area which had not been reported upon.* A small number of solitary hilltop mounds overlooking valleys and small streams contrast strikingly with larger mounds and mound groups in the valleys of nearby Red River and its tributaries. Heretofore none of these solitary hill-capping mounds has been carefully excavated and their place in the archaeology of the region has been uncertain.

Methodology

Permission to remove the mound was not obtained, hence a trenching technique was used. A five-foot trench was cut on a north-south line from the margin of the north road through the mound crest and well onto the southern slope

*Excavation of this mound was carried on largely by R. L. F. in preparation for his thesis in Anthropology at the University of New Mexico. The second author acted in advisory capacity, with limited assistance in excavation and study of artifacts.

(Fig. 1, C), for a total length of 70 feet. This trench was placed with the idea of revealing whether the site warranted a summer's work and whether stratigraphic levels could be recognized; in the event structure outlines were demonstrated, a modified stripping technic was planned. In the absence of these, vertical slicing was utilized throughout, shaving thin slices of the fill with a shovel and trowelling through midden deposits. Parallel to the original trench, an additional 5-foot cut was removed on the west side and two

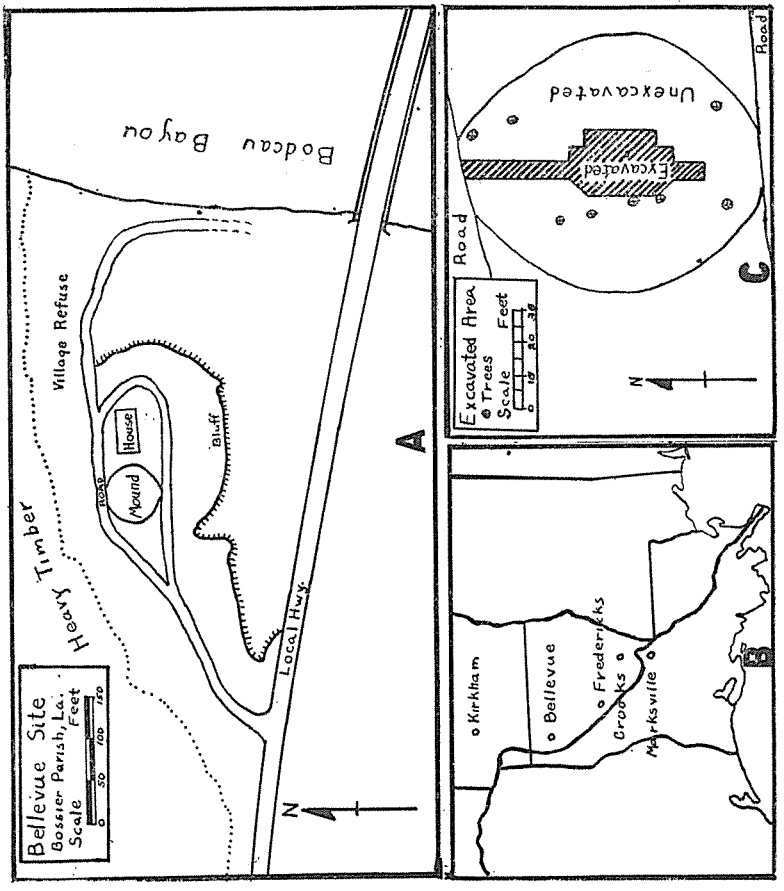

FIGURE 1

A, Map of Bellevue mound locality. B, Location of related sites mentioned in text. C, Outline of excavations.

such cuts on the east, producing a total width of 20 feet completely excavated beneath the crest of the mound.

Each trench was subdivided into sections, five feet square, marked by stakes. These sections were numbered from north to south, 14 in the original trench, and corresponding sections of the later trenches were similarly numbered. Trenches were designated A, B, C, D from west to east (Fig. 3, C). A field catalog was kept in which each specimen was numbered and a card was filed for each, recording the depth from mound surface, height above pre-mound clay level and placement within the corresponding section. If the specimens were not found in situ or came from one of the interruption pits, such information was recorded. Profiles were taken at five-foot intervals; features were recorded, diagrammed and photographed.

Stratigraphy

The mound was constructed upon a hard red clay subsurface, which was covered by a layer of fine sand beneath most of the mound, although in some places beneath the center the lowermost midden deposit extended to the clay subsoil and several features lay on this clay. The contact zone between the clay and over-lying sand was not sharp, but was a gradual mixture as is found over the village site away from the mound. Hence it is likely that at least the peripheral portions of the mound were built upon village sand, although the finding of several projectile points in the contact zone immediately above the clay leaves in question whether the sand layer was the first construction layer of the mound or was village sand subject to habitation disturbances which left these artifacts in its lower zone.

The first of three midden deposits was superimposed upon the light sand layer (Fig. 2, A, B) beneath most of the mound area. It was first detected as a thin layer in trench B about 12 feet from the northern perimeter and became progressively darker and thicker beneath the mound center. It attained a maximum thickness of 3½ feet, had 3 firebeds in

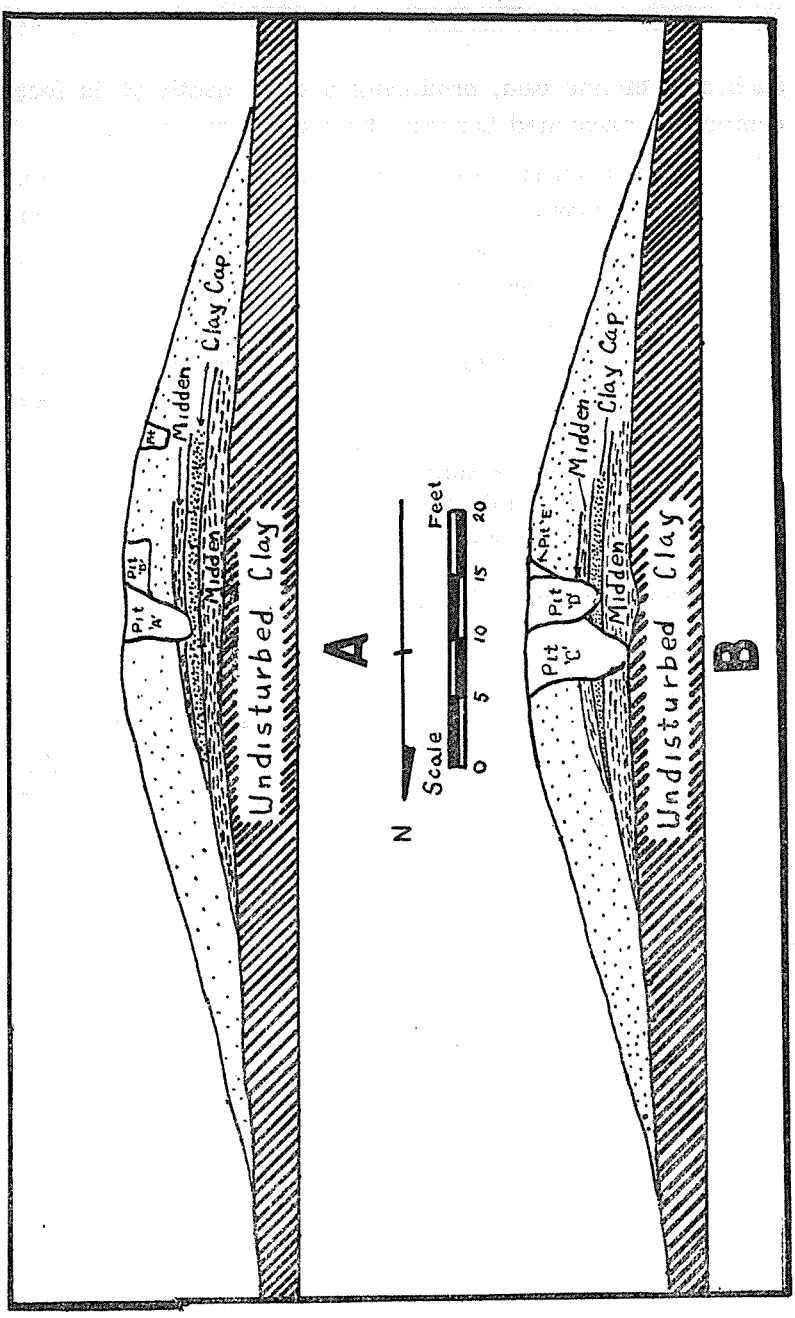

FIGURE 2

Profiles of Bellevue mound. A, Profile "B", oriented north-south. B, Profile "C", oriented north-south.

association, and yielded about half of all artifacts found in the excavation.

This initial midden layer was covered, beneath the center of the mound, by a clay cap which varied in thickness from one inch to two feet (Fig. 2, A, B). The thinner portions represented pure dark red clay similar to the clay subsoil; the thicker portions had some admixture of sand. The cap was oval in outline, 20 to 25 feet in diameter, with its thickest portions over the center of the mound and fraying out around the periphery. When Burial I was found lying on it, it was presumed to be a burial platform. However, no other burials were found on it and firebed D was also in association with it (Fig. 3, C).

A second midden deposit, 4 inches or less in thickness, lay immediately above a portion of this cap, detectable over a diameter of approximately 15 feet. The remainder of the mound above this level was composed largely of sand or mixed sand and clay fill, with one rather dense clay layer, 1 to 2 feet in thickness, its lower levels about one foot above the second midden deposit (Fig. 2, A, B). This layer was quite irregular and was interpreted as an incidental construction deposit of no significance. Above it, however, was a third midden layer, rather irregular and thin, visible more clearly along the west wall of the excavation and containing very few artifacts. If a final occupation midden existed atop the mound, it had been removed by erosion and the digging of several pits as mentioned below.

Features

Intrusive pits. Evidences were found of six intrusive pits sunk from the top of the mound, all apparently in recent times. Three of these, a barbecue pit and two narrow adjacent pits (Fig. 2, A) found by trenches A and B, did little damage to mound stratigraphy or features. Two others, found in trenches B and C, did little damage but a larger pit (Intrusive pit C) sunk from the center of the mound and detectable in trenches B and C, was more disturbing in that it was carried to the clay subsoil, interrupting all layers and

disturbing Burials II and III and their associations (Fig. 2, B).

Firebed A. This was a small firebed, 1½ by 2 feet in diameter and 2 to 3 inches in thickness, lying directly on the sub-mound clay at the adjoining corners of Sections B9 and 10 and C9 and 10 (Fig. 3, B). The ashes were deposited on the slope of a shallow depression or basin in the clay, which was approximately 5 by 6 feet in diameter. Immediately to the east of the firebed were some of the bones of Burial II, which also lay within the shallow depression. Intrusive Pit C, mentioned above, cut across the edges of the firebed and the burial, extended down to the clay of the depression, and interfered with interpretation of the aboriginal features.

Firebed B. This firebed, slightly larger than A but of similar thickness, also was placed on the submound clay in Section B8, in what appeared to be a prepared bed. Beneath its ashes was the beginning of a trench, extending eastward for about 7 feet, slightly sinuous in outline, 1½ to 2 feet wide and 5 to 6 inches deep, filled with white sand (Fig. 3, B). No artifacts were in association with the firebed or the trench.

Firebed C. This was the largest of the firebeds, about 5 feet in length, 2 feet in maximal width and 2 to 3 inches in thickness. It surmounted the lowermost midden deposit and was covered directly by the red clay cap in Sections C and D 8 (Fig. 3, C). A few broken animal bones and sherds were found in and around this ashbed.

Firebed D. This bed was placed immediately atop the red clay cap, 3 feet south of Burial I. It was irregular in outline and could have represented one large bed, 3 to 3½ feet in diameter, or an aggregation of several small beds (Fig. 3, C). The second habitation midden surrounded and overlay this bed; only a few bone fragments and sherds were in association. There was no indication of a prepared clay basin.

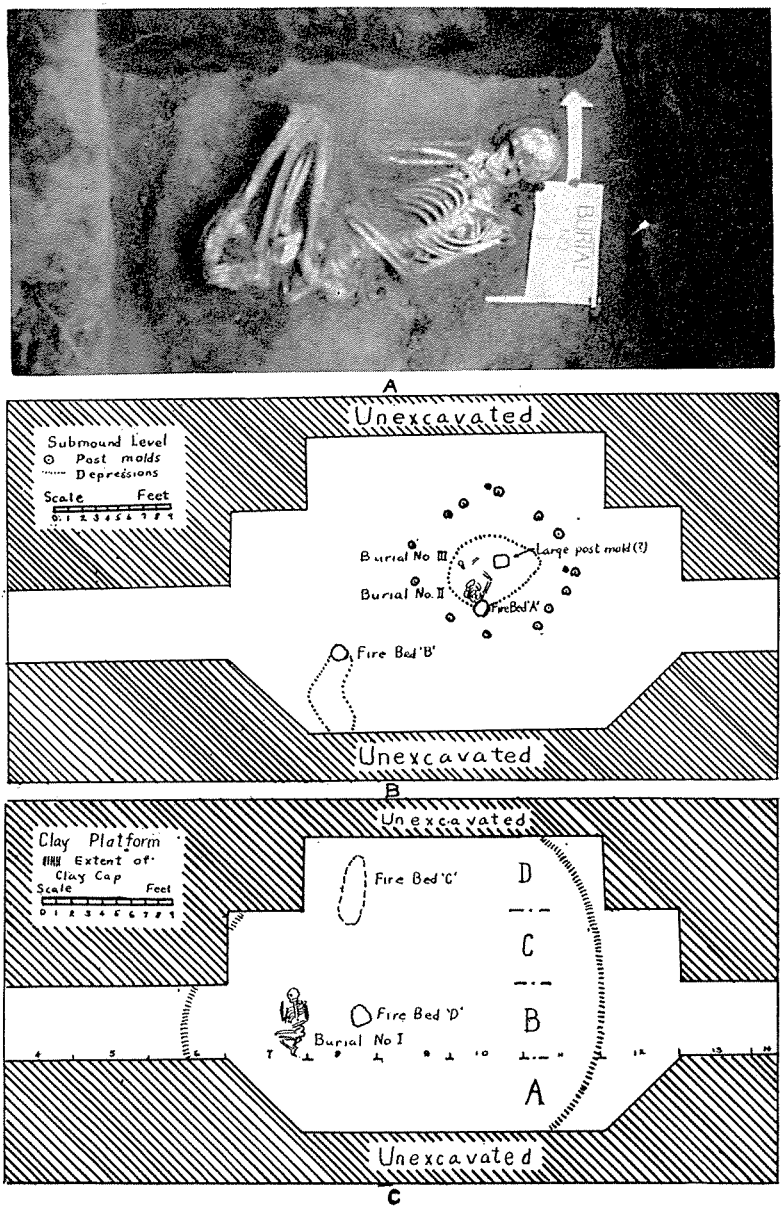

FIGURE 3

Bellevue mound burial and excavation plots. A, Burial 1. B, Sub-mound level. C, Level of clay platform.

Structure 1. It has been mentioned that Firebed A and Burial II were found in a shallow oval depression or scooped out basin in the clay subsoil almost directly beneath the center of the mound (Fig. 3, B). This depression was 5 by 6 feet in diameter and 6 to 8 inches in depth at the center. A thin layer of white sand had been placed on the clay before the fire was built and the burial deposited. Although Intrusive Pit C had cut into these features so that only the right humerus and portions of the corresponding radius and ulna were intact and in situ, there was a suggestion of cremation because several human bones were found among the ashes and others of the bones were hard, brittle and discolored as though partially charred.

Surrounding the depression was a larger oval of post molds detected at the sand-clay contact zone and extending into the clay for a depth of 12 to 18 inches. There were 14 molds, 4 to 8 inches in diameter, placed irregularly at intervals of 1 to 3 feet to form an oval outline 11 feet in N-S diameter and 9 feet in E-W diameter (Fig. 3, B). One 3 inch mold was inset at the south end. A square mold, 16 inches in diameter and 2 feet deep, was found within the oval and at the bottom of Intrusive Pit C. It was uncertain whether this was aboriginal or dug at the bottom of the intrusive pit.

Since this outline seems small for a habitation and since it was directly associated with the basin containing Firebed A and Burial II, it is reasonable to infer that Structure 1 was a small crude arbor or ceremonial structure enclosing a crematory basin.

Burials

Burial 1 was found intact, lying on the clay cap or platform in Section B7 (Fig. 3, C) with no artifact association, and no evidence of a burial pit. The axis of the body was east-west, with the head directed east. The position was flexed and rotated to the right side. The spine was strongly flexed, the legs flexed to 90 degrees at the hips, with lower legs fully flexed to place the heels against the pelvis. The right arm

was flexed at the elbow, placing the hand under the mandible; the left arm extended with the left hand between the femora. The skull indicated an elderly female.

Burial 2 was badly disturbed, as mentioned above, by Intrusive Pit C. Only the right humerous and six inches of the right radius and ulna were found undisturbed and articulated, lying alongside Firebed A (Fig. 3, B). In the bottom of the intrusive pit, near the firebed, there was a pile of bones, consisting of ribs, vertebrae, left humerus, part of the maxilla and upper dentures, parts of the pelvis and skull. Several ribs or portions of ribs lay among the ashes and the hardened, discolored condition of some of the bones, which indicated partial cremation, has already been described. No artifacts were in association. A preliminary examination of the skull fragments and teeth indicated a young adult female.

Burial 3, even more fragmentary, was found about 2 feet from Burial 2 (Fig. 3, B), apparently placed on the clay at the bottom of Intrusive Pit C. It was not certain to the excavator whether the fragments lay in the fill of this interruption or immediately beneath it. The former seemed more probable and this burial may have been closely associated with Burial 2. The skeleton was represented only by the mandible, upper teeth and several other bone fragments crushed into one mass and showing evidence of considerable burning. The teeth indicated a child of 2 to 3 years.

Food Sources

A large number of animal bones found in the midden layers and fill suggested that hunting was significant in the subsistence pattern of these people. Deer bones predominated. Mussel and snail shells were frequent. No fish bones were identified, but this may have been a matter of preservation, since many of the larger bones were badly absorbed. No evidence of agriculture was found except the implication afforded by the manos to be discussed later.

Pottery

A total of 752 sherds was available for study, 695 found by Fulton in the original excavation, 57 found by Webb in a subsequent trench on the east side. There were 31 (4.1 per cent) rim sherds and only 6 (0.8 per cent) decorated sherds in the entire series; in two instances the decoration was confined to the lip. This preponderance of plain ware and the lack of any stratigraphic evidence of differentiation on the basis of temper or surface finish preclude any attempt to set up typology.

One group of 14 sherds was of interest because of tempering with a white material which we interpreted as crushed bone and identified as bone by subsequent microscopic examination. In some instances this material had leached out from the surfaces, leaving a porous or "hole-tempered" appearance (Fig. 4, A, B). Since bone tempering has not been reported from the earlier horizons in Louisiana, typical specimens, in addition to a representative selection of other sherds from this site, were submitted to the Ceramics Repository, Ann Arbor, Michigan. We quote from a report by Dr. James B. Griffin:

> Sherds 10D-3 and M-56 were submitted to our Minerology Department for identification of the tempering material. Their reply was that the white temper is "apatite (calcium phosphate), could be either shell or bone." The sherds from the site which have this whitish temper and those from which the tempering material has been leached very closely resemble the appearance of pottery which has inclusions of limestone or fossil shell. When the temper did not react to dilute hydrochloric acid it was indicated that the material was not limestone.
>
> Two of these sherds are rims with narrowed and rounded lips. They are too small to determine accurately the vessel shape. Three of the sherds are fragments from the lower side wall where it joins the base. They are quite thick (1 cm.), while the rim sections are 6 to 7 mm. in thickness. Sherd 202 is from a side wall 7 mm. thick and has clay inclusions as well as the angular holes from leached temper. The exterior surfaces are smoothed but not burnished or polished. They are somewhat uneven. The texture is medium coarse to coarse with large angular temper inclusions and the clay has a con-

torted and twisted appearance in cross-section. Some of the breakage lines suggest that the vessel was coiled, and the contorted appearance of the clay is also suggestive of this method of construction. The surface hardness is 2-2.5. Except for the temper this group of sherds conforms rather well to the majority, which is clay tempered.

Most of the sherds sent in by Fulton are tempered with clay particles which I believe are crushed sherd particles, since some of the inclusions also seem to have tempering in them. Most are from the side walls of large bowls or deep, rather cylindrical jars with flat circular bases. The bases were shaped and the first and succeeding additions to the sides were added coils of clay. The paste is contorted and medium coarse to coarse on most of these body and basal sections. The bases are 1 to 1.3 cm. thick; most of the walls are .7 to 1 cm. in thickness. Both inner and outer surfaces are smoothed but are uneven. The exterior surfaces have a hardness of 2-2.5. Sherd 266 is somewhat unusual in that it is thinner, 6 mm., has a well-compacted burnished to polished exterior and is noticeably harder (2.5) than the majority of the specimens. The exterior colors are various shades of tan or buff, with grayish tones either from firing or from use over a fire. A minority of the sherds have reddish to pink exteriors, also produced by firing.

Most of the rim sherds are small but suggest a wide bowl form with either a vertical rim area or a slight inward curve. The rim areas are thinner (5 to 7 mm.) than the side walls and base, and the lips are narrowed and rounded. One rim has a markedly constricted mouth so that the rim is almost horizontal. Two of the rim sherds have lip decorations. The first (Fig. 4, D) has medium wide (2 mm.) and deep oblique grooves across the rounded surface of the lip. The second (Fig. 4, E) has very narrow, closely spaced oblique cuts on the rounded lip. (The authors call attention to the similarity of these decorations to lip decorations on steatite vessels from Poverty Point.) (Webb, 1944).

An unusual rim (Fig. 4, F) is quite thin, 4 to 5 mm. It has a very narrow lip (1.5 mm.) and a thickened rim area 1 cm. high with a slight channel on the exterior below the thickened rim. It is suggestive of rim forms in Adena and Hopewell pottery. Both surfaces of this vessel were smoothed and burnished with horizontal strokes. This sherd is clay tempered, presumably with crushed pottery; the texture is medium and the exterior surface hardness is 3.

Two sherds have a sandy feel not present in the others. One of these is a basal piece and has clay temper. The other may

be a rim and is also clay tempered, so that the different tactile quality of these sherds is likely due to a slightly different clay source rather than to any markedly different cultural source from most of the specimens at the site.

The majority of the sherds sent by Webb are not significantly different from the Fulton group, having the same general temper, paste, color, surface and shape qualities. There are some exceptions. One is a rather large rim sherd with a slightly narrowed and flattened lip. The rim is vertical and is from either a wide cylindrical jar or a vertical-walled deep bowl. One body sherd (Fig. 4, H) with a zoned punctate design has a smoothed exterior surface and a surface hardness of 4. Typologically this sherd reminds me more of the Troyville type Churupa Punctated than any other. The punctates are more like those of Rhinehart Punctated, but the bordering incised lines are Churupa. A small rim sherd with a single horizontal incised line 1.3 cm. below the lip is not readily assignable. The body sherd (Fig. 4, G) with curvilinear incised lines is probably Marksville Incised. I can do very little with the fourth decorated sherd which has a few scratches or incised lines.

Summary. The sherds from the Bellevue mound are, on the whole, I think, closest to the Marksville level. They are not much like Tchefuncte, nor are they much like the Troyville-Coles Creek paste. It is perhaps unfair to make this comparison since these specimens should be contrasted with the ceramic sequence in northwestern Louisiana, which is still in the process of construction. In paste quality, the Bellevue material would conform most closely with Early Baytown, particularly period E-D (Lower Mississippi Valley sequence). The burnished to polished sherds and the rim placed on a horizontal plane, with a markedly constricted orifice, are characteristics which are somewhat later than the Marksville period.

Baked Clay Object

One fragment of baked clay object was found in the mound fill (Fig. 4, M). It is tan-colored, smoothed on all except the broken surface. Although not typical in shape, this fragment is suggestive of the Poverty Point problematical objects of clay balls (Webb, 1944). No clay pipe or figurine fragments were found.

Stone Artifacts

Projectiles. Twenty-two whole projectiles were found by

excavation, in addition to one from the village surface. There were 12 portions of broken projectiles, of which 5 could be typed. All are of the larger, or "dart-point" size. Sixteen have contracting stems, corresponding to type Gary Stemmed (Newell and Krieger, 1949) of East Texas, but also found in Central Louisiana and throughout the Southeast (Fig. 5, B-D). The specimens from this site range from 3.2 to 5 cm. in length and from short and stubby to longer and slender in proportions. Ten of these are rather well made, the remainder crude—possibly due to inferior quality of material.

Seven projectile points (Fig. 5, E-F) are of the expanding stem type designated Ellis Stemmed by Newell and Krieger (1949). They range from 2.6 to 4.3 cm. in length and most are well chipped. Two projectiles (Fig. 5, G-H) are possibly of the type Yarbrough Stemmed (Newell and Krieger, 1949), not unusual in pre-pottery cultures of East Texas and found with pottery in the Davis mound. They are well made, 4 and 4.6 cm. in length and quite slender.

Two projectiles (Fig. 5, I-J) are of the type San Patrice Concave Base. They have been described from surface collections in the area (Webb, 1946) and were assumed to be late Archaic in origin. None had been found heretofore in excavations where cultural associations could be assumed. One (Fig. 5, I), a surface find, is 2.6 cm. in length, and 2 cm. in greatest width. It is of petrified wood, smoothly worked to extreme thinness, with secondary chipping along the edges and the concave base thinned by removal of a single wide longitudinal flake from one face. The second, found immediately below the clay platform in the mound proper, is more typical in shape (Fig. 5, J) and demonstrates a similar flaking technique. It is 3.2 cm. long, 2.4 cm. wide, very thin with basal thinning achieved by bifacial removal of wide longitudinal flakes.

Scrapers or Knives. Twenty flaked stone objects were found which are thought to be scrapers or knives, although some are so rough that it is questionable whether they are artifacts. Four were simply made by flaking along one

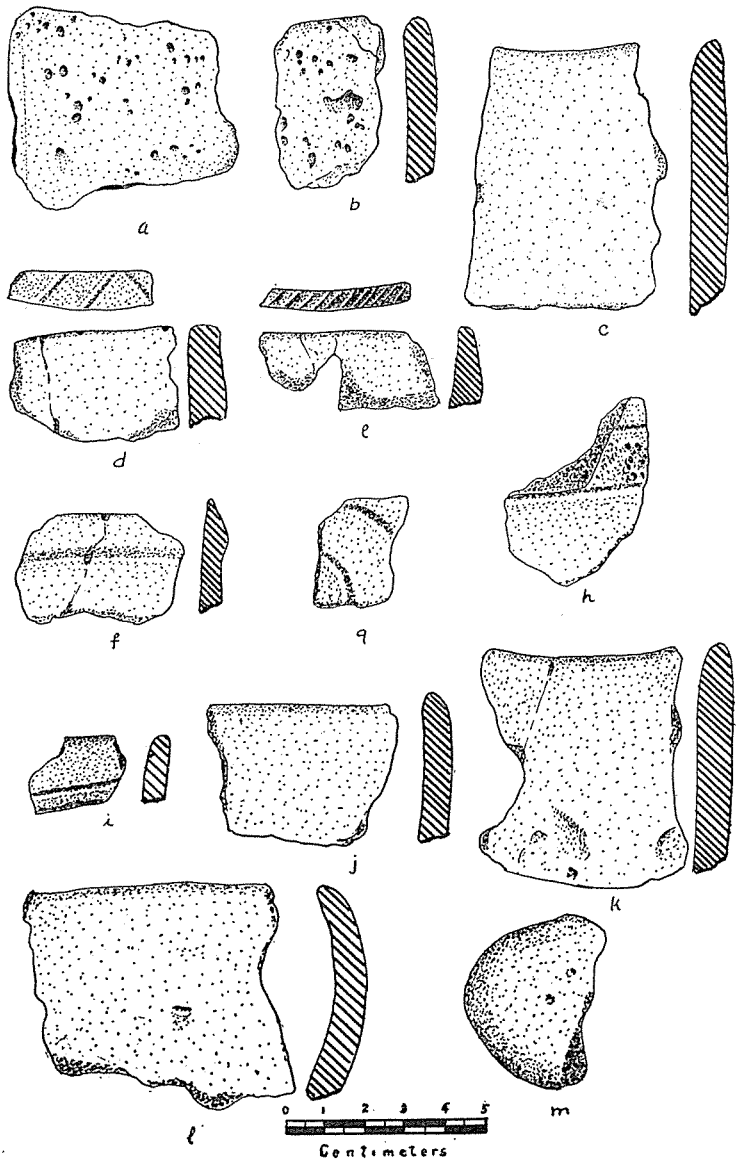

FIGURE 4

Potsherds and clay artifacts from Bellevue mound. A, B, Bone tempered. C, J-L, Plain rims. D, E, Decorated on lip. F, Sherd with exterior rim channel. G, Marksville Incised. H, Churupa Punctated (?). I, Incised sherd. M, Baked-Clay ball fragment.

edge, leaving the remainder of the stone unworked (Fig. 5, L). Another was made from a flat rectangular pebble of chert by flaking one end and the two adjoining edges (Fig. 5, M). A third is a long oval, 6.3 cm. long by 1.2 cm. wide, worked on all edges (Fig. 5, O). There were several smaller side scrapers.

Spokeshave. One beveled spokeshave or scraper (Fig. 5, N) is of the Albany type, with squared haft and angulated beveled blade. It apparently was made from a reworked projectile. Spokeshaves of this type have been described (Webb, 1946) as surface finds in this area, generally in association with San Patrice Concave Base projectiles.

Manos. Three hand-sized stones from the mound showed evidence of smoothing on one face, presumably from use as manos (Fig. 5, Q). They range from 10 to 12 cm. in length, 8 to 9.8 cm. in width, and 3 to 4.5 cm. in thickness. No pitted or nut-stones were found.

Quartz Crystals. Two small unworked quartz crystals, about 2.5 cm. in length, were found. One (Fig. 5, P) is clear quartz, the other opaque.

No beads, ornaments, celts, banner stones, bar stones, or other polished stone artifacts were found in or around the mound.

Discussion and Conclusions

The evidence indicates that the Bellevue mound was constructed for burial purposes by a comparatively small group of individuals who lived in a fairly early pottery-making period and were comparatively retarded in cultural development. The smallness of the group is indicated by the thinness of habitation evidence on the village site and the limited amount of materials in the mound fill and layers. The absence of ceremonial objects, ornaments and copper, in contrast with more highly developed centers of this general time period, further attest to the cultural paucity of the group. A carry-over of Archaic-like existence, primarily dependent on hunting and gathering, is indicated by the food remains;

evidence of agriculture is inferred only from the general Southeastern association of mound-building and agriculture.

The persistence of Archaic traits at this site is especially strong in the stonework. The chief projectile types, Gary Stemmed and Ellis Stemmed, are widespread in the late Archaic. They have been carried over into pottery-making horizons of the Gibson Aspect in Texas (Newell and Krieger, 1949), Fourche-Maline and Early Spiro in Oklahoma (Bell, 1953; Orr, 1952), the Tchefuncte-Marksville-Troyville sequence in Central Louisiana (Ford and Quimby, 1945; Ford and Willey, 1940; Ford, 1951), Arkansas and Mississippi (Jennings, 1952) and elsewhere in the Southeast (Newell and Krieger, 1949). In Northwestern Louisiana, Webb (1948) has noted their presence, as well as the San Patrice point and Albany scraper, on non-pottery and pottery sites. The scraper types and the baked clay ball fragment at the Bellevue site also represent carry-overs from Archaic times. The baked clay objects, originating in the Poverty Point period, have been found with pottery association in Tchefuncte, Marksville and Troyville sites (Ford and Quimby, 1945; Ford and Willey, 1940; Ford, 1951). They occasionally occur in sites of later periods such as Coles Creek and Alto (Ford, 1951; Newell and Krieger, 1949).

The construction of the mound on this site and the presence of several habitation debris layers in the mound show that the village, however small and primitive, was a fixed settlement for some time. There was no evidence that the mound served as a substructure for buildings. The added information that the original shape was a rounded cone, with the evidence of cremated burials and a flexed burial placed on a prepared clay platform, place it in the burial mound category of Early and Middle Woodland (Jennings, 1952) or Ford and Willey's (1941) Burial Mound I and II of the Southeast. Jennings (1952) states that small conical mounds on ridges or low terraces along streams of varying sizes occur in both Early and Middle Woodland levels of the lower valley, although multiple conical mounds placed on river flood plains are more characteristic of Middle Wood-

land. In the Early period burials were placed on prepared floors or in pits beneath the original surface and the conical mounds heaped over them. Burials were flexed and placements were rare. In the Middle period, typically the top soil was removed and a flat-topped platform of earth, about 30 to 40 feet square and not over 3 to 4 feet in height, was constructed. A mass or group burial was placed on this or log tombs were let down into the platform, the platform and burials were covered by a conical heap of dirt, then a secondary mantle of earth covered the entire original structure or structures to a height up to 20 feet and a total diameter up to 100 feet. Full flexion still predominated; partially flexed, bundle, and skull burials were not unusual but fully extended burials were rare. Cremation was practiced in certain instances during both periods, generally in prepared clay-lined basins in the original surface. Placement of objects with burials continued to be infrequent; 84 per cent of burials at Crooks site had no artifacts.

Although the position of the Bellevue mound on a ridge overlooking the stream and its small size are like mounds of the Early Woodland period, the construction of the clay-covered platform upon which the flexed burial was placed suggests Middle Woodland times, consistent with the pottery evidence. The placement of the platform over a habitation layer differs from the custom in central Louisiana Marksville sites, also in Miller II sites in Mississippi (Jennings, 1952), where sterile soil was used. Regardless of whether Burials 2 and 3 were cremated in a submound basin or in a pit dug into the platform, these burial customs are consistent with Burial Mound II features elsewhere, as is the absence of artifact placement with burials.

The above mentioned structural features, burial arrangements, and stone artifact types correspond quite well with the conclusions reached by Griffin from a study of the pottery. He has indicated that the sherds are on the whole closest to the Marksville time level and in paste quality conform most closely with early Baytown. The various evidences therefore indicate that the Bellevue site and

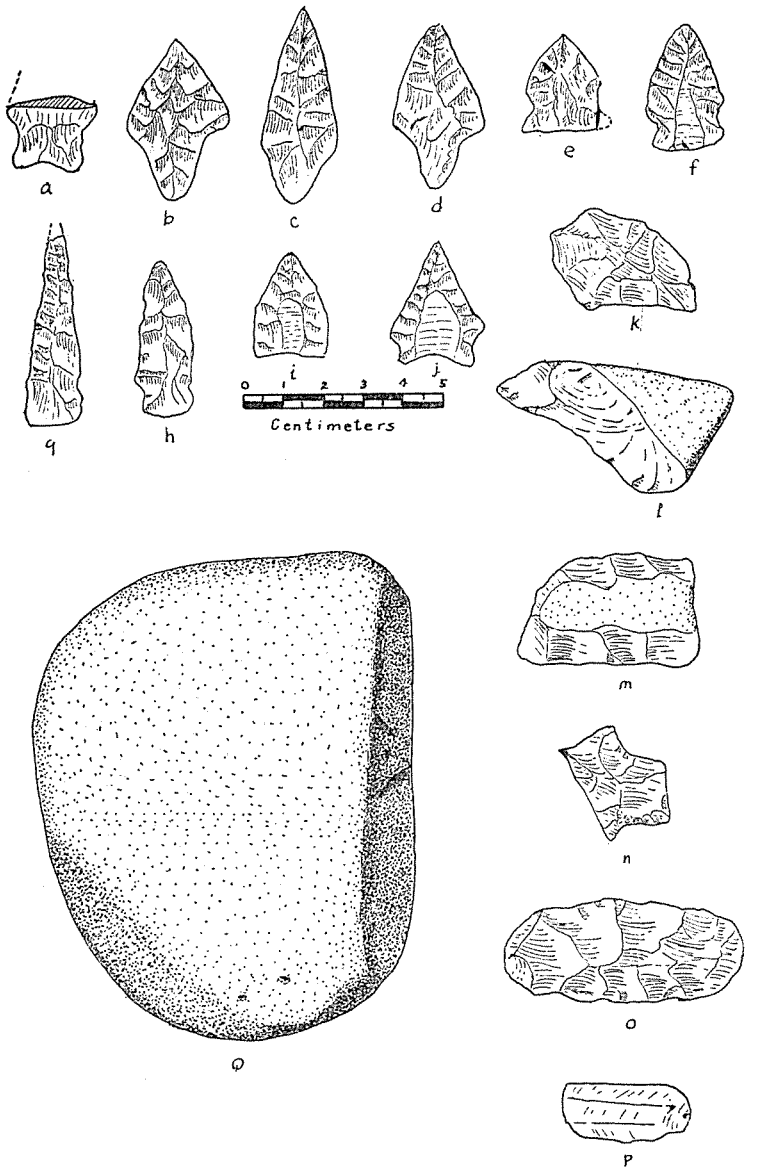

FIGURE 5

Stone artifacts from Bellevue mound. A-J, Projectile points. K-O, Scrapers. P, Quartz crystal. Q, Mano.

mound belong to the general Burial Mound II or Middle Woodland Horizon, in which are included Marksville of Central Louisiana, Early Baytown in the Lower Mississippi Valley, Miller II in Mississippi, Copena in Alabama, Santa Rosa in West Florida, and Cooper Focus in Oklahoma (Bell and Baerreis, 1951).

Several questions are raised by the pottery study. The preponderance of undecorated pottery is unusual, even in this period. At the Crooks site, 80 per cent of total sherds and 90 per cent of the Marksville period sherds were plain, in comparison with 99.2 per cent at Bellevue. In Miller II, 96 per cent of the pottery was plain or cordmarked. Orr (1952) reports a low percentage of decorated sherds in Fourche-Maline pottery of eastern Oklahoma, only 90 out of 6,000 sherds showing decoration, most of this being incised straight-line designs. The absence of any technique of body roughening by cordmarking or paddle stamping on the Bellevue sherds is consistent with the general absence of these techniques in the "Caddoan" area. Indeed, as Ford (1952) has pointed out, the lower Mississippi valley and the "Caddoan" area have a consistent technique of body smoothing and of plain wares in all early potteries. Fabric impressing, cordmarking, and check stamping never penetrated the "Caddoan" area, and generalized body roughening by brushing did not appear until Haley Focus times and the subsequent period of the Fulton Aspect, in which it is common.

Bone tempering, present in 14 (1.8 per cent) of the Bellevue sherds, seems to be indigenous to the four-state "Caddoan" area and westward into Texas. In northwestern Louisiana bone tempering was found in a large cache of pottery in the margin of a borrow pit near the big mound at Mound Plantation, chiefly in plain or straight-line decorated sherds, preponderantly thick-walled, with which were associated several sherds of the marker types of Coles Creek pottery (Coles Creek Incised, French Fork Incised), and several others of a plain black, polished ware.

A minor percentage of bone tempering extends into the Fulton Aspect wares of the Bossier Focus (Webb, 1948 a)

and the Belcher Focus in this area. In Texas, Krieger (1946) reports bone tempering to a minor degree in all foci of the Gibson and Fulton Aspects; also that it occurs outside of the "Caddoan area" in cord-marked pottery of the Antelope Creek and nearby cultures in the Panhandle and in the Austin Focus of Central Texas, wherein the chief pottery type, Leon Plain, is predominantly bone tempered. In Oklahoma, Orr (1952) states that somewhat less than 5 per cent of Fourche-Maline pottery sherds have bone tempering.

The suggestion by Griffin that the burnished sherds and strongly incurving rim are characteristics which are somewhat later than the Marksville period, and the presence of the decorated sherd of Churupa Punctated (placed by Ford in the Troyville potteries), pose the question whether the Bellevue mound should be equated with Troyville rather than Marksville. Although this question seems to be comparatively academic outside of the central Louisiana homeland, since elsewhere it has been difficult or impossible to differentiate Marksville Stamped and Marksville Incised from Troyville Stamped and Yokena Incised, it might be pointed out that barrel-shaped pots and bowls with incurving rims are present—even though infrequent—in Marksville wares and Churupa Punctated sherds were present in small numbers at the Crooks site (Ford and Willey, 1940). At the Kirkham site in Arkansas (Dickinson and Lemley, 1939) and the Fredericks site in Northwestern La., the two nearest Marksville (or Troyville) sites to Bellevue (Fig. 1, B), Churupa Punctated sherds occurred with sherds which have characteristic Marksville features (deeply incised concentric circles or ovals, conventionalized bird design, dentate rocker stamping and cross-hatched Marksville rims). Moreover, sherds secured by Webb from the deeper levels of one of the Larto mounds showed a similar association of

Churupa Punctated with Marksville Incised and Marksville Stamped pottery. The Bellevue mound furthermore shows none of the traits which first appear during the Troyville transition as distinguished from Marksville: rectangular temple mounds, plaza arrangement of mounds, extended burials, head deformation, small (arrow) projectile points, the replacement of monitor or platform pipes by elbow and effigy pipes, French Fork Incised and Mazique Incised pottery, cordmarked surface, and so on.

We conclude, therefore, that the Bellevue mound site represents a simple Burial Mound culture, on the Burial Mound II or Middle Woodland horizon, which developed out of the late Archaic horizon in this area.

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THE SAM KAUFMAN SITE, RED RIVER COUNTY, TEXAS

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The site described in this paper is located on the farm of Mr. Sam Kaufman in the north central part of Red River County, Texas, about two miles northwest of the small community of Blakeney. The village area is located on a low terrace about one mile long and about ¼ mile wide. Near the middle, the terrace is cut through by a small slough which flows into Red River just north of the site. It is called Salt Well Slough.

Many small rises are to be found over the village area on both sides of the slough. Several of these rises seem to have the remains of house sites located on them. Mound building seems to have about ceased at the time the site was occupied, but on the west side of the slough what appear to be two small mounds are to be found. The east mound, the smaller of the two, is probably only a natural rise with about two feet of accumulated midden material. This small mound has the remains of a house site located in it. Cultivation has torn into the remains of the burned house, as many large pieces of burned clay daub are found over the surface. Around this house site, some small evidences of white contact have been found, namely, four or five glass trade beads and three or four copper cones made from rolled-up sheet copper. They were probably ornaments or tinklers attached to clothing. However, one was rolled with a very sharp point on one end, and was probably an awl or a projectile point.

The larger or west mound is probably the only real mound of the two. Today, after years of cultivation, it is still about five feet high above the surrounding field. The soil on top of it is very black and shows evidence of much fire. Plows have no doubt destroyed several large burials in this mound as over the top may be found large conch shell beads and many sherds of Avery Engraved, Simms Engraved, and other types of pottery found in the Texarkana and McCurtain Foci.

Two cemetery areas are located near the site. One is just to the northeast of the village area and is in the bank of Red River. The other, also located in the bank of the river is about ½ mile downstream from the village area. Both cemetery areas are now being destroyed by Red River, and many burials are being lost to the river. In fact, the whole Kaufman Site is in danger of being destroyed as Red River is shifting south at a rapid pace. During 1952, Mr. Kaufman lost over 200 acres to the River. The two mounds are only about 300 yards from the river at present. If the river continues to shift south, at the rate of the last two years, the whole site will be gone in about three or four years. Before this happens, some institution should excavate some of the house sites and burials.

The writer and some of his fellow students of archeology have tried to gather as much information about the site as possible before it is lost forever. At this point the writer wishes to thank Mr. C. R. Allen, Mrs. Mamie Allen, Mr. Jack Hughes, and Mr. Lester Wilson for their help in making this report possible.

Surface Artifacts

Over the surface of the village, after a heavy rain, may be found many artifacts of the Indians who occupied the Kaufman Site.

Several house sites have been destroyed by the plow. Around these house sites may be found many artifacts. The following paragraphs will describe artifacts found over the surface.

Lithic Artifacts

Lithic artifacts at the Kaufman Site can be divided into projectile points, scrapers, knives, drills, and chipped axes.

Projectile Points: Projectile points can be divided into spear points, dart points, and small arrow points. The spear points shown on Plate 3, Nos. 13, 14, 16, and 18 are of the types found. The dart points are mostly of the type Gary Stemmed. Plate 3, No. 12, bottom row, shows dart points

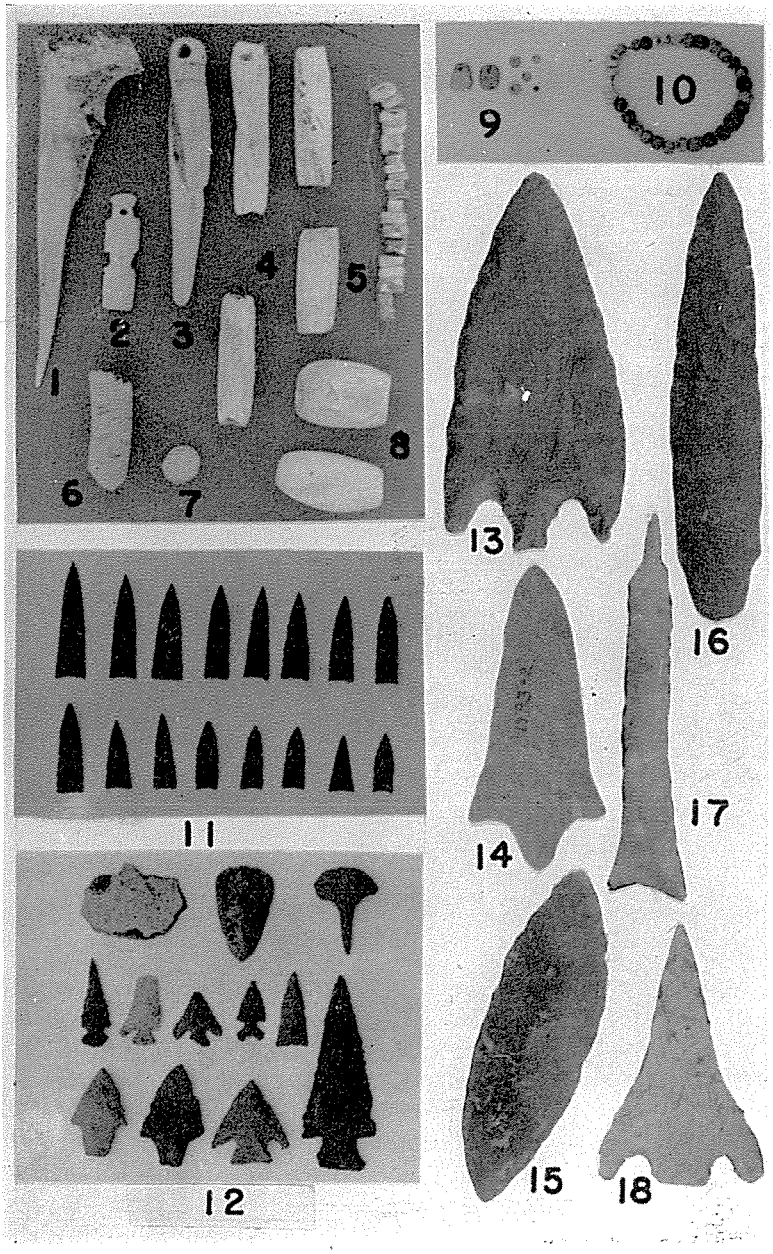

PLATE 3

Kaufman site artifacts of shell, bone, turquoise, glass, and flint. Size ⅔.

from this site. The small arrow points are mostly triangular, but several of the Alba Barbed and side-notched triangle are also found. Plate 3, No. 12, middle row, shows small arrow point types.

Scrapers: Scrapers are mostly small end or duckbill scrapers, but the side scraper is also present. Plate 3, No. 12, upper two left, shows types of scrapers found.

Knives: These are leaf-shaped. Some are double-pointed and some rounded on one end. Plate 3, No. 15 shows a knife from a burial.

Drills: Plate 3, Nos. 12, upper right, and No. 17 shows the types of drills found. Only one drill of the type shown on Plate 3, No. 17 has been found. This is the first of this type seen by the writer from the Red River area.

Double-bit Axes: Plate 4, No. 13 shows a double-bit axe chipped from ferruginous sandstone.

Lithic artifacts are made mostly from quartzite or cherts, but some evidence of trade is seen in artifacts made from novaculite from Arkansas.

Polished Stone Artifacts

Many celts are found at this site. They are made mostly from a black stone with white specks, but a few are made of a green stone. Plate 4, Nos. 12, 14, 15, and 16 are celts from this site.

Plate 4, No. 11 shows an arrow-shaft abrader from the Kaufman Site. It has two grooves in one face. Both of the grooves are smooth and rounded.

Plate 4, No. 4 shows a beautiful quail effigy pipe. It is made from red siltstone and has the features of a quail engraved on it. It was found in a disturbed house site.

Plate 4, No. 6 shows a stone ear plug or spool. It is made from a soft white stone and is of the same type as shown by Bell and Baerreis (1951, Plate 10, No. 13).

White Trade Artifacts

A few white and blue glass trade beads and three or four artifacts made of sheet copper have been found around house sites and in graves. On the whole, white trade artifacts are very scarce.

Shell Artifacts

Plate 3, No. 2 shows an insect effigy pendant of mussel shell. It has the features engraved with small lines or dots and probably represents a grasshopper or locust. Plate 3, No. 7 shows a piece of conch shell probably once used as inlay in some sort of wooden object. Plate 3, Nos. 4, 5, and 8 show conch-shell beads from the surface and from burials. A local farmer has a gorget made of conch shell, plain, about three inches in diameter, with two drilled holes near one edge.

Bone Artifacts

A few crude bone beads and one bone awl have been found. Plate 3, No. 6 shows one of the crude beads. The bone awl was in Burial 5 (see below). Most of the bone artifacts seem to have decayed due to soil conditions and time.

Pottery Artifacts Not Associated With Graves

Plate 4, No. 8 shows a shell-tempered pipe found in a disturbed house site. Fragments of long, thin-stemmed pipes have been found around house sites.

Plate 4, No. 7 shows an engraved and perforated sherd in broken condition. Fragments of several artifacts of this type have been found.

Plate 7, Nos. 4, 5, and 6 show three shell-tempered vessels of the type Nash Neck Banded. These were on the floor of a disturbed house, on a bed of ashes, with a small mano nearby. Plate 7, No. 3, and Plate 8, No. 7, show small shell-tempered vessels found on other disturbed house floors.

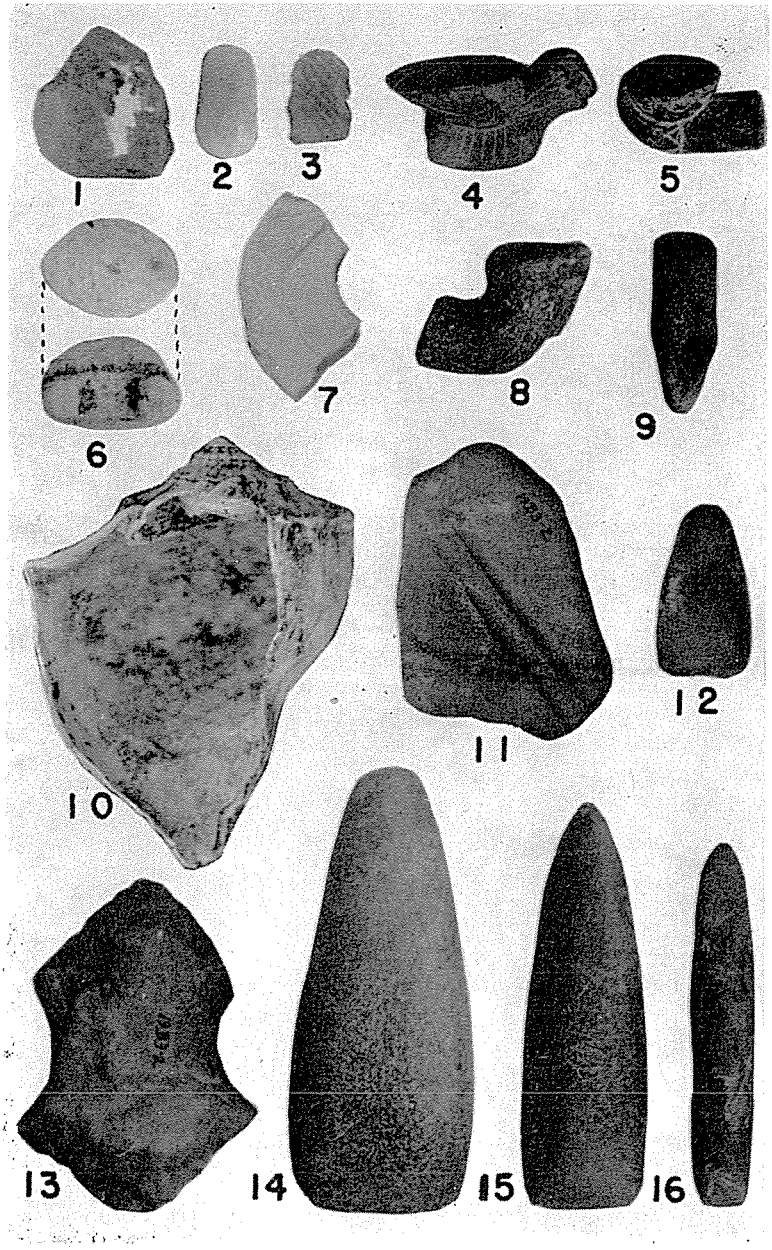

PLATE 4

Kaufman site artifacts of shell, stone, and clay. Size $\frac{3}{8}$.

Houses and House Floors

Very little is known about house types at this site, but from small amounts of excavation done by the writer in disturbed houses, it seems that round houses of wattle-daub construction are probably the major house types. However, one disturbed area seems to have a square or rectangular house present. This problem needs the attention of an institution which would have a crew large enough to handle it.

Burials

Many burials have been found at the Kaufman Site. Some are in the village area about the two small mounds, others in the two cemetery areas being destroyed by the river, and still others all over the remaining village area. All of the burials probably belong to a single culture as will be seen in the burial descriptions to follow.

Burial 1

This burial was located in the village area. It had been somewhat disturbed by the plow but was mostly in position as buried. The skeleton was in a bad state of preservation but appeared to be an adult. It was impossible to determine the sex. Burial was extended with head to northeast. Burial offerings were three shell-tempered vessels and one conch shell dipper or ornament. This was made by removing the central core of the conch shell and smoothing the outer edges. A hole was drilled at each end (Plate 4, No. 10). There was no decoration on it.

The small spool-necked bottle (Plate 5, No. 2) was near the head. The body of this bottle is engraved all over with interlocking hook-shaped elements with small engraved circles between. The design is repeated four times around the bottle, which is brown in color. A bottle of somewhat the same shape and design has been assigned to the McCurtain Focus in Oklahoma by Bell and Baerreis (1951, Plate 10, No. 20). However, they state it may be a trade piece. The second vessel from Burial 1 (Plate 8, No. 1) has a design engraved through a red slip and belongs to the type

Avery Engraved which Krieger (1946, Fig. 18) assigned to the Texarkana Focus. This type is also common in the McCurtain Focus which was defined in southeastern Oklahoma shortly after Krieger described the Texarkana Focus (compare the present vessel with that shown by Bell and Baerreis, 1951, Plate 10, No. 14). The third vessel (not shown) from Burial 1 is of the type Simms Engraved which was assigned to Texarkana Focus by Krieger (1946, Fig. 18), and, like Avery Engraved, is now considered common also in the McCurtain Focus (Bell and Baerreis, 1951, Plate 10, No. 19). In the Kaufman site the type Simms Engraved usually has red pigment rubbed into the lines.

Burial 2

Burial 2 was located in the cemetery area just to the northeast of the village area. It was buried at a depth of 14 feet below the present surface and was exposed by the present river cutting. The skeleton was extended with head to the east, and was in a bad state of preservation. Determination of sex was impossible, but the teeth were those of an adult. Offerings consisted of two shell-tempered vessels, a double-pointed knife (Plate 3, No. 15), and two small arrow points of the type Alba Barbed. There was no water bottle in this grave, but it is possible that there was one and it had already become a victim of the river.

The first vessel found (Plate 7, No. 7) is of the type Nash Neck Banded, assigned to Texarkana Focus by Krieger (1946, Fig. 18). Like Avery Engraved and Simms Engraved (see above) this type is now also considered to be common in both Texarkana Focus and McCurtain Focus (Bell and Baerreis, 1951, Plate 10, No. 17). The second vessel from Burial 2 (Plate 8, No. 5) has three rows of impressed fingernail lines (nail punctations placed end to end) around the vessel just under the rim, and a chevron design repeated four times around the body. These designs were applied while the vessel paste was still soft. This vessel has the crimping of neck coils and is probably a variation of Nash Neck Banded, which sometimes includes such body designs in addition to crimped rim coils.

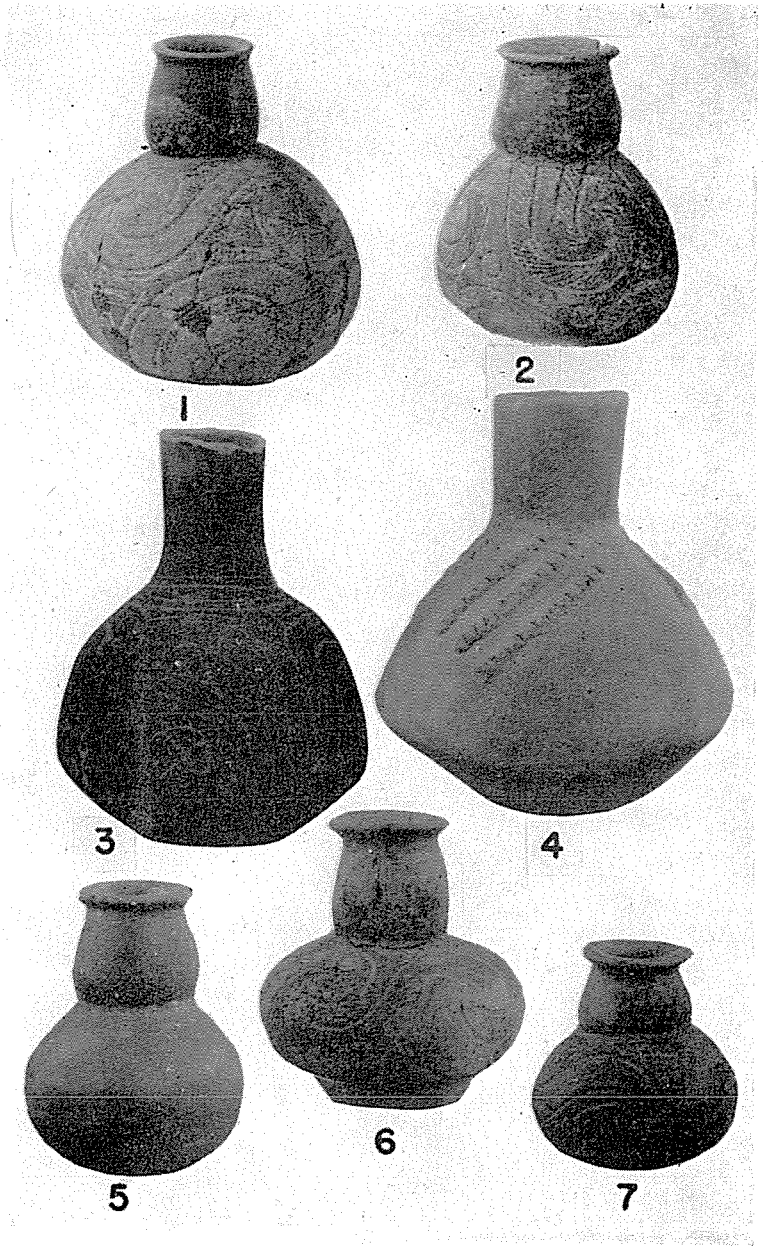

PLATE 5

Kaufman site pottery vessels. Nos. 3, 4 are ¼ size, others ⅜.

Burial 3

This was located in the village area and was extended with head north. The skeleton was in a bad state of preservation but was that of an adult. Sex could not be determined. The burial offerings were three shell-tempered vessels and 20 small triangular arrow points. Of the 20 small points, two are side-notched triangles, and 18 are indented-base triangles without notches. Two of the 20 are novaculite, a material obtained from southwest Arkansas. Of the three pottery vessels in this burial, one is Simms Engraved with red pigment in the design, one is Avery Engraved (Plate 6, No. 2) with design engraved through a red slip, and one is a bottle (Plate 5, No. 3). This bottle is very much like one pictured from Oklahoma by Bell and Baerreis (1951, Plate 10, No. 18). The water bottle and the red Avery Engraved vessel had both been broken around the rim, and showed evidence of having been chipped evenly around the break, then re-used.

Burial 4

Burial 4 was located in the middle of a county road which passes through the village area. The skeleton, which was in a bad state of preservation, was extended with head to the northeast. Determination of sex was impossible, but the burial was that of a child about 12 years old. Burial offerings included three shell-tempered vessels, a shell-tempered pottery pipe and eight long conch-shell beads. The shell beads (four of which are shown on Plate 3, No. 4) were around the neck. The pipe (shown on Plate 4, No. 9) is interesting as it is the stem of a pipe, which after the bowl was broken off, the break was smoothed down around the hole and the stem end smoked by placing a cane stem in the hole on the side. Two vessels (not shown) are Simms Engraved, with red pigment in one vessel design. The bottle (Plate 5, No. 5) is plain with a red slip covering it.

Burial 5

Burial 5 was located in the County road and was extended with head to north. The sex could not be determined and

skeleton was in bad state of preservation, but appeared to be a young adult. Burial offerings included two shell-tempered vessels and one bone awl. The bone awl (Plate 3, No. 1) is made from ulna of deer. Plate 8, No. 4, shows a vessel of Simms Engraved from this burial. Plate 5, No. 6, shows a bottle.

Burial 6

This burial was located in the cemetery area being washed by the river just northeast of the village area. It was in the bank of the river about 12 feet below the present surface. The skeleton was that of a middle-aged male and in a good state of preservation. It was extended with head to the east. Burial offerings included four clay-tempered vessels, one shell-tempered vessel, one conch-shell pendant with nineteen conch-shell beads, 16 small triangular arrow points, and three mussel-shell spoons.

Of the 16 small arrow points, five show evidence of being ground or smoothed on the edges near the point. One of the five is ground smooth on edges near the point and also smoothed on each side of the point about half way toward the base. The 16 points are shown on Plate 3, No. 11. The conch-shell beads and pendant are shown on Plate 3, Nos. 3 and 5. The pendant is made from the center core of conch and is probably some sort of insect effigy.

The water bottle shown on Plate 5, No. 4 has three sets of three strips of applied clay marked with fingernail as a design. The vessel shown on Plate 6, No. 1 has a design of punctates and straight lines, which is similar to Canton Incised at Sanders Site (Krieger, 1946, Plate 28, Figs. F & G). However, this vessel does not have the polish or shape of the vessel from Sanders. The vessel shown on Plate 6, No. 3, has 4 lugs on the rim and four incised lines under and around the rim and is well polished. The writer has seen vessels similar to it from the Sanders and Titus Foci Sites. The vessel shown on Plate 6, No. 6 has a thickened lip and four lines of punctates around the vessel just below the lip. The surface of the vessel is well polished. The above four ves-

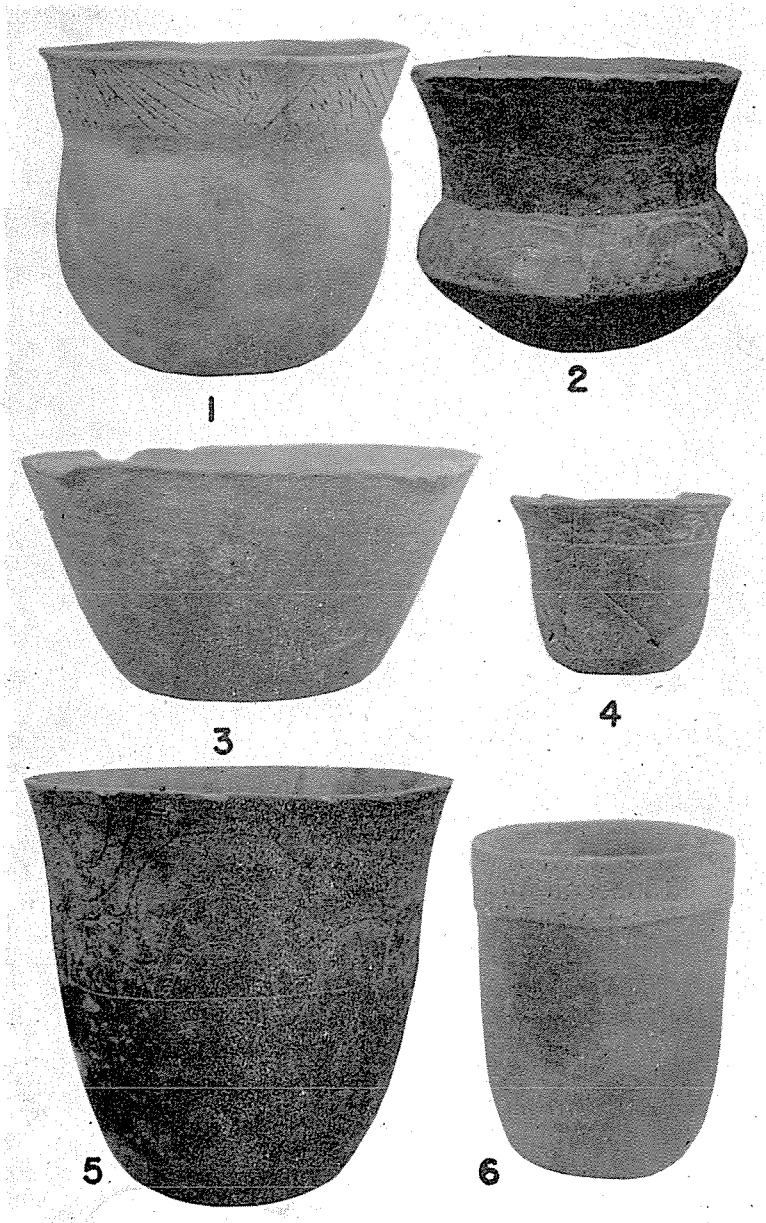

PLATE 6

Kaufman site pottery vessels. No. 4 is ⅜ size, others ¼.

sels are probably trade pieces to the Kaufman Site. All four are clay-tempered. The last vessel from this grave is shown on Plate 6, No. 5, is shell-tempered Avery Engraved with design engraved through the red slip. Burial 6 in some ways seems to be a stranger to the Kaufman Site with its four clay-tempered vessels, some of which could be Sanders or Titus vessels, and yet, they were in the same grave with a shell-tempered vessel of Avery Engraved and 16 small triangular arrow points.

Burial 7

Burial 7 was located in the County road in the village area. It was the burial of a small child in bad state of preservation. Sex was impossible to determine, but burial was extended with head to east. Burial offerings included three small shell-tempered vessels and a shell-tempered pipe. The pipe is shown on Plate 4, No. 5. It shows no evidence of being used in smoking. Plate 6, No. 4 shows a small vessel of Avery Engraved with design engraved through the red slip. Plate 7, No. 2 shows a small vessel of Simms Engraved with red pigment rubbed into the design. Plate 5, No. 7, shows a small spool-necked water bottle with interlocking design repeated four times around the body.

Burial 8

This burial was located just east of County road in village area. The burial was extended, but somewhat disturbed by the plow. The skeleton was in a bad state of preservation and determination of sex was impossible. Burial offerings included two shell-tempered vessels, two small turquoise pendants, and five turquoise beads. Plate 3, No. 9 shows the turquoise artifacts. These turquoise artifacts are of the same type as found by Rex Housewright in a burial on the Goss Farm in Fannin County (Housewright, 1946) and must be the result of trade from New Mexico with Pueblo tribes. The Goss Site is located across Bois d'Arc Creek from Sanders Mound. As early as 1542, Caddo tribes were engaged in the trade of bow wood of Osage Orange to the Puebloans in exchange for turquoise and cotton blankets (Krieger,

1946, p. 207). A small turquoise bead was found in the Hatchel Mound near Texarkana by the University of Texas-W. P. A. in a midden stratum assigned to Texarkana Focus (Krieger, 1946, p. 207).

Of the two vessels from burial 8, one is Simms Engraved (not shown) and the other Avery Engraved with design cut through the red slip (Plate 8, No. 6).

Burial 9

This burial was located in the village area and was extended with head to north. The burial was that of an adult, but skeleton was in a bad state of preservation and sex could not be determined. The offerings consisted of three shell-tempered vessels and 28 blue glass trade beads. The two vessels (Plate 8, Nos. 2 and 8) are of the same type and are plain except for a row of crimping around the top just below the rim. This crimping of the neck coils is done in the same manner as on the Nash Neck Banded vessels. The water bottle shown on Plate 5, No. 1 is from this burial. The blue glass trade beads are of the same type as found on the Womack Site some 30 miles up Red River.

Burial 10

This burial was located in the cemetery area northeast of the village area and was partially cremated with remains of skull to the east. It was not possible to determine the sex, but it was an adult. Offerings consisted of three pottery vessels, all shell-tempered. Plate 7, No. 1 shows a very fine vessel of the type Nash Neck Banded. The design was filled with red pigment and body highly polished. The other two were a red-slipped vessel of Simms Engraved and a plain vase-shaped vessel.

Burial 11

This burial was located in the County road in the village area and was extended with head to the northeast. The skeleton was in a very bad state of preservation, but seemed to be that of an adult female about middle age. A small shell-tempered spool-necked water bottle was to left side of

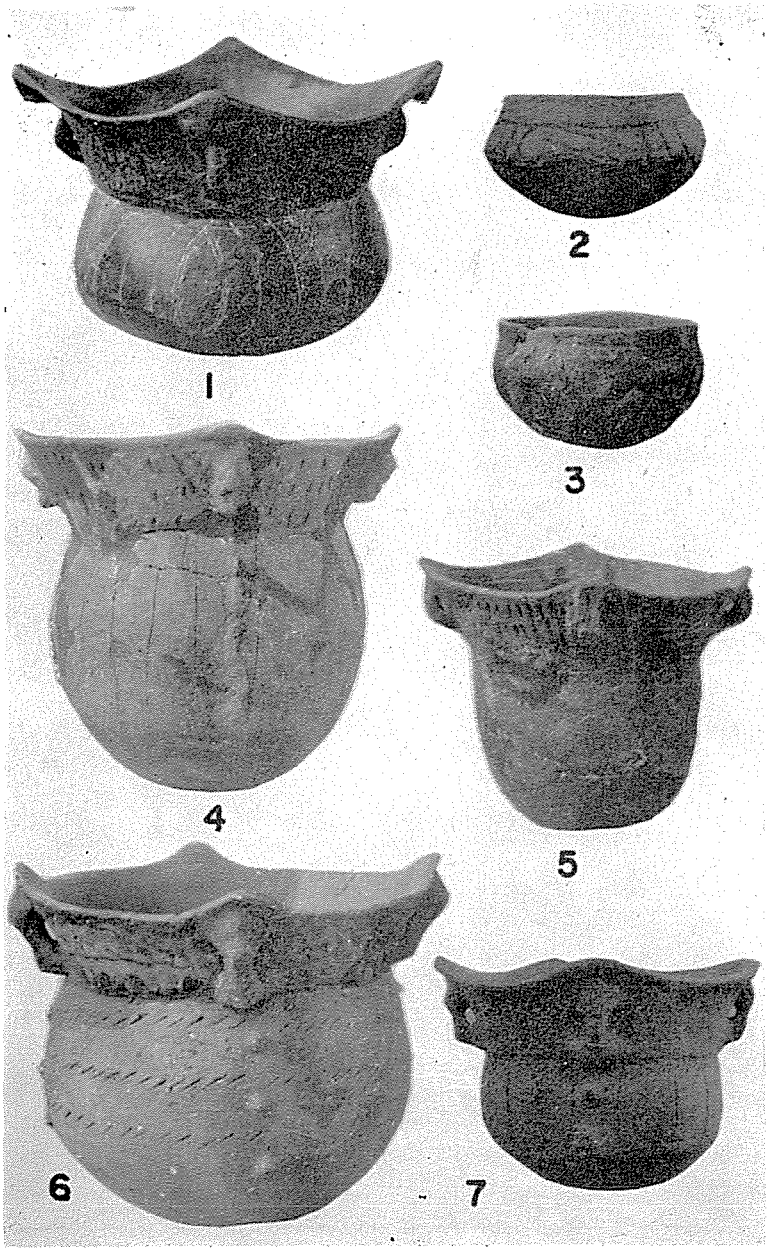

PLATE 7

Kaufman site pottery vessels. All ⅜.

head, but was so badly crushed by road grader that it could not be repaired. Two shell-tempered vessels were to right of head. One of these is Simms Engraved with red pigment in design. The other is shown on Plate 8, No. 3 and is plain except for a crimped design below the rim. This crimped design was done in the same manner as the two vessels in Burial 9. Near the right hand of burial 11 was a large mussel shell with a small flint scraper and three colors of paint inside. The colors were red, white, and yellow. Plate 4, Nos. 1, 2, and 3 show the yellow and white paint, and scraper. The mussel shell and red paint were too soft to move. This mussel shell was probably a paint kit and scraper used to work the colors.

Pit Burial of Skulls

Just east of Salt Well Slough, and about the middle of the village area, a pit was found. This pit contained about 20 skulls, but no other bones of the bodies. There were male, female, and small children's skulls in the pit. As the Osages were the bitter enemies of the Caddo in historic times, these may represent the remains of a group of Osages captured by the Caddo. If they were Caddo themselves, it is probable they would have been given the typical burial with offerings.

Many burials at the Kaufman site have been destroyed by road graders, plow, and the river, but many more remain to be excavated and recorded.

Summary of Burials

The burial of people who occupied the Kaufman site was typically in an extended position with the head usually to north or northeast, with a single skeleton in each grave. An exception is the partially cremated burial described above. Probably due to soil conditions, the bones are usually in a very bad state of preservation.

Offerings included pottery vessels of types commonly found in burials of the Texarkana and McCurtain Foci elsewhere, shell beads, shell dippers (one burial), shell gorgets and pendants, glass beads (one burial), turquoise artifacts (one burial), pottery pipes, and (very rarely) bone imple-

ments. In most cases the pottery vessels were placed about the head and shoulders.

Historical Notes

In 1797, while Andrew Ellicott was at Natchez, a body of Choctaw Indians crossed the Mississippi to make war on the Caddo. They were very successful and returned with a number of poles filled with scalps (Foreman, 1930, p. 32). In the early 19th century, the Caddos' greatest enemies were the Osage, William Dunbar reporting in 1804 that they were unable to defend themselves against this tribe (Foreman, 1930, p. 25).

A few Caddo were still living in the area of northern Red River County in 1815. Foreman (1930, p. 160) states that in 1815 a number of white traders made a settlement at Nanatscho, or Pecan Point, on the south bank of Red River south of the present Kullituke in McCurtain County, Oklahoma. The Caddo chief immediately complained of this intrusion to the Caddo agent, Jamieson, at Natchitoches, because this was the only crossing place for buffalo hunting for miles along the Red River. In April, 1816, Jamieson removed a dozen white families from this settlement to the north side of Red River, arrested several unlicensed traders, and confiscated their merchandise. The Caddo, however, had become greatly reduced in numbers by this time.

We have seen that some Caucasian trade material has been found on the surface of the Kaufman site and in Burial 9. However, the amount of this trade material is so small when compared with that from the Womack site, some 30 miles up Red River from the Kaufman place, that one wonders whether Kaufman is not mainly protohistoric rather than historic. Krieger (1946, p. 210) states that the Texarkana Focus sites in the northeast corner of Texas and adjacent Arkansas and Louisiana have not revealed the slightest hint of historic contact. Bell (personal communication) has said that the McCurtain Focus sites in southeastern Oklahoma are without historic contact. In Burial 9 at the Kaufman site, we nevertheless have found blue grass trade

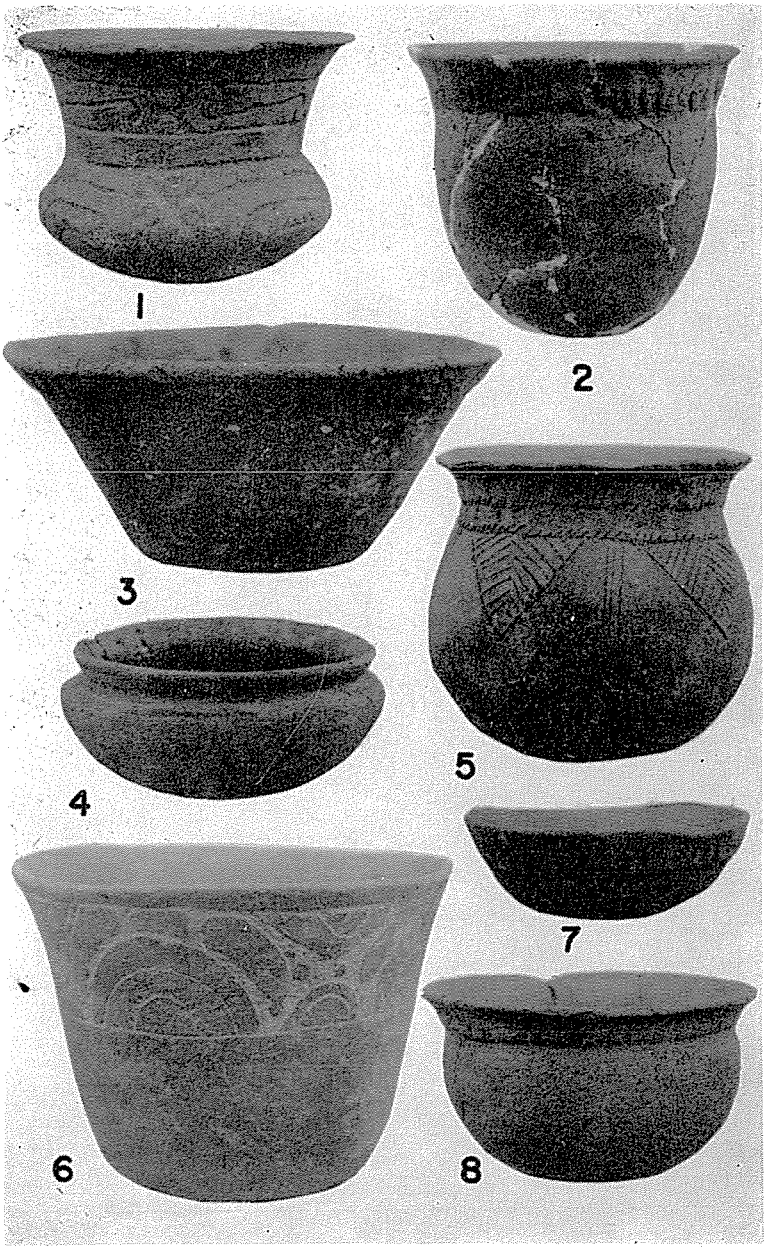

PLATE 8

Kaufman site pottery vessels. All 3/8.

beads together with pottery vessels which closely resemble those of other graves described above from this site. The complex as a whole provides a close connection with both the Texarkana and the McCurtain Foci through such pottery types as Avery Engraved, Simms Engraved, and Nash Neck Banded. The water bottle from Burial 9 may border on the type of bottle associated with the Glendora Focus, which is generally regarded as representing the historic period in the heart of the Caddoan area (Krieger, 1946). On the whole, however, there is no positive Glendora Focus ware at the Kaufman site so far as known, and Glendora Focus bottles are often difficult to distinguish from those of late prehistoric foci (Krieger, personal communication).

The Kaufman site would therefore seem to belong very near the beginnings of white contact in this area, perhaps early in the 18th century, when the first French traders were extending their activities up Red River from Louisiana. It has been the writer's observation that evidence of white trade increases as one comes up Red River. Thus, Kaufman might be slightly later in time than the sites of Texarkana and McCurtain Foci farther east, as from the notes above it is suggested that the Osage and Choctaw drove the Caddo west and south, or out of eastern Oklahoma and up Red River.

At the Womack site to the west in Lamar County, there is not only much more white trade material, but Glendora Focus pottery types become the major ones.

Although the pottery types Avery Engraved, Simms Engraved, and Nash Neck Banded occur commonly in both Texarkana and McCurtain Foci, there are a number of differences between these foci in other pottery types, house-floor patterns, projectile points, and other traits. Because of its proximity across Red River from the known McCurtain Focus sites in Oklahoma, the absence of some of the key pottery types of the Texarkana Focus, and the high frequency of red slips and shell temper, Krieger (personal communication) suggests that the Kaufman site probably should be considered a component of the McCurtain Focus

rather than Texarkana. If so, it extends this focus into the time of early white contact although the date cannot be accurately determined as yet.

Conclusions

1. The Kaufman site burials, so far as they have been studied, contain pottery types of both the Texarkana and McCurtain Foci, with preference for the latter, and perhaps some tendency toward Glendora Focus through the shape and decoration of certain bottles.

2. Trade relations with southwestern Arkansas are seen in the presence of projectile points made of novaculite.

3. Trade relations with the Puebloan Indians of New Mexico are seen in the turquoise artifacts in Burial 8.

4. A small amount (perhaps the beginning) of trade with white men, probably French, is seen in the presence of blue glass beads in Burial 9, and cone-shaped tinklers or projectile points of rolled sheet copper on the surface.

5. The McCurtain Focus, previously believed to be prehistoric, is seen to extend slightly into historic times, and the Caddo Indians living at Kaufman may have been forced westward up Red River by their enemies.

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9024 San Fernando Way
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THE MORRIS SITE, CK-39, CHEROKEE COUNTY, OKLAHOMA

ROBERT E. BELL AND CHARLENE DALE

Foreword

Archaeological excavations at the Morris site were sponsored by the Department of Anthropology at the University of Oklahoma. The project was under the direction of Robert E. Bell who also supervised most of the field activities. Cooperating agencies participating in the project included the University of Oklahoma Museum, the United States Army Engineers, the Smithsonian Institution River Basin Survey and the National Park Service. The University Museum furnished a vehicle and transportation. The U. S. Army Engineers supplied maps, minor supplies and easy access to lands under their jurisdiction. The Smithsonian Institution River Basin Survey furnished funds for the initial testing by Donald J. Lehmer in May, 1951, and the National Park Service supplied financial aid for labor in June and July of 1952.

Actual excavations were undertaken on three different occasions. In May, 1951, Donald J. Lehmer of the River Basin Survey dug a test trench across the site. His work revealed a series of burials and indicated that additional work should be done. During the months of June and July, 1951, Robert E. Bell expanded this exploratory work to learn more about the site. A preliminary report on the excavations of 1951 has been published in *The Chronicles of Oklahoma* (Bell and Fraser, 1952). During June and July, 1952, additional excavations explored the village area. The following report represents the results of all work accomplished including that reported on for the 1951 season. Although a large portion of the Morris site remains unexcavated, no additional work is contemplated. The reservoir for this area is completed, and the Morris site is already under several feet of water. Although additional work at the site would undoubtedly have produced new data and perhaps solved

some problems which remain, it is believed that a reasonably good sample of material and features has been secured.

The following students participated in the excavations: Ralf Andrews, Charles Bareis, Marian Berman, Harold Brighton, George Butts, Ann Chowning, Charlene Dale, Lathel Duffield, Joanne Johnson, Archie Lindsey, Alice Schroyer Proctor, Charles Proctor, Raymond Toldan, and Bobby Williams. Innumerable other persons have helped in various ways to make this report possible. Gratitude and appreciation are therefore extended to everyone who through contributing services or ideas has helped in making the following information available.

Introduction

The Morris site is one of 43 known archaeological sites located within the limits of the Tenkiller Reservoir in eastern Oklahoma. The reservoir will inundate approximately 20 miles of the Illinois River valley in Sequoia and Cherokee Counties between Gore and Tahlequah. Although some previous archaeological work had been done in the area, relatively little was known about the prehistory of the region. During 1939 and 1940 the University of Oklahoma excavated at three sites, Brackett, Smullens I and Smullens II. The field work was under the immediate direction of Lynn Howard, and a brief report on the excavations has appeared (Howard, 1940). The Brackett site represents a mound and associated village situated at the northern end of the reservoir; it will be outside the permanent lake pool but will be subject to flooding. The Brackett site represents the Gibson Aspect and has been assigned to the Spiro Focus (Bell and Baerreis, 1951; Orr, 1952). Smullens I and Smullens II represent two bluff shelters just outside the northern limits of the reservoir area. Excavations there were in progress at the time of Howard's preliminary report, and no definitive study of these materials has appeared. An examination of the specimens, however, suggests that a considerable span of cultural materials is present, ranging from Archaic to late prehistoric pottery bearing horizons.

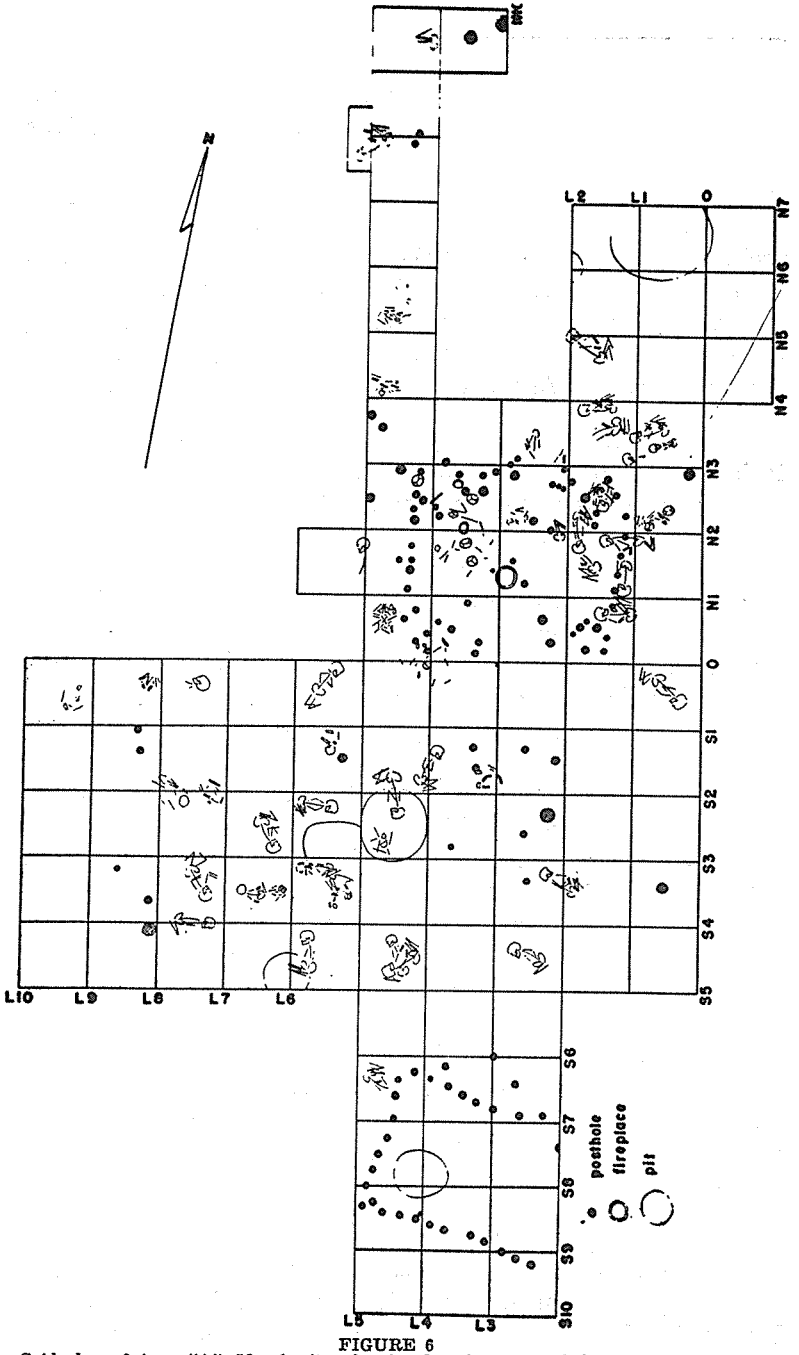

FIGURE 6
Grid plan of Area "A", Morris site, showing location of postholes, burials, pits, etc.

In the summer of 1948, stimulated by construction activities in the reservoir, the Smithsonian Institution River Basin Survey financed an archaeological survey of the area. David J. Wenner, Jr., and two assistants, William Mayer-Oakes and Robert Shalkop, reported the locations of 38 archaeological sites (Bell, 1949). This survey suggested that at least three types of occupation were represented; sites lacking pottery and probably to be considered as Archaic, and sites with pottery, probably belonging to either the Gibson or Fulton Aspects.

The Tenkiller Archaic resembles the Grove Focus materials of northeastern Oklahoma. The Grove Focus represents a pre-pottery hunting and gathering people who are best known from excavations in Delaware County (Baerreis, 1951). This complex lasted over a long period of time and has been subdivided into three phases labeled A, B, and C. These subdivisions reflect minor cultural changes through time within a single complex rather than geographical or major cultural groupings. In general, the Grove Focus can be characterized by a mobile population following a hunting and gathering economy. The sites are small and were apparently occupied intermittently as hunting stations by small family bands. The Grove Focus is represented by a variety of large sized projectile points and various other artifacts. Distinctive features of the projectile points are a proportionately broad blade, occasional coarse serrations and beveling of the blade. Other chipped flint artifacts include points with a blunt tip, large drills, knives, a variety of heavy crude scrapers, crude choppers, double-bitted axes and digging tools. Ground stone tools include full grooved axes, grooved atlatl weights, concave faced abraiding stones, anvils, grinding stones, manos and mortars. Bone and shell objects are rare but include bone awls, flaking tools and shell scrapers.

The Gibson Aspect has been outlined and described by Krieger (1946). It contains several foci and is well represented by sites in eastern Oklahoma and the Tenkiller Reservoir. The Gibson Aspect marks the appearance of an

advanced cultural development which reflects homogeneity within the Caddoan area for the first time. The Gibson sites are normally marked by both burial mounds and substructure or flat-topped temple mounds which were important religious centers supported by a surrounding but relatively dispersed population. The following list of traits are representative of the period. The houses are variable but in Oklahoma are normally square or rectangular with four central roof supports. The burials are commonly multiple graves with relatively abundant grave offerings. The pottery is represented by highly polished bowls, carinated bowls, and bottles decorated with carefully engraved, incised or punctated design and having a granular clay tempering material. Other important traits are effigy pipes of stone or clay, long stemmed pottery pipes, large T-shaped stone pipes, stone pulley-shaped ear spools, shell and wooden ear spools, use of copper veneer on ear spools, spindle shaped wooden beads coated with copper, conch shell containers, engraved conch shell dippers or gorgets, repousse copper plaques, pearl beads, a wide variety of shell beads, quartz crystals, spatulate celts, large flint blades, stone celts, sandstone hones, and small arrowheads in a variety of forms (Krieger, 1946, p. 215).

The Fulton Aspect contains a number of foci within the Caddoan area, and although largely prehistoric, two foci have produced evidence of European trade materials. The Oklahoma representatives of the Fulton period lack European trade goods although they must be considered as late prehistoric occupations. Krieger (1946, pp. 211-212) has outlined the characteristics of the Fulton Aspect as follows: a general absence of mounds; single extended burials concentrated in a cemetery area with grave associations close to the head; rectangular houses with two central roof supports; a variety of pottery vessel forms including simple bowls, bottles, jars with everted rims and globular ollas; pottery decoration includes engraving, crude incising and fingernail gouging. The Oklahoma wares are largely shell tempered. Other artifacts include elbow pipes of pottery or stone, cylindrical conch shell beads, sandstone hones,

small stemmed or triangular arrowheads, snub-nosed scrapers, side scrapers, flint drills, bone scapula hoes, bone awls and village cache pits.

This sequence of events, Archaic, Gibson and Fulton, as suggested by the 1948 survey did not adequately reflect the known phases of development for adjoining areas. To the northeast the Grove Archaic is followed by a Woodland complex, including Middle Woodland or Hopewellian, a Gibson thrust into the area and a late Neosho Focus which is a northern counterpart of the more southerly Fulton Aspect. The Woodland and Neosho materials seem to represent cultural traditions which have moved into Oklahoma from the north or northeast and which apparently did not push far enough south to be represented in the Tenkiller region. On the other hand, the sequence of events to the south and southeast is represented by the underlying Fourche Maline materials including pre-pottery and early pottery bearing levels followed by the Gibson and Fulton Aspects. As with the Woodland and Neosho, the Fourche Maline materials appeared to be missing in the Tenkiller region survey. Thus the Tenkiller area was situated geographically and culturally on the peripheries of two spheres of influence; the Caddoan area to the south and southeast, and the northeastern sector of the state, characterized by influences from the north and northeast. Both areas had apparently contributed to the cultural development of the Tenkiller area, and it was hoped that excavations in the region would not only clarify the prehistory of the local Illinois Valley, but aid in correlating cultural relationships between the two adjacent areas.

Following the survey, Donald J. Lehmer of the River Basin Survey conducted some excavations during the period from April to May, 1951. After testing two sites which were unproductive, extensive work at the more promising Cookson site (Ck-12) was undertaken. This site has two components represented, one early and one late. Lehmer (1952) has reported on the late occupation which he assigns to the Turkey Bluff Focus of the Fulton Aspect. The early occupa-

tion has not been described but appears to represent a pre-Fulton horizon. Characteristics of the Turkey Bluff Focus at the Cookson site include the absence of mounds, rectangular houses with two center posts and a central fire pit, cache pits, shell tempered pottery normally without decoration, stone celts, metates, manos, pitted hammerstones, stone pipes, arrowshaft smoothers, awl sharpeners, small triangular arrowpoints, flint knives, drills, scrapers, hammerstones, bone awls, bone punches, scapula hoes, bone picks, rasps, tubes and pendants, shell hoes and shell scrapers. No burials were represented. Although the Turkey Bluff materials were in part similar to those attributed to the Fort Coffee Focus (Orr, 1946), differences between the two suggested that separate recognition should be given to the Tenkiller materials.

During June and July, 1951, Robert E. Bell of the University of Oklahoma conducted excavations at the Vanderpool site (Ck-32). This site is represented by scattered occupational debris extending along the Illinois River bank for a considerable distance; test excavations were made at four localities of the site. A preliminary study of the materials suggested that three components are represented: a pre-pottery occupation represented chiefly by large projectile points and chipped flint objects, an early pottery bearing occupation which suggests a pre-Gibson period, and a late shell tempered pottery bearing occupation affiliated with the Fulton Aspect. The middle occupation is best represented at the site and includes the following characteristics: circular pit burials without grave offerings, round refuse or cache pits, square houses with a short trench entrance way and multiple roof supports, projectile points of various kinds including contracting stemmed, rectangular stemmed, flaring stemmed and some barbed forms, leaf shaped knives, crude scrapers and flint cores, flint hoes, double-bitted axes, boatstones, stone ornaments, manos, metates, flint pecking hammers, cup stones, stone celts, flint celts, drills and clay tempered pottery. The pottery is rarely decorated but a few crude incised lines have been found on rim sherds. The base is a thick flat-disc like bottom, sometimes with basketry

impressions. No vessel forms have been determined. All of the pottery is a thick crude ware resembling the Fourche Maline pottery (Williams Plain), the Spiro utility ware, and Harlan Plain ware. This complex lacks most of the features of Gibson Aspect times, but the presence of pottery suggests a post-Archaic period. Possible affiliations with Fourche Maline are indicated. Further identification can not be attempted until a complete analysis of the materials has been made.

With this additional information the chronology suggested by the survey was supplemented as follows:

Fulton Aspect—Turkey Bluff Focus (late occupation at the Cookson site)

Gibson Aspect—Brackett site.

Pre-Gibson—Vanderpool site (areas B and C)

Archaic (pre-pottery—Grove Focus?)

The Morris site was then selected for excavation in order to amplify the above sequence and to broaden our knowledge of the newly recognized Turkey Bluff Focus. Preliminary testing by Lehmer and his findings of several burials, shell tempered pottery and small triangular arrow points suggested that another Turkey Bluff site might be represented. In view of the fact that the burial complex was unknown further clarification seemed desirable.

Location and Description

The Morris site is located on the eastern bank of the Illinois River about 15 miles south of Tahlequah in Cherokee County, Oklahoma. This county lies in eastern Oklahoma to the north of the Arkansas River and includes a large portion of the Cookson Hill country. The site is about one-half mile due east of the former Standing Rock bridge which crossed the Illinois River at this local landmark. This area is about 25 miles east of Muskogee, Oklahoma, or 40 miles northwest of Fort Smith, Arkansas. More specifically the site is located in the SW¼, NW¼, Section 30, Township 15 North, Range 22 East.

The occupational area is situated on the second terrace of the Illinois River and was not normally subjected to overflow. At the time of excavation, the Illinois River was several hundred feet west of the site, although an old cut-off channel was still evident adjacent to the terrace slope. Elk Creek flowed into the Illinois River immediately to the south so that the site occupied an L-shaped promontory formed by the junction of these two streams. Stream erosion, in cutting into the terrace at flood stage, had destroyed portions of the site along the southern and western edges. Surface debris and exposed midden materials were especially abundant on these weathered slopes where erosion had exposed the underlying materials.

Although the actual extent of the site was not verified by test pits, village debris such as artifacts, flint chips, broken stones, and fragments of bone and mussel shells was found over a fairly large area. This debris was most abundant along the top of the terrace toward the river, extending parallel to the stream for a distance of at least 1,000 ft. Surface materials extended inland from the terrace edge for perhaps 300 ft. or more for the entire length of the site, but the greater abundance of materials close to the river suggested that the main occupation extended along the stream bank, remaining as close to the water supply as convenient.

The nearby Illinois River was a clear water stream furnishing not only a dependable water supply but good fishing. A large spring was also present near the mouth of Elk Creek and was equally close to the site. The valley provided ample areas of fertile land for gardening, and the surrounding Cookson Hills must have been plentiful with wild game and plant products. The location was well chosen for the hunting-gathering and agricultural economy which is suggested for the Morris site inhabitants.

The site had been under cultivation for a number of years and was planted in corn at the time of excavation.

Excavations

The excavations were limited to three areas herein desig-

nated A, B, and C. These were placed in what was believed to represent the richest and deepest portion of the site.

A horizonal grid system of 5 ft. squares was superimposed upon the site, and the areas excavated were carefully marked by wooden stakes placed at each 5 ft. interval. Each 5 ft. square was then numbered with reference to its position from two zero coordinates (Figs. 6, 7). For vertical control and measurements of depth, a point of reference or datum was established at the southwest corner of the site.

Each grid block was excavated by arbitrary 6 in. levels measured from the ground surface. Long handled shovels and small hand picks or trowels were used in the work, and most of the dirt was screened to avoid loss of any unnoticed specimens. The objects recovered were placed in paper sacks, which were marked with the square and level in which the materials had been found. All artifacts, flint chips, pieces of bone, shell and other bits of occupational debris were saved during the excavations. This was later carefully sorted to remove artifacts or significant specimens and the balance was discarded. The locations of the artifacts within the site were later made a permanent record when they were numbered and catalogued. As the excavation progressed, the walls and floors of each level were carefully troweled and examined for any disturbances or features that might appear. Whenever a burial or some feature such as a hearth or refuse pit was found, the excavation procedure was altered to deal with the situation at hand.

Excavation revealed that artifacts and occupational debris were concentrated in a dark colored soil which had an average depth of 2 ft. This dark colored sandy loam rested on top of a yellow-tan clay sub-soil. The underlying clay contained a small number of flint artifacts and flint chips to clearly mark an earlier occupation at the site. Differences in the color and texture of the soil made it relatively easy to distinguish between the two deposits although the yellow clay surface was irregular and marked by rodent disturbances.

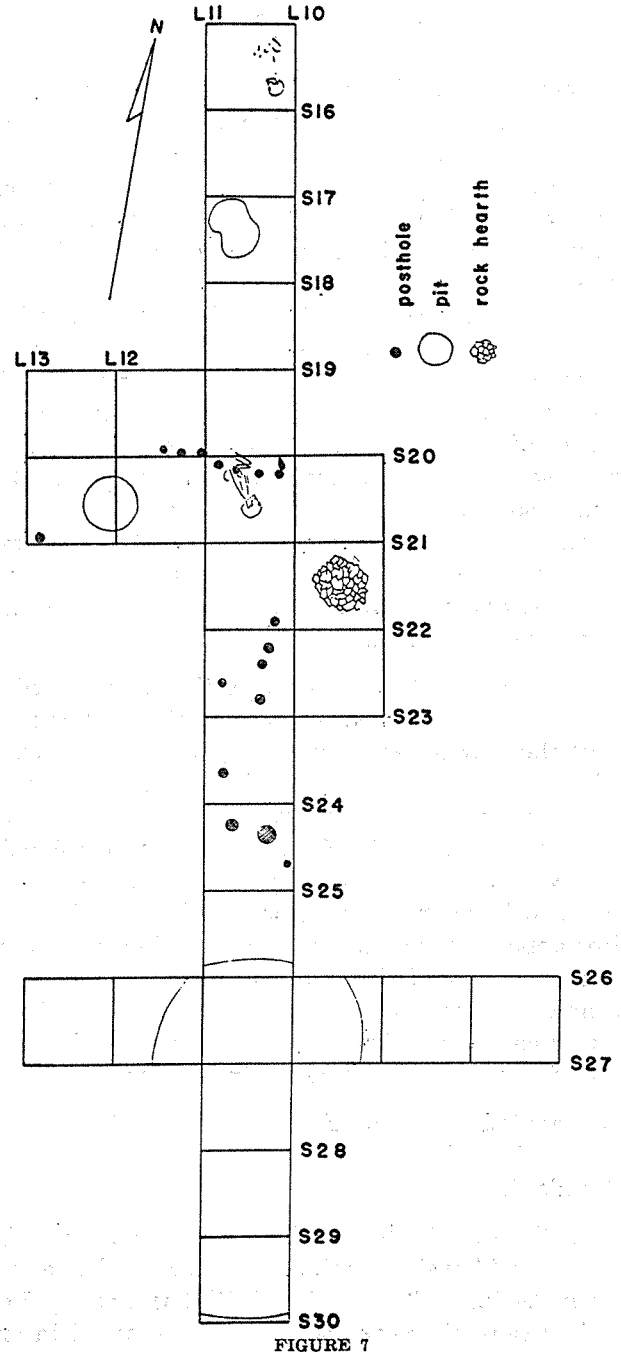

FIGURE 7

Grid plan of Area "B", Morris site.

The upper mantle of dark colored soil was found in all areas excavated and could be observed extending over most of the site. In some localities, particularly slopes or eroded areas, this surface deposit had been washed away to expose the underlying yellow clay. The upper stratum contained considerable debris such as bits of charcoal, flint chips, broken animal bones, occasional pieces of mussel shell, cracked rocks and various artifacts, either whole or broken. Artifacts were found in all parts of this deposit although they appeared most frequently in the first or top level, presumably a result of continued plowing and surface erosion. No evidence of natural stratigraphy or occupational surfaces could be observed within the upper brown mantle. Because of the dark soil color, the actual outlines of grave pits or similar features were not always visible except where they penetrated into the underlying yellow clays. Intrusions into the yellow clay were clearly evident by differences in color and the nature of the soil.

The underlying yellow clay sub-soil was believed to be sterile at the end of the first season's work (Bell and Fraser, 1952), but the subsequent work proved this supposition invalid. In removing some areas of the yellow clay during the second season, some flint artifacts and flint chips were found within this deposit. Aside from the occasional flint object the yellow clay does not appear to represent an occupational deposit; charcoal, ash, bones, shell or debris other than flint appears to be entirely absent. Because of limitations in personnel and time, no special effort was made to collect materials from the yellow clay. Most of the specimens found came from leveling floors or removing a single 6 in. layer for the rare specimen it might produce.

The excavated areas A, B, and C were located in the southern portion of the site where surface debris appeared most abundant.

Area A (Figure 6) included a total area involving 97 blocks of the grid system which was excavated to a varying depth from 24 in. to 30 in. The initial trench by Lehmer and the first season's work by Bell are contained in area A.

This section produced a large number of burials, several refuse or cache pits, one complete house pattern and perhaps three-fourths of another. This latter house pattern was discovered late in the season and it was not possible to completely uncover the structure.

Area B (Figure 7) is represented by a long north-south trench with adjoining areas on both the east and west sides of the main trench. It was dug primarily to aid in determining the extent of the burial area and to locate additional house structures. Several post holes, a rock hearth, two burials and some refuse pits were found in this area.

Area C is represented by a long trench extending in an east-west direction across the southern edge of the site. A single refuse pit and one probable rock hearth were found in this trench. The identification of the rock hearth, however, remains uncertain since most of the stones were removed by the Indian workmen before their possible significance was realized. With the abundance of scattered stones throughout the village deposit, it was not until the subsequent discovery of a stone hearth in Area B (Fig. 7) that this error became apparent.

Village Features

Houses: One complete house pattern was found in Area A (Figure 6). In outline the post hole pattern forms a crude square with rounded corners, the interior distance from wall to wall being about 15 ft. (Figure 8). The house pattern is somewhat confused by the presence of many extra post holes within the interior, at the corners and along the walls. It is suggested that the clustering of extra posts at the house corners may reflect features of construction at that point rather than repairs or interior furnishings. Although the post holes varied in size, most of them were between 5 and 7 in. in diameter and penetrated into the yellow clay for a depth of 8 to 12 in. No conspicuous evidence of roof supports is present on the interior of the house although some of the post holes found may indicate supports. In general, the post holes around the periphery were deeper than those

inside the house, suggesting that the interior posts demanded less strain or were of less support in the house construction.

A circular basin shaped fire place about 20 in. in diameter was found in the center of the house floor. The surrounding clay was baked quite hard from the fire place, and the basin contained a large quantity of ash and charcoal when discovered. Three post holes surrounded the fire place and appeared to have been associated with the fire basin in some way.

Extending from the fire basin and marking off the western section of the house was a dark colored disturbance which was clearly marked on the troweled floor. It is not known whether this represents some feature associated with the house, possibly a fire screen, or if it is merely a rodent burrow. The feature was fairly straight and much longer than any other burrow found during the excavations; however, it also appeared as a unique house feature and consequently remains of uncertain origin. Its position, shape and size suggest that it is probably to be correctly attributed to the house construction itself.

The house floor could not be determined except immediately adjacent to the fire basin where it was clearly marked by baked clay. Certainly the house was not characterized by a prepared clay floor. No special artifacts were found within the house except a stone metate which rested upon what must have been the floor surface to the northwest of the fire basin.

The house has no obvious entrance way although gaps in the post hole pattern on both the north and south walls could have served as doorways.

The incomplete pattern of a second house was also found in Area A (Figure 6). This house pattern was found at the end of the digging season and the time was not available to uncover the complete unit. The house was apparently rectangular in outline, fairly small in size, and was lacking interior features such as a fire place, central roof supports or a prepared clay floor. A circular basin shaped cache pit,

17 in. in diameter, was found within the western part of the house. The only artifact in the pit was a projectile point. The cache pit was apparently associated with the house rather than intrusive into the house area since the pit could not be seen in profiles above the assumed house floor.

The post holes ranged from 4 to 8 in. in diameter with most of them being about 6 in. Their average depth was 8 in. There were no burials overlying this house area which suggests that it was somewhat later in time than the square house which did have burials overlying it.

Several post holes arranged in a line were found in Area B. Although it is very likely that these represent parts of another house, excavation failed to reveal additional post holes in the area examined. Other occasional post holes were found as isolated features in various parts of the excavations (Figures 6 and 7).

Refuse or cache pits: A total of nine pits was found during the excavations. The pits represent two general shapes: a hemispherical or basin shaped pit, and a straight sided, flat bottomed pit. All of them contained refuse or debris from the village occupation and occasional artifacts.

Five examples were found in Area A; four were basin shaped pits and one was a flat bottomed pit. One large basin shaped pit was found in the N6 trench (Figure 6). It was roughly circular in outline and was 7 ft. 3 in. in maximum diameter. The cross section is hemispherical in outline presenting sloping walls and a rounded floor. The pit extended to a depth of 36 in. under the present surface. The contents included bits of charcoal, broken animal bones, some charred nut shells, small rocks, flint chips and a few artifacts. Worked specimens found in the pit include 4 projectile points, 5 crude pieces of worked flint and 2 pieces of worked bone. Three other pits in Area A (including one within the rectangular house) were similar in shape and content but were somewhat smaller in dimensions.

One flat bottomed pit was found in Area A. It had straight-sided walls and a flat floor. In shape, this pit was roughly circular; it was 5 by 5½ ft. across the top and 46 in. deep. Although the pit contained various fragments of animal bones, flint chips and charcoal, artifacts were few. Specimens recovered include one bone awl, a short antler tip, a worked penis bone of the racoon, three projectile points, two crude scrapers and two flint cores. An incomplete burial, number 15, was found within the limits of the pit area at a depth of 28 in. Although the pit extended underneath the burial, it could not be determined whether the partially filled pit had been used as a convenient burial place or whether the burial had been intruded into the abandoned pit at a later date.

Three pits were found in Area B (Figure 7). One was a circular, straight-walled and flat-bottomed pit about 37 in. in diameter and 38 in. deep. In addition to refuse it contained 11 pottery sherds, two mussel shells, one projectile point and one crude flint core.

A second pit was represented by an irregular shaped area in square S18-L10 which, since it is irregular in outline and has uneven walls and floor, may possibly not be aboriginal in origin. This feature may represent a disturbance by treasure hunters or possibly may be the area where a tree stump has been burned out or rotted away.

In the south end of the Area B excavation indications of a very large pit were discovered. It appeared to be a large pit having a relatively flat bottom and penetrating into the yellow clay for a depth ranging from 8 to 17 in. Since the pit area was about 25 ft. long it was thought that possibly a pit house structure had been discovered. However, a cross trench and careful search for interior features failed to produce any such evidence. The width of this feature reached a maximum measurement of 10 ft. 9 in., thus producing a large oval shaped pit 10 ft. 9 in. in width and 25 ft. long and averaging around 30 in. in depth. In some areas the outline

of the pit was not clearly defined; in others, it was exceptionally clear. The contents did not vary from the surrounding village midden area. Because of the unusual size, the possibility of this representing some natural feature of the occupational area is certainly to be considered. Perhaps a gully or eroded area became a convenient place for the disposal of village refuse.

A single basin shaped pit was found in Area C. It was 70 in. in diameter, 36 in. deep and was circular. Artifacts found in the pit include three projectile points, one flint blade, and one crude piece of worked flint.

Rock hearths: One rock hearth was found in Area B. It was composed of many cracked stones concentrated in an area approximately 36 in. in diameter. Charcoal and ashes mixed among the stones suggest the use as a hearth. A second rock fireplace was apparently found in Area C, but it was largely destroyed by the removal of the stones before its significance was realized.

Burials: A total of 55 burials was found during excavations at the Morris site. From the apparent distribution of the graves, they were concentrated within a cemetery area; however, since much of the site remains unexcavated, there is the possibility that this represents an accidental situation. The great majority of graves was found in Area A; Area B contained only two graves and Area C contained none at all. In general the bones are in fairly good condition and are suitable for further study except in cases where they had been damaged by rodent, human or plowing activity. The great majority of the burials found had been disturbed in some way, either by plowing or cultivation, post humus shifting of the bones, rodent activities or, more likely, by pot hunting activities. It is known that considerable digging for treasure and pot hunting activity has been carried on at the site in past years, and it is quite likely that some of the disturbed burials are a result of this activity. Since many of the graves were shallow in depth, continued culti-

vation has also scattered and disturbed some of the graves. Over one-half of the total number of graves were less than 12 in. under the ground surface; many were within the top 6 in. where they would be especially subject to plowing activities. A number of burials, although apparently not obviously disturbed as indicated by displaced bones out of articulation, were represented by incomplete skeletons. A few of the specimens exhibit various pathological conditions or bone injuries.

The graves were apparently dug from the surface to varying depths within the village deposit; most of them were quite shallow. The grave pits were either circular or oval in outline and normally were just large enough to accommodate the enclosed skeleton. The grave area was usually marked by a darker colored soil, and the pit outlines could often be clearly traced around the grave. Whenever the grave penetrated the underlying yellow sub-soil the area was clearly marked, but even in cases where it did not, the grave outline was often evident. In some cases the grave outline was clear almost to the surface and was easily marked on the floor of level 1. Consequently, it appeared that the graves had been dug from what was the ground surface and that they did not originate at a lower depth which was later covered with additional sediments.

Most of the graves contained single interments although some multiple burials were found. The body was commonly placed in a flexed position, and the orientation apparently had no significance. Some skeletons were in a semi-flexed position but no examples of an extended burial were found. The body position of several burials could not be determined. Two graves could possibly represent bundle burials; however, they may also represent disturbed graves which were opened by treasure hunters since many of the bones were

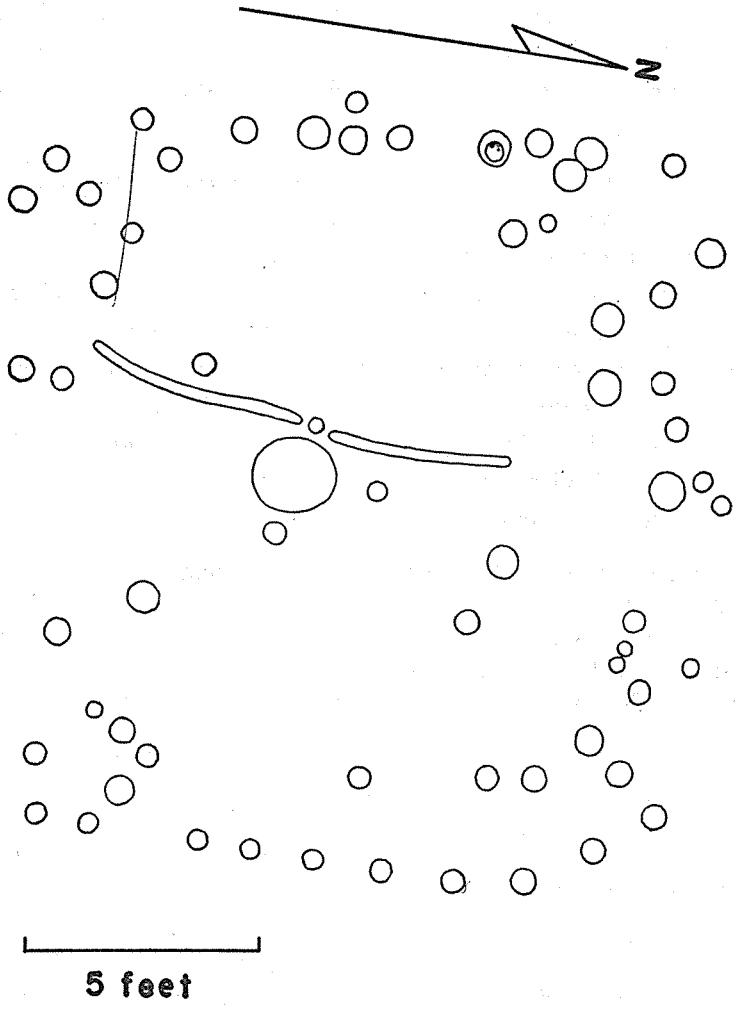

FIGURE 8

Floor plan of House 1, Area "A", Morris site.

broken and splintered rather than merely disarticulated. The bones were of multiple burials, disarticulated and damaged as though they had been thrown into the grave in a heap. Certainly the typical grave was a single interment with the body in a flexed position and without apparent orientation.

More than one-half of the graves had some artifacts in association with the skeleton. Since many of the artifacts, however, are minor items or broken objects, it is quite likely that many of them were not intentional grave offerings. Since the village midden was rich in artifact material, specimens could easily have become associated with the skeleton in the process of refilling the grave. Where the occasional projectile point or pottery sherd was found close to the skeleton and within the grave pit it is very likely an accidental grave association.

Articles which were certainly intentional offerings include pottery vessels, turtle shells, shell ornaments, shell beads, bone awls and flint knives. Such objects were usually found close to the head of the skeleton. Grave associations were modest and usually were limited to one or two objects.

In spite of the proximity of burials to one another, only one example was discovered in which one grave obviously cut into another one. The grave pit of burial 40 was intrusive into burial 44. In digging the grave for burial 40, the skull and shoulder region of burial 44 had been removed.

It should also be noted that many of the graves were located in the area containing House 1 (Area A). These graves were obviously later than the house in time, and the house must have been abandoned for a considerable amount of time prior to the digging of the graves.

The burial area of the Morris site was certainly not exhausted, and additional graves could be found with further excavation in the area.

MORRIS SITE BURIAL DATA

Burial number	Grave size(inches)	Disturbance	Sex	Age	No. of individuals	Type of burial	Depth from surface	Orientation	Direction of skull	Associations	Remarks
1	?	Yes	?	Infant	1	Flexed	18"	?	?	None	Disturbed by burial 2
2	38x21	No	Female	Adult	1	Semi-flexed	25"	SE-NW	SE	Oval-shaped knife, two shell-tempered sherds, 15 shell beads	
3	31x15	Yes	?	Adult	1	Flexed	6"	?	?	None	Disturbed by plowing
4	46x29	Yes	?	Adult	1	Semi-flexed	4"-9"	NE-SW	NE	One projectile point, four point fragments	Disturbed by plowing
5	58x22	Yes	Male?	Adult	1	?	3"-5"	E-W?	E	One shell tempered sherd, piece deer antler, two point fragments, 3 crude flint objects	Disturbed by pot hunters?
6	?	Yes	?	Adult	1	?	8"	?	?	Shell pendant, 2 shell tempered sherds, 2 broken points, 1 scraped, 1 knife tip, 1 unfinished flint object	Badly disturbed
7	?	Yes	?	Infant	1	?	15"	?	?	None	Incomplete
8	15x11	Yes	?	Infant	1	Flexed?	13"	N-S	N	None	Incomplete
9	35x25	No	Male?	Adult	1	Semi-flexed	20"	N-S	N	None	Incomplete
10	40x29	No	Male	Adult & infant	2	Flexed	30"	N-S	S	Turtle shell, pottery jar, 1 point and 2 fragments	Pit penetrated sub-soil
11	39x24	No	Male	Adult	1	Flexed	16"	E-W	E	Pottery jar, 1 clay tempered sherd, 1 point	
12	38x23	No	Male	Adult	1	Semi-flexed	15"	N-S	S	Pottery bowl, 3 flint knives, 1 celt, 1 bone hoe, shell hoe, 1 unworked shell, 1 turtle shell, 2 points, 3 pieces of antler, 1 split deer cannon bone, 2 sherds, 1 core scraper, 1 broken flint piece	Pathological femur
13	?	Yes	Female?	Adult	1	?	3"	E-W	?	None	Disturbed by plowing
14	47x34	Yes	?	Adult	1	Flexed	11"	E-W	E	Turtle shell, 1 point, 1 broken blade	Incomplete
15	?	Yes	Female	Adult	1	Flexed	28"	?	?	Bone awl fragment, 4 broken points, 1 flint fragment	In refuse pit?

MORRIS SITE BURIAL DATA (continued)

Burial number	Grave size (inches)	Disturbance	Sex	Age	No. of individuals	Type of burial	Depth from surface	Orientation	Direction of skull	Associations	Remarks
16	15x16	Yes	?	Adult	1	Flexed?	6"	?	?	None	Disturbed by plowing
17	11x6	?	?	Infant	1	?	9"	?	?	None	Incomplete
18	25x17	Yes	?	Juven.	1	Flexed	8"	SE-NW	NW	2 sherds, 1 piece of flint	Incomplete
19	28x28	No	Male	Adult	1	Semi-flexed	8"	N-S	S	Pottery vessel, 2 points, mano fragment, 1 flint piece	
20	14x10	Yes	?	Infant	1	Flexed	15"	SE-NW	SE	Turtle shell, large rocks	Incomplete
21	32x18	?	?	Adult	1	Flexed	14"	E-W	E	Pottery vessel, mano fragment	Incomplete
22	54x36	Yes	Female?	Adult	2	Flexed	12"	SE-NW	NW	Knife fragment	Two adults buried at same time, incomplete
23	23x13	Yes	?	Infant	1	?	16"	?	?	None	One adult vertebrae in association
24	49x25	Yes	?	2 adult 1 infant 1 juven.	4	Bundle?	9-12"	?	?	None	Possibly returned to pit by pot hunters
25	30x12	Yes	Female	Adult	1	?	12"	NE-SW	NE	2 points, 1 flint hoe	Incomplete
26	25x21	Yes	?	Adult	1	?	12"	?	?	None	Pit outlines clear at 6" depth
27	30x18	Yes	?	2 adult 1 juven.	3	Bundle?	8"	?	?	1 sherd	Possibly dug up and returned to grave by pot hunters
28	Scattered	Yes	?	Adult	4?	?	5"	?	?	Pottery sherds	Parts of 4 skulls, incomplete
29	?	Yes	?	Adult	1	?	9"	?	?	None	Skull fragments only
30	15x20	Yes	Female?	Adult	1	Flexed?	25"	?	?	None	Incomplete
31	36x27	No	Female	Adult Infant	2	Flexed	29"	NE-SW	SW	Bone awl, 1 point, 1 sherd	Infant (fetus)? in abdominal region
32	36x22	No	Male	Adult	1	Semi-flexed	8"	NE-SW	SW	None	
33	41x20	Yes	Male?	Adult	1	Flexed	12"	N-S	N	1 point near skull	Incomplete
34	28x24	Yes	Male	Adult	1	Flexed	12"	SE-NW	NW	1 bone awl, 1 sherd, 1 broken point	Incomplete
35	65x49	No	Male	Adult	1	Flexed	26"	SE-NW	NW	None	In pit
36	40x29	Yes	?	Adults	2	Flexed?	5"	?	S	Pottery bottle, 2 shell ornaments, 2 flint pieces	Disturbed by plowing

MORRIS SITE BURIAL DATA (continued)

Burial number	Grave size(inches)	Disturbances	Sex	Age	No.of individuals	Type of burial	Depth from surface	Orientation	Direction of skull	Associations	Remarks
37	42x22	Yes	?	2 adult 1 infant	3	Flexed?	4"	NE-SW	NE	3 sherds, 2 flint objects	Incomplete
38	55x26	No	Male?	Adult	1	Semi-flexed	6"	E-W	W	37 shell beads at wrist and below knee, 1 point, 1 knife, 1 hammerstone, 3 pieces of antler	
39	20x9	Yes	?	Juven.	1	Flexed	5"	?	?	Milling stone close to knees	Incomplete
40	35x18	No	Male	Adult	1	Flexed	4"	N-S	S	1 pottery bottle, shell gorget under chin, 3 shell beads, 1 point	Intrusive into burial 44
41	60x43	Yes	?	Adult	3	?	8"	?	?	3 shell beads	3 skulls plus broken fragments
42	36x18	Yes	?	Adult	1	Flexed?	?	N-S	S	1 point, 1 sherd	Incomplete
43	28x18	No	Female?	Adult	1	Flexed	6"	E-W	W	2 shell beads, 1 point, 4 sherds	
44	32x25	Yes	Male	Adult	1	Flexed	11"	SE-NW	NW	2 sherds, 1 turtle shell, 1 shell ornament, 5 shell beads, 1 piece of galena	Disturbed by burial 40
45	30x23	Yes	?	Adult	1	?	6"	?	?	1 sherd, piece shell ornament	Badly disturbed, incomplete
46	36x19	No	?	Adult	1	Flexed	12"	N-S	S	2 points, one near wrist	
47	31x14	Yes	Male	Adult	1	Flexed	10"	N-S	S	None	Incomplete
48	25x13	Yes	?	Adult	1	Flexed	4"	N-S	?	2 beads	Incomplete
49	34x24	Yes	?	Adult	1	Flexed	6"	E-W	W	2 points, 2 sherds	Skull missing
50	15x13	Yes	?	Adult	1	?	?	?	?	None	Arm bones only
51	37x29	No	?	1 adult 1 child	2	Flexed	5"	NE-SW	SW	1 pottery bowl, 1 flint blade, 1 shell piece, deer teeth, 1 turtle shell	Both probably buried at the same time
52	40x28	No	Male	Juven.	1	Flexed	5"	E-W	W	21 shell beads at wrist, broken mano, 1 turtle shell	
53	35x24	Yes	?	Adult	1	Semi-flexed	4"	E-W	W	14 shell beads around skull, 1 point, 2 flint pieces	Disturbed by plowing
54	27x16	Yes	?	Child	1	?	4"	?	?	Pottery bowl, turtle shell	Skull and fragments only
55	26x11	Yes	?	Adult	1	Flexed	13"	SE-NW	NW	1 piece of worked bone	Skull missing

Artifacts

Projectile points: Of the 1,886 projectile points found, 1,571 are relatively complete specimens while 315 of them are in too fragmentary a condition to be useful. The former were classified into 32 groups of which nine are represented by only one example and thus are considered unique. This classification of projectile points was made primarily on the basis of base and stem form and in some cases on size. With respect to size, there are generally two large categories. The first includes types 1 through 12, and, except for a number of large projectile points in type 3, is characterized by small-sized arrowheads. Type 3 includes both small arrowheads and dart points. These represent one of the three stemless forms and are characterized by having convex sides or both convex sides and convex bases. Some are basically triangular in shape while others are more ovoid in outline. The second general group includes types 13 through 32 which are of either representative dart point dimensions or of a large spear point size. On a stratigraphic basis the smaller arrowheads were all found in the top levels of the site. Only very rarely were they found in level 3, and only one specimen (with the exception of some in type 3) was found in level 4. The distribution of the larger points is not so limited.

Types 1 to 17 are shown on Figure 9, types 18 to 27 on Fig. 10, and types 28 to 32 on Figure 11.

Types 1 and 2 are the other two stemless forms. Type 1 is a triangular shaped point which differs from type 2 only in that type 2 is characterized by a concave base.

Type 4 includes a side-notched projectile point with a base always wider or at least as wide as the rest of the point. Type 5 is a corner-notched point with the base in all cases less wide than the widest part of the blade. These points have barbs to some degree in almost every case. Type 6 differs from type 5 in that the shoulders are straight with

no barbs and the stem is parallel-sided. The three specimens of this type are all serrated.

Type 7 has an unusually long stem which flares at the base. The base may be straight or concave. All examples have been serrated.

Type 8 includes those points which have been termed the Morris point (Bell and Hall, 1953). It has two wide side notches and one notch in the center of the base. Out of the ten points of this type, three have serrated edges.

Type 9 is another side-notched form and differs from type 4 only in that the two specimens found are much longer and have concave bases. Types 10, 11 and 12 are all unique points.

Type 13 includes points that are generally larger than the average dart point dimension. These projectile points in most cases are unusually thin in cross-section. The characteristic feature, however, is the apparently basic ovoid shape. The widest point is always above the stem in the middle of the blade.

Types 14 and 22 are characterized merely by corner notches. The bases are both straight and convex. In all cases they have barbs although the prominence of this feature varies widely. Type 22 differs from type 14 in that it is a much shorter, wider point. The ratio of length to width on type 14 is around 2½: 1½, on type 22 it is around 1¾: 1½.

Types 15, 16 and 19 are basically square stemmed types. Type 15 has a large square stem and contains both specimens that have barbs and specimens with straight shoulders. Type 16 has a very thin square stem. There are no barbs on the two specimens of this type and the blade is characteristically a very long one. Type 19 has a narrower stem than type 15 and is, in general, a smaller sized point.

Type 17 is represented by only three specimens all of which are side notched with the base as the widest part of the projectile point.

Type 18 is a contracting stem form with either a squared base or a slightly concave base. The typical specimen tends to be rather narrow with only slight or no shoulders.

Type 20 is characterized by a stem which expands toward the base. The base is straight in all cases. This type is mostly found in levels 3 and 4.

Type 21 is characterized by long very shallow side notches. In some cases the notches are so slight as to make them almost negligible.

Type 23 has a rounded base form with side notches and is represented by four specimens.

Type 26 is a tapered stem form and was separated from the other tapered stem forms because of its unique point. The only two specimens found, both in level 4, have a very characteristic drill-like point.

Type 27 includes all of the tapered stem points other than those of type 18 and type 26. Although there is a huge range of form in this type, the problem appears to be one of acknowledging different modes of the same type rather than separating out different types of the tapered stem projectile point. Every character that could have been a possible basis for differentiating sub-types proved to be useless. Each character graded so slightly that it seemed unsound and impossible to separate out the sub-types. Type 27 is by far the most popular projectile point at the site. It represents 64.93% of all points found.

Type 32 is characterized by a notch in the base in addition to side notches. Types 24, 25, 28, 29, 30 and 31 all represent unique points.

SITE DISTRIBUTION OF NUMBERED PROJECTILE POINT TYPES

Type	Surface	Levels						Burial	Pit	Post	?	Trench	Totals
		1	2	3	4	5	6						
1	2	7	2										11
2	2	6											8
3	21	60	19	10	12			1					123
4	4	17	3	1				1					26
5	5	32	13	4	1			1					56
6		1	2										3
7	1	2	2	1									6
8		6	2	1					1				10
9	1	1											2
10		1											1
11		1											1
12		1											1
13	9	4	11	3	2	2					3		34
14	29	29	13	21	12	5		3	2		2		116
15	7	10	5	4	3	2	1				2	2	36
16				2									2
17					2						1		3
18	15	2	4	4	1	2						2	30
19	2	4	1	1	1				1		1	1	12
20	1	1	1	4	5								12
21	7	8	1	1			1						18
22	4	6	2	6	1	3					1	1	24
23		2		1				1					4
24						1							1
25		1											1
26					2								2
27	239	376	154	128	48	15		19	8	1	15	17	1020
28												1	1
29		1											1
30											1		1
31				1									1
32			1	1	2								4
Total	349	579	236	194	90	32	2	26	12	1	26	24	1571
Untyped fragments	83	110	43	29	20	4		2	1		4	19	315
Grand Total	432	689	279	223	110	36	2	28	13	1	30	43	1886

Drills: There are actually five different types of drills, which probably differ only in shape and not in purpose or use (Fig. 11, A).

The first type, of which there are four examples, all have triangular stems which have been purposely shaped. The shafts in all cases are fairly uniform in size from stem to point. Only one of these specimens is unbroken, and it has a length of almost 2 in. This seems to represent the average length for this type of drill. Possibly one other specimen could be included in this group, but it is too broken to be identified positively.

Three drills were made from crude flakes. The only work displayed on these specimens is the chipping necessary to make the point. These shafts taper more from the base to the tip than do the shafts of the first group. In size these drills are slightly larger than the first group.

Five of the specimens possess a more cylindrical shape which tapers to a point at one or both ends. All of these specimens were worked uniformly the entire length of the drill. The longest specimen of this group is 2½ in. long, but it is a fragment and therefore represents only a fraction of the total length. Two of the complete drills are 2¼ in. long. In addition to these five specimens, two smaller drills are of this type but possess a small flaring base.

The two remaining specimens may well have been eccentricities and not represent two kinds of drills at all. One looks as if it had been fashioned from a former projectile point. It has side notches and the blade has been narrowed considerably to form the shaft and point of the drill. The other drill was made from a small flake, 1¼ in. long, and exhibits crude workmanship.

There is no significant correlation of type of drill to the various levels within the site.

Flint knives: In the total of 138 knives found, there are three general shapes represented (Fig. 11, F, G). These three types are not mutually exclusive but rather grade

from one shape to the other. The typical specimen of one group is an oval shaped knife with a length to width ratio of 3½:2½ or 4:3. A few of the oval shaped knives have a more circular outline. The second type of specimen is a longer elliptical shaped knife with one pointed end. The ratio of length to width in these specimens is on the average about 4½:1½. The third type of specimen is characterized by a square base, giving the knife a more triangular appearance. Only two whole specimens of this type were found, both of which have dimensions similar to the oval form. The square base fragments, however, seem to indicate that the square base is more typical of a longer knife. Of those in which the shape could be determined there are 22 elliptical, 35 oval, and 9 square base specimens. Of the remainder, at least 12 of the base fragments represent long knives.

The long elliptical knife has some variant characteristics. In one variety the knife is widest at the base and tapers very gently toward the point. Three of the specimens, however, are widest at 1/3 to ½ of the way up from the base. Two of the burial knives, one of which had evidently been resharpened and beveled, are of this latter variety.

In addition to the typical way of producing a knife by flaking a piece of flint to the desired thinness and then secondarily chipping the edges, two specimens have been beveled on opposite edges of the blade. One broken example may represent an incomplete diamond-shaped alternate beveled knife (Fig. 11, E).

Two uniquely shaped specimens are present and probably only reflect eccentricity. One of these probably was basically the long elliptical type, but it has a large notch on each side at one end. The other atypical example is a rectangular knife except for the point end. Here the specimen was angularly chipped to an off-center point. This specimen is 3 in. in length by 1½ in. in width.

Practically all of the knives are fairly thin except in a few cases where a large node of flint could not be detached from the face of the blade. Most of the knife fragments found

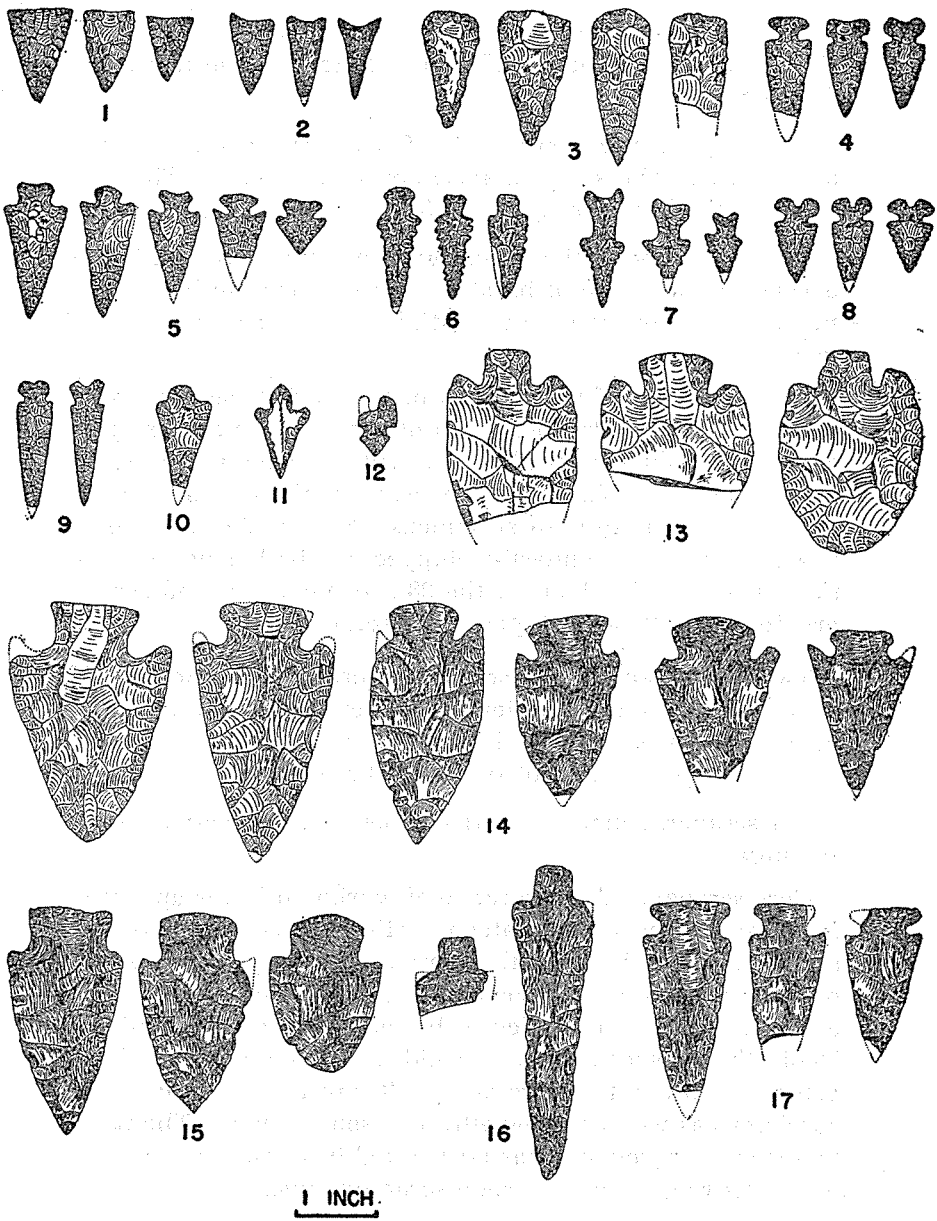

FIGURE 9

Examples of projectile-point types 1 to 17, Morris site.

are bases; consequently not much could be determined about their total size or shape. The same is true of the few point fragments found.

The longest specimen found is 6¼ in. long and 2 in. wide at the base. The smallest specimen is 2 in. long. The majority of the knives range from 3 to 4 in. in length.

All except one of the knives were chipped from flint; the exception was made of basalt. There appears to be no significant differences in the stratigraphic distribution of the knives.

Flake scrapers: The majority of the 28 flake scrapers was found in level 1. Practically all of these specimens are just crude irregularly shaped flakes with secondary chipping along one side. The overall workmanship was also comparatively crude in most specimens. Five of the specimens, however, were secondarily chipped on both sides of the flake (Fig. 11, C). Four of the 28 specimens are end scrapers, the rest all being typical side scrapers.

Two unbroken hafted scrapers were found, one in the initial trench and one in level 2. They both show the beveled scraping edge (Fig. 11, B) and are the only scrapers in this group that are not typical flake scrapers.

The scrapers range in size from about 1½ in. to almost 4 in. in length.

Core scrapers: A wide range of workmanship is apparent in the specimens of this category (Fig. 11, D). Some of the specimens have just a little more work on them than some of the crude cores, and some of the specimens are only too crude and a little too thick to be included with the knives. Typically, all specimens are ovoid in outline, but this characteristic does not always apply. There are a few circular specimens as well as a few elliptical shaped ones. The perimeter of all specimens has been roughly worked to provide a fairly straight though crude scraping edge.

The specimens range in size from small core scrapers 1½ in. in length to larger 4 in. ones, the majority being about 3

in. in length. It is probable that many of these specimens have been made from discarded pieces of flint which for some reason were not suitable for an implement of any other kind.

Crude cores: Included in the crude cores are specimens that show some, but in most cases very little, evidence of having been worked. For the most part they are large nodules of flint or rough thick flakes. Several flakes have been removed from the larger chunks of material, but in no definite pattern. Most of the specimens were probably rejects or by-products from the working of flint.

Double-bitted axes: Of the 43 double-bitted axes found, most are whole specimens. The evidence of use polish on the mid-section and bits varies considerably. A few roughly made specimens were found which display none of the characteristics that would mark them as having been used. One specimen is made from an irregular flint nodule with only one end crudely fashioned into a bit.

The typical implement appears to have been made by chipping both faces to a relatively thin core with an edge at each end and along the sides. The sides were indented at the mid-section to facilitate hafting (Plate 9, H, K). Quite often the mid-section is much thicker than the rest of the axe, even to the point of appearing almost round in cross-section. This is particularly true of the larger axes. Most of the specimens are at least 1½ to 2 in. longer than they are wide. A very few specimens, however, are less rectangular, the differences between the length and breadth measurements in these specimens is 1 in. or less. The length of the axes varies from about 3 to 5 in. with the majority having lengths in excess of 4 in.

All except two of the implements were made from a white colored flint. These two specimens were made from a dark colored stone, probably a basalt, from which hoes were commonly fashioned.

Chipped hoes: The 61 hoes found can be roughly divided into two groups, those made of flint and those made of a

non-flinty material. Fourteen of them are made from white flint, and all have been made by chipping the core on both sides to the desired shape (Plate 9, A). These specimens were limited to the upper three levels of the site, and one was associated with a burial. About half of the flint hoes are triangular in shape; the remainder are more rectangular with rounded corners. All of these tools have been sharpened on at least one end, and many are sharpened on all sides. Two of the more oval shaped ones and one triangular one exhibit a glossy use polish on the blade. The average size of the flint hoes is 4 to 5 in. long and 2 to 3 in. wide.

The second group consists of hoes made from sandstone, limestone, basalt, or some other non-flinty rock; the majority are made of basalt. Eight of these specimens have been ground and smoothed to some degree. Two, which have been pecked and then ground all over on both surfaces, are rather large in comparison to the typical specimens. Although broken, they both measure about 6 by 3½ in. and are an inch thick. Two of the smaller broken specimens were also ground and smoothed on all surfaces. The four remaining examples were ground only at the cutting end, but all were ground in such a way that a good cutting edge was produced. These partially ground specimens are all roughly rectangular with rounded corners.

All other specimens have been chipped only (Plate 9, A). In some cases, particularly in the utilization of sandstone and limestone, the natural stone was largely unmodified with the only work having been some sharpening at one end. The shape of these specimens is the same as that already described for the other partially ground specimens although a few tend to be more ovoid. Most of the specimens were sharpened only on one end but have been definitely shaped along the sides. Four specimens are mid-sections with the ends missing. Four specimens from level 1 are such small fragments that they were included with the hoes primarily by virtue of the material from which they were made. Three of the specimens show signs of wear and abrasion, indicating considerable use.

The sizes vary from a broken specimen 6 by 4 in. to the very small fragments already mentioned. An average specimen is about 3 in. in width at the digging end. The thickness of the hoes is rarely more than 1 in. Practically all of the specimens are fairly flat and thin but are crude in workmanship.

Flint hammerstones: A total of 61 hammerstones was found throughout the excavations. These were more abundant in the upper levels of the site, decreasing in frequency from 22 in level 1 to only one in level 5. They are all roughly globular in shape (Plate 9, C) and vary from almost perfect spheres to quite irregularly shaped ones. The degree of symmetry in most cases depends upon how much the stone had been used with the rounder ones showing the most use. All of the hammerstones were made of a light colored, almost white, flint. The sizes vary from 2 in. in diameter to 3½ in. in diameter; the majority are between 2½ and 3 in. There seems to be no correlation between the size of the specimen and the depth at which it was found although levels 3, 4 and 5 seemed to contain consistently the size which is 2¾ in. in diameter. The top levels yielded the total range of sizes.

Miscellaneous flint objects: There are a few miscellaneous artifacts that deserve mention. There were three cone shaped flint cores found, one each from levels 1, 2 and 3. These cores are distinctive because of the flake scars on them which run the full length of the height measurement. They all have flat bases. One of the bases has been secondarily chipped around the edges indicating that this specimen has been used as a scraper.

Four irregular flint flakes were found, one from level 1 and three from level 2. The distinctive feature of these four flakes is that all possess one edge which has been either wholly or partially ground smooth. This is the only evidence of any special preparation of the specimen. The purpose of these flakes is not evident.

One piece of chipped flint found in level 1 has two points which have been considerably worked down. The points

appear to have been continually rubbed by something; possibly these specimens were used as a drill or reamer.

A piece of flint having a worn down notch on one side was found on the surface. It is possible that other tools were straightened or rubbed down in this notch.

Although most flint was derived from local sources, one piece of flint from quarries in Kay County, Oklahoma, was found in level 4.

Unidentified flint pieces: Included in the category of unidentified specimens are fragments of well finished artifacts. It was impossible to identify what each of these fragments formerly represented. Certainly many of them are pieces of projectile points, knives, blades, and possibly drills or scrapers. In addition, parts of axes and hoes are probably included. Other specimens included among the unidentified are those which could not be attributed to any of the other categories of well finished artifacts but which show considerably more primary and secondary chipping than either the crude cores or core scrapers. Some of these are probably unfinshed artifacts, unused blocks of raw material or rejects from the manufacturing process.

Celts: The majority of the 12 celts found have been fashioned from quartzite. The one exception to this is a broken celt fragment which has been made from a white chalky sandstone. All of the specimens display ground and smoothed surfaces with one exception, which has been pecked but not smoothed.

Only four specimens found are whole or relatively complete (Plate 9, D, E). These include one which is typical of the group as a whole in size, shape and material. It is 5 in. long and 2 in. wide, quite thick and circular in cross-section. The butt is rounded, and the sides expand gently toward the bit, which has been ground down to a sharp cutting edge.

The whole specimens also include one almost rectangular celt found in association with a burial. It is 5 in. long and 2½ in. wide, and is only slightly broader at the cutting end.

It maintains a uniform thickness of little more than ½ in. throughout its length.

The two remaining whole specimens are almost identical in appearance. They are oval in outline with a cutting edge at one end. The dimensions are 3 by 2 in. with a ¾ in. thickness (Plate 9, D).

All of the other specimens were apparently shaped like the first celt described. The cross-section varies, however, from circular to elliptical with most of them being more elliptical. In addition, the size of the celts, when it can possibly be determined, is fairly uniform. The specimens are between 4 and 5 in. long and have a width at the cutting edge which is between 2 and 2½ in.

Stone beads: The stone beads found were made from three kinds of material. Six of the beads are of shale, two are made from a much harder dark-colored stone, and two are made of a light colored sandstone (Plate 10, R). The shale specimens are flat discs and tend to be laminated showing the bedding planes of the shale. The beads often split along these laminations. Three of this type were found in level 1, two in level 2, and one in level 3. The representative specimen of this type is about 1 in. in diameter. Two of the specimens are in such fragmentary condition, however, that the shape could not be determined. Moreover, one specimen found in level 3, although damaged, displays a diameter of almost 1½ in. Although the ends of the beads are usually flat, one specimen was found in which the end is more convex.

The two beads of the harder stone are both whole specimens. One was found on the surface, and the other was found in level 1. The larger bead, found on the surface, has the shape of a flattened spheroid with a diameter of 1 3/16 in. and a thickness of 13/16 in. It is perforated through the center. The smaller bead, found in level 1, is of the same general shape; it has a diameter of 9/16 in. and a thickness of ⅜ in. Both specimens are quite well formed and are carefully made.

Of the two beads made of white sandstone, one was found in level 1; the level of the other is unknown. One is broken from a large tubular bead and is 1 in. in diameter. The perforation is large and off center at the end but it tapers toward the center of the tube where the specimen has been broken. The other bead of this material is quite flat but is rounded on the edges. It is ⅞ in. in diameter and only ¼ in. thick.

Boatstones: Of the four boatstones found three are made of limonite and one is made from sandstone. The three limonite specimens (Plate 10, U, V, W) are complete, whereas the one made from sandstone (Plate 10, T) is just a small fragment. The typical specimen is boat shaped with a flattened area around what would be the keel. Only the broken specimen has been hollowed out. One specimen, which was found in Area C, is a slightly different shape. Instead of being elliptical on the top face, it is much thinner in width and possesses a groove around the keel rather than being flat.

The largest specimen found (Plate 10, V) is 3½ in. long and is 1¼ in. wide at the center. It is 1½ in. high with the flattened keel area being ¼ in. across. There are scratches across the top surface which may be the beginnings of a hollowed out area. This specimen is quite well formed and smoothed. A second specimen of this type (Plate 10, W) is only 2¼ in. across the top and 1½ in. high. The surface is cracked and in a poor state of preservation. The specimen from Area C (Plate 10, U) is also of this same general size. The hollowed out broken specimen (Plate 10, T) is of approximately the same size as the largest boatstone found; it is made of sandstone and is well ground and smoothed.

Stone pendant: One disc shaped stone pendant (Plate 10, M) was found in level 1. It is not a whole specimen but has a few chips broken off from the edges. The pendant is 2½ in. in diameter and has one perforation for suspension.

Pipe: Several pieces of a broken elbow shaped stone pipe (Plate 10, L) were found in level 1. The length of the bowl

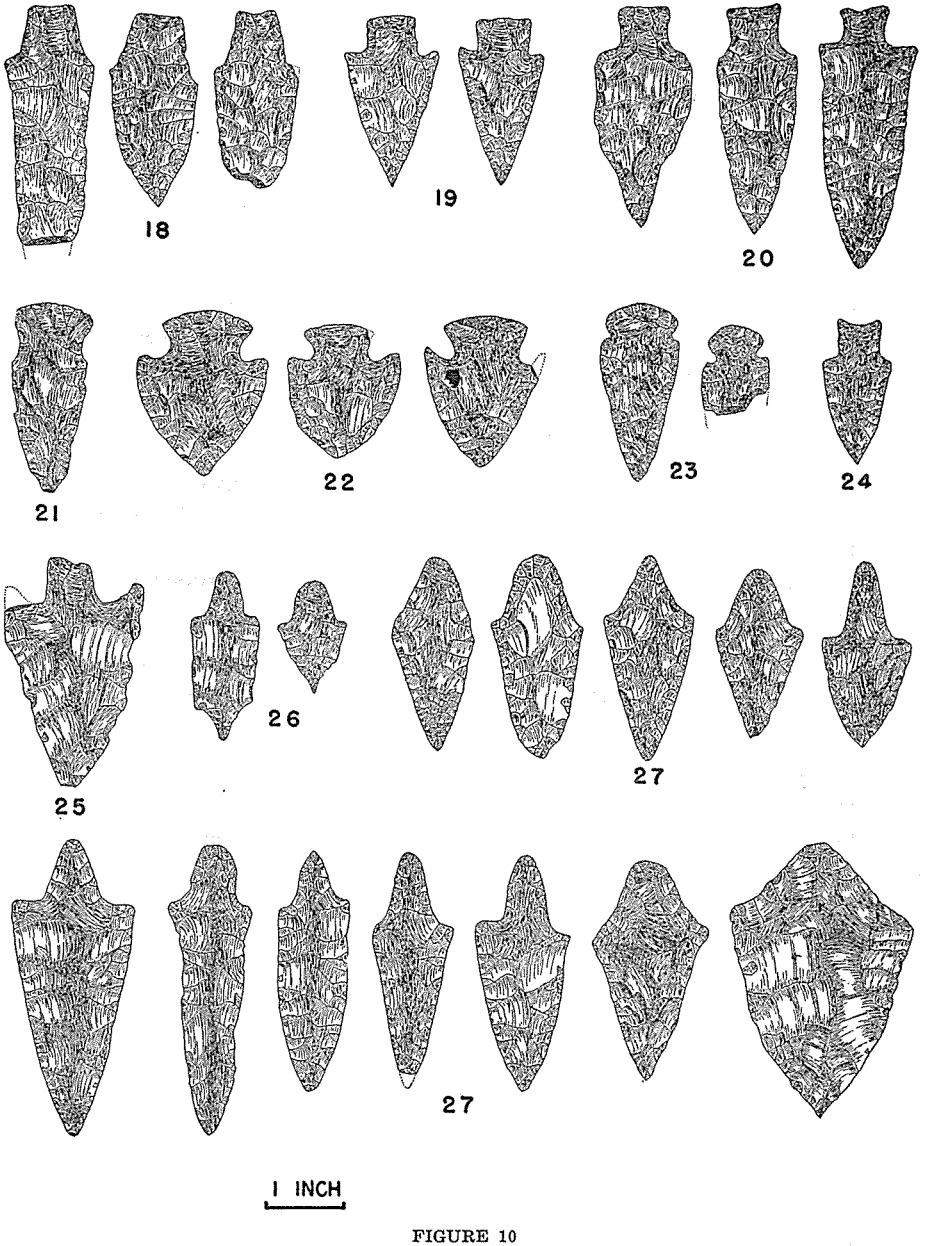

FIGURE 10

Examples of projectile-point types 18 to 27, Morris site.

is 2¼ in. and that of the stem is 1¾ in. The bowl is not of uniform diameter but is slightly spindle shaped with the mid-section larger than the ends. The walls of both the stem and the bowl are relatively thin, and the exterior surfaces are fairly well polished.

Ear spool: One broken stone ear spool (Plate 10, S) was found in level 1. It represents the pulley type ear spool and consists of one flange and a part of the inter-connecting mid-section. The flange, which is circular in outline, has a depressed central area. The rim, which is about 1¼ in. in diameter, is rounded inward to the central depression and outward to the perimeter. The diameter of the connecting mid-section is ⅞ in.

Unidentified stone piece: One fragment of a tubular piece of stone was found. The fragment is 1 in. long, but it has a thickness between the outer edge and what was the perforation of over ¼ in. This fragment could be a piece of a stone pipe or even of a large stone bead.

Sharpening stones: A grooved sandstone awl sharpener (Plate 10, Q) and a sandstone sharpening stone or hone were found in level 1.

Manos: Of the 57 manos found, 14 are unbroken. Except for three, these unbroken specimens are elliptical in shape. One of the exceptions is more bun-like in appearance; the other two are more rectangular with rounded corners (Plate 9, B). The average size of the elliptical manos is 3¼ by 4¼ in. with a thickness of around 1½ in. Two specimens, however, are larger; one is 4¼ by 5¼ in., and the other is 4 by 6 in. Thirty-one of the remaining stones, although broken, appear to be of the above mentioned type. Nine of these are so broken that it is impossible to ascertain their size. Some of the others are of the average size mentioned above, but most generally they seem to have been larger.

Three mano fragments are of a completely different shape. Two are perfectly circular in cross-section; one is square with rounded corners. These three have diameters of 2¾ in., 3¼ in., and 2¾ in. respectively, and, in so far as it could

be determined from the fragments, they seem to retain these same diameters throughout the length of the stones. It is interesting to note that all three of these specimens were made of exactly the same kind of sandstone.

Five specimens appear to be transitional between the above types. Their cross-section dimensions are 3 by 2 in., 3½ by 2½ in., 3¾ by 2 in., 3¾ by 2¼ in., and one is indeterminable.

Two unfinished manos were found, both of which are quite large in size and roughly rectangular in shape. Three of the stones, including the bun-shaped specimen discussed among the first group, seem to have been more polished, possibly from use as tanning stones. It should be noted that all of these polished specimens were found in the deeper levels, two having been found in level 4 and one in level 5.

Of the total number of manos 47 have been used on both surfaces. This number includes the polishing stones as well as the two unfinished specimens which are pecked on both sides. Five specimens have been used on only one surface. Eight stones have very faint cups on one side, but they are included among the manos because they were used in the same manner as the others on at least one surface. All of the manos were made of sandstone. Except for the already noted distribution of the polishing stones, there seems to be no further correlation of size or shape to the various levels. It should be mentioned, however, that the three manos of circular cross-section were from levels 2 and 3.

Milling stones: Seven various sized fragments and four relatively whole milling stones were found. With the exception of two, these were found on the surface. One of the exceptions was found at the top of level 2 in Area A, the other on the floor level and inside of House 1. The milling stones have dimensions of about 12 to 14 in. in both length and breadth. The basin area ranges from 9 to 10 in. in diameter and is of medium depth. All are hard sandstone.

Cupstones: Twenty-two sandstone cupstones (or nutstones), ranging in size from 4 by 4 in. to 2½ by 2½ in., were

found. The smaller sizes are most typical. There are three general shapes, the most popular one being a rectangular shaped specimen (Plate 9, I). In addition, there are five slightly spherical shaped cupstones and three broken ones that appear to have been elliptical in outline. These latter ones are quite similar in shape to the manos (Plate 9, F). The cups generally are merely bowl-shaped depressions in the stone; however, five of the specimens exhibit cups of a more conical form. The majority of the stones have cups on both sides although in some cases the cup is a very shallow depression. Only three specimens exhibit just one cup. There is no correlation between the sizes of the specimen, the number of cups or the particular level.

Sandstone hammerstones: There are ten sandstone hammerstones which were apparently used for the same purpose as the flint hammerstone. However, these vary much more in size and shape than the flint hammerstones. The largest one found is an elliptical shaped specimen measuring 6 by 3 by 1½ in. Four of them are roughly ball shaped and they average 3 in. in diameter. Except for one smoothly rounded pecking stone which has a diameter of 2 in., the remaining specimens are quite irregularly shaped.

Smooth stones: Two rounded and smoothed stones were found, one in level 1 and the other in level 4. The smallest one is perfectly round and well smoothed. It is a little more than 1 in. in diameter. The larger specimen, which is a little more than 1½ in. in diameter, is not as round in shape nor so well smoothed as the smaller one. The use or purpose of these stones is unknown.

Galena: Seven worked chunks of galena, varying in size and shape, were found. While the specimens are far from being spherical, the surfaces on six of them have been ground and rubbed to produce a fairly well rounded object (Plate 9, J). The remaining specimen shows much less grinding and has the appearance of a cube (Plate 9, G). The sizes range from 1½ to 3 in in diameter. The powdered galena may have been used as a pigment.

Hematite: Five miscellaneous pieces of hematite were found at the site. The largest piece is a chunk 2½ by 2 by 1 in. The other specimens are smaller pieces; three of these have rounded edges, and the fourth specimen is merely a flat broken fragment. The hematite was probably used to supply a red pigment.

Limonite: One very small irregularly shaped chunk of limonite was found in level 4. It was probably used to supply pigment.

Bone awls: Seventy pieces of worked bone awls were found, and they were in consistently decreasing order from level 1 to level 5. In general, the awls can be placed into two groups; one consists of a slender, pencil-shaped awl, and the other consists of awls made from splintered animal long bones (Plate 10, P). The pencil-shaped awls were generally the better made ones. They are rarely more than ¼ in. in diameter and retain this same diameter throughout the length of the awl. Most of them are perfectly circular in cross-section, although some of them do exhibit a flattened, more oval appearance. One of the most perfect examples of this type was found with a burial. It is 4½ in. long. Of 31 specimens of this type, almost half have been fire hardened.

The other type consists of awls made from deer cannon bones or from fragments of bones which have been sharpened to a point. These fragments vary in size, but the cannon bone awls are the largest. These are from 4 to 4½ in. in length. All of the other specimens of this type vary in shape and the amount of workmanship expended on them.

One specimen found differs from all others; it has a spatula-shaped end instead of a pointed tip. All examples exhibit some use polish at the tip. There is no apparent correlation between the various levels and the types of bone awls.

Bone flakers: Of the nine deer ulna flaking tools, seven have tips present and show wear and roughness due to chipping flint. Three relatively complete specimens are made

from deer ulnae (Plate 10, X), and the remainder apparently represent parts of the same bone. The specimens were identified as flakers by their flat spatula-shaped tips and abraded surfaces.

Antler: A total of 38 pieces of antler was found during the digging; of these, 18 are represented by horn tips. Only two of the tips show signs of having been extensively used although seven of the specimens are either fire-blackened or charred. The sizes of the specimens range from small tips to sections of antler as long as 6 inches. A majority of the specimens show evidence of rodent gnawing.

Bone hoe: One worn, small bone hoe measuring 5 by 2 in. was found in association with burial 12. It was made from a buffalo scapula (Plate 10, Y).

Bone ornament: One tubular bone ornament was found in level 2. It is 2 in. long and has a diameter of a little more than ½ inch. A single perforation has been drilled through the bone tube at one end (Plate 10, N).

Bone beads: Six fragments of tubular bone beads found all represent the complete length of the bead. They range from ⅞ to 2¼ in. in length and from ¼ to ½ in. in diameter. All but two of the specimens have been broken or split, but they exhibit some polish (Plate 10, Q).

Miscellaneous bone items: A small worked fragment of buffalo skull and a split deer cannon bone were found in association with burial 12. A raccoon penis bone was found in a refuse pit located in squares S3-L4 and S3-L5. The deer cannon bone, although not shaped (Plate 10, Z), may have been split for an awl. Neither of the other specimens displays evidence of having been made into a specific implement.

Shell beads: Of the 137 shell beads found, almost all of them are badly weathered and chalky. However, a few, found in levels 1, 2 and 3 are in a better state of preservation and retain their former hardness. The typical bead is a

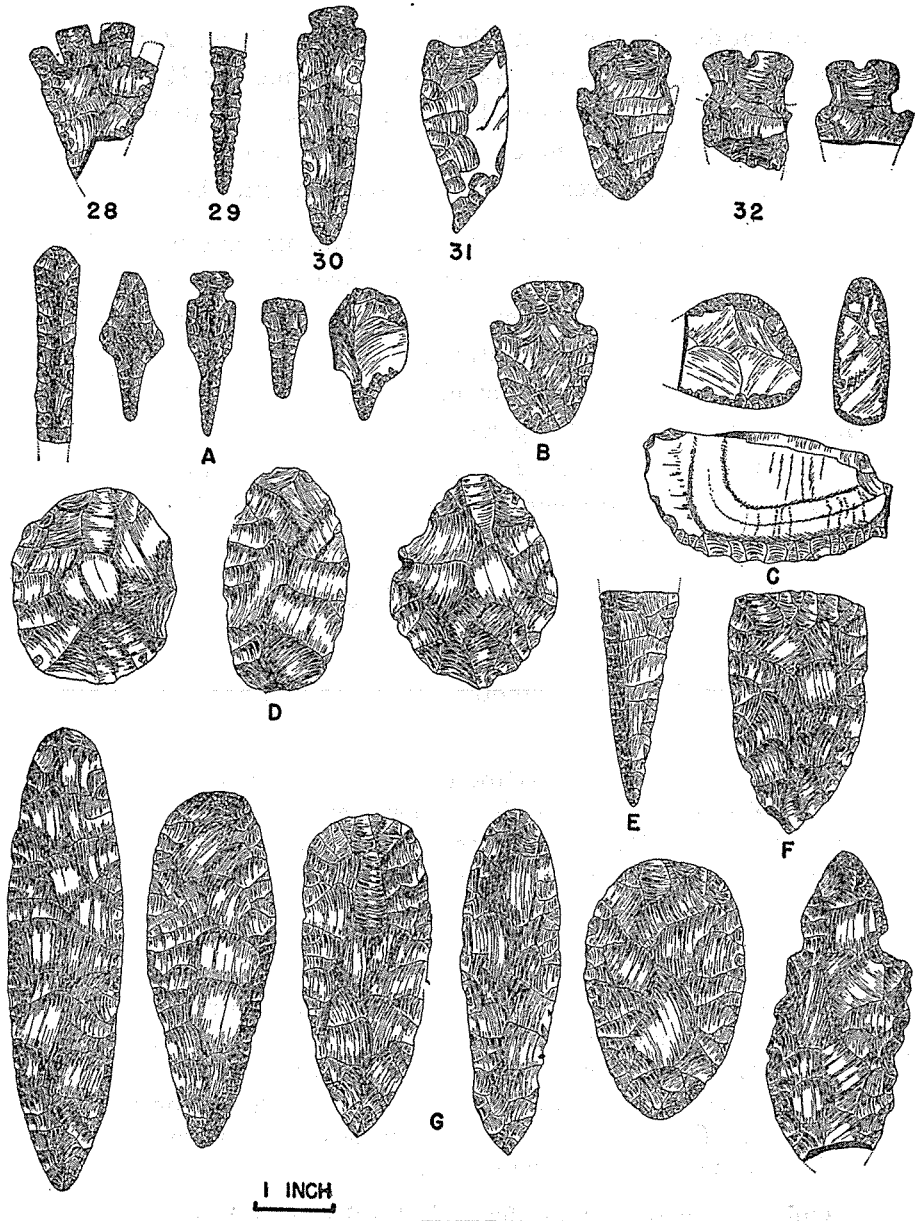

FIGURE 11

Examples of projectile-point types 28 to 32 and other chipped stone artifacts, Morris site. A, Flint drills. B, Hafted scraper. C, Side scrapers. D, Core scrapers. E, Beveled knife fragment. F, G, Knives.

small flat disc bead with a thickness of about ⅛ in. A very few specimens represent tubular beads as much as ½ in. in length. The typical tubular bead is about ¼ in. in diameter although a few are as much as ½ in. in diameter. The majority of the beads were found in association with burials.

Shell ornaments: Of the four conch-shell ornaments found with burials, three are whole circular specimens, and one is merely a fragment of a former pendant or gorget. The fragment suggests a circular outline, but it is broken along a perforation. One almost flat circular gorget, which is 3¼ in. in diameter, has three perforations, one in the center and two at the top (Plate 10, A). It was decorated on one side with pairs of parallel curved lines evidently forming some design which is no longer complete.

Another of the circular burial specimens is 2½ in. in diameter. At the top, it has two perforations for suspension (Plate 10, G). The other grave specimen is perfectly circular and is 1¼ in. in diameter. It is flat and has only one hole at the top (Plate 10, D).

Five more pendants were found in level 1. One is a broken elliptical shaped gorget with two perforations at the narrow end (Plate 10, H). Another is a circular gorget 1¾ in. in diameter with two holes on one edge (Plate 10, K). An unperforated disc-shaped ornament is a little more than 1½ in. in diameter; possibly this object was unfinished (Plate 10, B). One specimen is a small broken ornament with at least one perforation in the center. It appears to have been broken along another perforation. It is less than 1 in. in diameter. The last of the ornaments found in level 1 is a small rectangular-shaped pendant with a large perforation at one end (Plate 10, F). It has been broken on both sides, so its true shape is indeterminable.

Only two pendants were found in level 2. One is a slightly concave circular pendant, 1¾ in. in diameter, with a tiny perforation through the center (Plate 10, C). The other is a

DISTRIBUTION OF ARTIFACTS AT THE MORRIS SITE

	Drills	Flint knives	Flake scrapers	Core scrapers	Crude cores	Double-bitted axes	Chipped hoes	Flint hammerstones	Misc. Flint objects	Unidentified flint pieces	Celts	Stone beads	Boatstones	Stone pendant	Pipe	Ear spool	Unidentified stone piece	Sharpening stones	Milling stones	Metates	Cupstones	
Surface	4	27	6	76	71	25	28	16	1	89	7	1	2	1					9	9	3	
Level 1	8	16	15	41	113	2	14	22	3	529	3	5	1		1	1		2	12		10	
Level 2	3	22	2	22	80	6	11	9	4	204	1	2							11	1	6	
Level 3	2	26	1	15	74	3	4	7	1	171		1	1						12		1	
Level 4		28		8	35	1	2	2	1	125									9	1	2	
Level 5		4	1	3	15	1	1	1		42									1			
Level unknown		4		1	6			3		9		1					1		1			
Burial		6		3	5		1			24	1								2			
Pit		3	1	2	4			1		9												
Test trench		2	2	4	10	5				6												
Posthole										1												
TOTALS	17	138	28	175	413	43	61	61	10	1209	12	10	4	1	1	1	1	2	57	11	22	

DISTRIBUTION OF ARTIFACTS AT THE MORRIS SITE

	Sandstone hammerstones	Smooth stones	Galena	Hematite	Limonite	Bone awls	Bone flakers	Antler	Bone hoe	Bone ornament	Bone beads	Misc. bone items	Shell beads	Shell ornaments	Shell hoe	Misc. shell specimens	
Surface	1		2										2			6	
Level 1	5	1	3	1		28	2	14					13	5		1	
Level 2	2			2		15	1	7		1	1		15	2		1	
Level 3	1			2		9	2	5			2		7				
Level 4	1	1	1		1	5	1	5			1		1			/	
Level 5						2		1			1						
Level unknown						2					1						
Burial			1			6	3	5	1			2	99	4	1	3	
Pit						3		1				1				2	
TOTALS	10	2	7	5	1	70	9	38	1	1	6	3	137	11	1	13	

cone-shaped pendant made from the columella of a conch shell. It was grooved around the tip leaving a knob for suspension (Plate 10, E). Near the bottom there is a small perforation extending from the back to the bottom of the ornament. This pendant is only 1 in. long.

Shell hoe: One mussel shell hoe was found. It has a large perforation through the center of the shell and measures 4½ by 3¼ in. (Plate 10, I). It was associated with a burial.

Miscellaneous shell specimens: Four other whole shells were found. One large shell may represent an unfinished hoe, and one of the smaller ones has been used as a shell scraper (Plate 10, J). The others are unworked.

Nine pieces of shell show evidence of having been worked and are probably fragments of ornaments. They are all broken and therefore have irregular shapes; four are well shaped elongated pieces and possibly were broken from former pendants.

Pottery: Two major wares were found at the site. One of these is a shell-tempered ware and the other is a granular clay-tempered ware. In addition there are a few decorated sherds with shell temper (Plate 11, J-P) and with clay temper (Plate 11, I, Q, R). Decoration is rare and is not a typical characteristic of either the shell-tempered or the granular clay-tempered wares. Also found was a dark polished ware tempered with a more finely pulverized clay; this is represented by only a few sherds and may represent one or two vessels. A group of red-slipped sherds was found which was further sub-grouped because of differences in the tempering material. These red-slipped wares include shell-tempered, limestone-tempered, bone-tempered and grit-or sand-tempered sherds. All of the whole vessels found were with burials, and, except for the one red-slipped grit-tempered bottle (Plate 11. F) all the whole vessels are shell-tempered (Plate 11, A-E, G, H, N).

The only significant feature in the stratigraphic distribution of the pottery sherds is the fact that, from bottom to top levels, the shell-tempered ware increased in popularity

whereas the granular clay tempered ware decreased. This same distribution is also true in comparing the decorated shell-tempered ware and the decorated granular clay-tempered ware.

Shell tempered ware:

Type material: 734 sherds or 51.1% of the total sample of sherds are of this ware. In addition seven whole or restorable shell-tempered vessels were found associated with burials.

Paste:

Method of manufacture—The coiling technique was probably used on the majority, and possibly all, of the specimens as far as could be determined from the appearance of some of the fractured edges.

Tempering—The tempering consists of tiny particles of crushed shell. These particles, in densely tempered sherds, are sometimes as large as 2 to 3 mm. in diameter; occasionally a 4 mm. particle is present. The tempering makes up a possible fourth of the paste in some sherds, but more often it falls considerably short of this until in some sherds the tempering is just perceptible. There is some surface leaching on less than half of the sherds.

Hardness—Between 2.5 and 3.5.

Color—Black, dark brown, red and buff. Frequently a dark brown or mud colored core has been oxidized to a buff or reddish-brown on one surface and reduced to a grey-black or black on the other surface. In some other cases the mud-colored core has been oxidized to a light buff or reddish-buff on both surfaces. In cases of uneven firing, the surface is mottled reddish-brown or light buff and grey-black or black.

Surface finish:

Modifications—In the majority of cases both the exterior and interior surfaces have been smoothed, although in almost all such cases the exterior smoothing exceeds that of the interior. In some sherds the exterior surface looks as if it had been polished. In the cases where there is little exterior smoothing the interior has not been smoothed at all. The tempering is usually visible on both surfaces, although it is usually more evident on the interior than the exterior.

Form:

Rim—There are three different kinds of rims.

1) Rims that curve inward. Some of these have a definite shoulder; others are just a gentle curve.

2) Rims that flare outward. This includes the range from those which have a short rim and curve outward to varying degrees, to those which are longer necked, straight and flare outward only slightly.
3) Rims which are straight.

Lips—The lips are rounded, flat, thickened and flat, and narrowed.

Body—Bowls, jars, globular pots and bottles.

Base—The bases are all flat and disc shaped. They range from 6½ to 11 cm. in diameter.

Thickness—The average thickness is around 8 to 10 mm. although there is a range of thickness from 6 to 12 mm. The thickest part of the ware is the junction between the body and the base, and this never exceeds 13 mm.

Vessel diameters—The bowls range from 15 to 21.5 cm. in diameter (measured at the rim). The jars range from 12 to 21 cm. in diameter (measured at the shoulder region).

Appendages—Strap handles are present; they are attached to the lip and to the upper part of the body. In two cases there is a small lip tab on each side adjacent to the handle. Loop handles are also present.

Chronological position:

This ware is the same as Woodward Plain (Hall, 1951).

Decorated shell-tempered ware:

Type material: There are 22 sherds or 1.5% and one bottle made of this ware. It has basically the same description as the shell-tempered ware except that it appears to be a slightly thinner ware averaging a thickness of only 5 to 7 mm. It has been separated out principally because of the decoration.

Decoration:

1) Incising. Seven of the sherds are incised, most often with deep wide incisions. All of the incised lines are straight and parallel and from 3 to 9 mm. apart. It could not be determined on which part of the vessel the decoration occurred.
2) Four of the sherds and the bottle exhibit nodes which have been stuck on to the vessel. These nodes are generally about 7 mm. high. On the bottle twelve of them are evenly spaced around the base of the neck.
3) Six of the sherds have been decorated with a small attached ridge which, in most cases, has been further decorated by a punctate design. Two of the sherds, however, exhibit only the simple ridge. The punctate marks are about 4 mm. apart.

4) Four of the sherds are engraved with either straight cross-cutting lines, faint curvilinear lines or faint straight parallel lines.

Granular clay-tempered ware:

Type material: This ware is represented by 548 sherds or 38.2% of the total sample and includes rim and base sherds. There are no whole vessels.

Paste:

Method of manufacture—On the thicker sherds it is impossible to determine the method of manufacture. Some of the thinner sherds suggest a coil method although examples of coil fracturing are quite rare. Two sherds indicate that the coil was from 1.7 to 2 cm. thick. The maleated surface on some of the sherds suggests a paddle and anvil technique.

Tempering—The tempering consists of granules of clay and in some cases extraneous material such as small pieces of rock or coarse sand. In the very thick sherds the granules of clay are quite large and unpulverized; sometimes they are as much as 4 or 5 mm. in diameter. The average size of the clay granules, however, is between 2 and 3 mm. in diameter. The tempering has been only moderately well mixed into the rest of the paste, particularly on the thick sherds, and therefore the pottery in some cases has a crumbly appearance.

Hardness—For the thick sherds the hardness ranges from 2.5 to 3.5 with an average of around 3.0. For the thinner pottery the average is closer to 3.5.

Color—Black, dark brown, reddish-brown and grey. In most instances the pottery has been poorly fired and has been oxidized to a reddish-brown on the outer surface and reduced to a dark brown or black on the interior. In these cases about half of the core is also reddish-brown and half is black. In some of the pottery the exterior surface is reddish-brown whereas the interior has not been as reduced and is therefore a brown or brownish grey color. In other pieces of the pottery there is a consistent grey black on both surfaces and throughout the core. Evidence of uneven firing is seen by the fire clouds on some sherds. The grey pottery is medium in width in almost all cases and is consistently grey on both surfaces and the core.

Surface finish:

Modifications—Both the interior and exterior surfaces have been smoothed. Only a very few sherds show striations

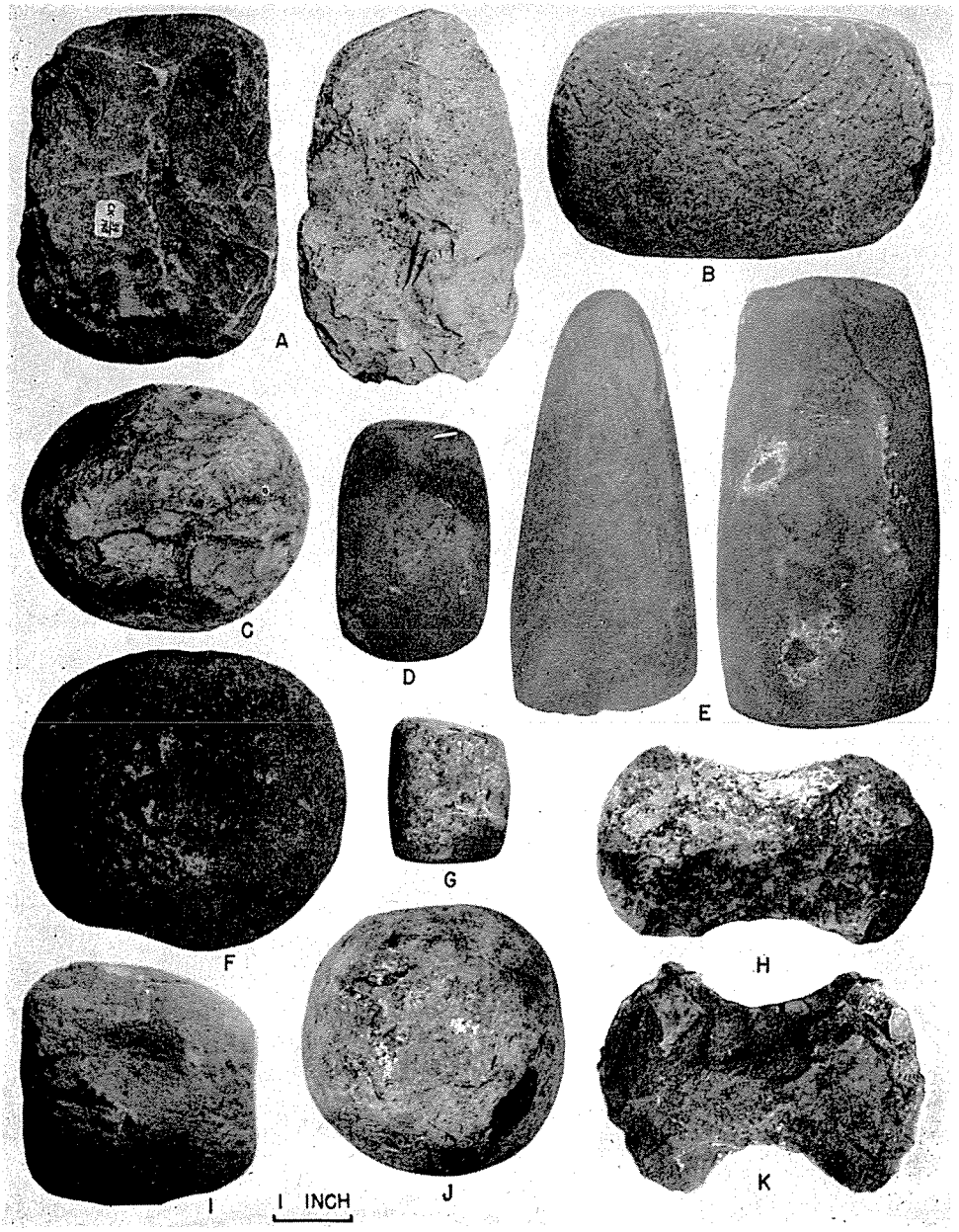

PLATE 9

Stone artifacts from Morris site. A, Hoes. B, Mano. C, Flint hammerstone. D, E, Celts. F, I, Cupstones or nutstones. G, J, Galena. H, K, Chipped double-bitted axes.

due to tool markings. Several sherds exhibit a very smooth maleated outer surface which is probably due to a paddle and anvil manufacturing technique.

Form:

Rim—All of the rim fragments suggest an incurving rim form. Some of the rim fragments are so small that their true form cannot be determined.

Lip—The lips have in a few instances been narrowed. They are sometimes flattened but are more commonly rounded.

Body—No whole vessels of this ware were found, and the sherds are generally too small to determine the body form. One large sherd, however, and the base fragments suggest a deep bowl form with sides which flare outward from the base. Some of the thinner sherds may be fragments of a bottle form.

Base—The bases are flat, disc like forms. They are often much thicker than the body of the vessel. Where the body joins the base is the thickest region of all. On the majority of the base sherds there is a very slight heel. Two base sherds are marked with a basketry impression.

Thickness—Most of the sherds average between 10 to 14 mm. although there is a range from 6 to 20 mm.

Vessel diameters—Some of the sherds, and especially the thickness of the sherds, suggest medium to large vessels.

Appendages—None.

Chronological position:

This ware is similar to Williams Plain.

Decorated granular clay-tempered ware:

Type material: There are 21 sherds or 1.5% of the total sample of this decorated clay tempered ware. This is essentially the same kind of ware that has been described for the granular clay tempered pottery except that this ware never exceeds a thickness of 9 mm. It averages a thickness of from 6 to 7 mm. It has been separated out principally because of its decoration.

Decoration:

1) Eighteen of the sherds are incised with parallel lines which are sometimes in a straight line design, sometimes in a curvilinear and/or concentric circle design, sometimes in an inclosed triangle or chevron design, and sometimes in a simple series of small lines only 6 mm. long. One of the straight parallel lined sherds is a rim fragment.
2) Four of the sherds are engraved with parallel lines or a chevron pattern.
3) One sherd is decorated with a small node in the middle of the incised decoration.

Polished granular clay-tempered ware:

Type material: This ware is represented by 17 sherds or 1.2% of the total sample. The number of vessels represented could not be determined.

Paste:

Method of manufacture—This could not be certainly determined because of the paucity of material. The maleated surface suggests the probable use of the paddle and anvil.

Tempering—This ware is tempered with pulverized granules of clay which are 1 mm. or less in diameter. Only occasionally are the granules as large as 2 mm. It is impossible to tell the percent of tempering because of the smallness of the particles.

Hardness—Between 3.5 and 4.0.

Color—Black or grey black. One sherd is red on the outer surface with a black interior. Usually the color is fairly uniform on both surfaces and throughout the core although occasional fire clouds are evident.

Decoration: None.

Surface finish:

Modifications—The interior and exterior surfaces have both been very highly smoothed and even polished to a degree. The exterior surface in all cases shows a maleated appearance.

Form:

Rim—Simple rim.

Lip—Of the four rim sherds only one lip shows a perceptible narrowing. It is also the only lip which is rounded; the other three are flattened.

Body—It is impossible to determine body form from the small sherds found. The sherds probably represent a bowl, flower-pot form or bottle.

Base—None found.

Thickness—The range of thickness is from 4 to 6 mm. with the great majority being between 4 and 5 mm.

Vessel diameter—Indeterminable.

Appendages—None.

Red-slipped wares:

A) Type material: A shell-tempered red-slipped ware represented by six sherds. All red slipped wares together constitute 1.5% of the total.

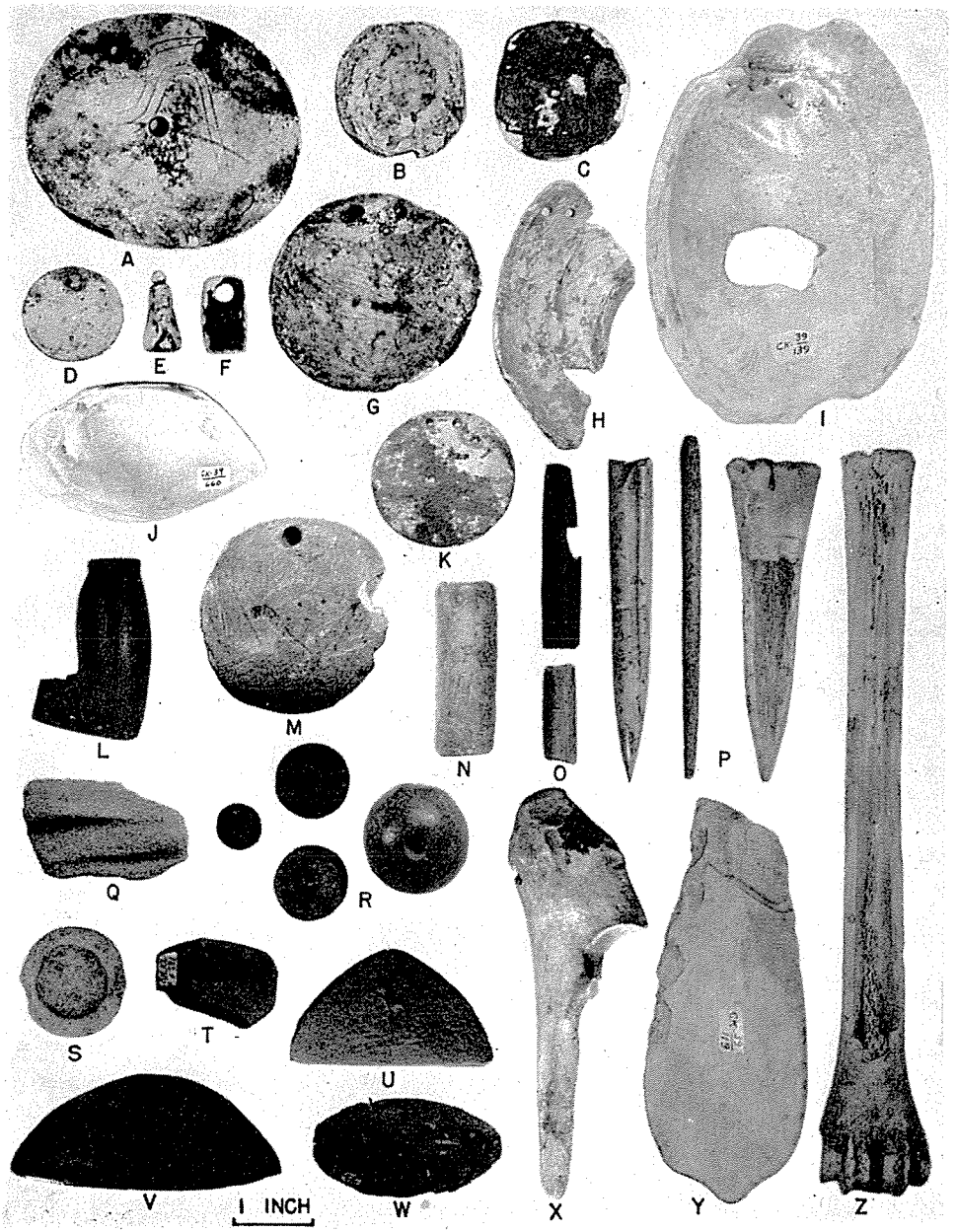

PLATE 10

Stone, bone, and shell artifacts, Morris Site. A-K are shell, as follows: A, G, K, Gorgets. B, C, Discs. D, E, F, Pendants. H, Ornament. I, Hoe blade, perforated. J, Scraper. The bone artifacts are: N, Tubular pendant. O, Tubular beads. P, Awls. X, Flaking tool of deer ulna. Y, Hoe blade of bison scapula. Z, Split cannon bone. The stone artifacts are: L, pipe. M, Pendant. Q, Grooved awl sharpener or hone. R, Beads. S, Earspool, broken. T-W, Boatstones (T broken).

Paste:

Method of manufacture—Indeterminable.

Tempering—This ware has been tempered with shell which in most cases has been crushed to less than 1 mm. in diameter. In some sherds, however, pieces as large as 3 mm. in diameter were found.

Hardness—Between 2.5 and 3.0, the average being closer to 3.0.

Color—All are red because of the red slip. Two of the sherds, however, have a buff colored interior. The core in all cases is either black or red.

Decoration: One sherd is decorated with two wide incised parallel lines about ¼ in. apart.

Surface finish: All of the sherds have been smoothed on both surfaces. On some of the surfaces striations from the working tools can be seen.

Form:

Rim—Both rim sherds found curve outward from the body. One of these flares quite sharply and stands out from the body surface at a 90 degree angle.

Lip—Only one lip was found; it is rounded and has a small tab sticking up from the lip.

Body—Indeterminable.

Base—None found.

Thickness—From 4 to 6 mm. thick. The average is around 5 mm.

Vessel diameters—Unknown.

Appendages—None found.

B) Type material: A limestone-tempered red-slipped ware represented by six sherds.

Paste:

Method of manufacture—Probably coiling.

Tempering—This ware is tempered with crushed limestone with the particles having a diameter of 1 mm. or less. There is only an occasional piece of limestone that is as large as 2 mm. in diameter. In most cases the tempering makes up at least 1/3 of the paste.

Hardness—Ranging from 3.0 to 3.5.

Color—Red on both surfaces due to the red slip. The core is dark brown.

Decoration: None.

Surface finish:

Modifications—These sherds show smoothing on both surfaces.

Form:

Rim—Only two rims are in this group. One is a simple rim; the other is incurved with a definite shoulder break exactly 1 in. down from the lip.

Lip—The simple rim has a rounded lip while the other rim has a flattened lip.

Body—Indeterminable. Probably medium sized bowls.

Base—None found.

Thickness—The average thickness is 5 mm.

Vessel diameter—Indeterminable.

Appendages—None found.

C) One red-slipped bone-tempered sherd was found. The bone tempering is in very tiny particles of 1 mm. or less and constitutes a very small fraction of the total paste. This particular sherd is a rim sherd that has been decorated by diagonal parallel incised lines ¼ in. apart around the rim. The rim has an incurved form with a definite shoulder break ¾ in. down from the lip. The lip is rounded. The core color is dark brown. The sherd is 8 mm. in thickness, and both surfaces have been smoothed.

D) Eight red-slipped sherds were found in which the tempering is either non-perceptible or could not be identified. Five of these sherds have a red slip on the exterior surface only. The interior surface in these cases is sometimes smoothed; however, in two cases the interior has not been touched. Only one rim sherd was found; it indicates a simple rim form. The lip is somewhat thickened and rounded. The thickness of these sherds ranges from 5 to 9 mm. Hardness ranges from 2.5 to 3.5.

E) One bottle which has a red-slipped exterior was found with a burial. The red slip differs from that of all specimens mentioned previously in that it contains a great amount of sand and grit in it; therefore it gives the surface a rough and gritty appearance. The interior surface has not been smoothed to any extent. The vessel has been tempered with bits of sand and occasional rock fragments. The sherd has a thickness of 5 mm. and a hardness of between 4.0 and 4.5. The bottle itself has a flat circular base 10½ cm. in diameter. The body is globular in form with a maximum diameter of 13.2 cm. The neck region is tubular and is 7.7 cm. long. The mouth of the bottle is 4 cm. across. The entire vessel stands 8¼ in. high. The lip is somewhat flattened. The core and inner surface are greyish black in color.

Decorated wares, temper unidentified:

Type material: There are six sherds or .4% of the total sample in which the temper is either unidentifiable or is so scarce as to be imperceptible. The ware is from 5 to 6 mm. thick and is a buff, greyish black or reddish brown color.

Decoration:

1) Three of the sherds are incised with straight parallel lines. One of these is a rim sherd and exhibits not only parallel lines but also straight cross-cutting lines.

2) Two sherds are engraved. One has been engraved in a zoned region with a small cross-hatched design. The other one exhibits a larger cross hatched design in an unzoned area.

3) One sherd is decorated with a small node and with finger nail designs.

Unidentified sherds:

In the 65 sherds of this group, the tempering is either bone or limestone, or there is too little of it to identify the tempering material. The hardness ranges from 2.5 to 4.5.

DISTRIBUTION OF MORRIS SITE POTTERY SHERDS

	Level 1	Level 2	Level 3	Level 4	Level 5	Refuse pit	Burial	Trench	Unknown	Surface	TOTALS
Shell-tempered	427	155	46	11		10	17	17	5	46	734
Decorated, shell-tempered	11	5		1				1		4	22
Granular clay-tempered	213	133	73	30	9	1	16	11	3	59	548
Decorated, granular clay-tempered	6	8	4	1						2	21
Polished, granular clay-tempered	11	1					5				17
Red slipped, shell-tempered	5							1			6
Red slipped, limestone tempered	5							1			6
Red slipped, bone-tempered	1										1
Red slipped, sand- and grit-tempered							1				1
Red slipped, unidentified temper	3	1							1	3	8
Decorated, unidentified temper	2	2	1	1							6
Unclassified	32	11	4				1	2		15	65
TOTALS	716	316	128	44	9	11	40	33	9	129	1435

Discussion

At the end of the first season's work at the Morris site, the exact number of occupations represented was not clear (Bell and Fraser, 1952). With the additional work of the second season, some points were clarified, but others still remain questionable. The finding of various artifacts within the yellow clay underlying the upper dark-colored sandy loam indicates that at least two components are present at the site. The difference between them is well marked by the deposit in which they are found and also by the artifact content. Unfortunately, however, the artifact yield of the yellow clay deposit was so small that few traits are available to represent the complex. This is certainly the oldest occupation at the site.

The occupation represented by materials in the yellow clay is certainly non-pottery and probably pre-pottery or Archaic in content. Artifacts found include several projectile point types including types 13, 14, 15, 18, 22, 24 and 27. Other flint objects recovered from this deposit are crude oval-shaped knives, thick oval-shaped core scrapers, crude cores or worked blocks of flint, and miscellaneous fragments of broken flint artifacts too damaged to be identified. No pottery, ground stone objects, shell or bone artifacts were found within the yellow clay. In general, the few artifacts recovered resemble some of those ascribed to the Grove Focus of northeastern Oklahoma (Baerreis, 1951). It is suggested that the early occupation of the Morris site represents the Archaic pattern and that it is most closely related to the Grove Focus of northeastern Oklahoma. The limited number of traits makes impractical an assignment to the Grove Focus subdivisions A, B or C.

Whether the materials from the upper levels of the site mark one or two occupations is not especially clear. The complete complex of traits represented by the upper dark-colored sandy loam includes characteristics of both the Gibson Aspect and the Fulton Aspect. Although the majority of traits suggests an occupation to be aligned with the Fulton

Aspect, a number of traits are typical of the earlier Gibson Aspect. Such traits include the granular clay-tempered pottery, large sized projectile points of various types, pieces of galena, black stone beads, conch shell ornaments and stone ear spools. At the close of the first season, it was suggested that possibly two occupations were present in the upper levels, a Gibson occupation overlain by a Fulton occupation. An alternative possibility was that the upper levels might represent a single occupation which was transitional between the two periods and hence contained some features of each. It was hoped that the excavations of the second season would clarify this situation.

After careful study of the stratigraphic position of the various artifacts recovered, however, the results of the second season indicate that it is impossible to segregate the Gibson and Fulton traits on the basis of the Morris site alone. The only stratigraphic differences to be noted are changes in pottery and certain projectile point types. The granular clay-tempered pottery becomes less popular in the upper levels whereas the shell-tempered wares are of increasing popularity. Certain projectile point types also appear to be limited to or are more common in the lower levels. Otherwise, there appears to be no significant differences in the distributions of the various artifacts. Since this is the case, it seems most reasonable to consider the upper dark-colored soils as representing a single occupation, with slight internal change, which is transitional in time and characteristics between the Gibson and Fulton Aspects. The majority of the traits are Fulton Aspect in character.

Of the sites excavated in the reservoir, the upper levels of the Morris site most closely resemble the late component at the Cookson site which has been assigned to the Turkey Bluff Focus by Lehmer (1952). Although the relationship is quite close, it is not identical. Aside from some Gibson Aspect traits which are lacking in the Turkey Bluff Focus, there are differences in architecture and in various minor artifacts. The role of bison as food and bison bones as raw material for artifacts is decidedly different for the two com-

ponents; also, the Turkey Bluff Focus has a greater number of features which suggest influences derived from the Plains cultures. Although these differences are not great, it is suggested that they are the result of time rather than space and that the late horizon at the Morris site represents a somewhat earlier occupation.

A suggested chronological framework for the Tenkiller Reservoir area is as follows:

Fulton Aspect

Late occupation at Cookson site—Turkey Bluff Focus.
Late occupation at Morris site.

Gibson Aspect

Brackett site—Spiro Focus.

Pre-Gibson

Vanderpool site (Areas B and C).

Archaic

Early horizon at Morris site (yellow clay)—Grove Focus.

In terms of a broader comparison with the state as a whole, the late component of the Morris site appears to be most closely related to the Fort Coffee Focus (Bell and Baerreis, 1951) of eastern Oklahoma. It does not appear to be related to the Neosho Focus (Bell and Baerrias, 1951), which is identified largely by pottery types which are not present at the Morris site. The Searcy component (Bell and Baerreis, 1951) has features which are duplicated at the Morris site, but limitations in comparative data make the Searcy materials of less value.

Summary

The Morris site appears to have been occupied by two different peoples in prehistoric times. The earliest occupation probably existed sometime between 2,000 and 5,000 years ago. It represents a relatively small population of nomadic or semi-nomadic hunting and gathering people who utilized the site for a temporary or intermittent camp-

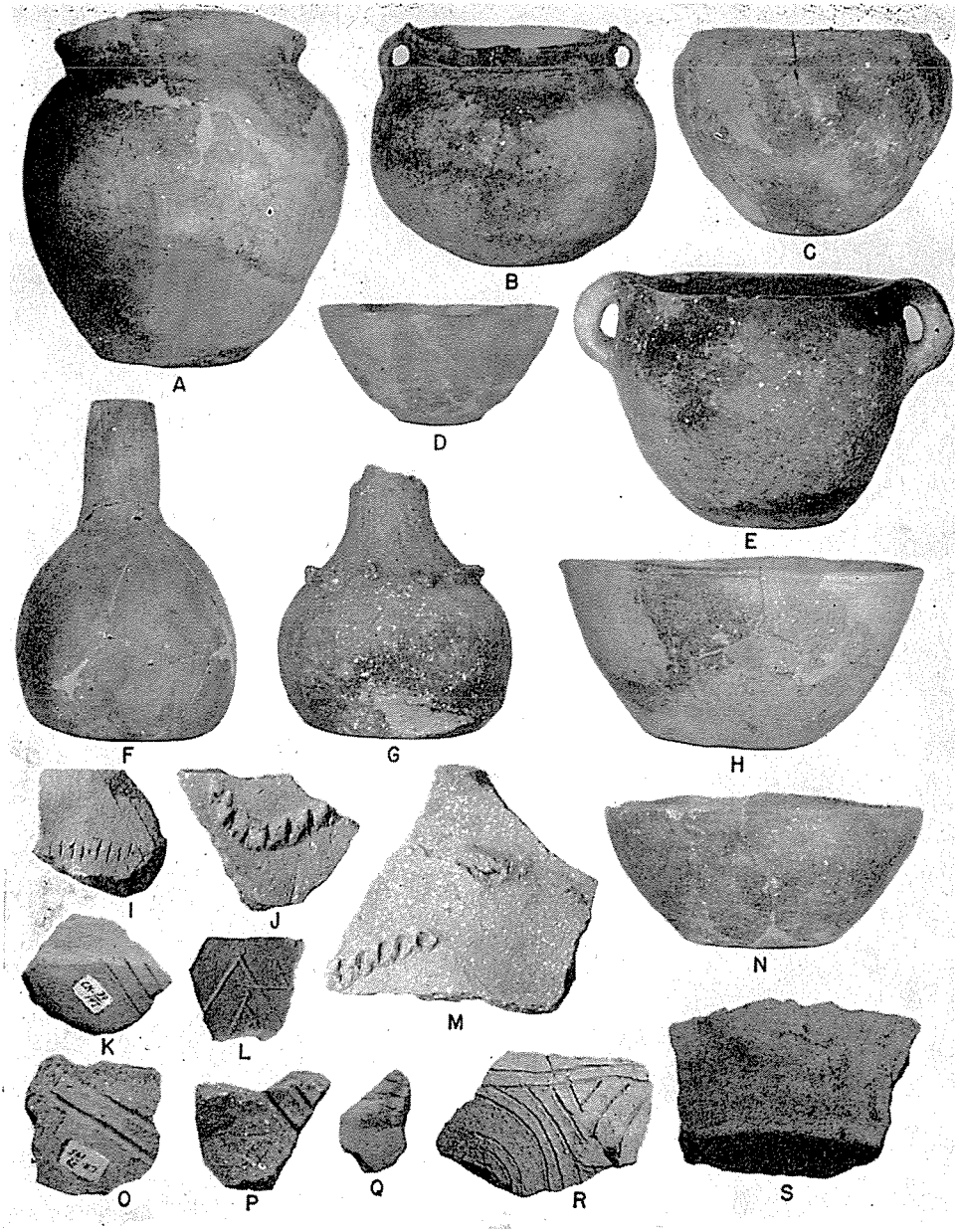

PLATE 11

Pottery from Morris site. A-H, N, Whole vessels. I-M, O-R, Decorated sherds. S, Base sherd with basketry impression.

ing locality. Among the few artifacts found that can be attributed to these people are large projectile points which were probably used in conjunction with the atlatl and dart. The most typical projectile points are characterized by their large size, relatively broad blades and prominent corner notches. Additional artifacts include crude oval-shaped flint knives, heavy core scrapers and a few unidentified flint implements. No houses, burials, ground-stone tools or pottery representing remains from these people were found. Apparently they represent one example of a fairly widespread Archaic people who formerly lived throughout many parts of northeastern Oklahoma.

The Morris site was again occupied in late prehistoric times by a sedentary, agricultural people. At this time a village, undoubtedly small in size, was present on the site and several houses were arranged along the river terrace. The economy was one concerned largely with maintaining a subsistence level, and it is doubtful if much of a surplus or many luxuries existed. Subsistence was evidently based largely upon hunting, gathering and fishing, with agriculture being somewhat limited and probably restricted to small family gardening activities.

Some knowledge of the surrounding country is indicated by the raw materials used in their technology. Some trade and exchange with nearby groups must also have taken place. The presence of conch shell, galena, and flint from distant quarries in north-central Oklahoma indicates some contact with surrounding areas or peoples. On the other hand, the absence of many features such as novaculite from Arkansas and trade pottery wares from the northeast and the rarity of alien exchange materials suggest a somewhat provincial and isolated people. This is noticeable in contrast to earlier times when outside contacts were probably more numerous and effective. It appears as though the Morris site occupants had lost their stimulating contacts with cultural centers to the south and east and that they had become, more or less, a peripheral survival which continued to persist in the Cookson Hill country. They certainly

received some ideas from peoples in surrounding areas but, at the same time, many older cultural features continued to persist. One is tempted to view the late occupants of the Morris site as surviving representatives of an earlier Gibson Aspect expansion into the Tenkiller area.

The village is characterized by scattered house sites, a limited cemetery burial area, cache or refuse pits, outdoor fire places, and an absence of mounds. The houses were of a wattle and daub construction, square or rectangular in outline, lacking passage type entrances and large interior roof supports but containing some interior features such as fire places, cache pits and minor construction features. The rectangular type house is probably more recent than the square style.

There was no special midden area, but debris from daily living was scattered over the village area or in abandoned cache pits. Burial of the dead was within a restricted cemetery area, and grave offerings were present but were limited to simple utilitarian or ornamental objects.

Household furnishings included pottery bowls, globular jars and bottles, primarily without decoration or appendages. Other articles utilized were flint knives, manos and milling stones, sharpening stones, cupstones and shell scrapers.

Tools and implements included a variety of projectile points, suggesting the use of both the bow and arrow and the atlatl and dart; also manufactured were flint drills, scrapers of various types, chipped double-bitted axes, stone hoes or digging tools, celts, boatstones, bone flakers and bone awls.

Included as ornaments by these people were stone beads, pendants, ear spools, shell beads, shell pendants and gorgets, bone beads and bone pendants. Pigments were made from galena, limonite and hematite.

It remains difficult to determine when these later people occupied the Morris site. There is no evidence of contact with Europeans, and, since trade materials are abundant on

sites occupied between 1700 and 1750 (Bell and Baerreis, 1951), a date considerably prior to 1700 is indicated. A reasonable guess would be that the last occupation took place sometime between 400 and 600 years ago. Any identity with known historic Indian tribes is impossible at the present time.

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Appendix A

Site locations for various artifacts illustrated in the plates.

Figure 9

No. 1 a) Area A, Level 1
b) Area A, Level 1
c) Surface
2 a) Area B, Level 1
b) Surface
c) Area C, Level 1
3 a) Area A, Level 2
b) Surface
c) Area A, Level 4
d) Area C, Level 1
4 a) Burial 15
b) Area A, Level 1
c) Area A, Level 1
5 a) Area A, Level 2
b) Area A, Level 2
c) Area A, Level 1
d) Burial 40
e) Area A, Level 1
6 a) Area A, Level 1
b) Area A, Level 2
c) Area A, Level 2
7 a) Area A, Level 3
b) Area A, Level 2
c) Area A, Level 1
8 a) Area A, Level 2
b) Test Trench
c) Area A, Level 1
9 a) Surface
b) Area A, Level 1
10 Area A, Level 1
11 Area A, Level 1
12 Area A, Level 1
13 a) Surface
b) Area C, Level 5
c) Area C, Level 3

14 a) Area A, Level 3
b) Area A, Level 1
c) Area C, Level 1
d) Area A, Level 3
e) Area A, Level 2
f) Area C, Level 2
15 a) Area A, Level 6
b) Area A, Level 4
c) Unknown
16 a) Area C, Level 3
b) Area A, Level 3
17 a) Area C, Level 4
b) Area A, Level 3
c) Area C, Level 4

Figure 10

No. 18 a) Surface
b) Area C, Level 3
c) Surface
19 a) Area A, Level 2
b) Surface
20 a) Area A, Level 4
b) Area A, Level 3
c) Area A, Level 4
21 Surface
22 a) Surface
b) Surface
c) Surface
23 a) Burial 10
b) Area A, Level 1
24 Area A, Level 5
25 Area A, Level 1
26 a) Area A, Level 4
b) Area A, Level 4
27 a) Surface
b) Area C, Level 5
c) Surface
d) Area A, Level 1
e) Area A, Level 2
f) Surface
g) Area A, Level 2
h) Area C, Level 5
i) Surface
j) Area B, Level 3
k) Area A, Level 3
l) Surface

Figure 11

No. 28 Test Trench
29 Area B, Level 1
30 Area C, Level 1
31 Area C, Level 3
32 a) Area A, Level 5
b) Area B, Level 3
c) Area C, Level 2
A a) Area A, Level 2
b) Surface
c) Area A, Level 1
d) Area B, Level 2
e) Area A, Level 3
B Area A, Level 2
C a) Area C, Level 1
b) Area B, Level 1
c) Area C, Level 1
D a) Surface
b) Area B, Level 4
c) Area A, Level 1
E Area A, Level 2
F Area B, Level 3
G a) Burial 12
b) Burial 12
c) Area C, Level 1
d) Area A, Level 4
e) Area A, Level 2
f) Area B, Level 3

Plate 9

A a) Surface

b) Surface
B Area B, Level 3
C Surface
D Area A, Level 1
E a) Surface
b) Burial 12
F Area C, Level 1
G Area A, Level 1
H Test Trench
I Surface
J Surface
K Surface

Plate 10

A Burial 40
B Area A, Level 1
C Area A, Level 2
D Burial 6
E Area A, Level 2
F Area A, Level 1
G Burial 36
H Area A, Level 1
I Burial 12
J Area B, cache pit
K Area A, Level 1
L Area A, Level 1
M Area A, Level 1
N Area A, Level 2
O a) Area B, Level 2
b) Area B, Level 3
P a) Area A, Level 3
b) Burial 34
c) Area A, refuse pit
Q Area A, Level 1
R a) Area C, Level 1
b) Area A, Level 1
c) Area B, Level 1
d) Surface
S Area A, Level 1
T Surface
U Area C, Level 1
V Surface
W Area A, Level 3
X Area A, Level 2
Y Burial 12
Z Burial 12

Plate 11

A Burial 21
B Burial 11
C Burial 19
D Burial 12
E Burial 10
F Burial 36
G Burial 40
H Burial 51
I Area A, Level 1
J Area A, Level 1
K Surface
L Area B, Level 4
M Area A, Level 4
N Burial 54
O Test Trench
P Unknown
Q Area A, Level 1
R Area A, Level 2
S Burial 34

THE BROWN SITE, Gd-1, GRADY COUNTY, OKLAHOMA*

KARL SCHMITT AND RAYMOND TOLDAN, JR.

Introduction

The Brown Site is situated on the left bank of Winters Creek just above its junction with the Washita River. The site was first reported to the Department of Anthropology of the University of Oklahoma by Mr. George McClure, then of Norman, Oklahoma. The major portion of the site lies on the property of Mr. Roger Brown, who has been most hospitable and cooperative—even to the extent of allowing excavations to remain open for extended periods. We are most grateful for this and his permission to excavate. We also wish to thank the following personnel of the University of Oklahoma for assistance: Professor Willis Stovall for identifying bones and stone; Professor O. F. Evans for examining the terrace situation of the site; Professor A. O. Weese for identifying shells; Professors George Goodman and Elroy Rice for aid with vegetable remains; and Professor Robert E. Bell for aid in excavation and interpretation.

Approximately 300 yards from the junction of the creek and river, a bank exposure exhibits five to six feet of a dark refuse-bearing stratum overlying the sandy, reddish subsoil. In the nearby field, potsherds, broken bones, shells, and other indications of former occupation are plentiful. From these surface materials it appears that the site extends some 100 yards both to the north and south of the bank exposures, and 50 yards back from the bank.

At present, the courses of Winters Creek and the Washita are marked with trees, including elm, various oaks, and walnut. Both the streams carry heavy silt burdens and older residents say that fish are few in number compared with those of a period forty years ago. Fresh water mussels seem to have disappeared, as have the larger land animals such as deer and buffalo.

*Submitted by Mrs. Iva Schmitt. Manuscript was being prepared for 1952 Bulletin by Karl Schmitt at time of his death, August, 1952. Manuscript and illustrations completed by Toldan.

The geological situation of the site is not yet clear. The site is on the first terrace above the present flood plain. There is some possibility that this terrace is not the true first terrace of the Washita, but is a "half terrace" at a slightly lower elevation. In present floods, river water does not rise over the site although the run-off from hills will cover the area.

Excavations have been carried on intermittently from 1948 to 1952 under the direction of R. E. Bell and the senior author. These have been in the nature of week-end field trips for anthropology students and friends. The initial excavation consisted of a trench 5 feet by 20 feet paralleling the bank exposure. Subsequently, another trench at right angles to the first was started toward the east. Two squares of this latter trench were completely excavated while only the top levels of two others were removed. A third trench, 5 by 15 feet, was in the field east of the bank. Thus, a total of nine five-foot squares were completely excavated. Material from horizontal six-inch levels in each square was kept separate. Material from pits, as they were recognized, was also separated. All dirt was passed through a ¼ in. screen.

Traits of the Brown Site

A summary treatment of functionally related traits, as used by Krieger (1946), will be followed in the presentation.

Subsistence

A dual economy of agriculture and hunting was followed. Charred kernels and cobs of corn and also beans were found. The large number of bone digging implements and storage pits also indicate the importance of agriculture. The refuse included bones of many species of animals, of which the most important for food were bison, deer, and rabbit. Turtles, tortoises, fresh water mussels, and catfish also were important food items. Wild plants were utilized: a charred mass of seeds, either of wild sunflower or perhaps of a wild carrot, was found in the pit.

Architecture

No houses were excavated. There are numerous concentrations of "wattle", or baked mud containing many grass impressions, in the field east of the bank exposure. One fifteen-foot trench was oriented so that it cut through a portion of this area in the hope of delimiting a house pattern. Although the first shovelsful of dirt revealed a much used hearth, no post-hole pattern could be found. The hearth was basin-shaped, two feet in diameter, and eighteen inches deep; hard, red, fired earth lined the pit, except for the bottom. This may not have been intentional but may have been accidentally produced by the intense heat of the fire. White ashes completely filled the pit.

No prepared floor was found; it is possible that such a floor could have been removed by plowing. No post holes could be observed at, or near, the expected floor level since the building had been on a rich midden which here was over 30 inches in depth. Near the base of the midden two post holes were discovered and may have been those of center posts for the house. No wall trenches were found. It appears that the depth of the midden was so great that most of the post holes did not penetrate subsoil. One cache pit with contents intact most probably was associated with the house; since it was only seven feet from the fire place, it would have been inside the structure.

Houses, in general, were plastered with a mixture of mud and grass. From accidentally fired pieces it appears that the mixture was applied two to four inches thick and roughly smoothed. No matting impressions were noted, though several of sticks a half inch in diameter were seen. One wood impression indicated a log eight inches in diameter and suggested that the mud was applied directly over wall posts.

Agricultural Complex

Bison Scapula Hoes: These were of two minor types: one with a groove which cut away a portion of the posterior side (Plate 13, E), and the other with a medial groove (Plate 13, B). There were ten specimens of the former, nine made

from left scapulae and one from a right; and five specimens of the latter, four made from left scapulae and one from the right. The medial groove was on the outside surface in four of the specimens and on the inside in the fifth. There were twenty-eight miscellaneous fragments of scapula hoes of which four could be identified as from left and two from right scapulae. Six scapulae blanks, all with dorsal spines removed and one with a side groove, were found in the cache in the house area; of these, five were from left scapulae and the other from a right. Two scapula hoes, reworked for use as knives, were both from left scapulae. Three reworked pieces of scapula hoes appear to have been parts of scraper or chisel-like implements, though two may have been fragments from the manufacture of hoes.

The process of manufacture of hoes is revealed by the above specimens and some fragments from the bone refuse. A strong preference for left scapulae is indicated, twenty-four out of twenty-nine identifiable specimens were such. First the dorsal spine was knocked off; this is indicated by six blanks from the cache and by five such spines from the general refuse, all of which exhibit battering near the juncture of the spine and the main blade of the scapula. Then the groove for attachment was made; this is indicated by one specimen from the cache (Plate 13, A). The rough areas of the spine were honed as is indicated by striations left by sandstone abraders on the smoothed hoes. Often the entire proximal end of the scapula was carefully smoothed with abraders. The blade portion was also honed to a sharp edge. Hoes were damaged in use and resharpened many times as shown by the presence of short, stubby specimens. Details of hafting are not known.

Bison Skull Hoes: Six whole and six large fragments were found (Plate 13, D). These were made by breaking out a portion of the frontal bone so that the horn core was still attached. Then the tip and ventral half, or more, of the core was removed, and a cutting edge ground on the frontal bone. The method of hafting is not known. It is possible that they were used as hand trowels. It is also possible that

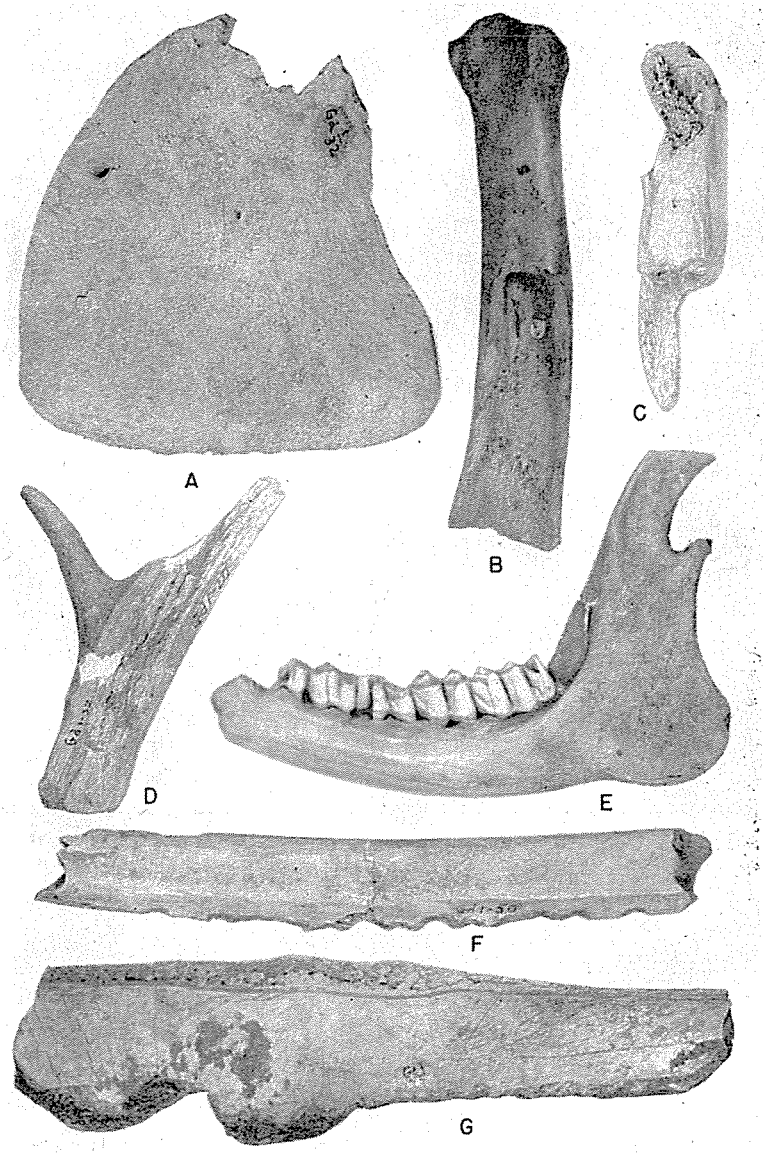

PLATE 12

Bone artifacts from the Brown site. A, Squash knife made from bison skull. B, Digging stick tip made from bison tibia. C, Flaking tool of bison tibia. D, Worked deer antler, possibly part of headdress. E, Deer mandible. F, Rasp (?) made of bison rib. G, Dorsal spine of bison scapula. Slightly under ½ (G, 8½ inches long).

they were used as ladles, though the intensive wear at the blade and the cutting edge suggests more strongly a digging function.

Bison Tibiae Digging Tools: Eight complete (Plate 13, G) or large fragments and thirty-one smaller fragments were found. Three partially finished specimens (Plate 12, B) were found in the house area cache; these had the proximal end broken off and a portion of the posterior side of the shaft broken out to the marrow core. The other specimens show that holes between 1½ and 2 inches in diameter were pierced through the distal end to meet the natural cavity of the bone. Blade-edges were honed at the distal end of the tool and often the whole distal end was extensively smoothed by sandstone abraders. High use polish indicates a dirt digging function. They would have served as excellent digging stick tips, but on some, a sharp demarcation between the area of use polish and remainder of the bone shows that the hole-end was covered in hafting. A few specimens have flattened, worn areas on the posterior side indicating they may have been hafted like hoes or adzes.

Storage Pits: One pit was completely excavated as were portions of four others which lay in the test areas dug. These were straight-walled pits, some with flat bottoms and some with gently concave bottoms. The largest, from the arcs noted, would be oval with diameters of 8 and 5 feet and a depth of 5½ feet. The smallest would be under 3 feet in diameter and 5 feet and 2 inches in depth. All, with one partial exception, were filled with refuse. Several had reddish sterile layers extending from wall to wall, indicating that dirt had been thrown in to form a new, clean bottom after some trash deposition. Although no agricultural produce, intentionally placed, was found in the pits, it is most probable that they were initially dug as cache pits for such material and that they were subsequently used as refuse pits.

One completely excavated pit had a cache of artifacts still in place. This pit was 34 inches in diameter and 48

inches deep with straight sides and a flat bottom. It had been used as a refuse pit for a while and then a false bottom or layer of sterile soil had been put down so that the bottom was 24 inches from the present surface. On this new base several partially completed and completed artifacts were placed. First, six bison scapulae blanks, for later use as hoes, and three bison tibiae blanks, for later use as digging tools, were laid down. On these were placed a small, complete, greenstone celt, a complete deer-jaw tool of unknown use, the mandible of a deer with the angles and ascending rami removed, three shell scrapers, three shells with roughly serrated edges, and fifty-five unworked fresh water mussel shells. This pit and its contents were most probably associated with the house of the near-by fire basin.

Food Preparation

Hearths: One deep, basin-shaped, unlined fire pit was found in the house area. Other small concentrations of ash turned up by the plow indicate other probable hearth areas.

Grinding Stones and Manos: Three large fragments of grinding stones were found on the surface: these were irregular sandstone slabs, two to three feet long with shallow depressions worn by back and forth motions of manos, and thus properly called metates. There had been very little shaping of the stones. Two had been used on one side only, the other on both sides. From the surface and excavations, thirty-one miscellaneous grinding stone fragments were recovered. Some of these indicate intentionally shaped sides and deep depressions with almost vertical walls. A back and forth grinding motion is indicated by the depressions and striations on the stones: only two possibly had been used for rotary grinding.

Twenty-two complete, or nearly complete, and twenty small fragments of manos were recovered from the surface and the excavations. All were of the one-hand variety. Of the large specimens, nine are thin, flattish, and rectangular with rounded corners, used mainly on one side; ten are thick, loaf-shaped, and were used for grinding on

the one flat side; one is wedge-shaped and was used on both sides; and two are thick oval, rounded, and have no flat sides. All except the latter two indicate grinding by a back and forth motion; the two exceptions indicate grinding by rotary or possibly rolling motions. Material of all the manos was sandstone. Pecking was evident on many; worn surfaces appear often to have been repecked to increase grinding efficiency.

Hammerstones: Twenty-one nodular hammerstones of dense quartzite and chert were found, and almost all came from the excavations. These were rounded pebbles which exhibited battered surfaces and ranged between 3½ and 1¾ inches in diameter. Such stones could have served as meat and vegetable pounders and as bone crushers.

Squash knives: Two blade portions of bison scapula hoes had been reworked into another class of implement. One had the proximal end trimmed and smoothed so that there was a hand grip (Plate 13, C). The other had the broken edges smoothed so that there were no jagged protrusions. Both had ground cutting edges. Another specimen was made from a portion of a bison skull (Plate 12, A). This artifact had been greatly thinned by scraping and had ground cutting edges.[1]

Bone Refuse: Such refuse was common and many ribs, vertebrae, and scapulae of bison and deer and two deer foot bones exhibit scraping, cuts, and grooves evidently made by flint knives during butchering. It would appear that an attempt was made to remove a maximum amount of meat.

Pottery: 318 body, 20 basal, 5 handle, and 147 rim sherds were collected from the surface; 926 body, 12 basal, 3 handle, and 81 rim sherds were obtained by excavation. The great majority of the pottery (Plate 15) was made locally and would be classified as Lindsay Plain (Schmitt, 1950, p. 75), Nocona Plain (Krieger, 1946, pp. 109-110), or Woodward Plain (Baerreis, unpublished manuscript). On the basis of

1. Professor Alfred Bowers of the University of Idaho commented that these specimens were similar to tools used by the historic Mandan and Hidatsa to cut and peel pumpkins and squashes.

the present evidence, the preliminary description of the former will have to be partially altered, and the fact emphasized that the other types grade gradually into one another. Temper is the most variable attribute of the pottery at the Brown Site. Sherds were tempered with shell, limestone, sandstone, sand, bone, sherd fragments, possibly caliche, and numerous combinations of the foregoing. Within this range the smoothed sherds with shell temper fall within Krieger's definition of Nocona Plain and Baerreis's description of Woodward Plain while the smoothed sherds with other temper are Lindsay Plain. Table I presents a less detailed breakdown of surface treatment, decoration, and temper for the excavated sherds than was actually made. The sherds are classified by their predominant temper: a heavily shell-tempered sherd might exhibit a small, occasional fragment of sandstone but be classed as shell tempered.

Briefly described, Lindsay Plain is a thick, carelessly smoothed ware. The exterior surfaces show many striations left by scraping and occasionally by brushing. Temper is used in large amounts and is highly variable, though sandstone or limestone, or either mixed with shell, are the pre-

TABLE I

SHERDS FROM EXCAVATION

Surface Finish—Temper	Smoothed	Roughened	Polished	Red Slip	Appliques and Handles	Incising	Total
Shell	223	1			4	1	229
Shell-limestone	17						17
Shell-sandstone	369	2			3		374
Shell-bone	2						2
Shell-sand	118						118
Limestone	12						12
Sandstone	115	1			2		118
Sand	64	6		2		1	73
Bone	32	4					36
Sand-caliche (?)	23	1					24
Fine sand			2		1	1	4
Unclassified	13	2					15
	988	17	2	2	10	3	1022

dominant materials. At the Lee Site, a sandy limestone is the usual material; at the Brown Site, a reddish sandstone is found most often. It is now realized that the limestones and sandstones used grade one into the other, and that the choice of one is almost certainly not indicative of a cultural preference. The paste tends to be compact: it does not flake easily, but does occasionally have many small cracks. This is particularly true for interior surfaces. Color ranges from reddish browns through light greys to dark grey or black; greys predominate. Hardness is 2.5 to 3.0. Decorations are rare: three sherds from the surface and one from the dig have small nodes (Plate 15, A-D, H, I; A, D from same vessel). No restorable pots were found, but vessel form seems almost limited to flat-based jars of varying sizes. Twelve such bases are among the excavated material; they range between three and one-half and six inches in diameter; five have thickened and five have thinned basal discs; one protrudes to the side; all, but one with an indented base, are flat. The surface collections have fifteen such bases; they are similar in size range and other characteristics to those excavated, except that one is cord-roughened and partially smoothed over. Rims flare, some drastically so. Lips are thinned and rounded; no fully flattened rims occur. Large strap handles (Plate 15, A, E, G) are an occasional feature of Lindsay Plain at the Brown Site; one such handle from the surface and three from the excavation were noted. They were attached below the lip from the flaring rim to the body of the vessel.

The problem of shell-tempered wares of the Plains and Southeastern areas was discussed at a gathering of archaeologists held at Oklahoma University in April, 1952. It was pointed out that body sherds of the types Nocona Plain, Woodward Plain, Neeley's Ferry Plain, and Bell Plain, appear to be indistinguishable. This is probably true of body sherds of Cowley Plain, also. To distinguish these types rim sherds appear necessary. Nocona Plain lacks handles and appendages; Woodward Plain has strap handles attached to the lip and rim protrusions. Neeley's Ferry Plain and Bell

Plain appear similar to Woodward Plain. Cowley Plain has strap handles attached below the lip.

Both shell-tempered vessels and Lindsay Plain vessels were made at the Brown Site. Only the arbitrary distinction of temper enables one to place the sherds in different categories. Because of this, and the lack of stratigraphy, we seriously doubt that the former inhabitants of the Brown Site considered them distinct styles. Here, the classification into Lindsay Plain, Nocona Plain, and/or Woodward Plain probably does not reflect native distinctions of importance. However, this breakdown into types may have utility in establishing chronology and determining cultural relationship when many sites are considered.

Some shell-tempered sherds at the Brown Site do deviate from the others and perhaps with further data another type may be usefully described. These sherds are relatively thin, have a well-worked paste, are well smoothed, and seem to have a higher incidence of decoration. From the surface are three sherds with small nodes (not arranged in lines) made by sticking clay pellets to the exterior surface, and five well-made strap handles. From the excavations are three such sherds with nodes, and one pinched applique strip. This variation may be the predominant ware of the Grant Site[2] on the Washita River in nearby Garvin County; some of the sherds in question could be trade pieces from this or a similar site.

In addition to sherds discussed above a few obviously deviant specimens were noted. These are most probably trade pieces from other areas. From Level 6 in the deepest portion of the midden, came a highly polished, fine sand-tempered, red sherd. The interior is poorly smoothed, suggesting that it came from a bottle. This sherd is well within the range of plain polished sherds associated with the Sanders Focus (Krieger, 1946) and Spiro, and is undoubtedly a trade piece from the Caddo area to the east. Another

2. Material from this site was excavated by the University of Oklahoma and is now being analyzed by the junior author.

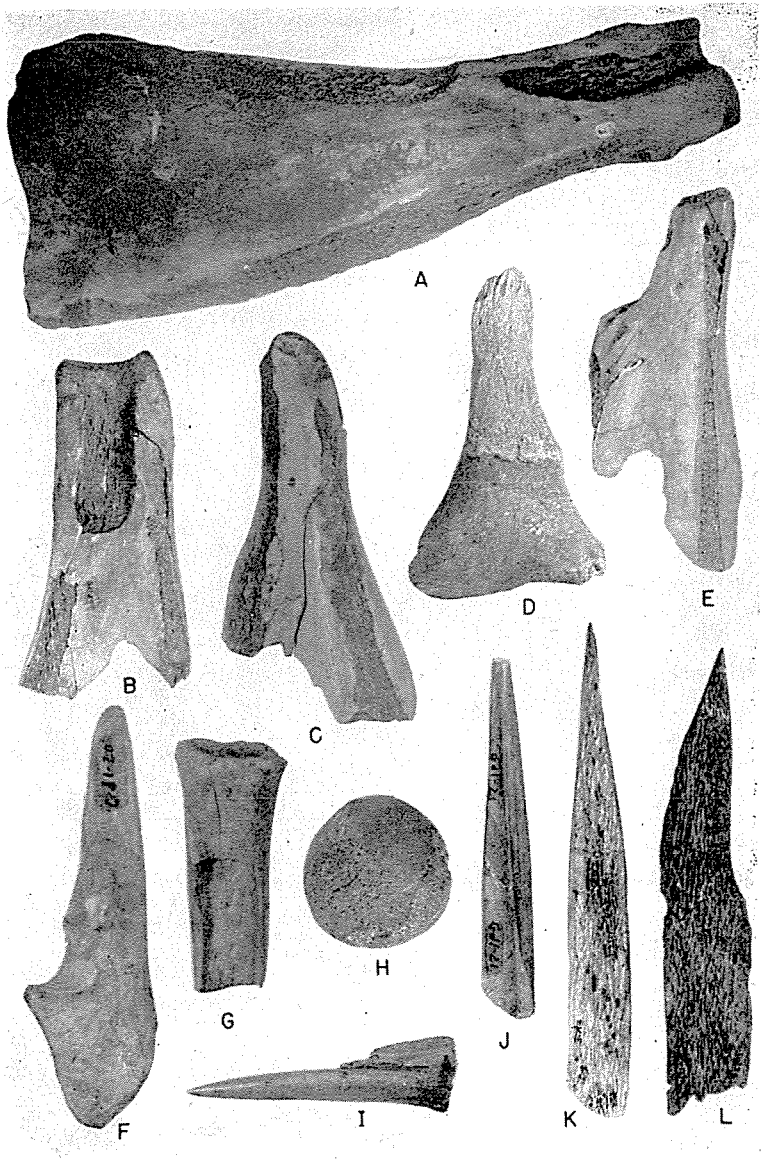

PLATE 13

Bone artifacts from the Brown site. A, Hoe blade of bison scapula. B, Hoe blade of bison scapula with medial groove. C, Squash knife of bison scapula. D, Hoe blade of bison skull. E, Hoe blade of bison scapula with posterior groove. F, Flaking tool of deer olecranon. G, Digging-stick tip of bison tibia. H, Ball carved from bison bone. I-L, Awls (L made from bison rib). A-E, G¼, others ½.

polished, fine sand-tempered, blue-gray sherd from Level 4, and a highly polished, fine sand-tempered, black sherd, also from a bottle, from the surface are referable to the same area and time period.

Two unpolished sherds with red slip and a fine sand temper, containing quartz, came from levels 4 and 9 in the same midden area. They, too, appear to be trade sherds from the east but are not identifiable as to type.

Seventeen roughened sherds were recovered from the excavations. One was a base with markings of a small-corded textile. Two sherds are thick, sand tempered, and seem to come from small cylindrical vessels some three or four inches in total diameter: the interior vessel cavity would be approximately two inches in diameter (Plate 14, J). The others are cord-roughened and have the temper range shown in Table I. These cord-roughened sherds are not all similar; two of those tempered with sand are relatively thin, hard, and very similar, if not identical, to sherds from the Antelope Creek Focus of the Texas Panhandle, or to sherds of the Upper Republican Culture. The others are thicker and probably trade sherds from an as yet undefined archaeological manifestation—perhaps in west central Oklahoma. Thirteen such sherds were found on the surface.

Also from the excavation were three incised sherds which, although they deviate somewhat in temper, probably are within the Lindsay and Nocona Plain series. One well-made, shell-tempered sherd with a portion of a loop handle (Plate 14, I) was found on the surface: a design in broad-line incising was partially on the handle and the adjacent portion of the vessel. This latter piece definitely appears exotic and is within the range of pottery associated with the Neosho Focus of northeast Oklahoma. This identification was confirmed by Professor David Baerreis of the University of Wisconsin.

Cutting, Scraping, Skin Preparation

Stone Knife: Only one such specimen was identifiable and was from the collection of a nearby resident. The ma-

terial is agatized dolomite or "Alibates Flint" and is 5½ inches in length and almost 2 inches in width. It is roughly diamond-shaped with two long and two short sides; the short sides are opposingly beveled.

Stone Scrapers: Thirty-six complete and fragmentary snub-nosed scrapers were recovered from both the surface and undisturbed levels. These were made from flakes struck from a core so that in each instance a concave flake scar formed one side; at one end fine flakes were removed to form a steep bit; workmanship varied from excellent to poor. Five of the specimens were made from small and very narrow flakes (Plate 14, Q).

Thirteen side scrapers were made by retouching large flakes (Plate 14, S). Over 150 worked flakes which also had been used as scrapers were recovered. One disc-shaped specimen was found on the surface; this has flake scars forming two concentric sides and fine retouching all around the circumference.

Stone Celts: One complete and four fragments of celts made from a greenish-black (when polished) rock were found. The complete specimen (Plate 14, B) came from the cache in the house area, and the others from the surface or plow zone. Four are circular or oval in cross section and have a tapered poll. One has a flattened oval cross section. Three specimens had been re-used, after breaking, as hammerstones. The presence of the celt in the cache, which otherwise contained objects connected with women's work, suggests that the celts may have been used in skin working.

Shell Scrapers: Three complete and seven fragmentary specimens were recovered from the excavations; the three complete specimens came from the cache. They are made of fresh water mussel shells with flattened edges worn by smoothing or grinding. One specimen from the cache (Plate 14, A) is modified in the most extreme manner and so ground down that one end is almost pointed. These artifacts could have served a variety of scraping purposes:

they could have been useful as pottery working tools, for skin working, as corn scrapers,[3] or as shellers.

Rib Beamers: Portions of three specimens were recovered in the excavations. Half of a large deer rib has the edges well worn and rounded and has a high use polish. Two other fragments, probably bison ribs, also exhibit some wear and a high use polish. Such tools could have been used as dehairers, or as skin-softeners.

Bone Beamer: One fragment of a possible deer metapodial bone beamer was recovered. This is a distal end with an indication of a concave cutting edge. The same bone also had great popularity at the Brown Site for making bone awls; it is possible that the specimen in question may be part of a large awl. But, since beamers are known for nearby sites, the present identification is thought more probable.

Bone Chisels: Three fragments of scapula hoes which had been re-used as scrapers were recovered. One in particular had been re-worked on all sides; the irregular surfaces of the broken edges are well-smoothed. One edge is chisel-like; and one jagged, but smoothed, edge has been used for scraping.

Four implements from fragments of bison tibiae were similar in appearance to the preceding specimens. They were probably made from pieces knocked from the shafts in the process of making bison-tibiae digging tools. The edges are jagged and irregular but well-smoothed, and the wear suggests a scraping function.

Bone Scrapers: Three irregularly oval bone discs were recovered. In size they are 15 by 25 mm., 13 by 30 mm., and 10 by 15 mm. The latter two had flaked edges and presumably had been worked by the same technique that was used on flint.

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3. An elderly Pawnee woman, who recently visited the senior author's home, commented on a mussel shell used as an ash tray. She said that one never saw these shells anymore, but that they used to use them to scrape green corn in the preparation of "green corn bread." Shells could be used unaltered, but were sometimes ground down on the edge.

Sewing, Punching, and Drilling Implements

Stone Drill: One specimen was found on the surface (Plate 14, K). This tends to a T-shape, but with a wide base. Two bone fragments with drilled holes, one bi-conical, were recovered from the excavation. The sherd-discs also had bi-conical perforations.

Bone Awls: Specimens of several different types were found. Eight bison rib awls were noted (Plate 13, L): these were made from ribs split longitudinally so that the maximum cancellous bone was exposed and with a point worked on one end. Some specimens were extremely well-finished, while others had jagged and only partially smoothed edges.

Five awls were made from split metapodial bones of deer (Plate 13, I). In addition to the finished awls, there were 14 miscellaneous fragments indicating the manufacturing process. They were split the length of the bone: a cut through the bone by scraping in the natural groove on the anterior surface was matched by a similar cut on the posterior surface. This resulted in two long slender blanks which could be pointed as desired. Some awls of this type were resharpened until they were quite short.

Two awls were made from the long bone of some small unidentified animal (possibly a jack rabbit). The joint is partially preserved but greatly modified by smoothing.

One specimen is made from a bison scapula fragment and is over an inch at the maximum width. Two other pieces of awls are probably made from bison scapulae: these were round to oval in cross section, approximately ¼ inch in diameter, and long and curved (Plate 14, P). Among the bone refuse was found the dorsal spine of a bison scapula from which the topmost edge had been broken off by scraping two long grooves on opposing sides (Plate 12, G). Such a process would produce long, curved blanks, easily workable into awls similar to the two in question.

One awl was made from a small animal rib; the bone was broken and a splinter-like projection ground to a point.

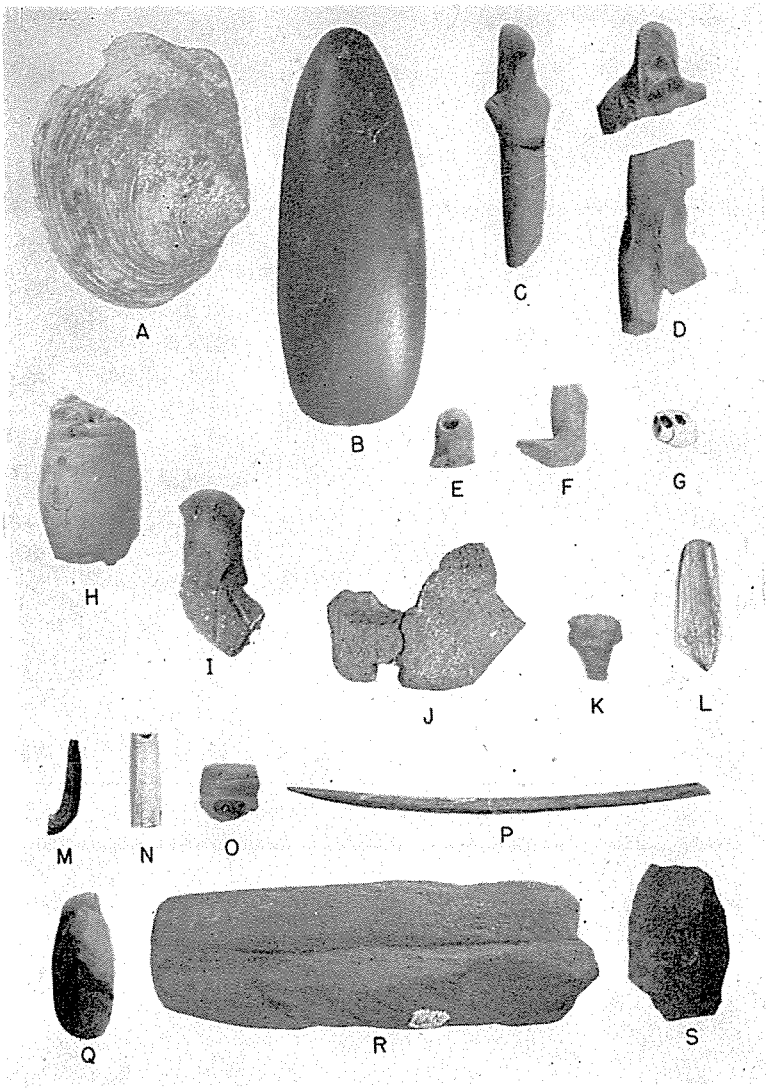

PLATE 14

Various artifacts from the Brown site. A, Shell scraper. B, Celt. C-F, H, parts of clay figurines. G, Shell bead. I, Potsherd with incised lines and part of loop handle. J, Cordmarked potsherd. K, Flint drill fragment. L, Bone fish-hook blank. M, Bone fish-hook. N, Bone bead. O, Fragment of stone-pipe bowl. P, Bone awl. Q, Flint end-scraper. R, Sandstone shaft abrader. S, Flint side scraper. Size ½.

There were eleven awls made from splinters and twenty-two miscellaneous fragments (Plate 13, J, K). Five of the latter were the tops of awls and had been abraded to a flattened end.

Weapons and Associated Tools

Arrowpoints: A large number of arrowpoints were found, almost all of relatively small size. Basically triangular points, with or without side and basal notches, greatly predominate. Figure 12 shows the outline forms of the points and the number underneath each outline gives the frequency of that variety. Three specimens (not illustrated) are of a type known as Alba Barbed (Krieger, 1946); one was found on the surface, the others were from undisturbed levels of the dig.

Arrowpoints were manufactured from flakes struck from flinty pebbles. Many points show the original flake scar. Small cores from which such flakes were taken are common in the refuse. In addition, four points were made of Kay County flint from quarries in northern Oklahoma.

Deer Olecranon Flaker: Four specimens were recovered (Plate 13, F). The proximal joint served as a handle and the shaft was ground to a rounded flat tip. Two other specimens exhibiting polish on the joint probably were similar tools broken in use.

Antler Drifts: Four fragments of antler approximately cylindrical and about ⅜ inch in diameter were found. Blunt, somewhat rounded ends are indicated. Nine miscellaneous pieces of antler were also found; two exhibit circular cuts and breaking. A portion of a deer skull shows that the horns were broken off by cutting and battering.

Bison Tibia Flaker: One specimen originally was a bison tibia digging tool but had been reworked to produce a narrow cylindrical tip (Plate 12, C). On this tool the larger end is shaped to a convenient handle, and the flaking point has a blunt and much scarred end.

Bison Rib Flaker: The rib had been broken directly across so that a minimum of cancellous bone is visible; the broken surface is smoothed and rounded. A portion of the rib formed a natural handle. One side, below the handle, had been broken off at an angle so that a long blade was formed. The very tip is smoothed to a rounded point. It could have served as a flaking implement, or less probably as an awl or punch.

Arrowshaft Wrenches: Five fragments attributable to this class of implement occur. They were made from deer radii with the distal ends removed and two opposing, offset, holes cut into the shaft. Two of the fragments show the cut and smoothed proximal end. One specimen exhibits wear in the form of a groove from drawing an arrowshaft through the holes.

One highly polished fragment from the shaft has incising in the form of five triangular figures and 13 fine nicks in a line. While this specimen is so fragmentary that its identification is partially in doubt, attention is called to the fact that two shaft smoothers from other sites exhibit similar decorations. One specimen was recently found on the surface of the Lee site, GV-3, in Garvin County. Another was excavated from site D-1, in Delaware County.

Abrading Tools

This category overlaps the previous one in that some of the artifacts were used in shaping arrowshafts.

Arrowshaft and Awl Abraders: Six fragments of large well-made shaft abraders are present in the collections. They are of a type which often occurs in pairs in the Plains area: one side is flat with a central longitudinal groove, and the general appearance is loaf-shaped. One specimen which is nearly complete is 5½ inches long (Plate 14, R). All are made of non-local sandstones. One specimen indicated part of the technique of manufacture: it had been sawed lengthwise, probably by scraping with flint flakes, until two opposing cuts almost met. Then it was broken

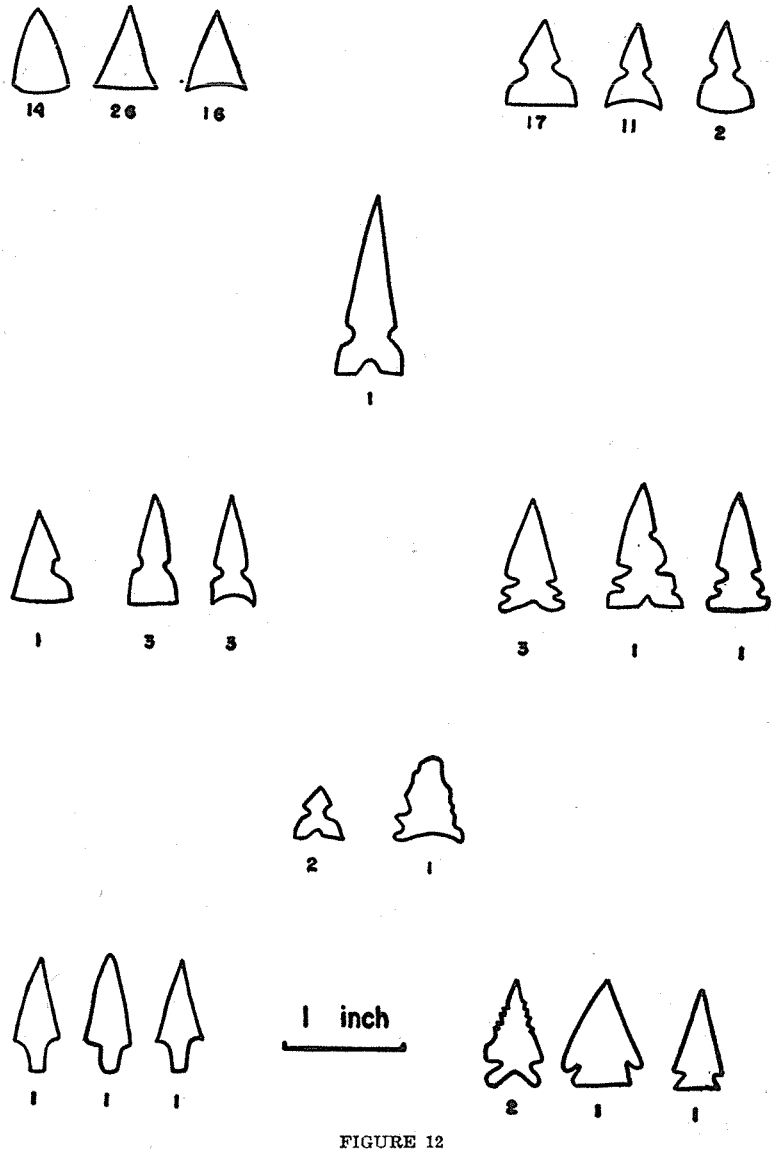

FIGURE 12

Projectile point types from the Brown site. The number under each outline represents the number of specimens found.

along the cuts, with the resulting rough surface only partially smoothed.

Three irregularly shaped pieces of local sandstone have rounded grooves indicating they had been used as shaft-abraders. These grooves, as well as those on the more completely finished specimens, indicate that arrowshafts were between ¼ and ⅜ inch in diameter. Several of the specimens had also been used to sharpen awls since the original grooves had been partially altered to more angular shapes. Five irregularly shaped pieces of local sandstone had only awl-sharpening grooves in them.

Another type of abrader is rectangular in cross section and has three or four grooves, one to a face; four such specimens were noted. They had been used both as arrowshaft smoothers and awl sharpeners and were made of non-local sandstone.

Whetstones: Seventeen flattish pieces of sandstone, usually of local origin, had been used in honing operations. They exhibited worn surfaces, with small grooves and striations such as would result from sharpening and shaping bone hoes and other bone artifacts.

Fishing Tools

Bone Fish Hook: One fragment (Plate 14, M) was found in the excavations. The point probably was broken in the process of manufacture. There is no knob or groove for attachment to a line.

Fish Hook Blanks: One thin, flat bone slab (Plate 14, L) is broken but originally it was rectangular with rounded corners; in such blanks the center portion could be cut out and two hooks made from one blank. Another irregularly oval bone slab has been smoothed on all sides and the center area has been scraped extensively from both sides in an effort to cut it away.

Weaving

One basal sherd of a shell-tempered vessel has an im-

pression of a loosely woven material with relatively fine threads. Some form of over-and-under plaiting is indicated.

Ornaments

Bone Beads: Ten tubular specimens cut from bird or small mammalian bones were found (Plate 14, N). Several had been well smoothed at the ends and polished. One bead of small diameter was found within a larger one. Two bird leg bones had circular cuts and breaks indicating the main part of the shaft had been removed to make beads.

Snail Shell Bead: One such specimen was excavated (Plate 14, G). It is made from a shell of the genus *Io* and has been extensively ground on the tip, one side, and the base. A string could be passed through the original aperture and out through the ones produced on the side or tip by grinding.

Bone Inlay: A small, thin disc, flat on one side and convex on the other, was found in the deepest part of the midden. It is ½ inch in diameter and about 1/16 inch thick. Possibly this was used as an inlay in the manner shell discs were used to inlay stone and wood at the Spiro Site.

Ceremonial Objects

Stone Pipes: One small bowl fragment was obtained by the excavation, and three other fragments from the surface. The bowl fragment is made of a fine-grained sandstone, it has a collar-like projection, delineated by a groove, and one incised line on the collar (Plate 14, O). Two of the surface fragments are made of similar material; one has a fine incised line. Another surface fragment is of fine-grained, reddish clay or silt stone. It is of an elbow-shape with almost equal arms 1½ inch long. The bowl is larger than the stem and has a collar-like projection delineated by a groove. The stem end is swollen into a less definite collar.

Deer Antler Headdresses: Four fragments of antler show extensive modification (Plate 12, D). Half of the antlers had been cut away and smoothed longitudinally. If these

were parts of headdresses, the effect, if the unworked portion of the antler were worn to the front, would be that of a full set of antlers, but of much less weight.[4]

Pigment Stones: Three pieces of hematitic sandstone with facets produced by grinding were found. These were tested and readily gave pigments of reddish shades. One small piece of hematite with one flat facet, a small piece of yellow limonite, and a piece of banded hematite-limonite also had been used to obtain pigments.

Burials

Information concerning disposal of the dead is scanty. One burial, that of an elderly female, was recovered. Leg bones and parts of the pelvis were found where they had fallen with a portion of the bank along Winters Creek; the skull, arm bones, and most of the vertebrae were still in situ. No pit outlines were discernible. Apparently the body had been placed in a shallow excavation which did not penetrate the base of the midden. The head was to the east and the position was extended or very slightly flexed. One stone scraper was found while excavating the burial but almost certainly was accidentally included in the fill.

Mr. Reynolds, lessee of a portion of the site, reported that he had plowed out several burials and had found two or three more in eroded gullies. All these were at or near the southern margin of the site. It is possible that a burial area would be found here.

A human molar and a small scrap of skull were discovered in the plowed field near the excavated area. A child's tibia was found in the exposed refuse of the bank; this was mixed in with other bone refuse and did not appear to have been the remnant of an intentional burial.

Games

Pottery Figurines: A large number of these specimens were recovered—so many that they must have been ex-

4. Elderly Wichita informants have told the senior author that deer antler headdresses were worn by some members of the **Deer Lodge** in their ceremonies. However, Wichita headdresses included part of the frontal bone shaped to fit the contour of the head. No such specimens were recovered from the Brown Site.

tremely common among the former inhabitants of the Brown Site. It seems more probable that they served an amusement function rather than a ceremonial one.[5]

One specimen (Plate 14, C) is almost complete: it has a long, tapering, cylindrical body, rudimentary shoulders and arms, and a keel-shaped head. The basal portion is broken off. Two fragments of another figurine exhibit a flattened, oval body, two legs, finger nail incisions on the shoulder area, and a groove on the shoulder (Plate 14, D). The sex of this latter specimen is not indicated. Another body section has the rudimentary shoulders and arms and two legs; again the sex is not indicated. There are four other fragments from the shoulder area of figurines; these indicate the rudimentary shoulders and arms by slight projections.

Five miscellaneous fragments are from torsos. One of these was from a feminine figurine; one complete breast is present and a portion of the other remains. An incised arc with fringed lines on and over the breast may have been intended to represent tattooing or painting.

Six specimens seem to be sections of bodies of the long tapering cylindrical type. There are also five basal sections, tapering down to a rounded point, which are referable to the same type of figurine. Several specimens are heads; one with portions of the shoulders remaining has a rounded hole possibly intended for a mouth (Plate 14, E); two indicate rounded heads; and another is a keel-shaped head. One foot is present (Plate 14, F); it shows no distinctive features.

Over fifty other small fragments of figurines were recovered. One of these had an intentional hole made by molding the clay about a cylindrical object. A larger fragment may have come from an outsize figurine, or it may have been part of an artifact of unknown use (Plate 14, H). It is barrel-shaped, broken at top and bottom, nearly 2 inches long

5. Elderly Wichita informants tell of a boys game played with baked clay figurines of horses and men. Two sides of boys set up their figures ten or more feet apart. Then they hurled small mud balls with pliant sticks until one side won the game by knocking down all the opponent's figures.

and 1¼ inch in diameter, and has cord impressions about one end.

The great majority of figurines are relatively poorly made. Most are untempered. A few contain some sand temper. The paste is not well worked and the figurines tend to split along old convolution lines. Some specimens flake extensively on the surface.

Miscellaneous Traits

Sherd Discs: Portions of ten such discs and two other artifacts of a related nature were found; two were from the surface and the remainder from the excavations. Four are made from Nocona Plain, seven from Lindsay Plain sherds, and one from a roughened sherd. The discs are round, or almost so, and have a single central, bi-conical perforation (Plate 15, L). This feature is present on six specimens, and two others have pits drilled from two sides, but not meeting. The other two specimens of discs are less than half complete and the expected central hole is thus not present. The only evidence for possibly multi-perforated discs is one of the incompletely drilled specimens mentioned above: this has a drilled pit on one side and three on the other, but, they are all very close together and complete drilling might have obliterated the extra pits. Diameter of the discs ranges from slightly over 1 inch to approximately 2¾ inches. Five specimens are between 1 2/3 to 2 inches; one is larger than this and four range between 1 and 1½ inches. Two specimens exhibit decorations. One has two broad gouged areas extending from the circumference toward the center; this suggests that the complete design on the disc would have been a rayed flower or a star-like design with perhaps seven or eight points. The other specimen, the fragment of the largest disc, has parts of an engraved design near the circumference; this consists of three lines meeting at acute angles giving the appearance of connected triangles. A similar design occurred on the fragment of a bone arrow-shaft wrench.

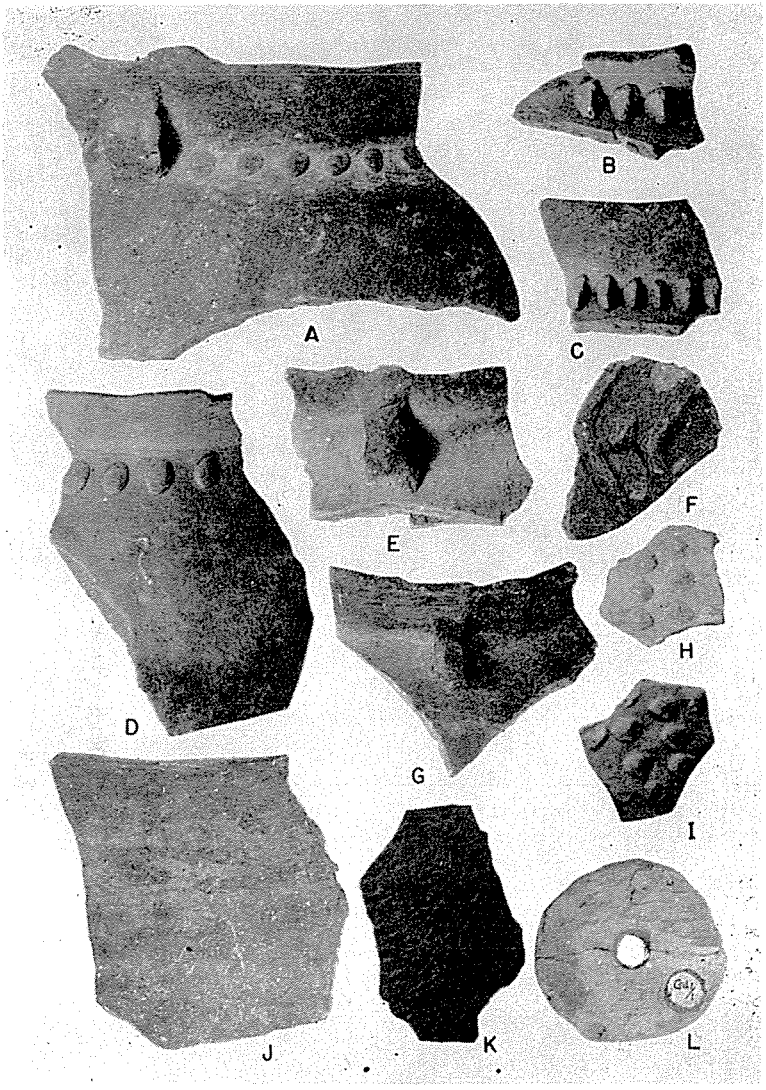

PLATE 15

Pottery from the Brown site. Examples of noded decoration, strap handles, and cordmarking. L, disc made from potsherd. Size ½.

Two sherds showing smoothing of old breaks were probably discs in the process of manufacture. One is a basal sherd which was round to begin with; apparently it broke again during the abrading process and was discarded.

Angular Worked Sherd: This fragmentary specimen is definitely not part of a sherd disc since it has a sharply angular corner, somewhat greater than a right angle. It was found in the excavations and is made from a Lindsay Plain sherd. In shape and appearance it is very similar to specimens found on many Pueblo sites of the Southwest.

Deer Mandible Tools: Two complete specimens, one large fragment, and three smaller fragments were found. As a class these share removal of the diastema almost to the first premolar, smoothing over of the broken bone, and some form of grooved wear of the teeth. A complete specimen (Plate 12, E) has the diastema removed and the break completely rounded and smoothed; one groove was worn so that it removed a part of the roots of the first and second premolars; another groove was worn between the last premolar and first molars; there are also parallel cuts across the ramus which may be butchering scars.

Another complete specimen was recovered from the cache. It has the diastema smoothed and rounded, though the old break is visible. A small groove is worn into and between the first and second premolars. As in the first specimen there are parallel cuts across the ramus.

A large fragment which has the ramus missing also has the diastema removed and rounded. The first premolar and the first molar are missing, but the edges of alveoli show wear. In addition there is a groove worn behind and into the last molar.

Of the smaller fragments: two have the teeth missing but the edges of the root cavities exhibit wear; the other specimen has the diastema removed, is well rounded and smoothed, and has a groove worn so deep that it has removed all but the roots of the first premolar. Three other deer man-

dibles have parallel cuts across the ramus but no other signs of use; this similarity to the two complete tools may have resulted from the butchering process and not from use as tools.

At present the use of these specimens is conjectural; they have been called "corn shellers" and "sinew stretchers," and a somewhat similar hafted specimen was collected from the Caddo and identified as a sickle (Swanton, 1942, Plate 16, Figure 1).

Perforated Bison Scapula: A scapula complete with acromial spine had a hole approximately 3 by 2 inches battered into the central part of the blade. Some of the rough edges of the break had been partially smoothed. Its use is not known.

Bone Balls: One almost spherical specimen (Plate 13, H) 1½ inch in diameter was excavated. This is all of cancellous bone and probably was made from the head of a bison femur. Another specimen is hemispherical, ¾ inch in diameter, and ½ inch high. The use of these objects is not known though they could have served as painting tools, or in a game.

Stone Balls: Two ovoid sandstone-barite balls were recovered. One is 15 by 19 mm. in diameter and the other is 17 by 19 mm. The last was obviously made from a small "rose rock," or sand cemented by barite crystals, since some of the original depressions remain. An unmodified "rose rock" of similar dimensions was also found in the refuse. It is possible that these objects were pigment stones or game objects.

Miscellaneous Worked Bone: Twenty-eight such pieces were noted. One has a bi-conical drilled perforation, another has a perforation drilled from one side only. A small fragment exhibits a decoration of four small parallel cuts or notches along an edge. Another, from a large implement, has a well-worked spatulate tip 1 inch across. A portion of a bison rib (Plate 12, F) has rudely made notches and may be a musical rasp.

Evidence of Trade

The material from which the celts are made is a fine-grained greenish rock of non-local origin. A source farther to the east, perhaps Arkansas, is suspected. The materials of many of the sandstone abraders and of the stone pipes are also of non-local origin, but the sources are unknown. Implements and flakes of banded, Kay County, Oklahoma, flint containing fusilinid fossils are fairly common: a total of 37 such specimens were noted. Only one sample of "Alibates flint," a red-banded, agatized dolomite, was encountered: this is the large stone knife from the surface of the site. The bead made from a shell of the genus *Io* most probably is indicative of eastern trade connections: this genus is now limited to the Tennessee River Valley.

A great majority of the pottery was locally made, even most of the shell-tempered ware. However, some of the latter type with a more carefully smoothed surface finish and/or noded decorations may be trade sherds from sites such as the Grant site near Pauls Valley, Oklahoma. The few polished sherds are trade pieces from the Sanders Focus of East Texas or the Spiro area of eastern Oklahoma (Krieger, personal communication). Two other unpolished red sherds are also from the east but cannot be delimited more accurately. A shell-tempered, incised loop handle from the surface appears to have originated in the Neosho Focus of northeastern Oklahoma. Of the cord-roughened pottery, two sherds could easily have come from sites of the Antelope Creek Focus of the Texas Panhandle or perhaps Upper Republican sites of Kansas. The origin of the other cord-roughened pottery is not known though central and western Oklahoma seem to be the most likely sources.

Stratigraphy

The relative great depth of midden at the Brown Site gave hopes that stratigraphy associated with distinctive artifact types would be encountered. This has not been found yet. Excavation was carried out by five-foot squares and six-inch levels. Pot sherds were typed by surface finish

and temper; all major types occurred in all levels and the variations in frequencies do not have statistical significance.

Small-scale stratigraphy, that of ash lenses and bands of refuse, is evident in the profiles. The various pits encountered could have originated at almost any level of the refuse. The original excavations of such pits may partially account for the lack of stratigraphy as they would tend to mix the refuse. Pieces of several pottery vessels and other artifacts which fitted together were found in widely separated levels. It is still to be hoped, and perhaps expected, that significant stratigraphy will be found with extensive excavation. Comparison of pit contents and material from over and under house floors would appear to have the best chance of yielding such results.

General Relationships and Chronology

The closest relationship of the material from the Brown site is with that of the Lee Site (Schmitt, 1950), and both sites would be within the same focal grouping. These two sites, along with the Grant, Braden, Lacy, and Frankenburg Sites, are placed by Bell and Baerreis (1951, p. 75) in the Washita River Focus. Cursory examination of the material from all these sites indicates that they are indeed very closely related. However, the pottery complex at the Grant and Braden Sites may differ enough from that of the others so that the focus might be subdivided. General, and many detailed, similarities are also evident between the Brown and Lee Sites and those of the Henrietta Focus (Krieger, 1946 pp. 87-159), Custer Focus (Bell and Baerreis, 1951; Brighton, 1951; Gallaher, 1951), Optima Focus (Bell and Baerreis, 1951; Watson, 1950), and the Paint Creek or Great Bend Aspect (Wedel, 1942). Somewhat more distant relationships are with those of the Antelope Creek Focus (Krieger, 1946); and the Fort Coffee, Nelson, Bryan, and Neosho Foci (Bell and Baerreis, 1951). All these manifestations are generally accorded to be of a late prehistoric time horizon. The presence at both the Brown and Lee Sites of trade sherds similar to types associated with the Sanders and Spiro Foci indicates that the two sites in question may have a time

span of several hundred years. Certainly they all pre-date the earliest European contact.

Conclusion

The material from the Brown Site shows that the former inhabitants followed a dual economy of hunting and agriculture of the type found in the late prehistoric archaeological horizons of the Low Plains and adjoining portions of the High Plains from Northern Texas to North Dakota. As might be expected, closest relationships are to other manifestations of geographic proximity, such as the nearby Lee and Grant sites, the Henrietta Focus of North Texas, and the Custer Focus of Western Oklahoma. A terminal date of not later than 1600 A. D. is indicated. More precise dating will depend on local dendrochronological and Carbon-14 dates or perhaps cross-dating with Spiro and Sanders Foci. Correlation with any historic tribe is not possible at this time.

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TWO EARLY HISTORIC SITES ON THE SOUTHERN PLAINS

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This is an appraisal of two large, early historic sites on the southern plains: the Deer Creek site in Kay County, Oklahoma; and the Spanish Fort site in Montague County, Texas, and Jefferson County, Oklahoma. Other sites, similar in aspect, and probably contemporaneous, have been recorded but not enough is yet known of them to warrant comparison with the two described here. At each of these sites there has been found a large quantity of early 18th-century material of French origin, but of the several sites only Spanish Fort is mentioned in known accounts of French or Spanish travelers and explorers. Spanish Fort figured, as the principal Taovayas village, in both French and Spanish accounts of the Red River country throughout the 18th century and it persisted as a settlement into the 19th century (Krieger, 1946, p. 161 et seq.). For Deer Creek there is no positive identification by Europeans but the Indians at that site were probably Wichita proper.

The Deer Creek Site

The Deer Creek site lies in an excellent position at the confluence of the creek of that name with the Arkansas River, northeast of Newkirk, Oklahoma (Plate 16, A). Approximately two miles north is a smaller contemporaneous site and there are rumors of at least one other similar site in the vicinity. In order to distinguish between the two known sites I shall refer to the smaller site, north of Deer Creek, as the Bryson site; it was partially excavated in 1926, by the late Joseph Thoburn of the Oklahoma Historical Society.

The principal site, at Deer Creek, covers an area of perhaps two hundred acres of high ground which is well above the flood plain of the river. At the present time most of the site is under cultivation but a portion of the village area lies under sod which has never been plowed.

Apparently about the middle of the 19th century finds of European relics at Deer Creek gave rise to a belief that a Spanish fort had once existed there and the name Ferdinandino, or Fernandino, appeared on several maps to indicate such a post. Just how this name originated cannot now be determined.

In 1925 Joseph Thoburn obtained excavation funds for work at Deer Creek and, during parts of that summer and of the summer of 1926, dug a portion of the Bryson site. No report of the work was ever published, and the material recovered lies unstudied at the Museum of the Oklahoma Historical Society in Oklahoma City. A few newspaper accounts, dictated by Thoburn during the work, gave little archeological information; two of these accounts were republished in an obituary for Thoburn (Wright, 1947). The only item of any importance which appeared in the newspaper articles was that definite evidences of a stockade were found. In none of the stories is there any account of artifacts, house types, or any other features which would help us place the site with a cultural group.

The best collection of Deer Creek material available for study is in the private collection of Mr. Burt Moore, of Winfield, Kansas. Mr. Moore has collected from the surface of the site for many years.

At the Deer Creek site no evidence of a stockade can be detected on the ground, nor, for that matter, is there a trace of any other structure. The only surface features of the site are half a dozen large middens, apparently composed entirely of bison bones among which hundreds of large scrapers are to be found. Most of the middens are well plowed down but still stand a foot or more above the surrounding ground and are thirty feet or more in diameter (Plate 16, A).

The Spanish Fort Site

Archeological accounts of Spanish Fort have been published by Krieger (1946) who discussed the site at some length, especially its relationship to the Henrietta Focus, and Witte (1938) who gave a brief account of the site. In

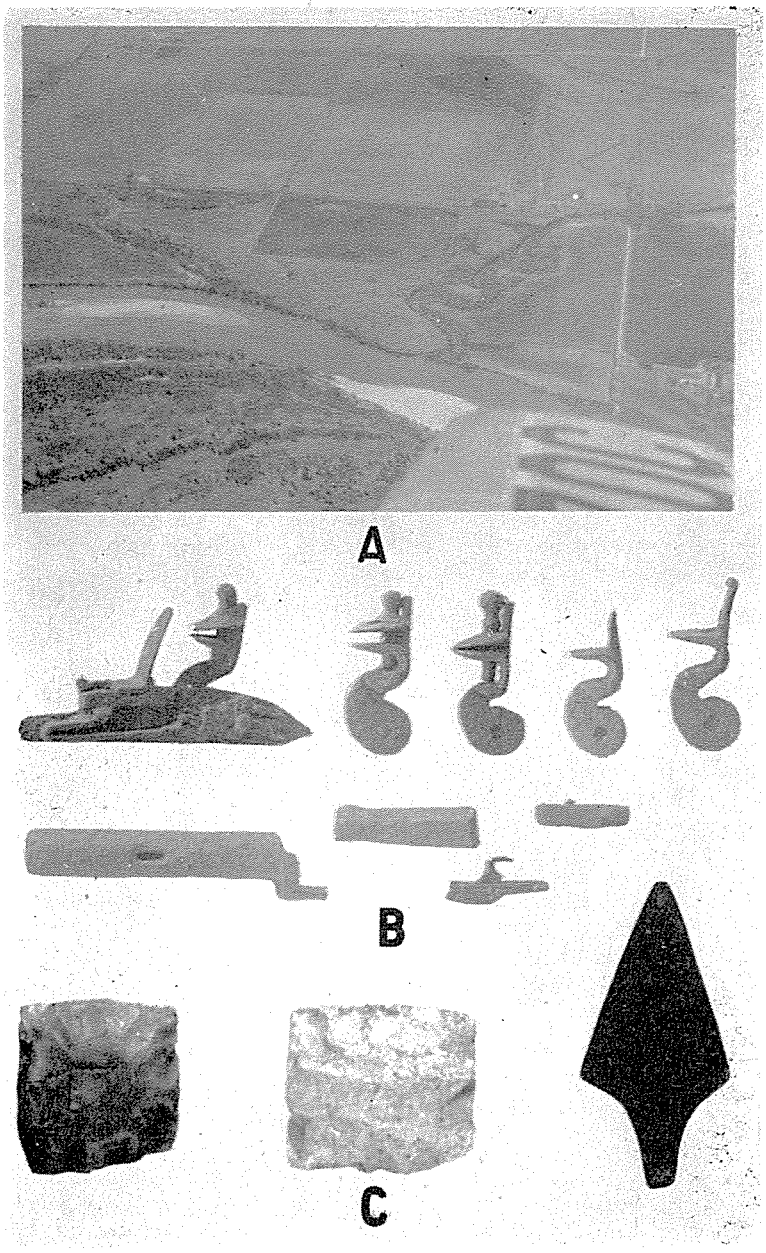

PLATE 16

A, Air view of Deer Creek Site, Oklahoma, looking west across Arkansas River with Deer Creek entering it from the right. In the plowed field in center, one large bison-bone midden shows as a white scar, and other middens, closer to the river, as dark spots. B, Parts of mechanisms of flint-lock muskets from Spanish Fort Site on Red River, Joe Benton Collection, Nocona, Texas (about 1/3 actual size). C, Indian-made gun flints and steel projectile point, from Deer Creek Site (about actual size).

addition, Mr. Joe Benton, of Nocona, Texas, has collected artifacts from Spanish Fort for years and has gathered a large collection of Indian and European artifacts from the vicinity.

Two locations, and an unknown number of sites, make any analysis of Spanish Fort material exceptionally difficult. Fluted points have been found here; and other point types from the Spanish Fort vicinity which are much older than the historic period are the Gary and Martindale types described by Bell and Hall (1953). The Spanish Fort bend of Red River was apparently a favored homesite for primitive man for many centuries and an intensive survey of this stretch of the river would undoubtedly locate a number of sites with a considerable time span. The historic material is concentrated in two comparatively small areas. One of these lies in the triangle of land between Red River and Farmers Creek, on the Texas side of the river; and directly east, on the Oklahoma side, there is a site fully as large, on higher ground.

No controlled excavations have been made at either of the historic Spanish Fort sites, and we have no evidence of the Taovayas Indian culture other than artifacts recovered from the surface of the sites. There is indirect evidence that the village on the Texas side, at least, was surrounded by a stockade, for Parrilla reported that during his attack on the site in 1759 the Indians fought from behind such defense works. The only visible features of the villages are large middens of bison bones, identical with those at the Deer Creek site, and from which many scraping tools have been recovered.

French Goods at the Sites

The similarity of metal goods found at the two sites is astonishing, as is the quantity in which the items have been found. It is easy to understand how tales of trading posts located at these sites could get started, for a large amount of material has been recovered from each location. The collections of European materials from each site are so

similar that, except for the possibility that some perishable goods such as blankets formed part of the trading stock, it would appear that we have a rather complete list of trade items of the time. These are:

1. Flint lock muskets—numerous parts of many muskets have been found at each of the sites (Plates 16, B; 17); butt plates, trigger guards, hammers, frizzles, and short lengths of barrels which have been altered to serve as tools. Some European gun-flints are found at Deer Creek but they are fewer in number than Indian-made flints (Plates 16, C; 17); at Spanish Fort the proportion of European to native-made flints seems greater.

2. Lead Bullets (Plate 17).

3. Cutting tools—Knives (probably "sheath" knives), scissors, pole axes, and cleaver-like chopping knives.

4. Cooking pots—of iron and copper.

5. Ornaments—Glass beads of several types, rolled "tinklers" of thin metal sheets, brass buttons and hat ornaments.

6. Projectile points—of iron and copper (Plate 16, C).

Mr. Burt Moore sent a representative collection of this material to Mr. Arthur Woodward, then of the Los Angeles County Museum, for identification. Mr. Woodward wrote to Mr. Moore that all of the material was of French origin, that it could be dated as of the first half of the 18th century, and that he would place the time 1725-1750 as the most likely period in which the items were traded to the Indians.

Now we have, at two widely separated sites, European materials of the type which can safely be termed "trade goods", materials which have been dated as of the second quarter of the 18th century. The question remains as to what sort of trading establishments were maintained at these villages. A definite clue can be found in a letter written in 1727 by Father du Poisson, a Jesuit stationed for a short time at the Arkansas Post. Du Poisson wrote a rather lengthy letter to a fellow priest in France in which he described Louisiana and its inhabitants. It reads, in part:

"Besides these grantees and planters, there are also in this country, people who have no other business than that of vagabondizing. 1st, Women and girls taken from the hospitals of Paris, from Salpetriere, or other places of equally good reputation, who find the laws of marriage too strict, and the care of a single household too troublesome. Voyages of four hundred leagues present nothing to terrify these heroines; I have met with two of them, whose adventures would furnish material for a romance. 2d, The voyagers; these are for the most part young people sent for some reason to Mississippi by their parents or by justice, and who finding it too low to dig the earth, prefer engaging themselves as rowers, and wandering about from one shore to the other. 3d, The hunters; these at the end of the summer ascend the Mississippi to the distance of two or three hundred leagues to the buffalo country; they dry in the sun the flesh on the ribs of the buffaloes, salt the rest, and also make bear's oil. Toward spring they descend, and thus furnish provisions to the Colony. The country which extends from New Orleans even to this place [Arkansas Post], renders this business necessary, because it is not sufficiently inhabited, or enough cleared to raise cattle there. At the distance of only thirty leagues from here they begin to find the buffaloes, and they are in herds on the prairies or by the rivers. During the past year a Canadian came down to New Orleans with four hundred and eighty tongues of buffaloes he had killed during the winter campaign with only one associate." (Kip, 1846).

One has a great desire to deviate from the announced subject of this paper and speculate on the lives and adventures of the women and girls who roved the Mississippi valley because they could not be bothered by the cares of a single household, but with only that single tantalizing statement du Poisson dropped the subject of women and went on to more prosaic matters. It is with the hunters, the third group listed by du Poisson, that we are here concerned. The description given of these men, and their activities, furnishes the clue to the sort of establishments maintained by the French at the Indian villages on the

southern plains. It is doubtful that we can ever be certain that Deer Creek, Spanish Fort, and other similar sites were winter headquarters for French hunters.

If we assume however that such hunters returned to a certain village, or village group, year after year and paid for carcasses, or for help in the hunt, with trade items, it would easily explain the large amount of trade goods to be found at sites at which there is no record of a permanent trading post or factory. Such activities are also in keeping with the general nature of the vanguard of Frenchmen on the American frontier.

Summary

At present there are many more questions to ask than statements to make concerning the material culture of the Indian population of the villages under discussion. On the map which accompanies his article on the archeology of the Central Great Plains, Wedel (1940, p. 293) indicates a site on the Arkansas River (at the approximate location of Deer Creek) with the symbol for the Paint Creek manifestation of Plains culture. I believe that if his viewpoint had been from the Southern plains that he would with just as much certainty, have stamped the site with a Henrietta Focus label. In a subsequent paper I hope to show that, based on artifacts alone, there is remarkably little change in material culture between districts in the central and southern plains in late prehistoric and early historic times. The differences which do exist seem based partly on materials available to the different groups, partly on regional proximity to other cultural areas, but mostly differences are apparent merely because we lack the information which intensive excavations would give us concerning the economy of the plains Indians.

With the evidence available at present it appears that the great middens of bison bones are products of the decades after 1700. This probably indicates a change in the hunting methods of the Plains Indians which followed the introduction into Plains economy of the horse, which Haines (1938)

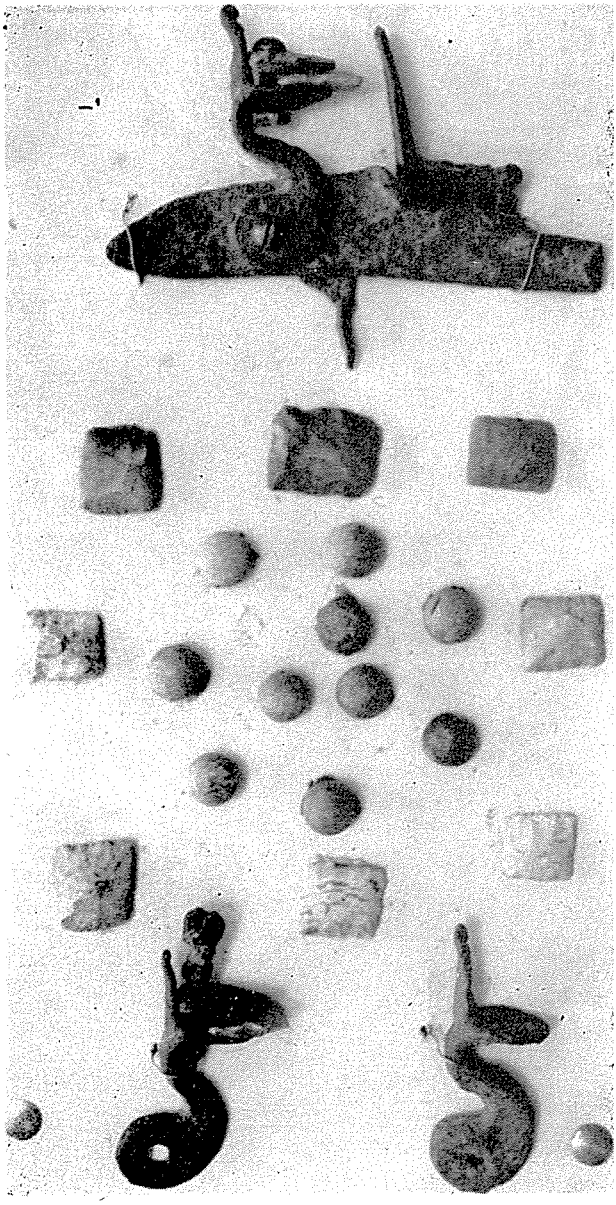

PLATE 17

Artifacts from the Deer Creek Site. Flint lock mechanisms, Indian-made gun flints, and lead balls in the Burt Moore Collection, Winfield, Kansas.

places on the central Arkansas River by 1719. It may not be stretching a point to say that, with the coincident use of the horse for hunting, and for carrying or dragging carcasses, and with the arrival of professional hunters from the Louisiana colonies, hunting habits did change. The necessity to produce meat far in excess of the needs of the village, with a sudden ability to transport major portions of bison carcass, could well mean that much of the meat cutting and skin dressing, which formerly seems to have taken place at the site of the hunt, was transferred to the village.

In general, early 18th-century villages of the Wichita, and their affiliates, appear frequently to have been located on major streams at, or near, the mouth of a small stream which probably furnished the water supply. The villages often appeared in clusters; this may have been dictated by the location and distribution of arable land. Some evidence exists that a stockade was a common feature of the village, but practically nothing else is known of the village structure. It is also probable that these villages served as winter quarters for small bands of professional hunters whose business it was to supply the Louisiana colony with meat. Since there are no surface indications of permanent structures for trading posts it seems likely that, with the evidence now available, the hunters were responsible for all of the trade material found at the sites. Excavation at these sites probably would furnish data on the acculturation process which was then (1700-1750) beginning to change the lives of the Plains Indians.

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National Park Service

Region Three

Santa Fe, New Mexico

EXCAVATIONS AT THE BLUM ROCKSHELTER

EDWARD B. JELKS

INTRODUCTION

The Blum rockshelter is situated on the west bank of the Nolands River near the town of Blum in Hill County, Texas. It was discovered by Mr. George Benson, Hill County rancher and amateur archeologist, in the summer of 1951. Recognizing the potentialities of the site, Benson informed the writer of his discovery.

In January, 1952, Edward H. Moorman and I spent two days in company with Benson digging a test pit in the shelter. Results of the test indicated that the site held promise of producing significant data on the Central Texas Aspect, and since it will be within the embrace of Lake Whitney's flood control pool, plans were immediately made for its excavation. These plans were brought to fruition in September, 1952, when a crew consisting of Benson, E. O. Miller, Thomas L. Williamson, Steve Boyd, James H. Duke, Glen E. Rodda, and the writer excavated an area of 250 square feet to a mean depth of approximately six feet.

I am grateful to all the above for their enthusiasm and industry on the dig. Special acknowledgment is due Mr. Benson for his discovery and initial appraisal of the site, and for his wholehearted cooperation during all phases of the River Basin Surveys' investigations at Whitney. I am also indebted to Glen L. Evans of the Texas Memorial Museum for his geological analysis of the site, one of the key ingredients used in formulating the conclusions in this paper.

Excavation of the Blum Rockshelter was part of the nationwide archeological salvage program of the River Basin Surveys, a program designed to recover, before it is inundated or otherwise destroyed, archeological material endangered by the construction of dams and reservoirs. Formerly administered by the Smithsonian Institution, the River Basin Surveys office in Austin is now operated by the National Park Service, Department of the Interior, and

conducts salvage operations in Texas and adjoining states. Grateful acknowledgment is due the following institutions and agencies, all of which contributed complete cooperation to the Whitney archeological project: the U. S. Army Corps of Engineers, the University of Texas, Texas Memorial Museum, and Baylor University.

Physiographic Setting

Across the extreme northwestern corner of Hill County, Texas, flows the Nolands River. From its headwaters in northern Johnson County to its point of entrance into Hill County it flows in a southeasterly direction, roughly parallel to the Brazos a few miles to the west; but immediately after entering Hill County it changes its direction of flow and curves toward the west in a broad arc to converge with the Brazos at a point some eight miles southwest of Blum.

Its channel has cut deeply into the Cretaceous limestone bedrock, thereby exposing vertical limestone cliffs at the edges of the valley. The cliffs have been long exposed to the elements, and rockshelters have been formed in them at favorable spots by the erosional effects of stream action, weathering and temperature fluctuations. One of these is the Blum Rockshelter.

Present day mammalian fauna of the area includes the white-tailed deer, fox squirrel, cottontail, jack rabbit, gray fox, red fox, opossum, raccoon, bobcat, timber wolf, coyote, and armadillo. Of these the red fox was introduced in recent years and the armadillo has migrated into the area within the last fifty years. Mammals present historically, but not found in the area now, include javelina, bison, and beaver.

The uplands are rolling prairie which once sustained large herds of bison, but along the margins of the stream valleys erosion has produced a series of rocky hills and valleys. The prairies support a fairly heavy cover of native grasses, scattered mesquites, and motts of elm and oak. The stream valleys are heavily forested with pecan, hackberry, elm, juniper, and other trees, dense tangles of underbrush oc-

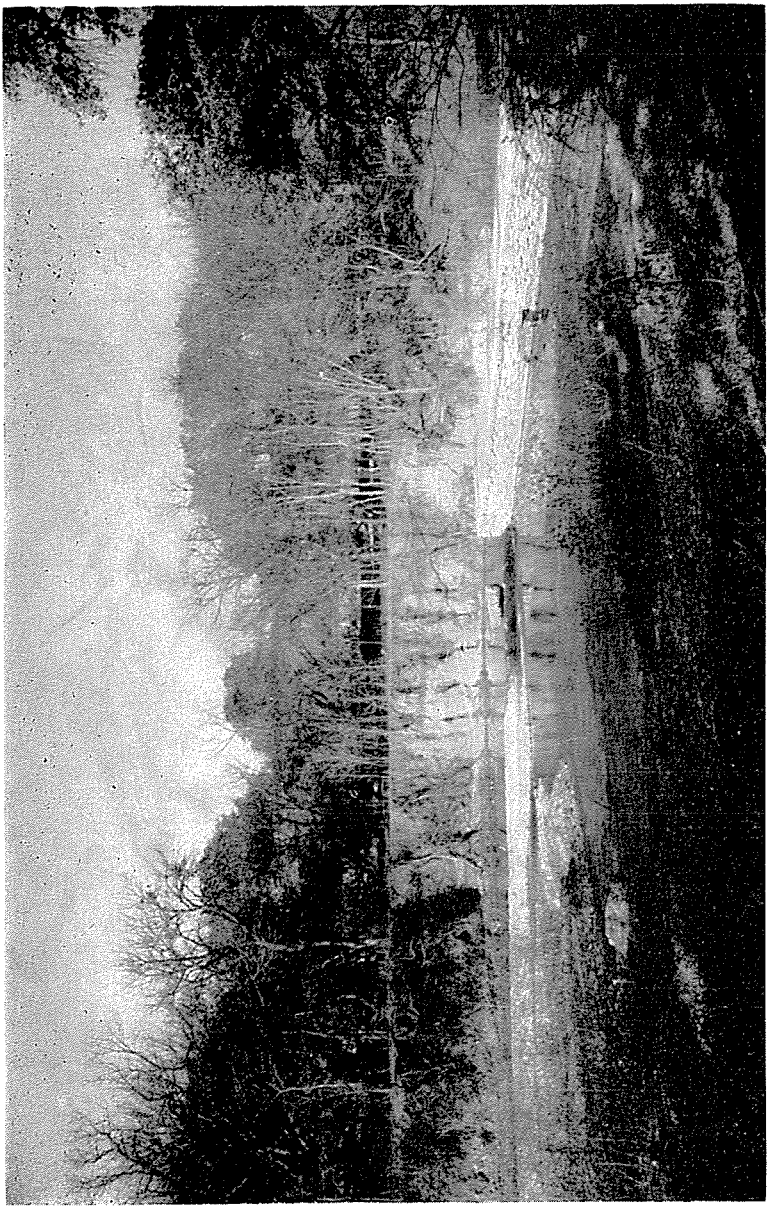

PLATE 18

View of Nolands River terrace with Blum Rockshelter in center background. Note end of low-water dam in center, where river has cut around it.

curring in many spots. The hilly zones adjoining the valleys are covered with juniper and small oaks.

The resources appear adequate to support a hunting, gathering population of considerable size: small game was abundant a century ago; the streams still teem with fish, turtles, and mussels; edible nuts, fruits, seeds, and berries are plentiful. Terraces along the streams would have been suitable for primitive agriculture without irrigation.

Geological Background

The Blum Rockshelter faces almost due east toward Nolands River. A low terrace (T-1), 18 to 20 feet thick and 60 to 100 feet wide, stretches across the interval between shelter and river (Plate 18). On the east side of the stream T-1 is absent, but T-2 is well developed. The surface of T-2 is about 25 feet above the bed of the stream, some seven feet higher than T-1, and T-2 is undoubtedly of considerably greater age than T-1 (Figure 13, A).

On a line with the northern end of the shelter, a low dam was constructed across the Nolands by the PWA in 1936. Shortly afterward the river burst around the west end of the dam (Plate 18) cutting a new channel through the terrace (T-1) to which the dam had been anchored. This dissection of T-1 left a clean, vertical face revealing clearly its composition, which is as follows (Figure 13, B):

Stratum	*Thickness in feet*
4. Top stratum of T-1. Weak soil, sterile of cultural material	1.2
3. Middle stratum of T-1. Brown silt, weakly stratified. Sterile of cultural material	2.8
2. Bottom stratum of T-1. Gray silt, humus stained in the top three feet, containing lenses of small gravels and sand. Flint chips, charcoal, hearthstones, and bone scraps occur throughout this stratum	15.0

—— Disconformity ——

1. Weakly consolidated gravel lenses resting on limestone bedrock, evidently remnants of an older terrace than T-1 (T-2?) 2.5

Four stages in the development of the present geological situation have been reconstructed, all based on a study made by Glen L. Evans.

Stage 1. The Blum shelter lies in a limestone bluff on the convex side of a long meander of the Nolands River. The erosional processes which formed the shelter can be seen at work today several hundred feet upstream at a point where the river impinges on the vertical face of the same limestone bluff. A cavity is developing there in the bluff where the erosional action of the stream is slowly removing a layer of relatively soft stone sandwiched between more resistant strata.

Formation of Blum shelter took place during Stage 1 when the Nolands flowed against the cliff at the point where the shelter is situated, and removed a soft stratum of limestone, leaving an inhabitable indentation in its stead. The original cavity has continued to enlarge through the years due to spalling of weathered fragments of stone from the ceiling and back wall. Erosion has also imparted a slight inclination to the floor, so that it slants downward from the rear wall toward the mouth.

Stage 2. After having hollowed out the shelter the stream gradually migrated laterally to the east, depositing gravels—and presumably silts—where its former channel had been. Remnants of this deposit (T-2?), resting on bedrock and discomformably underlying T-1, are yet visible where the river has dissected and exposed a vertical face in T-1 in front of the shelter. Another remnant of what is apparently the same older terrace lies about fifty feet south of the shelter along the face of the same limestone cliff. (There are indications, incidentally, that another shelter, still filled with the terrace remnant and masked by a sizeable talus accumulation, may exist at that spot.)

Stage 3. At some unknown time after the formation of the terrace in Stage 2, the Nolands moved in toward the shelter again, erasing the old terrace except for remnants such as those described above. Although there may be small remnants of the old terrace remaining within the shelter proper, none were recognized as such in the excavated area, and it is probable that the shelter was swept completely, or very nearly, clean during Stage 3.

Stage 4. Again the river retreated from the cliff, leaving another deposit (T-1) in its wake, mostly silt rather than gravel (Figure 13, B). That the formation of T-1 took place in relatively recent times is indicated by an unbroken sequence of cultural material, all a result of the Central Texas Aspect occupation in the shelter, extending to the bottom of T-1. All the cultural material excavated was apparently deposited on the site during Stage 4.

Excavation

Prior to excavating, an area fifty feet long and twenty feet wide, running east and west on its long axis from the rear wall of the shelter out into the open terrace, was blocked off in a grid system of five-foot squares with a stake at each corner of each square (Figure 14). The east-west lines of the grid were labeled J, K, L, M, and N, in sequence from south to north; the north-south lines were numbered in sequence from 6 through 15 from west to east. The coordinate designation for each square was taken from the intersecting lines at its southeast corner.

Specimens were sacked by six-inch levels and, after the strata inside the shelter had been recognized, were labelled by strata. All excavated fill was run through a screen of ¼ inch mesh.

Squares excavated were J-6, J-7, K-6, K-7, L-6, L-7, L-8, and L-9. It was soon discovered that the rear wall, instead of being perpendicular, sloped back to form a recess, so that the deposits lying in the back part of the recess fell into Squares J-5, K-5, and L-5. This material was also excavated.

All squares inside the shelter were carried down to bedrock except L-7, L-8, and L-9. L-8 and L-9, lying at the mouth of the shelter, were excavated to respective depths of 96 and 114 inches, well below all evidence of occupation. Tests with a post-hole digger in the floors of those two squares went some 20 inches deeper in both cases without producing any sign of habitation. For the purpose of correlating the geological sequence inside the shelter with that revealed in the face of the terrace, Square L-15, about half way between the shelter and the edge of the terrace, was excavated to a depth of 84 inches.

Four distinct strata were recognized in the shelter deposits. They are:

Stratum	*Thickness in feet*
4. Reddish brown, oxidized soil, in the upper part of the stratum. Small gravels and numerous small limestone spalls in the lower 7 to 8 inches. Sterile	0 -2.3
3. Silt, grading from dark gray to brown, heavily interspersed with limestone spalls. A few bone splinters and flint chips and a large fire hearth were in the lower six inches	1.2 -2.8
2. Midden material intermixed with silt and tiny to very large limestone spalls. Several ash lenses were present. Most of the artifacts were found in this stratum	0.5 -5.3
1. Dark gray silt containing small gravels, artifacts, and cultural debris. Not discernible in Squares L-5, L-6, L-7, L-8, and L-9	0 -1.5

The three higher strata (4, 3, and 2) in the shelter evidently correspond to the three higher strata in the vertical terrace exposure at the river's edge (Figure 13, B). Stratum 1 in the shelter, however, contains Central Texas Aspect

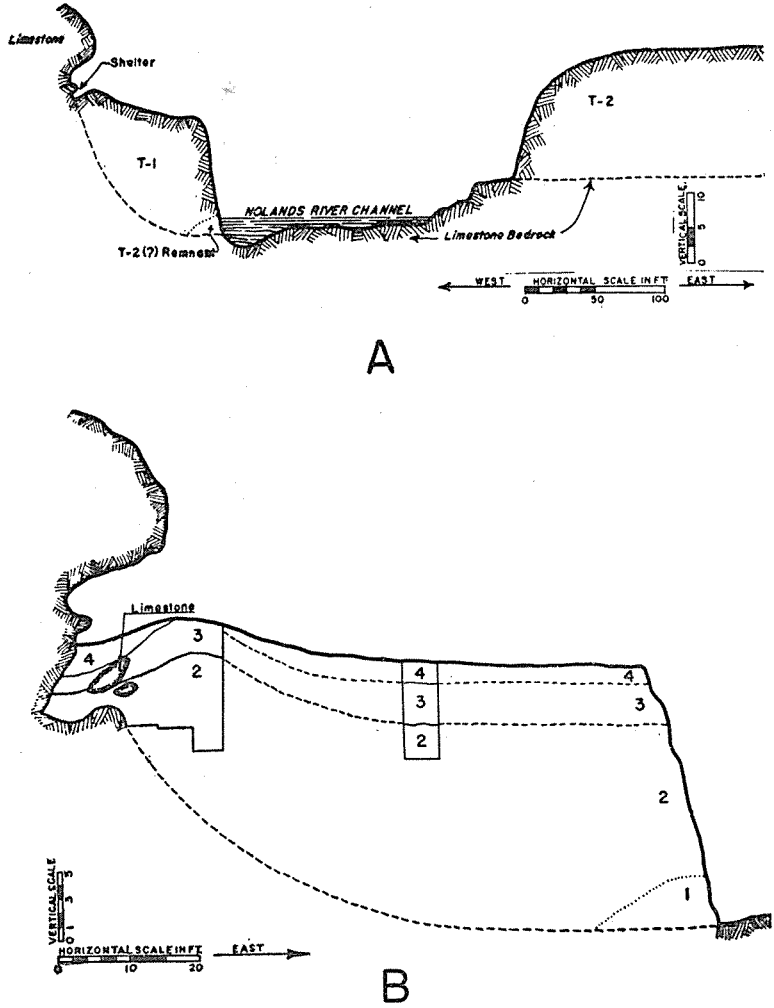

FIGURE 13

Cross section of Blum Rockshelter and adjacent terraces of Nolands River. A, Composition of terraces T-1 and T-2 with position of rockshelter indicated. (Vertical scale exaggerated 5 times). B, Stratigraphy of excavations, related to strata exposed in edge of terrace at river (vertical scale exaggerated 2 times).

artifacts and is probably equivalent to the lower portion of Stratum 2, rather than Stratum 1, in the terrace outside.

Inside the shelter, artifacts were found from the lowest part of Stratum 3 throughout Strata 2 and 1 down to bedrock. Features encountered include numerous ash lenses, piles of fire-cracked limestone chunks, masses of charcoal, and concentrations of snail and mussel shells.

Square L-15, in the terrace between the shelter and the river, was carried down to a depth of 84 inches. The three upper strata seen in the section at the terrace's edge were easily identified in L-15, Strata 4 and 3 being sterile, Stratum 2 containing artifacts and cultural debris.

No line of demarcation between Strata 1 and 2 was discernible in Squares L-5, L-6, L-7, L-8, and L-9 but it is thought that the difficulty in separating the two strata is due to soil characteristics. Consequently, when the artifacts are assigned to their respective strata in the following, those found in the bottommost levels of the L squares are designated as occurring in Stratum 1-2. All other specimens were found definitely in the strata to which they are assigned.

Artifacts

Since most of the recognized artifact types found at Blum have been described elsewhere, no descriptions of them will be given here. The others will be briefly described. Projectile-point types having binomial designations will be referred to only by the identifying word in the name, as follows:

Present Name	*Binomial Designation*
Perdiz	Perdiz Pointed Stem
Cliffton	Cliffton Contracting Stem
Alba	Alba Barbed
Scallorn	Scallorn Stemmed
Fresno	Fresno Triangular Blade
Yarbrough	Yarbrough Stemmed

Arrow Points

A total of 148 chipped stone arrow points was found, 36 of them too fragmentary for typological identification and six that do not have the requisite characteristics to be assigned to any recognized type. Of the remaining 106 specimens, 50 are of the *Perdiz* type (Kelley, 1947, Plate 13, a; Miller and Jelks, 1952, p. 177 and Plate 24, 2); 28 are *Scallorn* (Kelley, 1947, Plate 13, f; Miller and Jelks, 1952, pp. 176-7 and Plate 24, 1); 19 are *Cliffton* (Kelley, 1947, Plate 13, b; Krieger, 1946, p. 115 and Fig. 7, p-s; Miller and Jelks, 1952, p. 177 and Plate 24, 3); six are *Alba* (Newell and Krieger, 1949, pp. 161-2 and Fig. 56, A-H; Miller and Jelks, 1952, p. 178 and Plate 25, 2); and three are *Fresno* (Kelley, 1947, Plate 13, g; Miller and Jelks, 1952, Plate 25, 3). Examples of these types appear on Plate 19.

Of the two most numerous arrow point types, *Perdiz* and *Scallorn,* it was readily apparent—both in the field and in the laboratory—that *Perdiz* occurred principally in the upper levels of occupation while *Scallorn* was found, for the most part, at greater depths. Thirty-three *Perdiz* points were recovered from Stratum 2 where only one specimen of *Scallorn* was found; six of the *Scallorn* points occurred in Stratum 1, which yielded no *Perdiz.*

Fourteen of the 19 *Cliffton* points were in Stratum 2 in association with *Perdiz;* none were found in Stratum 1. One specimen each of types *Alba* and *Fresno* was recovered within Stratum 2, the other points of those two types occurring in the Stratum 1-2 zone (bottom levels of the "L" squares).

The average depth below the surface for *Perdiz* was 52.6 inches, for *Cliffton* 52.1 inches, and for *Scallorn* 67.1 inches.

Dart Points

Sixteen dart points were found at Blum, all made of chipped stone. Three are probably of the type *Yarbrough* (Newell and Krieger, p. 168 and Fig. 57), four are of unknown type, and nine are too fragmentary to be classified. One

Yarbrough and two indeterminate fragments occurred in Stratum 2; all the other dart points were in Stratum 1-2.

Drills

The nine flint drills and drill fragments were classified on a basis of size. There are three small drills with light, delicate blades chipped on both faces. One was rechipped from a dart point with the dart point stem retained as a base (Plate 19, N); the other two have unworked bases (Plate 19, L, M). Four drills were classified as medium-sized, all having worked bases. Two fragments were not classifiable.

While the "medium" drills are larger than those commonly occurring in Central Texas Aspect components, they are not so large as those typical of the Edwards Plateau Aspect.

Blades

A total of 28 flint blades and blade fragments was found. Eight are thin triangular specimens which were probably used as knives. One of them was found in the lower part of Stratum 3, three in Stratum 2, and four in Stratum 1-2. Another knife-like blade, asymmetrical in shape, was recovered from Stratum 1-2. Three crude blades which might equally well have been classified as blanks or cores were found, one in Stratum 2 and two in Stratum 1-2. The sixteen fragments, too small for identification, were distributed in this manner: eight in Stratum 2, five in Stratum 1-2, and three in Stratum 1.

Scrapers

Of the 66 flint scrapers, 56 are flake scrapers, six end scrapers, and four heavy side scrapers. The flake scrapers are small, irregularly shaped spalls which have been retouched unifacially along one or more edges. Twenty-three occurred in Stratum 2, 25 in Stratum 1-2, and eight in Stratum 1.

The heavy side scrapers are larger chunks of flint with one smooth unworked face. The opposite face is worked

along one or both lateral edges. Strata 2 and 1-2 yielded respectively one and three examples.

Two small and four medium-sized end scrapers were found. Of the medium ones, two were in Stratum 3, one in Stratum 2, and one in Stratum 1. One small end scraper came from Stratum 2, the other from Stratum 1-2.

Gravers

The six gravers are irregular-shaped flint chips retouched along one edge in the manner of the flake scrapers, but with a sharp, short, beak-like projection which would be suitable for scratching grooves in materials such as wood, bone, and soft stone. They were equally distributed between Strata 2, 1-2, and 1, two specimens occurring in each of those strata.

Grinding Implements

Five fragments of grinding slabs and ten mano fragments

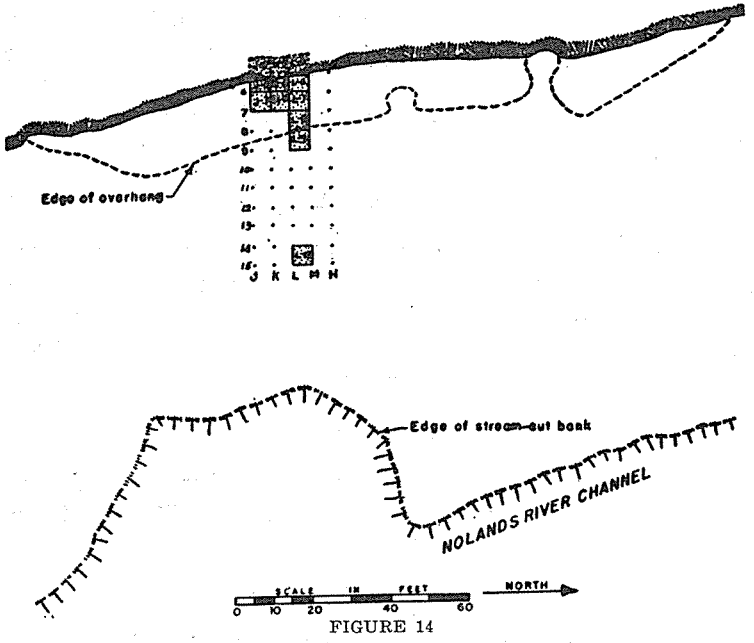

FIGURE 14

Ground plan of Blum site, showing position of rockshelter in relation to eroded edge of terrace to east. Stakes in excavation area shown by dots. Squares outlined are those excavated to date.

were found as follows: in Stratum 2, three slab and five mano fragments; in Stratum 1-2, two slab and five mano fragments. As nearly as could be determined from the pieces, the grinding slabs had been subjected to rotary, rather than back-and-forth, motions during the grinding process.

Hammerstones

Three hammerstones were found in Stratum 2, four in Stratum 1-2. All are waterworn pebbles which show evidence of battering around the edges.

Pigments

Small pieces of hematite, probably used for body paint, were found in all occupation levels.

Bone Awls

Fourteen sharply pointed bone awls with highly polished blades were recovered from Strata 1, 2, and 1-2. All are evidently of deer bone, two of them retaining a portion of the articular surface of a joint at the base. One, fashioned from a bone splinter, has a rough unworked base. The other eleven are too fragmentary for complete description.

Deer Ulna Flakers

Eleven flaking implements made from deer ulna were found. Five were in Stratum 1-2, six in Stratum 2. The blunt design of the tip and the scratches toward the distal end of the blade indicate that this type of implement was probably used for flint chipping by the pressure method.

Bone Bead

One undecorated, cylindrical bone bead was cut from a long bone of a small mammal. It came from Stratum 2, and is 1 cm. long with a diameter of 7 mm.

Artifacts of Antler

There are thirteen pieces of worked antler, all probably representing implements used for chipping flint by either

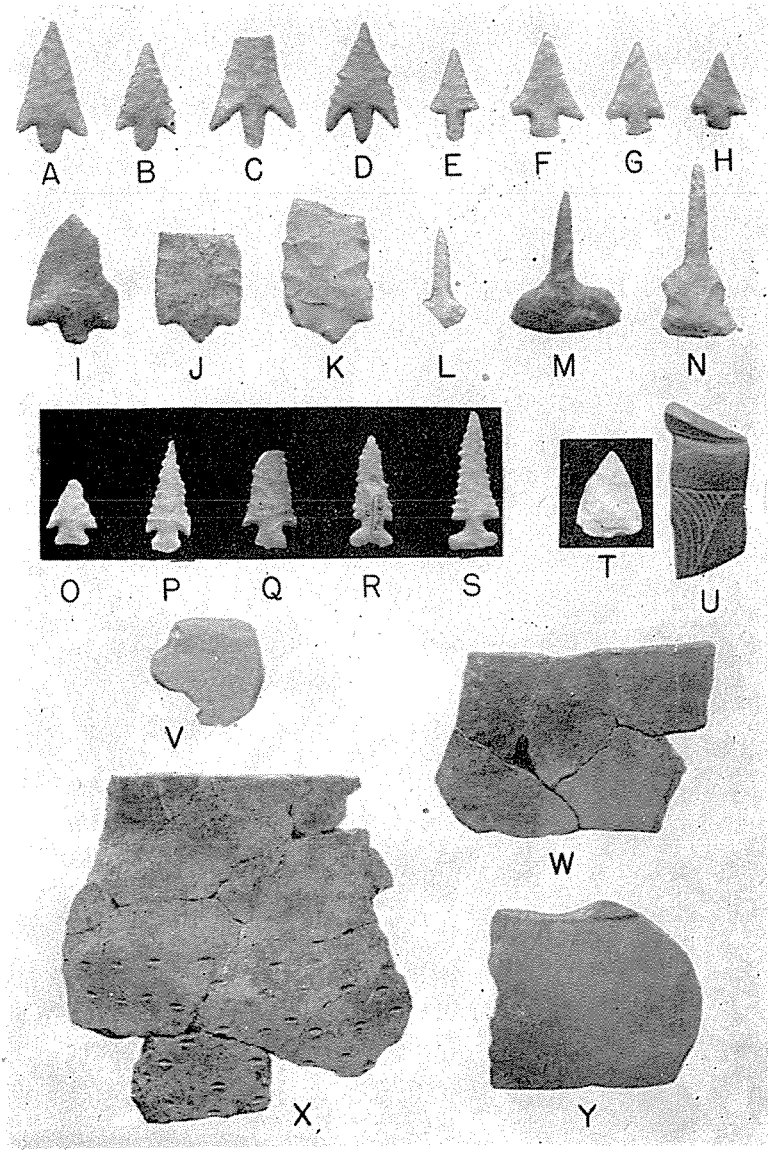

PLATE 19

Representative artifacts from Blum Rockshelter. A-E, Perdiz points. F-H, Alba points. I-K, Cliffton points. L, M, Drills with unworked bases. N, Stemmed drill. O-S, Scallorn points. T, Fresno point. U, Engraved sherd from vessel No. 1. V, Rim sherd from vessel No. 3. W, Rim sherd from vessel No. 2. X, Rim sherd from vessel No. 4. Y, Sherd with faintly engraved pendant triangles from vessel No. 5. Size ½, except X, ¼.

pressure or indirect percussion. The distal tips are blunt and have been smoothed and polished. Three specimens are between 11 and 12 cm. long and may be almost complete; the rest are small fragments. Four are from Stratum 1-2, the others from Stratum 2.

Ceramics

Eighty-eight potsherds, representing at least five and perhaps six or seven vessels, were found. All are from the upper portion of Stratum 2 in association with *Perdiz* and *Cliffton* arrow points. No pottery was encountered below the *Perdiz-Cliffton* zone.

Only a single sherd (Plate 19, U) of Vessel 1, a bottle, was found. It is a thin, hard, dark gray, polished ware with clay temper. An engraved design of panels composed of concentric curved lines is somewhat reminiscent of the Titus Focus type *Ripley Engraved.* The lines contain traces of red pigment.

Vessel 2, represented by 15 sherds, was a simple undecorated bowl, dark gray in color (Plate 19, W). It is clay-grit tempered, with a sandy texture, and the paste is relatively hard. A heavy coating of burned grease suggests use as a cooking vessel.

The four sherds of Vessel 3 are light tan in color, tempered with clay lumps and small particles of bone (Plate 19, V). Like Vessel 2, it was evidently a small, simple bowl. The exterior is smoothed, and an incised design consisting of inclined parallel lines and light, thin punctates appears below the rim.

Most complete of the vessels is Vessel 4, of which 55 sherds were found. The paste is black and has a decided tendency to crumble. The tempering agent is bone. This was a large vessel with a slightly outcurving rim and a bulging body which is decorated with parallel, horizontal bands of deep fingernail impressions, the uppermost band 9 to 10 cm. below the rim (Plate 19, X). The shape of the base cannot be determined.

There is only one sherd of Vessel 5, a bottle with a crudely executed design of pendant triangles engraved around the shoulder (Plate 19, Y). It is dark gray in color, with a slightly smoothed exterior, and the principal tempering agent is small clay lumps. There are also a few tiny white particles which appear to be bone.

None of the five vessels has been definitely identified as to type, but most or all of them seem to be Caddoan ware. It is safe to assume that all are trade items from the east.

Summary and Conclusions

The entire occupation at the Blum Rockshelter can be attributed to the Central Texas Aspect. A complete absence of European trade material indicates that the shelter was abandoned prior to the time that intensive trade between white men and central Texas Indians began. The fact that a terrace of the Nolands River, 18 feet in thickness, has been deposited over the earliest signs of habitation suggests that the occupation extended over a period of several centuries. That conclusion is strengthened by the quantity of spall material, fallen from the shelter's roof, encountered throughout the excavated deposits. The dozens of carbon samples which were collected should provide accurate dates for the occupation when they are subjected to analysis by the radiocarbon method of age determination. Absolute dating of the material will also contribute to geological knowledge concerning the rate of terrace accretion along small streams in the area.

The presence of Caddoan style pottery in the higher levels is indicative of trade relations between the Central Texas Aspect and peoples to the east. While no pottery was found in the deeper levels, the presence there of arrow point type *Alba* and dart point type *Yarbrough* suggests contacts with peoples in the same direction.

Arrow points with expanding stems, notably types *Scallorn* and *Alba,* in general lay deeper than those with contracting stems (*Perdiz* and *Cliffton*). It will be of interest,

and perhaps of considerable chronological significance, to discover whether or not similar typological stratigraphy obtains at other Central Texas Aspect sites.

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National Park Service
River Basin Surveys
601 East 19th St.
Austin, Texas

A PRELIMINARY REPORT ON THE MORTUARY CAVE OF CANDELARIA, COAHUILA, MEXICO

PABLO MARTINEZ DEL RIO

Introduction

The Cueva de la Candelaria lies about 55 miles northeast of Torreón and 30 miles north-northeast of San Pedro de las Colonias, in southwestern Coahuila. It is reached after a four-hour drive across the dry bed of Laguna de Mayran and then along the rocky bottom of Canyon de Ventanas; a very sturdy type of vehicle is essential. This canyon connects the prosperous, agricultural Laguna bolsón (or basin), with a smaller one, the Bolsón del Sobaco or Bolsón de las Delicias. But whereas the Laguna is nourished by the large Rio Nazas, Mexico's counterpart to the Nile, which rises far to the west in the Sierra Madre, the Bolsón de las Delicias is nourished only with the very meager local precipitation.

The practically waterless bolsón, in consequence, is unfit for agriculture, which today depends upon irrigation throughout the Laguna region. The bolsón contains a single small settlement, Las Delicias, which owes its name to a tiny permanent stream which springs from the flanks of the adjoining sierra. The bolsón is roughly oval in shape and, according to Maldonado-Koerdell, it is an area of subsidence surrounded by Mesozoic sierras of moderate elevation. The floor of the bolsón is about 3,300 feet above sea level (Plate 20, B).

The cave itself is located about 100 feet above the flat floor of the bolsón (Plate 20, A), on a small hill which forms part of a cluster of similar hills closely attached to the Sierra de la Candelaria, in the southern section of the bolsón. These hills, which are particularly rich in lime, abound in caves, crevices and cracks of all sorts and have not proved too friendly to vegetation, although the surrounding country is clothed with yuccas, ocotillo, scrub mesquite, cactus, lechuguilla and the other members of a typical desert flora (Plate 20, B). Animal life is impressively scarce. A well, pro-

ducing more mud than water, has been dug some two miles away, and there is also a "poza", or basin, about 1,000 feet long and full of a most untempting coffee-colored liquid, at a slightly greater distance. This rimless "poza", with its steep sides slanting down to about 100 feet below the level of the plain, is the largest of several equally puzzling depressions, although the rest are now quite dry. In other days it seems to have provided the Candelaria people with much of their drinking-water, as attested by the large number of small flint artifacts lying within a restricted area (no doubt a work-shop or camp-site) close to the edge of the basin. These are mostly arrowheads and scrapers, a few of them remarkable on account of their strange shape, as if it had been inspired by the thumb-nail. Nowhere did we find traces of dwellings.

The cave was originally reported by Sr. José Sánchez to his employer, Sr. Luis Talamantes, who has proved most helpful throughout. Sr. Talamantes promptly conveyed the information to Lic. Federico Elizondo, the very efficient Director of the Escuela Secundaria y Preparatoria del Estado, at Torreón. Soon some preliminary visits to the cave were conducted by Lic. Elizondo himself, by Prof. Wenceslao Rodríguez, who is the organizer of the School museum, a model in its way, and by other associates. They were able to collect a great amount of material, including many of the objects illustrated in the following pages. Some time later news of the discovery was sent to the Departamento de Prehistoria of the Instituto Nacional de Antropología e Historia, in Mexico City, together with a generous invitation to cooperate with the School in further work on the cave.

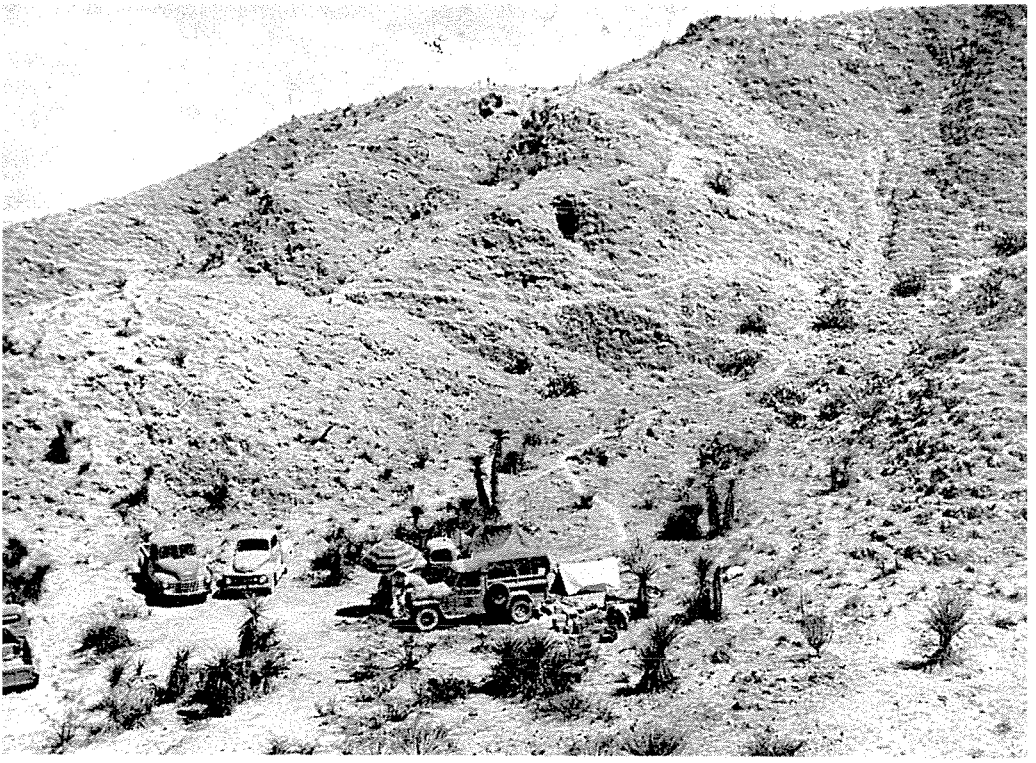
In view of the above, two visits to the cave, each lasting several days, were made by joint parties from the School and the Department. The first visit (March-April 1953) was financed and handsomely assisted by the State and local authorities (Sr. Román Cepeda, Governor of Coahuila; Lic. Rodolfo González Treviño, Mayor of Torreón; Lic. Lucas Haces Gil, Chairman of the Junta de Mejoras Materiales).

The second expedition (September 1953), although largely financed by the Department, also received a substantial grant from the same sources. During the expeditions, the School was represented by Sres. Elizondo and Rodríguez, the Department by Sres. Maldonado-Koerdell, Bernal, Aveleyra, Romano, González Rul and the writer. Aveleyra and Bernal did not take part in the first campaign; Maldonado-Koerdell was absent from the second. The writer wishes to express his indebtedness to several friends and confrères from both sides of the frontier who gave him the benefit of their personal experiences in that part of the world (notably Dr. J. Alden Mason and Dr. Walter W. Taylor), or else helped him in other ways. Dr. J. O. Brew, for instance, kindly provided him with a copy of the field notes of Dr. Palmer, who visited some other caves in this region around 1880 (Report of the Peabody Trustees, 1881) and provided the Peabody Museum of Harvard University with a collection which, to judge from description, is almost exactly a duplicate for our own. Further acknowledgments were all duly set down in a previous publication (Martínez del Río, 1953). Special thanks, however, are due to Alex D. Krieger.

It must be stressed that it has as yet proved impossible fully to study the material in all its aspects, including its implications and possible correlations. A great amount of work remains to be done with the material itself and the early historical sources before the final Report is available. This paper, however, is offered chiefly as an accompaniment to the illustrations, which are reproduced through the kindness of Dr. J. Silva Herzog, Director of "Cuadernos Americanos," hoping that they may prove of interest to fellow-workers in the great Aridamerican field. The larger illustrations are from photographs by Arturo Romano: each of the black blocks represents one centimeter. For the smaller photographs I am indebted to Lic. Elizondo and Prof. Rodriguez.

The Cave

Camp was set up close to the cave, and thanks to a small generating plant we had the best possible lighting, both in



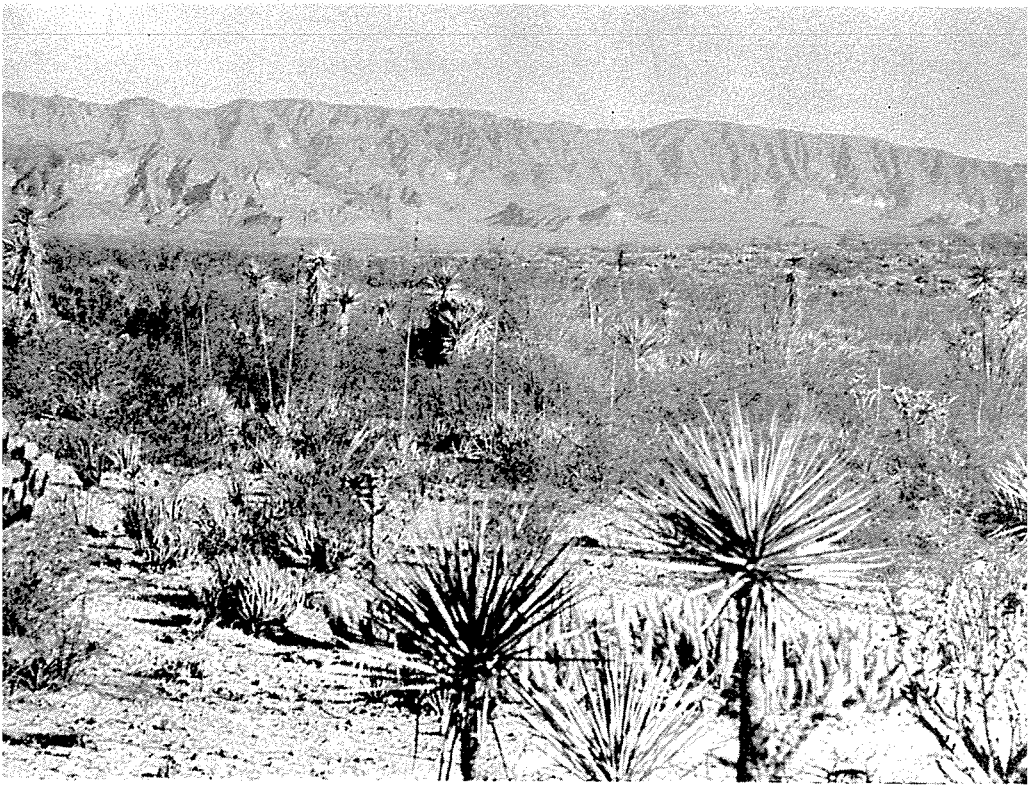


PLATE 20

A, Candelaria Cave mouth on hill slope where men are standing at far right, and camp in center foreground. B, View, of bolsón and vegetation from near the camp.

PLATE 21
Interior of cave with entrance opening at top.

camp and also inside the cave itself. The Candelaria cave was exclusively a burial cave: it could never have been used for human occupation. The entrance is roughly circular and very small, some 4 ft. across: it opens horizontally on to a vertical shaft some 30 feet deep, so that ropes or, better still, a rope ladder, are absolutely essential (Plate 21). At the bottom of this shaft the floor of the cave slants in accordance with the dip of the strata. Some important rock falls have taken place, crushing a certain amount of material; and work inside the cave is fraught with considerable danger. All the same, an almost incredible number of bones and objects of all kinds was collected, some of them in remarkably "fresh" condition in the archaeological sense, though it would hardly meet with the approval of the average housewife. In fact the work inside the ill-ventilated cave was only rendered possible by the lavish use of respirators and deodorizers as the atmosphere, owing to the guano and the effects of human decomposition, was truly nauseating.

The material was in a state of great disorder (Plate 22, A, B). The dead had been placed with knees bent toward the chest and wrapped in fibre-blankets (Plate 22, D), but as the result of decay and other ravages the bundles had been largely torn open and the bones and other contents scattered. Originally many of the bundles had been placed overlying each other, with a layer of cactus leaves, sticks and other bedding between the bundles, but owing to the rock falls and the general confusion stratigraphic work was clearly impossible. A few remains, in fact, had slipped down and hung like stalactites in a sort of secondary chamber underneath. There are other crevices, as yet unexplored.

Skeletal Material

Human remains were found, as already explained, in great quantity, and a large proportion of these, secured during the first expedition, has already been measured and studied by Sra. Faulhaber, of the Department of Physical Anthropology of the Museo Nacional de Antropología in Mexico

City. It would be impossible to reproduce her report and tabulations but a few data, and some of her general impressions, will be of interest. It must be pointed out that work of this nature had been carried out many years ago (Studley, 1884, pp. 233-260) on the osteological remains taken to the Peabody Museum by Palmer and secured, as already pointed out, from caves in this same Laguna region (although quite far from Candelaria) in association with some strikingly similar cultural material.

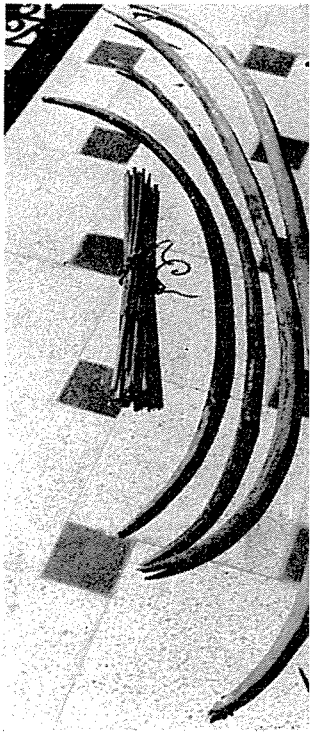
Most of the Candelaria individuals were long-headed: the average breadth-length index for 11 male crania is 74.38. The index for nine of these lies under 74.9; the remaining two were mesocephalic. The average index for 10 female crania was 73.29; five of them were dolicocephalic, the other five mesocephalic.

As regards the height-length index, six males turned out to be orthocephalic, with indices between 70.00 and 74.9. Five proved to be hypsicephalic. The average height-length index for all the male skulls is 74.54. Six of the females were orthocephalic, four hypsicephalic; the average index for the ten is 73.75. Average height-breadth index for the males is 100.14; for the females 100.67. Average nasal index is 49.36 and 51.29, respectively.

Sra. Faulhaber has worked out the probable average stature of the individuals at 166.80 cm. for the males and 156.81 cm. for the females. Thus, in accordance with Martin's classification, the Candelaria people were rather higher than the average, although not actually tall.

The majority of the bones, according to Sra. Faulhaber, suggest healthy individuals, although a certain proportion reveal pathological injuries. She points out that there are no intentionally deformed skulls. The teeth are considerably worn, apparently due to a predominance of hard foodstuffs. There are abscesses in 13 of the crania studied.

Sra. Faulhaber remarks, in short, that the Candelaria folk seem to have been well-developed, and that the individuals were physically strong. Their stature was similar to that of



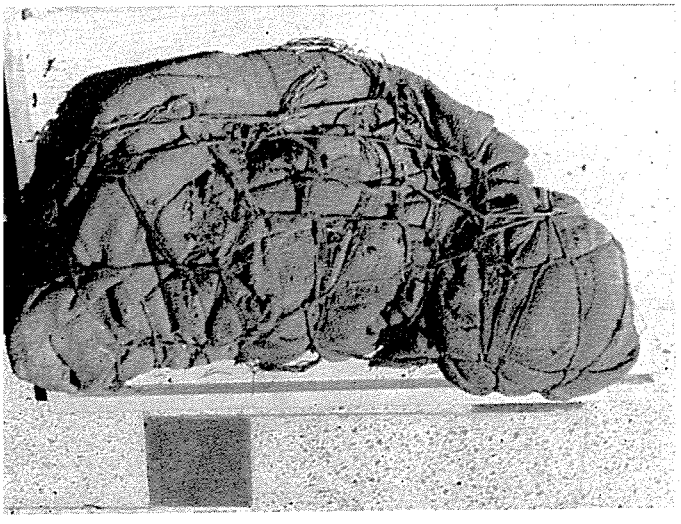
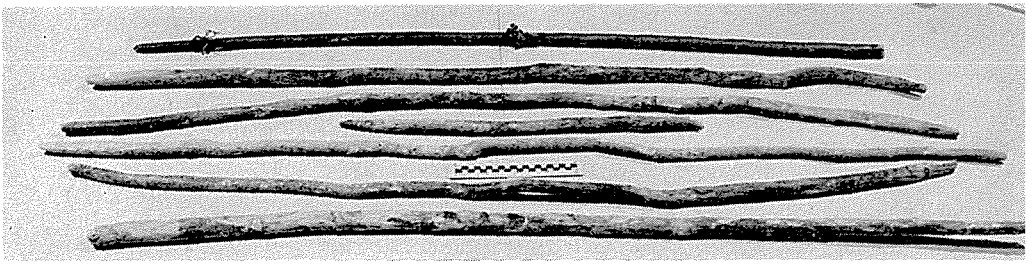
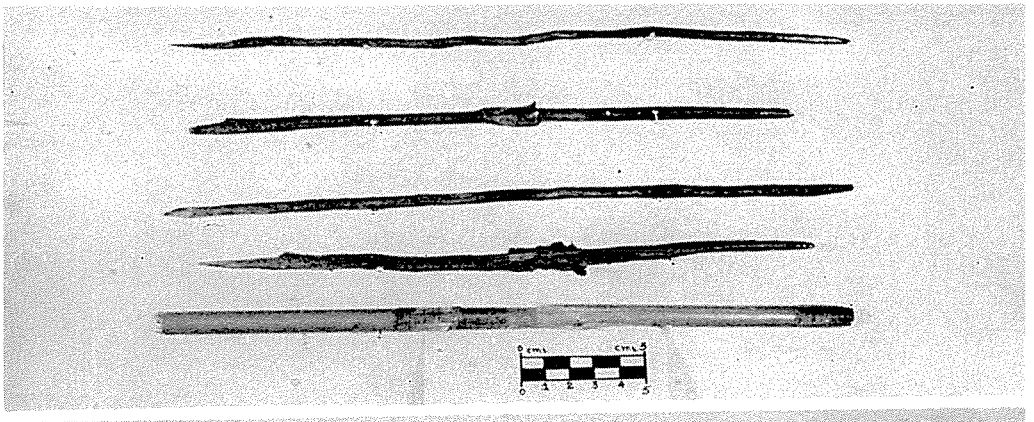


PLATE 22

A, B, Views of masses of artifacts and skeletal remains on cave floor. C, Bows and arrow shafts. D, Wrapped infant bundle.





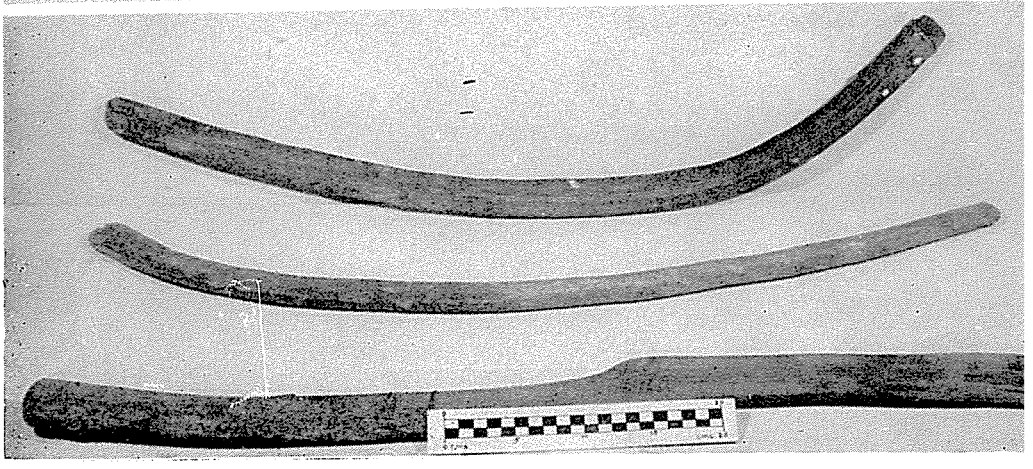


PLATE 23

A, Three skulls showing advanced syphilitic lesions on frontal and facial bones. B, Digging sticks. C, Miscellaneous shafts, including arrowshaft (?) at bottom. D, Grooved "rabbit clubs" or "fending sticks".

the Indians of northern Mexico today, although these, unlike the Candelaria folk, are on the whole mesocephalic. They had narrow foreheads and a large face in proportion to the skull. For the rest, after careful comparison with the data relating to the Peabody material, Sra. Faulhaber thinks that she is able to affirm "that both series represent the same Indian people, since the variations observed in the few crania do not appear to be in excess of normal limits; although it is impossible to state to which particular tribe individuals under study belonged."

More material was secured during the second campaign but this had not as yet been considered by Sra. Faulhaber. For the rest, Dr. Dávalos Hurtado, Professor of Palaeopathology at the Escuela Nacional de Antropología e Historia, points out that several of the skulls show impressive and undeniable symptoms of syphilis in the frontal region (Plate 23, A).

Cultural Material

It must be stressed that the cultural material is still undergoing study: we only returned from the second expedition to the cave some three weeks ago, but it is hoped that the illustrations will afford a good general conspectus. The best collection is in the museum of the Escuela Secundaria y Preparatoria at Torreón, but there is an excellent duplicate series in the Museo Nacional de Antropología, Mexico City.

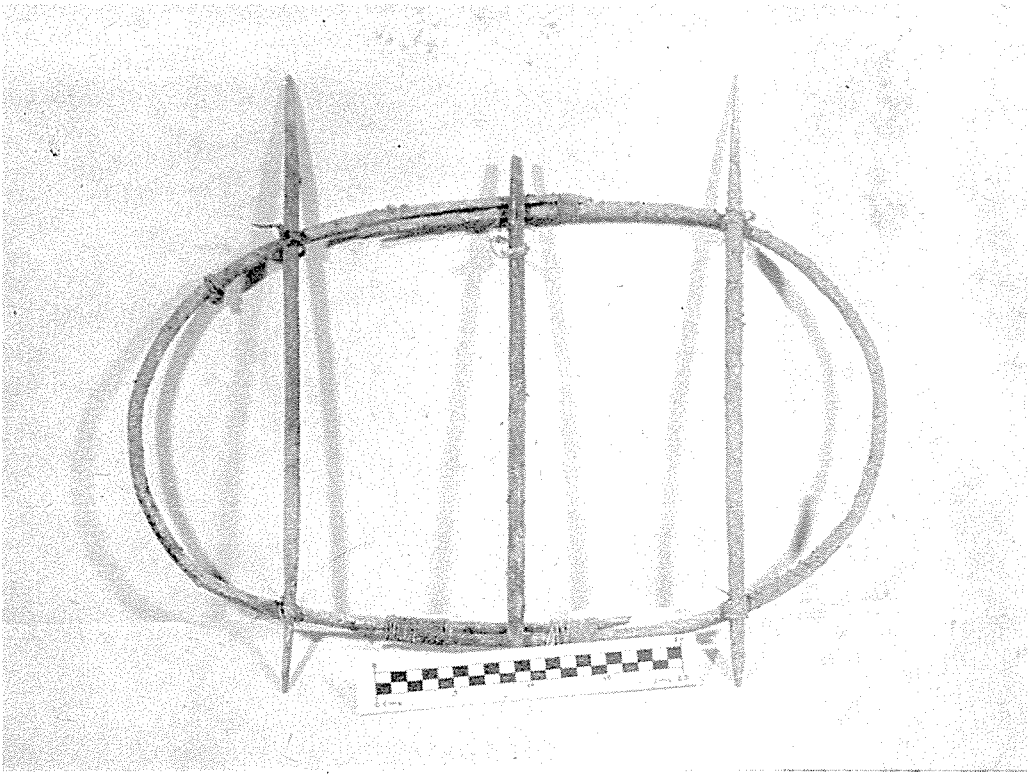
Some of the wooden artifacts are illustrated in Plates 22-24. The digging-sticks in Plate 23, B of course do not attest that the Candelaria people practiced cultivation since, as pointed out by Mera (1938, p. 58) and others, they would have proved useful for uprooting various plants, notably the small agaves which, as all anthropologists are aware, were such an essential part of the diet of the hunting and gathering peoples of Aridamerica (see Castetter, et al., 1938). It is important to note that no traces of edibles of any sort were found inside the cave, nor of grinding equipment of any description.

The number of bows secured (Plate 22, C) was surpris-

ingly small, relatively speaking, and the same holds true of arrowshafts (Plate 23, C). During the second expedition we secured part of a fine bow with a large part of the fiber string and a strip of leather still attached to it. The grooved "rabbit clubs" or "fending sticks" (Plate 23, D) are like those found widely in western Texas and the Southwest. There was no trace of the atlatl or dart-thrower; one is reported (wrongly, I suspect) in the Palmer collection at Peabody Museum, but we have not been able to go into the matter. Our associates had discovered a cradle frame (Plate 24, A), and we found fragments of others.

The knives (Plates 24, B; 25, A-C) might be described as spectacular; they are not only things of beauty in their way but reveal excellent workmanship. A few of the wooden handles are round; others are wide, thin, and flat. Many are attached to the flint blades with asphaltum which may have come from the Gulf of Mexico shores. Krieger has suggested another and much closer source in northeastern Chihuahua, where tar pits are known near Ojinaga. In three cases the knife handle bears round black pits due to its being used as a fire-drill hearth. Steward (1937, p. 75) cites this practice for the Great Basin, where various wooden artifacts were often used as emergency material for fire-drilling. Some of the knife handles are, moreover, decorated with incised designs. One would expect frequent use to blacken the handles and obliterate the designs, hence one wonders whether these knives were of ceremonial nature. That shown in Plate 25, B, for instance, is remarkably frail, and some of the blades are decidedly thin. The flint, of local origin, is at times translucent.

Cotton textile was quite exceptional, a single piece being found. Great masses of other fine textiles (Plate 26) were found, woven with agave fibers. The designs are often polychrome and in assymetrical but pleasing designs, as in Plate 26, B. The number of these "mortuary blankets" is almost overwhelming. Sra. Johnson of the Museo Nacional is going carefully into the question of techniques, and has already called our attention to two fragments (Plate 26, A,



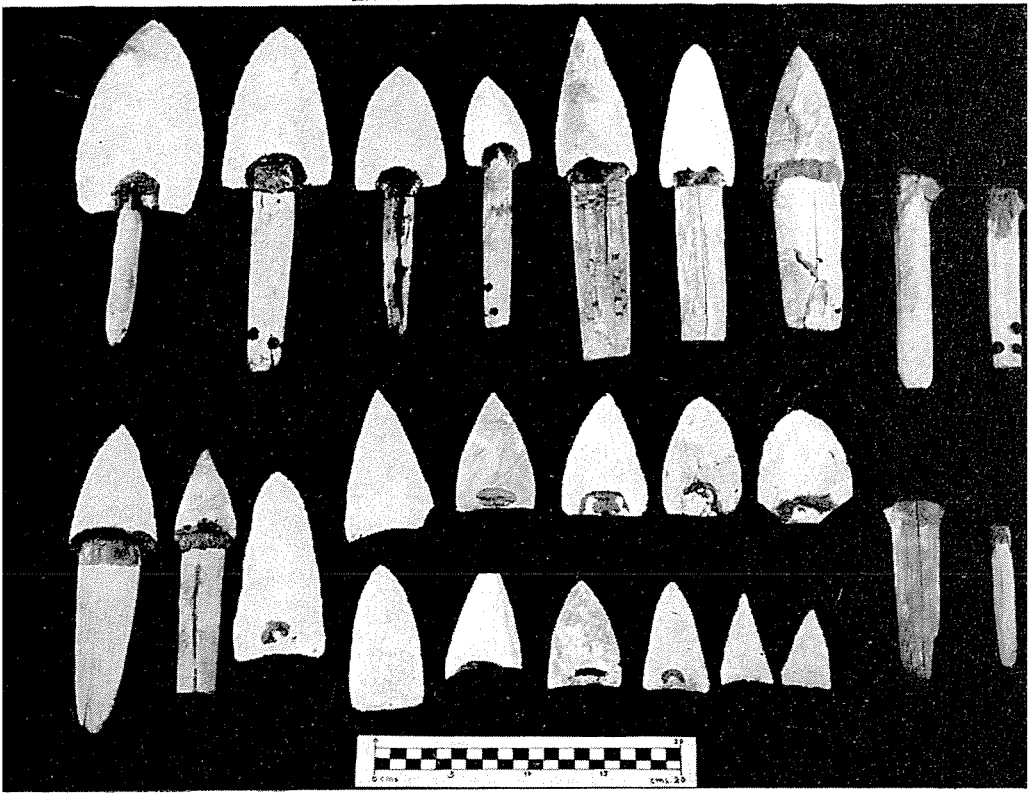


PLATE 24

A, Cradle frame; note sharpened ends of cross-pieces. B, Knives.

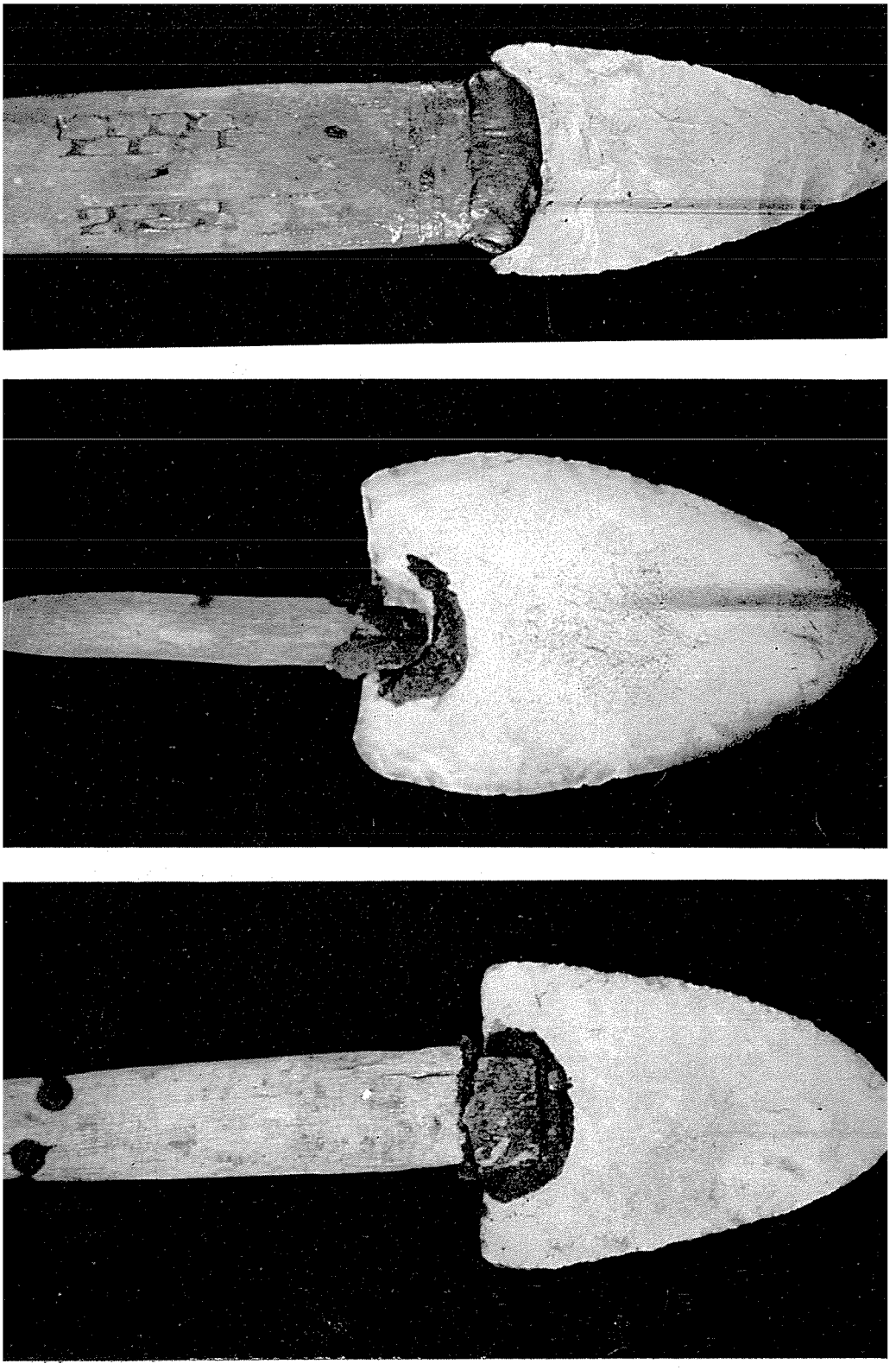


PLATE 25

Three of the hafted knives shown in preceding plate, enlarged to about 2/3 actual size. Length of A, about 9 inches. Note incised decoration on A and two fire-hearth pits in handle of C.

second from left and lower right corner) which are strongly reminiscent of Peruvian weaving methods. A sash-like strip was also found, no doubt resembling those mentioned by Palmer from other Coahuila caves.

Cordage was found in quantity, apparently all of agave fiber. It was present in various degrees of thickness although none of it might be described as "rope" (this point is of importance since the question arose of how the Indians got in or out of the cave without stout ropes). A bundle, largely undamaged, which we opened in Mexico City, proved that the corpse had been provided with a sort of turban. There are also breech clouts (Plate 31, A), a trait found throughout Aridamerica (cf. Haury, 1950, Pl. 40) and some curious tassels (Plate 31, B). Nets were found (Plate 28, B), probably both for fishing and for carrying, although one wonders where the Candelaria people would have fished unless it was in the Laguna basin. Reference must also be made to the round bags of net-like weaving (Plate 28, D). Prof. Rodríguez states that one of these is of a type still in use for catching birds in that part of Mexico. Incidentally, the turban referred to a moment ago must not be mistaken for the grass rings (Plate 28, C) which were placed on the head for carrying loads; a cruder type was made of cedar bark in the Basket-Maker culture in the "Four Corners" area of the Southwest United States (Kidder and Guernsey, 1919, p. 175).

There were many pieces of reed matting, called "petates" and used as sleeping mats even by the more sophisticated tribes of Mesoamerica (Plate 28, A). The twilling is at times diagonal, and many of the fragments are either painted red or decorated with red and green designs. Some of these mats, together with a different type consisting of a large number of thin sticks closely bound together, might almost duplicate a couple of the illustrations in Cosgrove's work (1947, Figs. 106-107) in caves of the Upper Gila and Hueco areas. Similar specimens were likewise present in Tularosa Cave (Martin, et al., 1952, p. 323) and in Murrah Cave on the lower Pecos River in Texas (Holden, 1937, Pl. 10). In so far

as the "petate" mats are concerned, these, of course, may be found over most of Aridamerica and Mesoamerica wherever rushes were or are available (for example, see Cressman, 1942, Figs. 89, 99 for northern Great Basin).

There are many fragments of basketry but only a few complete ones (Plate 27). The coiling technique is clearly shown, and a couple of the baskets had been patched, as, for instance, in the case of Ventana Cave, Arizona (Haury, 1950, Pl. 32). There were plenty of sandals, made in several different techniques (Plates 29, 30). They are mostly of lechugilla fiber and merit an extensive study in view of comparisons with other areas (in western Texas, for example, see Setzler, 1935, p. 107; Smith, 1933, pp. 57-65).

Ornaments were found in great profusion although in many cases the kinds of material used awaits identification. Some of the necklaces and bracelets are still threaded (Plate 33, A, B); they contain beads made of seeds, shell, bone, and stone. The magnificent necklace made of rattlesnake vertebrae tied tightly in place with cords (Plate 34, B), deserves special mention; in this case as in so many others, there are duplicates in the Palmer collection. The curious flower-like objects (or rattles?) reproduced in Plate 32, A, are fashioned out of tiny ringlets of bone tied into bunches with fine cords. Bone also figures in the sharply pointed object at the top of Plate 32, B, and in the two objects in the center of the same photograph, which Prof. Rodríguez ascertained are thorn cases. Some of the shell ornaments are shown in Plate 34, A; the object at bottom center of this photograph is of green slate. We were very fortunate as regards shell ornaments during the second expedition, but they resemble those in the illustrations.

The antlers in Plate 35, A, were no doubt used for ceremonial purposes, presumably dances, as occurred throughout most of the Greater Southwestern area. The small partly mummified dog (Plate 35, B) naturally reminds one of Kidder and Guernsey's discoveries in a Basket-Maker cave in Arizona (Guernsey and Kidder, 1921, Pl. 15).

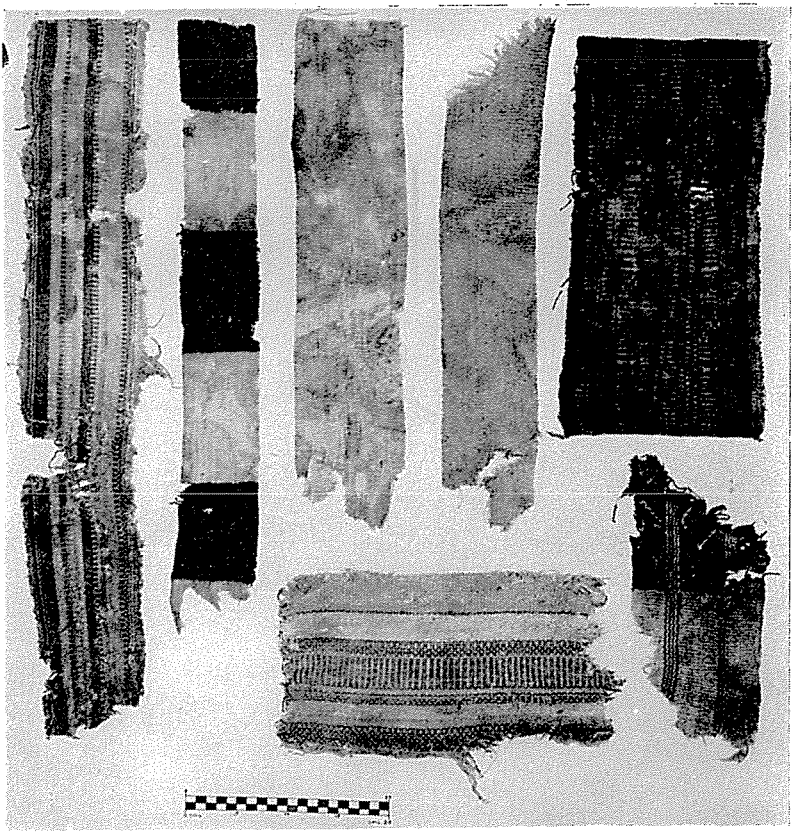


PLATE 26

Textiles woven with fine threads of dyed agave fibers.

PLATE 27

Coiled baskets.

Bone tools were strangely absent, although there was an awl. A number of pieces of deer-skin were found, of different sizes, and there was evidence that the head of a corpse had been wrapped in one of these before being finally enclosed in the usual fiber blanket. Another piece was provided with a simple decorative motif. We found no traces of fur, and the most remarkable piece of human hair was a long wisp which had been coiled around a small reed splint. There was another remarkable find: a human skull with a fragment of fiber cloth rammed into the foramen magnum, strongly suggestive of decapitation.

Our associates had already secured a bundle, intact, containing an infant (Plate 22, D); and during the succeeding expeditions two more were secured, both in the same excellent condition. The bundle of an adult, which had been well preserved down to the waist, revealed that the body had been enclosed in two fiber-blankets, sewn together lengthwise, then wrapped around the corpse and finally sewn, although the part around the head had only been fastened by means of strings. The dead man, as already said, had been provided with a kind of fiber turban, originally dyed red. In this case there were no traces of deer-skin.

As regards stone artifacts, our associates were able to gather well over three dozen inside the cave, mostly small arrow-heads and scrapers, during their earlier visits. During the later expeditions only four were secured, two of them broken. It has been impossible to illustrate these points but Aveleyra, who has studied them closely, reports that this deficiency can be compensated by turning to Krieger's well-known paper (1950, Fig. 8), since they almost always conform to his outlines D, E, H, I, J, K, L, M, N, in section V, at the top of the illustration. Krieger considers that these small points begin to appear from about 500 A. D.

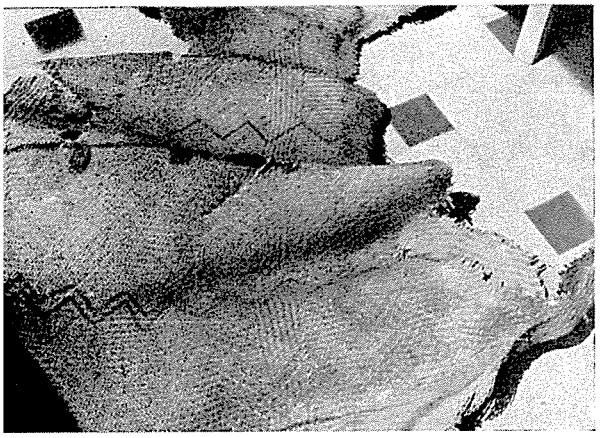
A very large number of similar artifacts were found by Aveleyra and other members of the party close to the "poza" to which reference has already been made, which

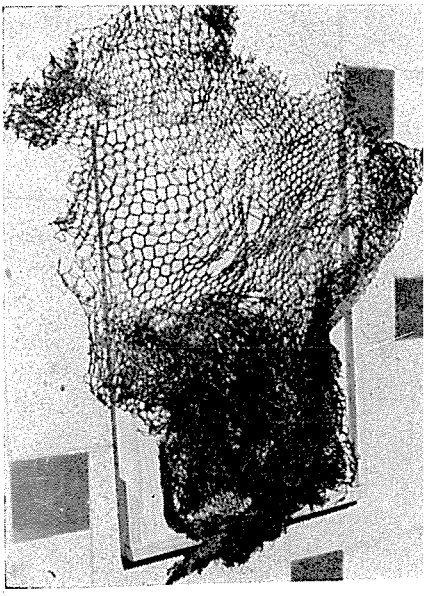
also produced two large fragments of blades. These types are reported associated with pottery (presumably indicative of European activity) at Finisterre, Cerro de Santiago and other sites in this same Laguna region. There is, accordingly, a strong suggestion that they were in use at the time of the first contacts with the Spaniards late in the 16th or early in the 17th centuries.

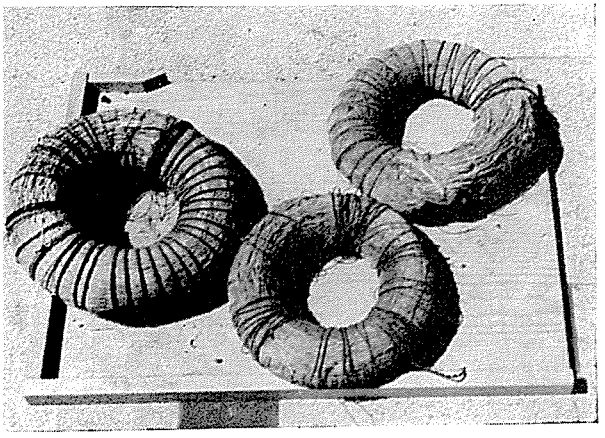
Sr. José Sánchez is said to have reported finding a piece of pottery during his first descent into the cave, but further information is unavailable at this moment. Aveleyra and González Rul discovered a single blackened, primitive-looking potsherd under one of the bundles; they feel sure that it was in situ, but this closes the list as far as the cave is concerned and, for that matter, all the adjoining country. That, however, need not surprise us, since such is the situation throughout the vast north-central Mexican area of which the Laguna region is only a small part. Many crude, coarse, sherds are indeed found in the Laguna itself, such as at Cerro de Santiago, but they are apparently limited to the early mission sites of communities that came into being under European influence, when the missionaries attempted to set the Laguneros on new ways of living. The single sherd in the cave, amongst hundreds of other objects, is still somewhat of a mystery, as is all this question in general, but it does seem suggestive when trying to establish a date for the Candelaria people.

Discussion

Given the evidence provided by the finds, and their relative freshness, it is tempting to consider that the Candelaria people were flourishing at the time of the first contacts with the Europeans, late in the sixteenth and early in the seventeenth centuries. A good deal of ethnological information as to the tribes of all this part of the world at that time is to be found in the writings of the ecclesiastics who either established missions in the region, or else embodied data, based on earlier sources, when writing many years later (Alegre, Arlegui, Mota y Escobar, Pérez de Ribas, etc.). The early "Litterae Annuae" of the Jesuit missionaries,







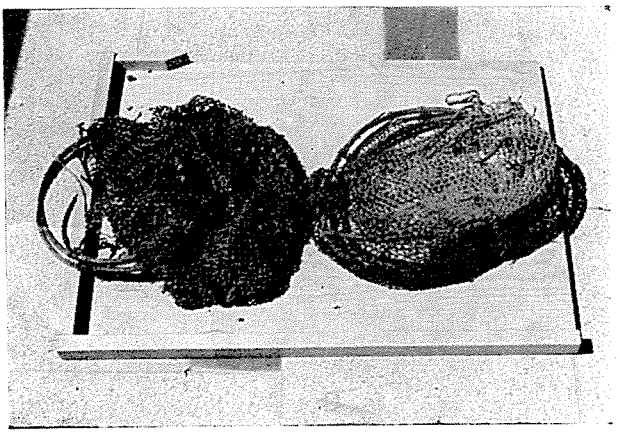


PLATE 28

A, Twilled sleeping mat with painted designs. B, Fine net. C, Three rings of thick grass bundles bound with cordage. D, Two round baskets of loose weave with stick rims.

PLATE 29

Examples of different sandal techniques.

in other words the annual reports sent by the Jesuit missionaries to their superiors (some are transcribed in "Documentos", 1857) are of special interest, and were it not for these devoted men, who may almost be counted on the fingers but shirked no difficulty in their work of conversion of the natives, our information would be of the vaguest, although even thus it is far from complete.

Curiously enough, it can be said in brief that, generally speaking, the written sources neither contradict nor confirm the evidence afforded by the finds. According to the sources, the Laguna tribes (to use the term as also embracing the Delicias basin) were hunters, fishers and gatherers who, at least in part, lived in "rancherías", mostly on the islands in the great lagoon, although no information is given as to the nature of their dwellings, which must have been made of the flimsiest materials. In fact, the term "rancherías" might even be construed simply to imply either a tribe or a community, although the first seems to be the right interpretation.

Did the tribes of the Laguna region practice agriculture? Beals (1932) favors the idea; Kirchhoff (1943, pp. 137 and 144) questions it; and the present writer, frankly, is even more skeptical, although I would by no means refuse to admit a certain possibility. But it seems most unlikely. As already pointed out, the sources tell us specifically that the Laguneros hunted different kinds of game, fished and caught water-fowl in the great lagoon, which also supplied them with certain edible roots which they beat into circular long-lasting cakes; and that they likewise subsisted on the usual desert products: agaves, prickly pears, "mezquitamal", and the rest of them. In point of fact, the documents give us quite a lot of information on this subject of diet, but I have hitherto failed to find a single mention of maize, or for that matter, a single unequivocal reference to agriculture in general. The few references that one encounters merely prove, to the writer's way of thinking, that, thanks to the missionaries, the natives took to cultivation very rapidly. Nor, must one insist, did the cave, with the extremely doubtful

exception of the digging-sticks, provide any evidence on this very important matter. Moreover, cultivation could never have been practiced anywhere near the cavern.

The sources speak a good deal about the use of deer antlers by the natives in their ceremonies, and as already said, we found such antlers, adapted to ceremonial purposes, in the cave, but this is such a common trait that it can hardly be classified as diagnostic. What is more significant is that the sources should make no mention of mortuary bundles or, for that matter, of mortuary caves of the Candelaria type, an ommission that would seem almost inexplicable in the missionaries, who wrote their accounts on the spot and give us all kinds of details regarding the life of the natives and their different practices. This might lead one to suspect that the people of the mortuary caves may have antedated the period of Spanish penetration by a considerable period; in other words, that they may have flourished much earlier; and their cultural status would seem to be in agreement.

As against this evidence, there are, however, the suggested correlations between the pottery and the artifacts, rightly stressed by Aveleyra, and favoring a date roughly coincident with the early contacts with the Europeans, not so many years before 1600 A. D. and a little afterwards. There is also the relative freshness of the remains. What is certain is that the tribes in question cannot have flourished much later, as there would certainly have been some clear evidence to that effect in the mortuary caverns. It is to be hoped that C14 and further research will shed more light on this question.

It is undeniable that in other days a great cultural continuum stretched all the way down from Oregon to Guanajuato and even as far as Querétaro, in Mexico. It has been termed the "Greater Southwestern Area" by American archaeologists such as Martin and his associates (1947, map on end papers) although, to my mind, the area spread much further south into central Mexico than the aforesaid au-

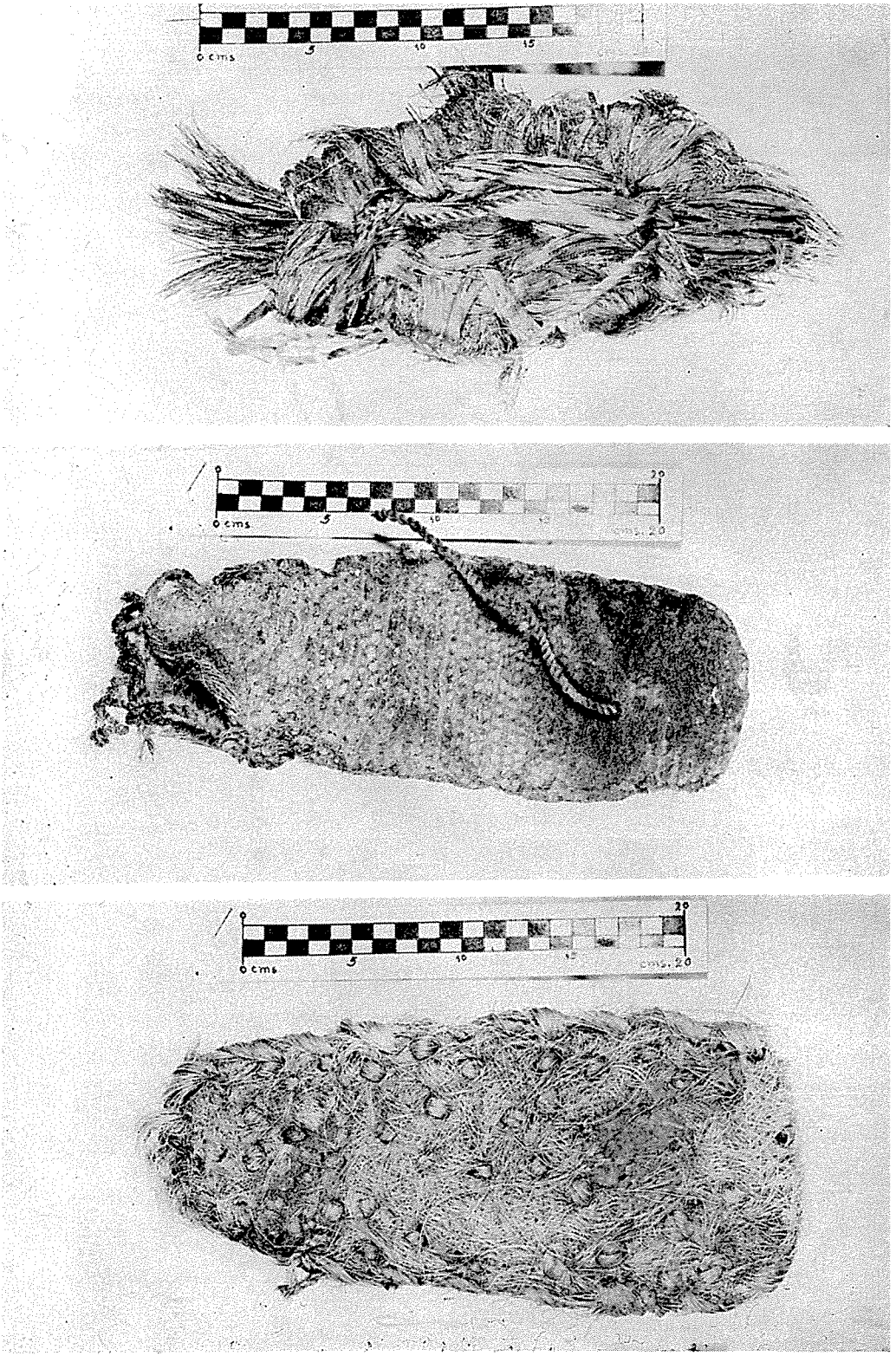


PLATE 30

Examples of different sandal techniques.

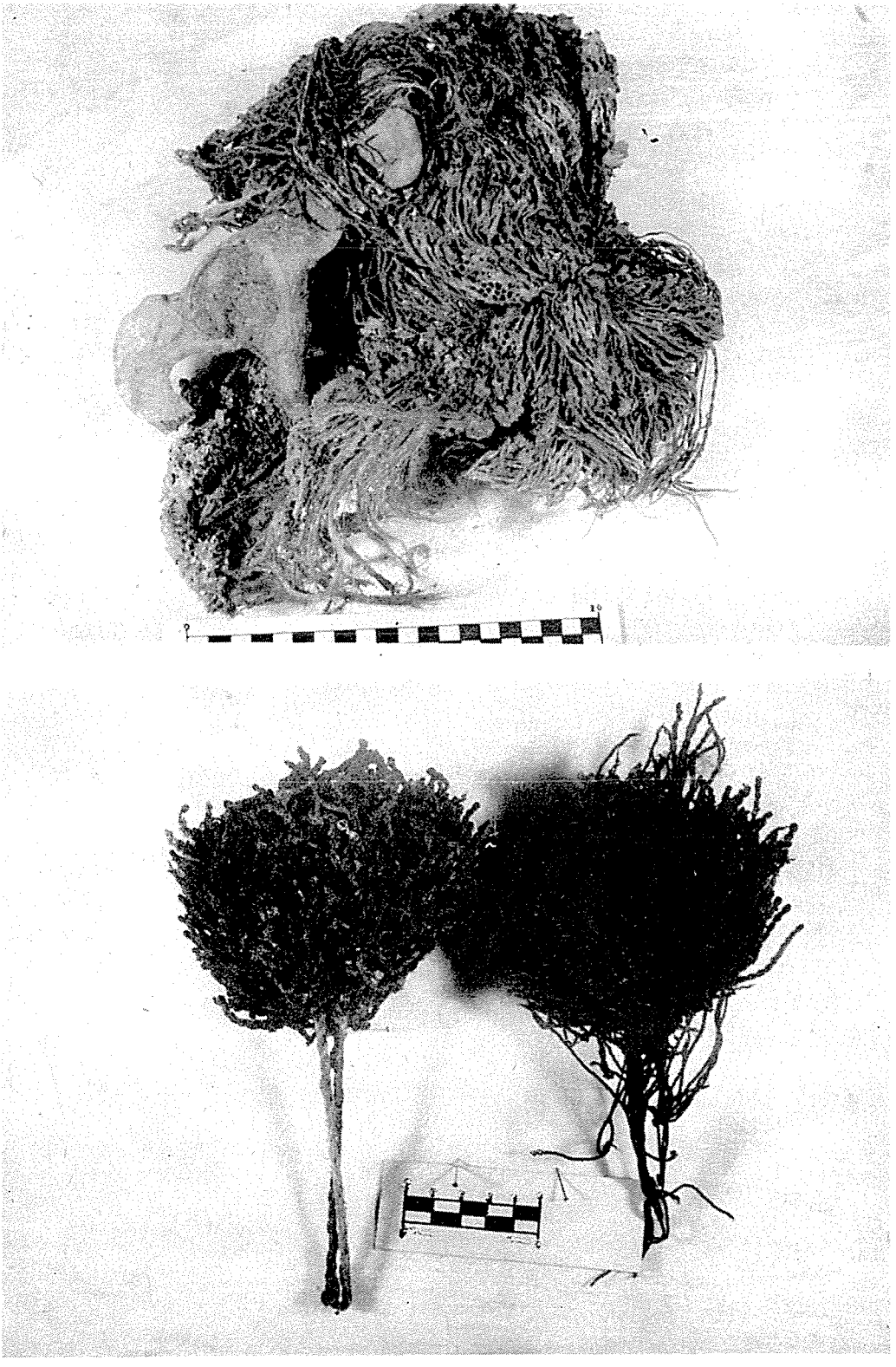


PLATE 31

A, Breech clout of agave-fiber cords and pelvic bone. B, "Tassels" of agave-fiber cords.

thorities suggest. The cultures that flourished within the continuum were strongly differentiated in accordance with local ecological conditions, but they are basically related: in fact, they stand to each other much as the fingers of a single hand. They all have the same "air de famille".

A general resemblance, for instance, could easily be made out between the Candelaria people and the Basket-Makers in spite of what is in all probability a considerable time-lag on the part of the first. Basket-Makers II were, of course, incipient agriculturists so that one would prefer to speak of Basket-Makers I, although these are practically hypothetical. A Basket-Maker "mummy", apparently at the Peabody Museum and illustrated by Miss Wormington (1947, p. 30) might, at first sight, be taken for one from the Candelaria cave, and the same holds true of some of the objects shown by Kidder and Guernsey in their well known reports.

But these first impressions have to be qualified immediately. The Candelaria blankets, unlike the Basket-Maker, were not made of fur: in fact, I repeat that no traces at all of fur (or of bark) were found inside our cave. The similarities, in other words, lose in sharpness of definition the closer one studies them, and turn out to be generic rather than specific, whereas divergences are often clear and straightforward. For example, one may refer to the fundamental differences in the type of burial between the Candelaria folk and the peoples of Southwestern Texas or of the Sierra Madre, although they did not lie so far away geographically. In brief, notwithstanding the basic relationships to which we have referred, the culture of the Candelaria people has a character all its own which sets it distinctly apart: it most certainly merits the greatest attention.

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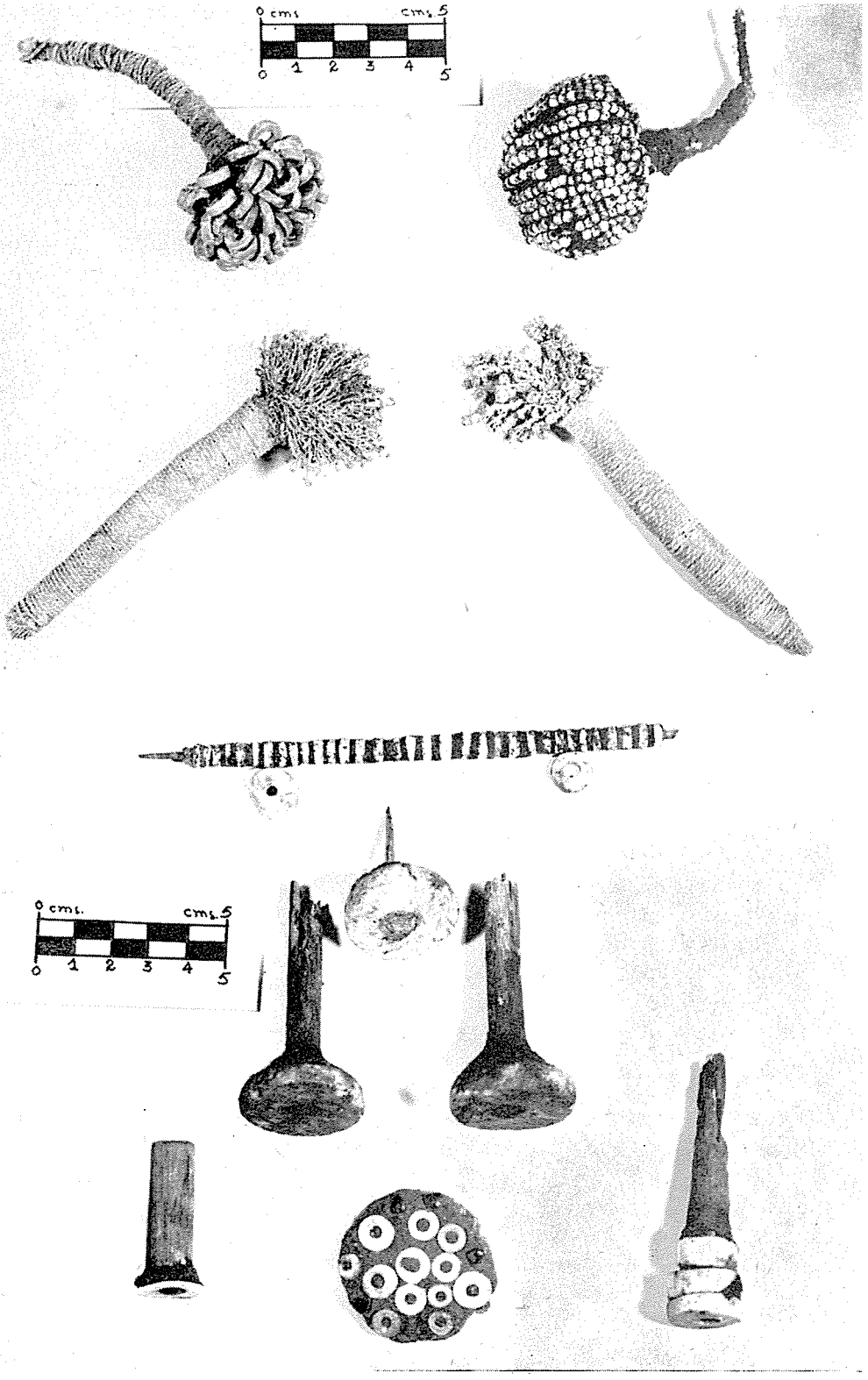
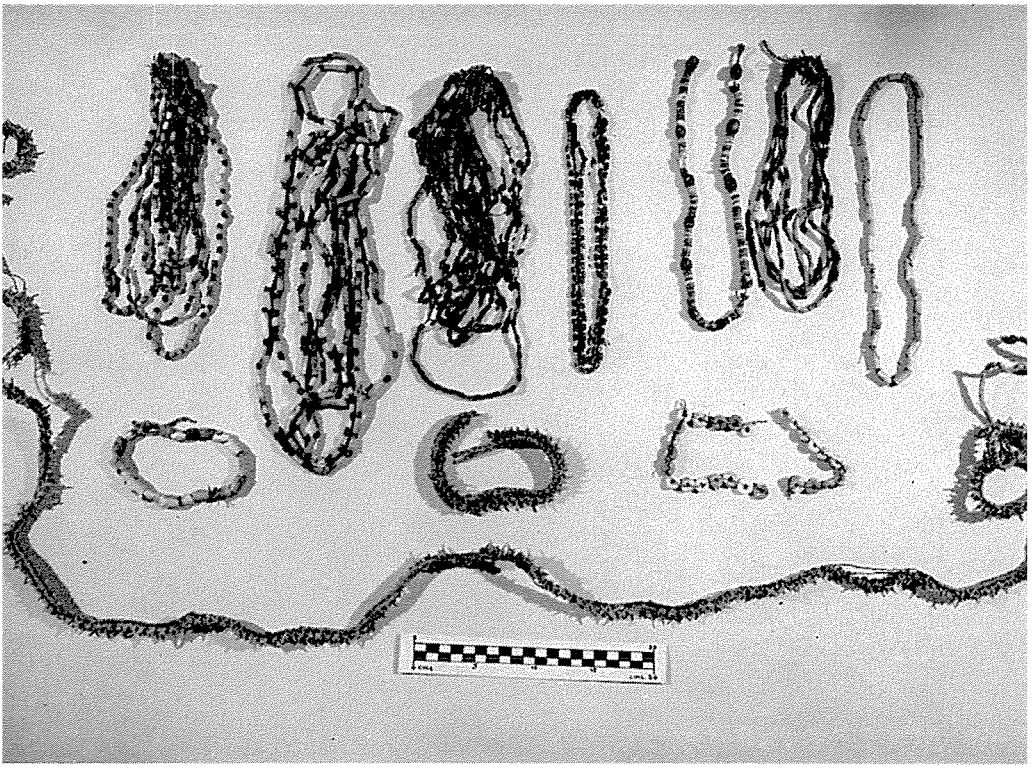


PLATE 32

A, Ornamental objects and rattles (?) of tiny bone ringlets bound with cords. B, Miscellaneous objects of wood, bone, and shell; note beads at bottom set in asphaltum.



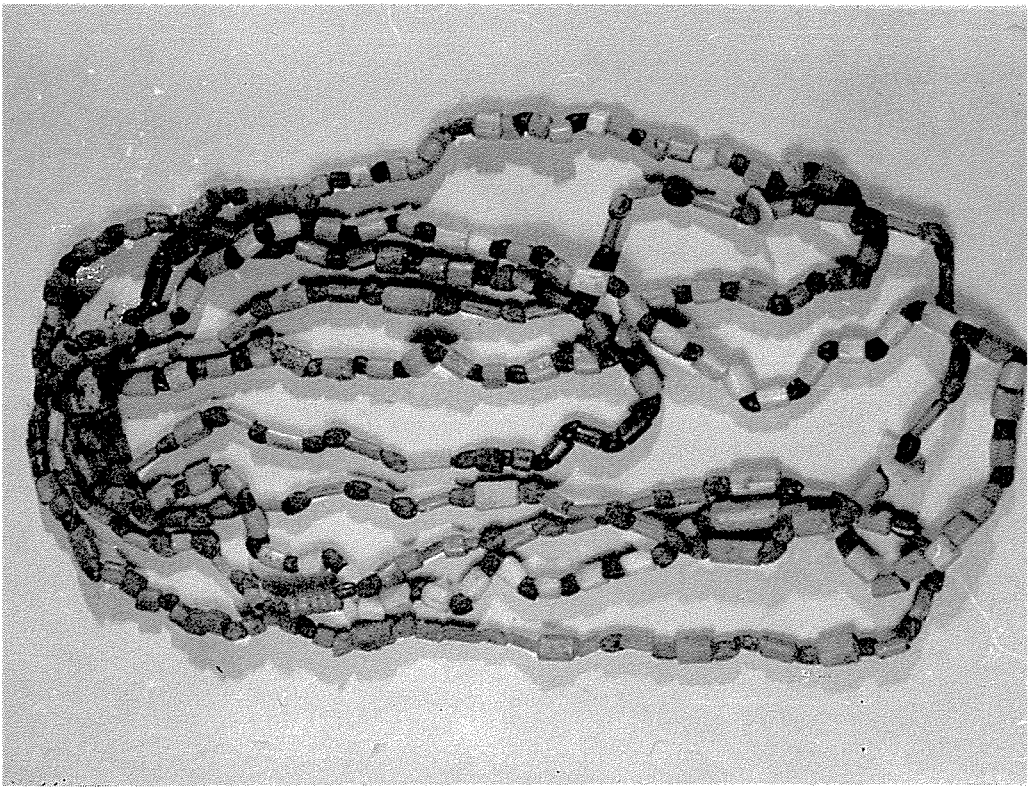


PLATE 33

A, Necklaces and bracelets of stone and bone, including snake vertebrae. B, Necklace of bone and stone beads.

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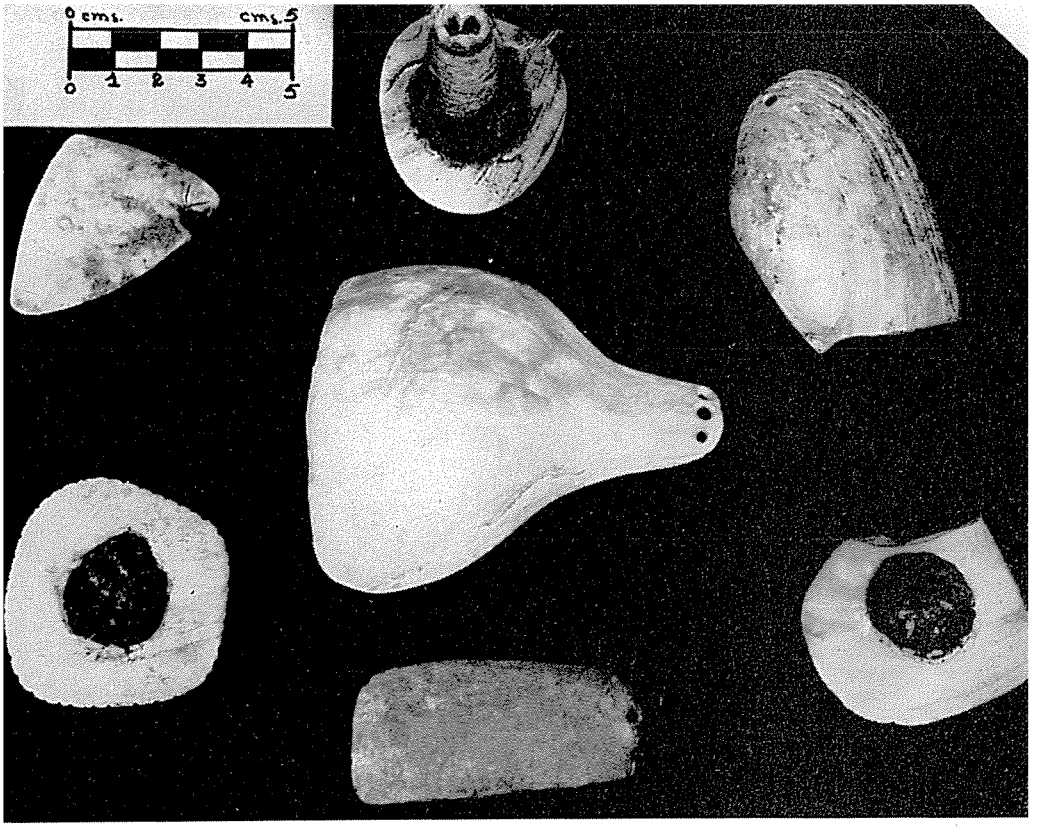

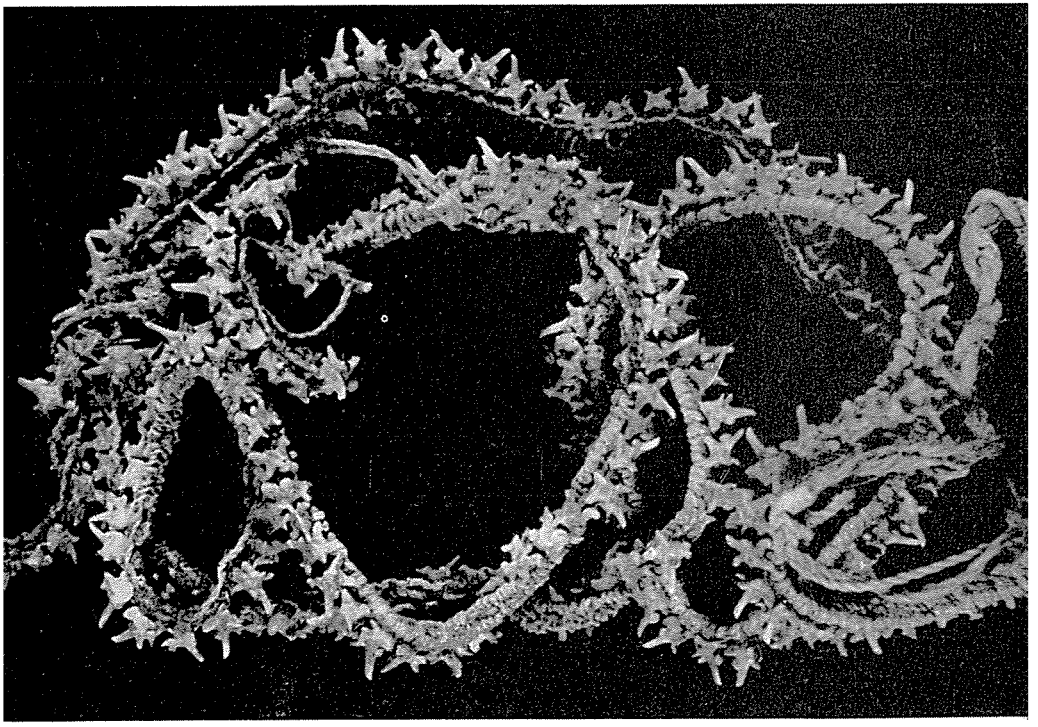

PLATE 34

A, Shell ornaments; note use of asphaltum. Object at center bottom is green slate.
B, Necklace of rattlesnake vertebrae held in place with fiber cords.

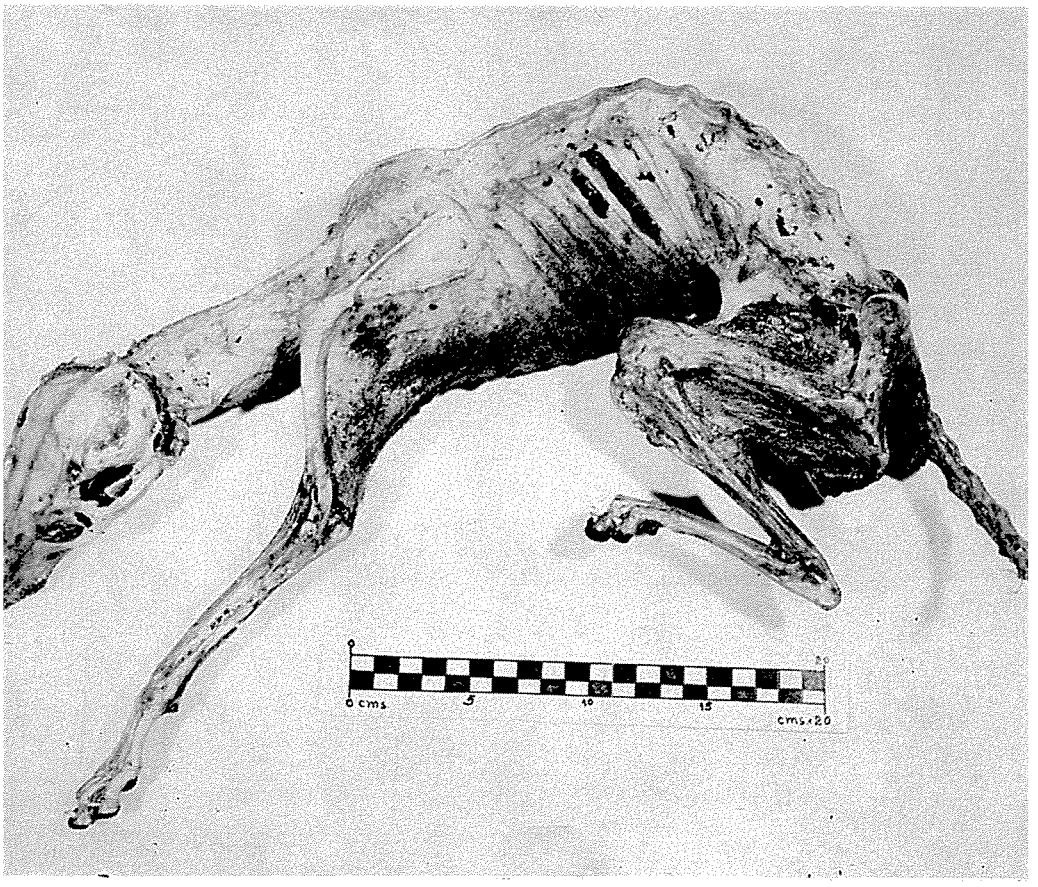

PLATE 35

A, Deer antlers of ceremonial use. B, Dried body of skinned dog.

NEWS NOTES

THE 1952 ANNUAL MEETING

The twenty-fifth annual meeting of the Society was held in Room 119 Fondren Science Building, Southern Methodist University, Dallas, on November 1, 1952. On the preceding evening a get-together at the home of Mr. and Mrs. R. K. Harris was much enjoyed. The following papers were presented in the morning, while the afternoon was given over to discussion topics suggested by members previously.

"Excavations at the Morris Site, Cherokee County, Oklahoma," Dr. Robert E. Bell, University of Oklahoma.

"Excavations at the Bonnell Site and on the Gallo River, New Mexico," Dr. W. C. Holden, Texas Tech College.

"Some Material Culture Elements Common to the Southwest, Northern Mexico, and the Southern Plains," Charlie R. Steen, National Park Service, Region Three, Santa Fe, New Mexico.

"The Carbon-14 Dating Laboratory at the University of Texas," Alex D. Krieger, University of Texas.

"Excavations in the Falcon Reservoir Basin, Rio Grande Valley," Joe F. Cason, Round Rock.

"Resume of Culture Chronology in the Dallas Area since Glacial Times," Wilson W. Crook, Jr., and R. K. Harris.

Extended discussions were held on the following subjects:

Geological - archaeological correlations and culture dating in Texas.

Projectile-point typology in Texas, E. B. Jelks and Alex D. Krieger, illustrated with Kodachrome slides of about 30 of the best-known types.

Procedures in defining artifact types.

The following day a field trip was made by members and their guests to the Wheeler Site near Carrollton and the East Fork Site, both of which have produced pre-ceramic cultural material serving to link the late Pleistocene cultures with those of the much later agricultural and pottery-making Indians.

At the business meeting, the following events took place:

Report of the Editor, Dr. W. C. Holden.

Report of the Resolutions Committee, Dr. T. N. Campbell, chairman.

Report of the Auditing Committee, A. D. Krieger, chairman.

Vote of thanks to R. K. Harris and Wilson W. Crook, Jr., for making local arrangements and conducting the field trip, and to Southern Methodist University.

Appointment of Floyd V. Studer as chairman of Arrangements Committee for 1953 annual meeting.

Report of the Nominating Committee, Ed B. Jelks, chairman. The slate of new officers offered by the Committee was adopted by voice vote and appears at the front of this Bulletin.

Several ideas for increasing membership were discussed. It was agreed that dues should not be raised, and that, instead, every member should make real efforts to obtain new members for the Society. (The Editor is glad to report that we did obtain many new members in 1952-1953).

CHANGE OF NAME

By unanimous vote, it was decided to change the name of our Society from THE TEXAS ARCHEOLOGICAL AND PALEONTOLOGICAL SOCIETY to THE TEXAS ARCHEOLOGICAL SOCIETY. *Please notify your friends and local libraries.*

THE OKLAHOMA ANTHROPOLOGICAL SOCIETY

The newly-established Oklahoma Anthropological Society announces the following types of memberships and annual dues:

Active	$ 3.00
Contributing	10.00
Sustaining	25.00
Institutional	3.00
Associate (under age 16)	2.00
Life	75.00

Send applications for membership to Roland Scott Hall, Secretary-Treasurer, Oklahoma Anthropological Society, University of Oklahoma, Norman.

The Society has begun the publication of an attractive Bulletin free to all members or obtainable for $3.00. Volume 1 appeared in March, 1953, and contains the following articles on archaeology and ethnology:

"Selected Projectile Point Types of the United States," Robert E. Bell and Roland Scott Hall. (Illustrated, with descriptive notes and general distributions of types).

"The Lacy Site, Garvin County, Oklahoma," John Underhill Oakes.

"Pottery Vessels from the Spiro Mound, Cr-1, Le Flore County, Oklahoma," Robert E. Bell.

"The Oashuns or Dances of the Caddo," Eugene Heflin.

"Report of Excavations in the Eufaula Reservoir," Charles Proctor:

"The Brewer Site: A Preliminary Report," Lathel Duffield.

We need hardly add that members of the TEXAS ARCHEOLOGICAL SOCIETY have always enjoyed close cooperation with both professional and amateur archaeologists in Oklahoma, that many of them belong to our Society and have contributed excellent papers to our Bulletin, and that we can all derive a great deal of mutual benefit by becoming members of THE OKLAHOMA ANTHROPOLOGICAL SOCIETY.

BOOK NOTICES

The following recent publications will be of interest to members:

EARLY MAN IN AMERICA: A STUDY IN PREHISTORY. By E. H. Sellards. Order from University of Texas Press, Austin. $4.50. Contains early man sites listed by states and countries, numerous drawings of artifacts, and sketches of Pleistocene animals as they looked "in the flesh", by Hal Story.

LA VENTA, TABASCO. A STUDY OF OLMEC CERAMICS AND ART. By Philip Drucker. Bureau of American Ethnology, Bulletin No. 153. Order from U. S. Government Printing Office, Washington, D. C. $1.25. The article by Robert Greengo in our last Bulletin discussed the Olmec problem at length but contained no illustrations. Drucker's publication contains 66 plates illustrating the very important sites and artifacts from La Venta, detailed descriptions of the artifacts and great stone heads, and further important discussions.

MOGOLLON CULTURAL CONTINUITY AND CHANGE: THE STRATIGRAPHIC ANALYSIS OF TULAROSA AND CORDOVA CAVES. By Paul S. Martin and others Fieldiana Papers in Anthropology, Volume 40, Chicago Museum of Natural History, Chicago, Ill. This large volume of 528 pages brings together the detailed data on Mogollon Culture in western New Mexico and eastern Arizona, has many charts, graphs, and photographs. The perishable artifacts found in excellent preservation in the New Mexico caves are of special interest, as is the discovery of over 30,000 corn cobs from Tularosa Cave.

AN ARCHEOLOGICAL SURVEY OF THE ADDICKS DAM BASIN, SOUTHEAST TEXAS, by Joe Ben Wheat, and INDIAN SKELETAL REMAINS FROM THE DOERING AND KOBS SITES, ADDICKS RESERVOIR, TEXAS, by Marshall T. Newman. These articles appear in RIVER BASIN SURVEYS PAPERS, Bureau of American Ethnology, Bulletin 154. Order from U. S. Government Printing Office, Washington, D. C. $1.75. These reports give the excavation details and illustrate the artifacts and skeletal material from the Addicks Reservoir Basin west of Houston in Harris County, the field work having been done in 1947. The same Bulletin contains two important papers by Waldo R. Wedel on the whole Missouri Valley archeological salvage program, another by Herbert W. Dick on the excavation of two rock shelters near Tucumcari, New Mexico, and another on the geology of these sites by Sheldon Judson.

THE SPIRO MOUND. By Henry W. Hamilton, with a Preface and an interpretation of the place of Spiro in Southeastern Archaeology by James B. Griffin. The Missouri Archaeologist, Volume 14. Order from the Missouri Archaeological Society, Switzler Hall, University of Missouri, Columbia, Missouri. $3.00. This is a compilation of the vast amount of archaeological material taken from the Spiro Mound in eastern Oklahoma by commercial excavators in the 1930's and now located in many places. Heretofore it has been almost impossible for archaeologists to get any idea of the riches of the central tomb in this mound. There are 152 photographic plates of artifacts and drawings of the in-

cised designs on conch shells. No archaeologist should be without this striking volume.

THE MISSOURI ARCHAEOLOGIST, Volume 15, Nos. 1-2, 1953. Order from Missouri Archaeological Society as above. This publication is of great value to amateurs who wish to know how to record different kinds of archaeological sites, describe them, catalog the specimens, etc. There are four sections: THE MISSOURI ARCHAEOLOGICAL SURVEY, by Carl H. Chapman; ARCHAEOLOGICAL PHOTOGRAPHY, by T. M. Hamilton; HOW TO DRAW ARTIFACTS, by Eleanor F. Chapman; and EXTINCT RIVER CHANNELS AS A METHOD OF DATING ARCHAEOLOGICAL SITES IN SOUTHEAST MISSOURI, by Edward G. Scully.

THE KARANKAWA OF THE TEXAS GULF COAST. By Richard P. Schaedel. Southwestern Journal of Anthropology, Volume 5, No. 2, 1949. $1.00. Order from University of New Mexico Press, Albuquerque. This is a convenient and easily obtained summary of knowledge on the history and ethnology of the Karankawa tribes, the only previous study being that by Gatschet in 1894.

THE BIDAI INDIANS OF SOUTHEASTERN TEXAS. Andree F. Sjoberg. Southwestern Journal of Anthropology, Volume 7, No. 4, 1951. $1.00. Order as above. Information on this tribe has always been very scarce and the present paper summarizes what is known.

LIPAN APACHE CULTURE IN HISTORICAL PERSPECTIVE. By Andree F. Sjoberg. Southwestern Journal of Anthropology, Volume 9, No. 1, 1953. $1.00. Order as above. The best summary available of this well known tribe that roamed over western Texas and northeastern Mexico, their hunting habits, weapons, implements, social customs, etc.

THE CULTURE OF THE TONKAWA, A TEXAS INDIAN TRIBE. By Andree F. Sjoberg. The Texas Journal of Science, Volume 5, No. 3, 1953. $1.25. Order from T. N. Campbell, Editor, Department of Anthropology, University of Texas, Austin. An extensive study of the several tribes grouped as "Tonkawa" in south-central Texas, their early history and location at several 18th century missions, economy, material culture, and social customs.

THE RIVER BASIN SURVEYS: RECENT ARCHAEOLOGICAL INVESTIGATIONS IN TEXAS, ARKANSAS, AND KANSAS. By Edward B. Jelks. In same issue of Texas Journal of Science mentioned above.

REPORT OF THE SECRETARY-TREASURER OF THE TEXAS ARCHEOLOGICAL SOCIETY

Report for the twenty-fifth year from September 1, 1952, to August 31, 1953.

RECEIPTS

Balance on August 31, 1952	$1,781.16
1952 Dues, 193 @ $5.00	965.00
1953 Dues, 18 @ $5.00	90.00
Sale of Bulletins, 70 @ $5.00	350.00
Sale of Indexes, 76 @ $2.00	152.00
Reimbursement for reprints for articles in Vol. 23	238.00
TOTAL RECEIPTS	$3,576.16

DISBURSEMENTS

Abilene Printing & Stationery Co., printing 300 copies of Vol. 23	$1,156.50
Abilene Printing & Stationery Co., printing 300 copies of Index	366.50
Southwestern Engraving Co., engraving plates for Vol. 23	347.23
Merchants Fast Motor Line, for delivery of Indexes	1.55
Clerical work for Index	175.00
Postage	49.00
TOTAL DISBURSEMENTS	$2,095.78
Balance on deposit, First National Bank, Lubbock, Texas, on August 31, 1953	1,480.38
	$3,576.16

EDWARD B. JELKS,
Secretary-Treasurer.

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