

BULLETIN

OF THE

Texas Archeological and
Paleontological Society

Volume Three
SEPTEMBER
1931

Published
by the
Society at
Abilene,
Texas

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*The editors acknowledge with
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ABILENE PRINTING & STATIONERY
COMPANY in printing this Bulletin
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Original Price \$3.00
Abilene, Texas

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SOME TYPES OF ARCHAEOLOGICAL SITES IN TRANS-PECOS TEXAS

BY HENRY T. FLETCHER

Archeological sites are found at more or less close intervals throughout the Trans-Pecos region of Texas. These sites are of various types depending upon the uses made of them by their aboriginal builders who utilized the limited facilities at hand in their efforts to live. Their chief needs were water, protection, game and plants that provided food. The type and distribution of sites reflect conditions as they obtained at the time of their occupation.

The West Texas Historical and Scientific Society has mapped some two hundred sites, mostly within a hundred mile radius of Alpine, where its museum is located. Many other sites, known to members of the Society and reported by reliable persons, have not as yet been mapped.

Workshops

While most camp sites have workshops in connection with them, sites often occur where rock was worked and no burned rock, ashes, or other evidences of a camp are found. At these sites the ground is usually covered with flakes, chips, fragments of completed points and hammer stones. Occasionally, the materials are wholly from nearby ledges, though usually they are mostly foreign to the locality.

Flint Sources

The Edward's Limestone includes several strata characteristically rich in flint nodules reaching the size of a base ball. The nodules range in color from black, through blue and gray, to pink. An outcropping of Edward's Limestone, in the form of a high bluff, along the south side of Buck and Chalk Draws, about sixty miles southeast of Alpine, contains several dry shelter camps of various sizes. At several points, independent of camp sites, scattered chips and fragments of flint, many with flaked edges, indicate the site of work shops. It is quite probable that the flints were quarried from the nearby bluff.

Some miles to the northwest, a thick bed of red conglomerate, in weathering, yields nodules of flint, chert and novaculite. A nearby lava flow carries numerous geodes of agate and chalcedony. At a number of points in this area workshops are found, the ground being covered with numerous flakes and chips, together with nodules from which they were chipped. Celts, fragments of knives and points, and rude hammer stones are still not uncommon, though these sites have been visited repeatedly.

Hearths

Several small hearths are found at a Site five miles due west of the O2 Ranch Headquarters, forty miles south of Alpine. This site is situated in a flat now cut by numerous shallow gullies. The hearths are circular or oval in shape and are all more or less disturbed by erosion. Several metates and manos were found near them. A large camp site may have once been located here but the burned rock mounds and ashy earth, if ever present, have been covered by alluvium or washed away.

A large camp site lies around Diff Spring. The writer knows of no large hearth unless some of the burned rock mounds at some of the camp sites are hearths.

Mounds

Mounds of several types are found. Most of them are composed of rather well sorted rocks, usually two or three inches in diameter. Charcoal and soil, having the appearance of having been burned, are generally present.

One type of mounds is found along trails ascending talus slopes from valleys to hills. Sometimes, only one mound is present but several usually occur at intervals from the bottom to near the top of the trail. On one trail ascending the Mitchell Mesa, ten miles northwest of the O2 Ranch, there are seven such mounds. They are roughly

circular in outline, some ten feet in diameter, and three or four feet high. The topsoil under the mound, lowest on the trail, yielded charcoal. No artifacts were found at or near any of them. Their uses are problematical. They may have been trail markers; pointers to water; caches; or burials, though the latter is hardly likely as the soil under the mound examined apparently had not been disturbed.

Another type of mound is found in valleys, usually just above the high water mark. They are circular in outline and level on top. They are of burned rocks mixed with ashy earth, and sometimes charcoal. A common size is ten to fifteen feet in diameter and two to three feet high. One at Live Oak Well, on the 02 Ranch, is well preserved and has large bushes growing on it. A few artifacts, including several metates and manos, were found, all typical of the camp sites of the region. At another mound, near Whirlwind Spring, also on the 02 Ranch, several well made scrapers were found.

Between Leoncito Spring and Hovey, about twenty-five miles northeast of Alpine, is a snake or serpentine mound of earth. It is three yards wide, two to three feet high, and about one thousand yards long. It winds through the brush, having some plants growing on it. A corral is situated near the head and any peculiar shape it might have had has been obliterated by the activities of working cattle over a long period of time. The tail describes a circle which nearly closes. A few flints were found at several points. Several large camp sites occur near Leoncito Spring, a few miles away.

Monuments

Monument sites are found on a number of prominent points in the Davis Mountains. The rocks in the monuments are laid without mortar but with some order. Some of them are evidently markers pointing to water as exploration disclosed nothing under them. One, on Mount Livermore, the highest peak in the Davis Mountains and second highest point in Texas, was used as a cache. Mrs. Susan M. Janes, with a party, found 1250 small arrow points, beautifully made and most of them perfect, mixed with the soil under a cairn of rocks several feet high. Mrs. Janes and others think that this cache

was made as a ceremonial. The larger part of this collection is in the Museum of the West Texas Historical & Scientific Society.

Burials

Burial sites are of several types: in dry shelters and caves; on talus slopes and on open high points. The cave and shelter burials are rather common in the Davis Mountains and Big Bend. Mr. E. F. Coffin, of the Museum of the American Indian, Heye Foundation, found burials in Bee Cave Canyon and nearby caves, about seventy miles southeast of Alpine. In one case a skeleton was wrapped in a woven skin basket. In another, the body had been flexed and tied with fiber cords. The Museum of the West Texas Historical & Scientific Society has a burial of an infant taken from a cave near Langtry. It was placed in a woven sack which was folded over and sewed.

The talus slope and open country burials are usually shallow and are indicated by low mounds of rather large stones placed with some care. The mounds are round or oval, the bodies often being buried in a flexed position.

On a flat-top point east of Terlingua Creek, about eighty miles south of Alpine, is a site with a group of eight mounds. They are placed irregularly, the point now being covered with a growth of ocotillo and other shrubs. They have not been explored but are thought to be Indian graves.

Sotol Pits

Peculiar, circular, burned rock mounds are found throughout that part of Trans-Pecos Texas where the sotol, *Dasylerion* sp., is an indigenous plant. The writer noted one of these mounds at the entrance to the Carlsbad Caverns in New Mexico. Mr. E. W. Wilson describes the sotol mounds of the Edward's Plateau in Bul. 2, Texas Archeological & Paleontological Society.

In Trans-Pecos Texas the occurrence of sotol is determined by physiographic conditions rather than the type of the soil. It grows almost invariably on debris covered mountain slopes or rolling or hilly areas representing the cutting of plateaus. Hence,

we find it growing in locales of volcanic rocks as well as those of limestone. This gives us types of sotol pits, the main difference being in the kind of rock of which they are built. In this region they are circular and average ten or twelve feet in diameter. As found today, they are as a rule lower in the center and composed of rocks of rather uniform size. They are generally located some distance from camp sites, often one half mile or more, and near the foot of the hills where the sotol grows. Two miles east of Diff Spring a single sotol pit is on the top of a long point, there being a light stand of sotol at present growing on the slopes nearby. This mound is hidden by a thicket of sumac, that grows in the ashy soil of the pit. The few artifacts found near sotol mounds include metates and manos.

E. W. Wilson, in the work above cited, has described the method of cooking sotol. He quotes F. M. Buckelew, an early traveler, as saying that meal was made from the cooked sotol. This would account for the presence of grinding implements. Another method of eating is indicated by the numerous chewed quids of sotol leaves found in the dry shelters of this region.

Rock Walls

Rock walls were used for shelter in this region. At a number of points in the Davis Mountains walls of rough masonry are found. At one place in Green Valley a room about seven feet in diameter is found having walls two feet high except for a rude opening on one side.

In some places rocks are used to chink or stop openings between large boulders to afford protection against north winds. Remnants of walls are found in many shelters and semi-shelters, indicating the outlines of small rooms, usually circular in shape. In the exploration of the Bee Cave Canyon Shelter, by Mr. Coffin, small circular rooms, with walls of crude masonry laid without mortar, were found practically the whole length of 768 feet.

Irrigation Ditches

At the old Indian Farm, about seventy miles south of Alpine and just north of Agua Fria Mountain, the

remains of a system of irrigation ditches are found. They are in the form of connected low ridges, two or three yards wide, covering several hundred acres of land that slopes southward to Alamo Cesario Creek. The site is too high above the creek to have received its water supply from that source unless it was diverted some distance above and brought down in a ditch skirting the hills on the north side of the draw. It is more probable that the water came from a spring, in the canyon north of the field, now dry or plugged, as some have suggested. There is no suggestion of ditch on the tops of the ridges today, but the two series of parallel ridges, at right angles to each other, preclude the idea that they might indicate natural drainage channels.

When Fort Davis was established in 1854, C. G. Raht, in *The Romance of the Davis Mountains*, says the soldiers reported seeing the Indians irrigating crops by ditches which took water from Limpio Creek nearby. I do not know whether any sign of these ditches are to be seen today.

Mortar Holes

While mortar holes are found at most camp sites, especially those occurring in shelters or on hilly terrain, sites are often found where they are the only sign of previous occupation now to be seen. At a number of sites mortar holes are found singly or in groups: sometimes on rocks at the foot of talus slopes, and sometimes on ledges near gullies or creeks. The kitchen midden mounds that were once probably located nearby have disappeared. Usually no artifacts are found though occasionally a mano or flint fragments are noted.

Trails

Early maps of the region show several Indian trails that were said to have been well marked when first noted by the early travellers west of the Pecos. Parts of these trails are still preserved where they ascend bluffs or traverse rocky terrain. One of these sites is in Middle Canyon passing out of Green Valley to the westward. Near the head of the canyon is a rocky water hole and the site of a camp that has yielded a number of relics. This trail contains several of the rock mounds mentioned above. Near

San Esteben, twelve miles south of Marfa, the trace of a well traveled trail is seen. Here, the travel of countless years has cut deep into the lava in some ten parallel paths, some of them more than a foot deep. This trail was said to have been used by the Comanches in their forays into Mexico.

Battlefield

Five miles east of the O2 Ranch, running east and west, a hill rises some two hundred feet above the Alpine road. The highest point of this hill is called Cottonwood Mesa from Cottonwood Spring in a canyon behind it to the northward. Cottonwood Canyon emerges east of the mesa and contains within its mouth a large camp site. In smaller canyons to the west are sites of smaller camps.

On an area of several hundred acres, lying about a mile southwest of Cottonwood Mesa, many arrow points have been picked up, usually one at a time. No other class of artifact or signs of a camp site have been noted. From the fact that so many weapon points have been found in so small an area, it is believed that a battle was fought here between enemy groups. The inhabitants of the Cottonwood Canyon camps were, probably the defenders.

Dry Shelters

Most dry shelters are accompanied by either characteristics of camp sites, as pictographs, mortar holes, and burned rock and ash heaps on the slopes outside. However, many small shelters occur at distances from other sites. They may have been used as temporary winter quarters for hunting parties. Some are often so small that not more than two persons could find shelter in them and usually have blackened walls and often beds of ashes mixed with wind blown sand. There are numbers of these sites in the Green Valley section.

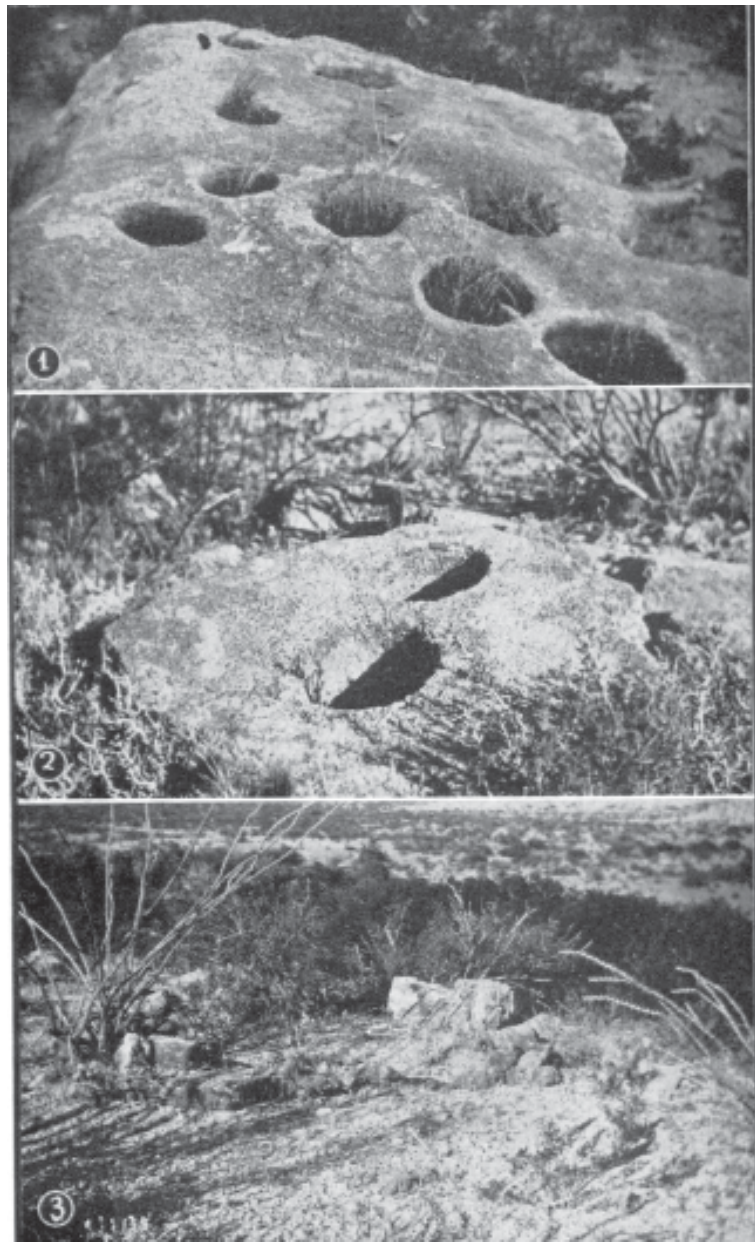


Plate 1
TRANS-PECOS SITES

1. Mortar holes; eroded stone. O2 Ranch.

Camps

Camp sites are, roughly, of four types: sand flat, valley, hill and dry shelter; the differences depending mainly upon topography. We will describe each type briefly.

Sand Flat Camps

Sand flat camp sites are not uncommon in the salt basin region east of El Paso. They were commonly on the shores of the shallow lakes that were often dry. The gradual drying up of the lakes has left many sites some distance from the present shore lines. The shifting of the sands by wind action has partially or wholly covered other sites.

Valley Camp Sites

Valley camp sites are usually found just above the danger of high water and near a rocky point. Sometimes, however, they occur in the middle of wide draws where they must have been subject to overflows. Possibly, they were occupied only in seasons of the year when rains would not be expected. These sites are marked with large mounds of burned rock, mixed with soil that has been blackened with ashes. Artifacts usually occurring include: metates, manos, knives, weapon points, hammer stones, scrapers and numerous chips and rejects. In the Green Valley region an anvil rock of red lava is usually found, especially where ledges of rock are not near. Small hearths occur at many camp sites.

Mounds

The O2 Ranch is situated on a branch of Terlingua Creek, which for several miles is a small running stream of fine water. At close intervals are mounds of burned rock, some oblong in outline and as much as one hundred feet long. These mounds have been flattened out as the draw was subject to overflows until the creek was washed out to near its present dimensions. The mounds commonly bear a more vigorous growth of lote bush, mesquite or creosote bush than the surrounding soil. Two arrow shaft polishers were found near one of these mounds.

Hill Camp Sites

Hill camp sites are of three sub-types: those utilizing a south facing bluff for protection; those having tepee sites marked by circles of boulders; and those built on talus slopes. In each the kitchen mounds are on the south slope of the hill or at the foot of the bluff.

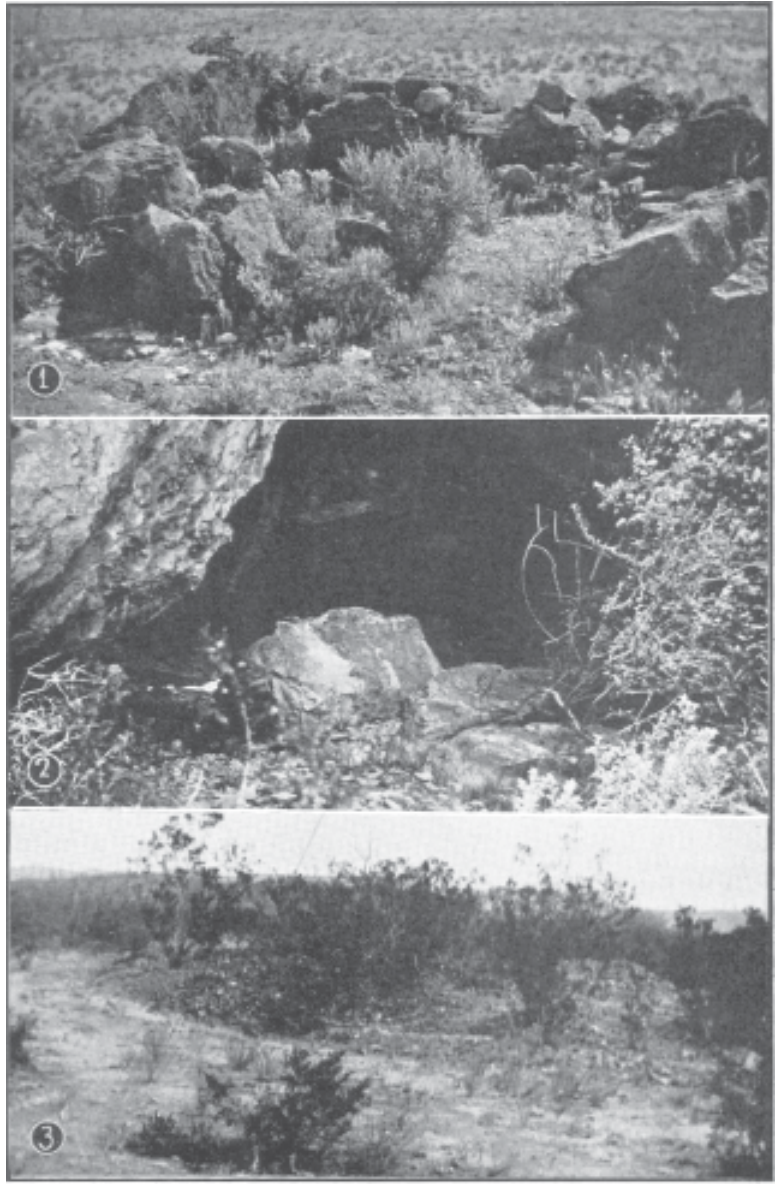


Plate 2
TRANS-PECOS SITES

1. Tepee site, outlined with boulders, O2 Ranch.
2. Small dry shelter near Santiago Peak. In Edward's Limestone.
3. Circular flat top, burned rock mound. Live Oak Well.

On a bench at the east side of the mouth of Cottonwood Canyon is a site with six tepees outlined by red gritty boulders from the ledge forming the hill. There are many mortar holes along the edge of the low bluff making the bench and a great mound of burned rock under the bluff on the south. At one point the bluff forms a semi-shelter several feet deep. Boulders form the outlines of several rooms, probably having been used to weigh down tepee walls. Many artifacts common to camp sites were found.

On the opposite bench is a similar site except that only two or three tepee sites are present. Here, several thin metates were found. The rock from which they were fashioned occurs in thin beds under the gritty conglomerate which forms the bench. Two types of metates are often found at camp sites. One, a thin plaque type of light material, the other often a foot thick and of lava or sandstone. The latter was probably used in situ while the thinner type may have been carried from place to place. In Green Valley the metates were hollowed on only one face. At a camp site three miles south of Alpine, in an oak grove near a small spring, metates were found that were hollowed on both faces.

The mouth of Cottonwood Canyon between the camp sites is dry today, the nearest natural water being at Cottonwood Spring a mile above. Early maps showed a large water hole at this point which was called Ojo de San Aparicio.

Mortar Holes

Three miles north of the O2 Ranch, at the point of a low flat topped hill near the mouth of Diff Canyon, is a mortar hole camp site with hundreds of mortar holes made in the great slabs of volcanic tuffs that have rolled down from the low bluff at the top of the mesa. A small shelter in this bluff has several pictographs, one a perfect, life size, left hand done in cinnabar red. Several mounds of burned rock occur at the foot of the slope and a workshop at the north edge of the camp. Many of the typical camp site artifacts have been picked up here.

Metal Artifacts

The writer found a steel knife blade, four inches long, badly oxidized and with the point broken. It had lugs on each side for fastening to the handle. With a reading glass it was possible to decipher the words PIERRE RAVOLIER. This blade appears to have been hand forged, the name, no doubt, being that of the maker. It probably reached the Big Bend through the connection of Commanche Indians with French traders on the Arkansas or Missouri rivers.

A camp site two miles to the west yielded a flat wrought iron spike, seven inches long, that had been worked to make a rude chisel. At another site nearby a slender steel knife blade was found. It was about eight inches long and was branded with a small anchor.

Dry Shelter

The dry shelter sites vary in size from those providing shelter for not more than two persons to the Bee Cave Canyon shelter, measured by Mr. Coffin, which is 768 feet long and 108 feet in maximum depth. Vol. 6, No. 4, Indian Notes describes the exploration of that shelter. The dry shelters of this region have also been described by V. J. Smith, in Vol. 29, No. 2, The American Anthropologist.

Many shelters occur near Alpine, some of them yielding burials besides the wooden and fiber articles and stone artifacts usually found. Many of them contain pictographs and a few sherds have been picked up.

In the limestone areas of Trans-Pecos many caves occur. Most of them show some signs of occupancy, though only the area near the mouths were occupied. The cave sites often contain burials. Some forty feet back in a cave, six miles southwest of Santiago Peak, two burials were found. The bodies were in baskets laid on poles over a natural vertical shaft that descended from the floor of the cave. The bottom of the shaft yielded nothing of interest.

Pueblos

Very near the Texas-New Mexico line, some thirty miles northeast of El Paso, are the ruins of several large pueblos. The foundation walls of masonry, laid in a brittle gray mortar, are partly or wholly covered by drifting sand.

Water and shelter seem to have been determining factors in the location and type of sites. The larger camp sites are found near permanent water and their occurrence would indicate that a constant supply of water has existed over a long period. Other large camp sites, where no water is now found, indicate that springs have become dry or streams have changed their courses since they were inhabited.

Paint

No quarries, of materials for weapons or pipes, or paint mines have been found. A single paint ball was found in the Bee Cave shelter. It was red and probably derived from cinnabar ore which occurs

in the lower part of the Big Bend. A ball of red paint, four inches in diameter, was found in a shelter in Sunny Glen, west of Alpine, by Ross Smith, son of V. J. Smith. It is now in the Museum of the West Texas Historical & Scientific Society.

Plants

Certain plants make more vigorous growths in the ashy soil of the burned rock mounds of this region. Camp sites, sotol pits, hearths and other sites may often be located by watching for groups of plants larger in size and richer in color than the plants around them. Shelters and talus slope sites may often be located in the same manner, as shrubs, usually found growing in draws or flat terrain, are often found to have adapted themselves to the hillside slopes, because of the changed condition of the soil. It is probable that potash from the ashes, mixed in the soil, causes the increased growth of the flora on the sites.

SOME FLINT SOURCES IN CENTRAL WEST TEXAS

BY E. B. SAYLES

Edwards Limestone

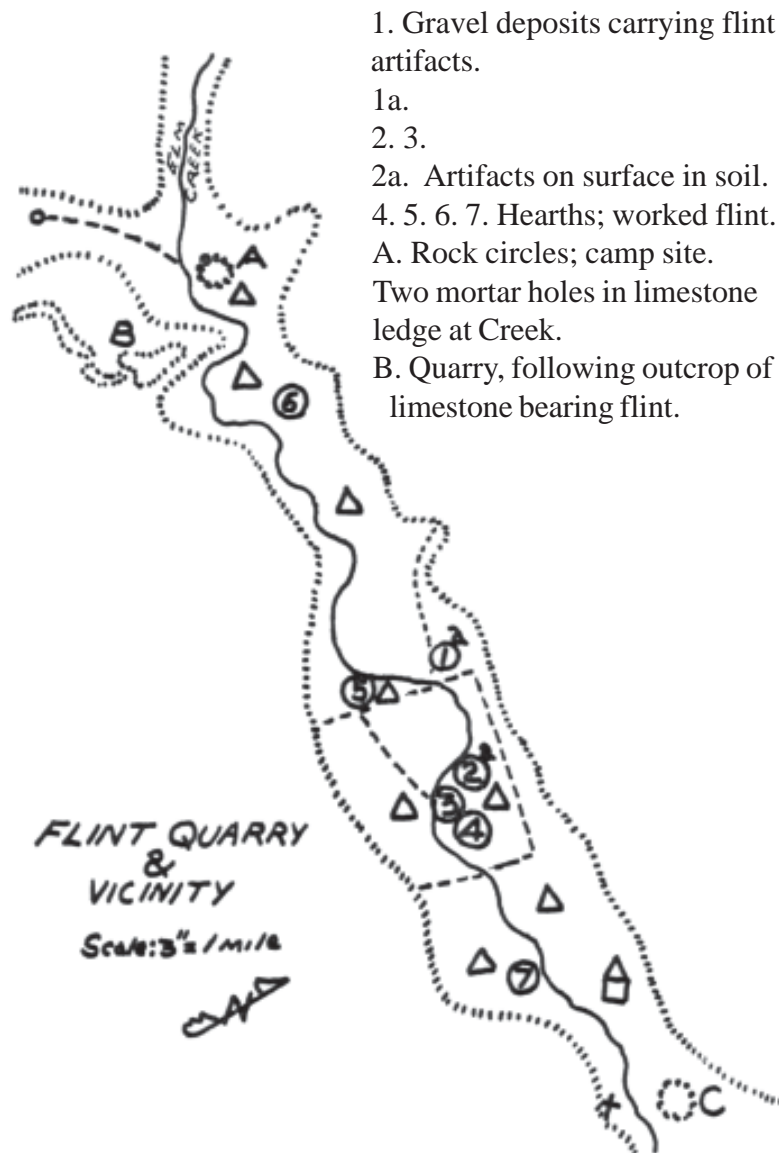
The source of flint of the aboriginal inhabitants of Central West Texas was principally from the limestones of the Edwards Plateau. The flint occurs about the middle of the Lower Cretaceous series and varies in color from a lead or blue slate to nearly black, while some is grey, specked or mottled with lighter or darker colors.

Other strata of this formation carry much cherty material, a great deal of which has eroded out and has been deposited with the flint nodules upon the high gravel hills along streams in this section. This re-deposited material was worked extensively, but apparently was not wholly satisfactory as there are thousands of rejects.

Where the flint has recently eroded out of its limestone bed, many localities show worked material. But this material appears to be hardly more satisfactory than that which was deposited upon the plains, for the rejects are numerous.

The most satisfactory material for working appears to have been that which was taken out of its limestone bed by the users. Evidence of such a quarry exists upon the head of Elm Creek in Taylor County. Through the courtesy of the owner of the land, Mr. K. Stoker, this site has been investigated with the help of Carl Chelf, and a number of interesting things were found.

Figure 1
FLINT QUARRY AND VICINITY



Flint Quarry

First in interest are the flint quarries. For 2450 feet the hillside has been dug up, following the outcrop of the flint bearing stratum, so deeply that even now some of these trenches are three feet deep. A test trench placed across the old ditches showed that the flint bearing stratum was 8 feet deep where

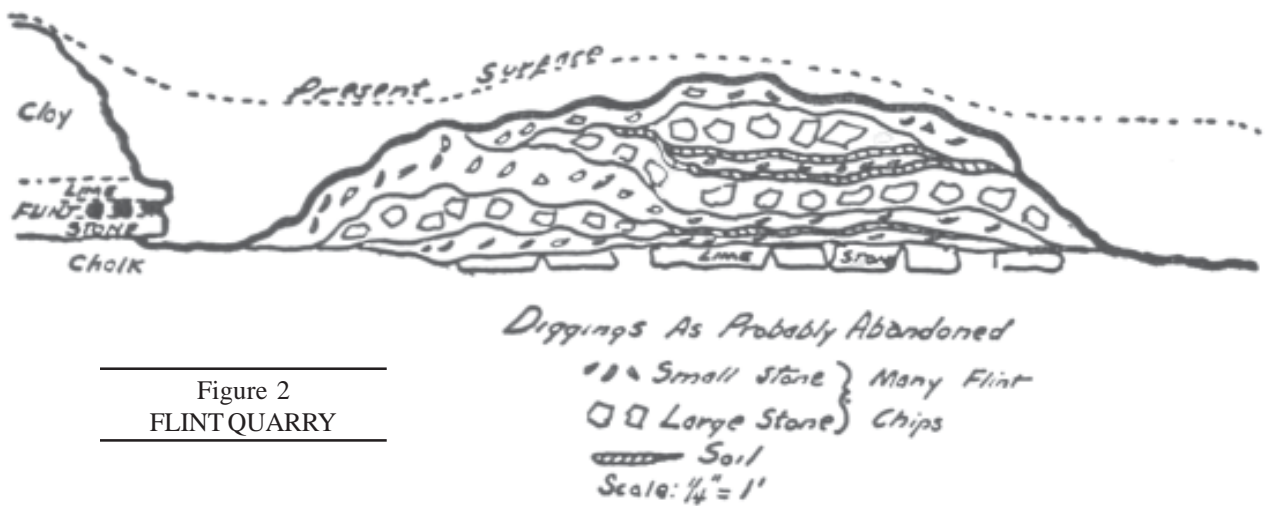


Figure 2
FLINT QUARRY

the digging was abandoned. Much of the diggings may have been just as deep.

The removal of the overlying dirt probably was done by the use of large heavy axe-like flint blades and scrapers, a number of which were found on the surface and nearby, and some in the old ditch where the test trench was dug.

The material from this quarry was taken out in large nodules after the embedding limestone had been broken off by the use of stone boulders. Some of the used hammerstones were found in the old diggings and these were as large as a man's head, and were battered over the entire surface. Then the flint apparently was broken into more or less thin sections, if the great quantity of similar material that lies upon the ground correctly tells the story. Some of this work was done at the quarry site, but more of it at the camps nearby. From these thinner sections, the flint was further worked into large leaf blades. Tons of flakes, and hammerstones, scrapers, hearths and other evidences of occupation nearby extend continuously for at least three miles along Elm Creek. Few other specialized implements have been found on the surface. From the number of fragments of large leaf blades found, it seems that this was as far as the work was carried in the vicinity of the quarry. The same type of artifact is found along Elm Creek for fifteen miles to the east, and to the southeast some thirty miles away, where the same kind of dark flint appears in abundance in the camp sites, together with completed implements of similar material.

Flint Quarry Used by Pottery Makers

Two potsherds of the same buff colored ware that is found elsewhere in this section were found in the camp site close to the quarry. Also other artifacts were found here of forms typical of the pottery sites, and it is likely that this flint was being sought by the pottery users of this area.

Long Use of Quarry

This flint must have been used during a long period of time. Many of the worked fragments are heavily patinated, and at different places along the course of Elm Creek below, artifacts are found in the gravel deposits. Worked flint in place is found at depths ranging from two to five and a half feet below the present ground level. Yet in some of the camp sites the flint is actually on top of the grass, as though it might have been worked but yesterday.

Rock Circles and Rectangles.

In the campsite nearest the quarry is a series of stone circles and rectangles that evidently formed a part of the camp there. The smaller circles of stone are twelve to sixteen feet in diameter, and the rectangles are of similar area. One large circle is about 150 feet in diameter. So far as is known, no other prehistoric remains like them are found in this immediate section.

A similar circle of stones, approximately 300 feet in diameter is found on the eastern extension of the area occupied, and about three miles from the

quarry. This has all the appearance of having once been a low stone wall, such as sheep herders use in building temporary corrals. But from a careful search of the surface and from several test holes, there is no evidence of white occupation or even contact, and so far as it has been possible to verify, no early cattle camps were located in this immediate vicinity.

At this site the soil is filled with flint flakes, down to a depth of 18 inches, while at the site

nearest the quarry, a test hole shows them to extend for nearly three feet below the present surface.

Burial

Across the Creek from the circle of stones to the east, a recent burial covered with stones, was found in a rock crevice. Hair still clung to the skin, and there was a fragment of some utensil of wood. this might represent a Mexican rather than an Indian burial, however. The cranium was found by the discoverer of the burial but unfortunately it disappeared before an examination could be made.

Mortar Holes.

In a ledge of limestone immediately adjacent to the Creek at the camp site nearest the quarry are two round mortar holes.

Probably further investigation of the quarry site will show other points of interest.

Other Sources of Flint

The majority of the flint artifacts found in this section (with the exception of those found in the Sand Dune sites) appear to have been made from the nodules coming from the Edwards limestone. But numerous flint artifacts are found near Abilene that are made of flint that is not known to exist in place here. These are the reds, banded and brightly mottled materials, which occur farther to the northwest. Yet it is possible that the material for many of these implements might have been found upon the surface in the same washed deposits, where so much of the flint from the Edwards limestone has been deposited. Here unworked nodules of flint dissimilar to that found in place in the Edwards Limestone occur.

Figure 3
 SKETCH MAP OF FLINT QUARRY AND CAMP SITE
 (Note: Map shows relative positions only, Sites A and B drawn to different scale).



Sand Dune Flint

The material that was used by the Sand Dune people, did not come from any locally known stratum in the Edwards limestone. This material is either of a translucent grey agate, a light grey, or most frequently of a rich light cream colored flint. Nodules of the same kind of flint are frequently found within the camp sites in the dune sand, but it

is not known whether they occur there naturally, or have been carried there by the occupants of these sites.

It may be that this material was brought in from the southeast of Abilene where all of the flint artifacts that have been examined by the writer are of similar material.

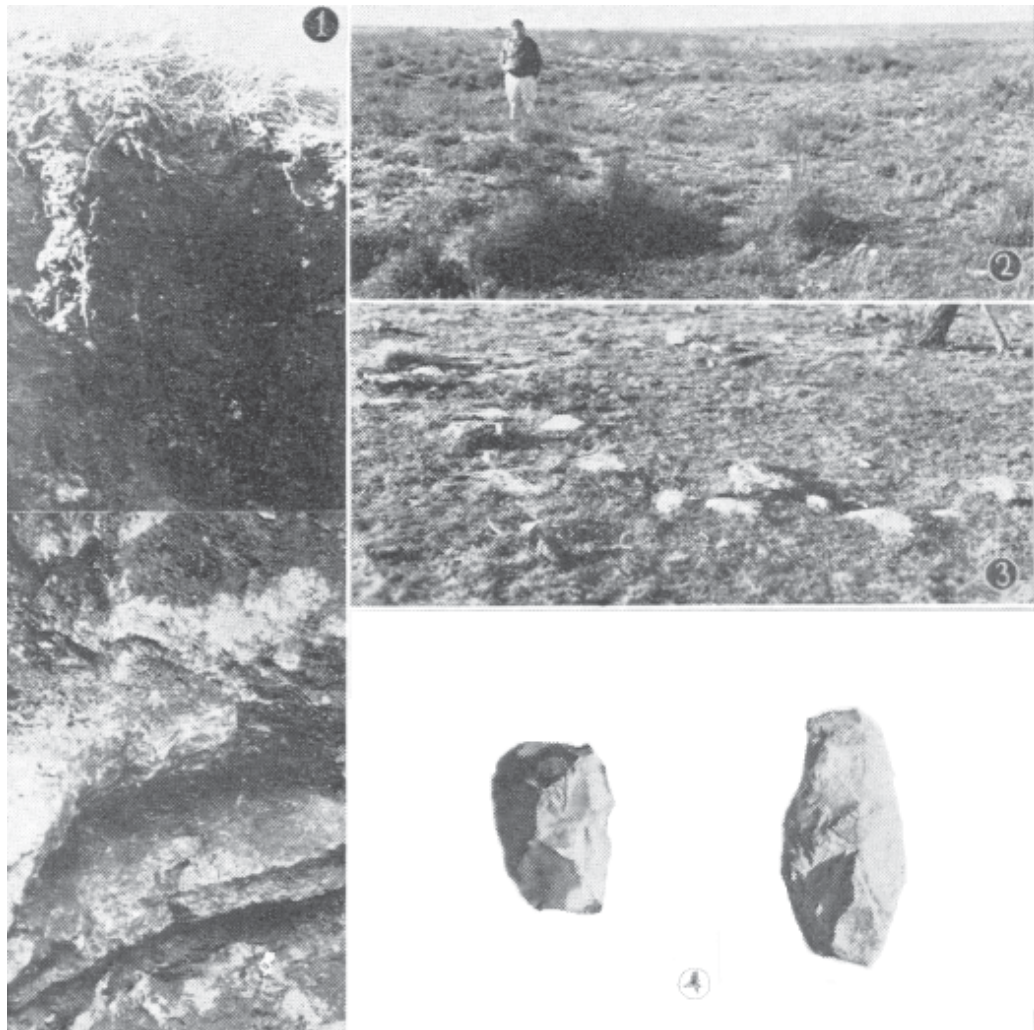


Plate 3
FLINT QUARRY

1. Test trench: Depth from present ground surface to limestone ledge is 8 feet. Fill above flintbearing stratum contains many flakes of worked flint and some artifacts.
The flint, in large flat nodules, is found between the two layers of limestone.
3. Campsite north of Quarry. Small circle of large flat limestone rocks. Flint flakes and some artifacts are found in this site; also hearth stones, and tones of partly worked flint from the Quarries.
4. Type of blade used in removing overcover of soil and clay from the flint-bearing stratum. Implement on right is 4" by 8", 2" thick. The other is fashioned similarly to a common type of scraper found in this section, that is, one side had been left unworked.

THE PICTOGRAPHS AT THE HUECO TANKS

BY COLONEL M. L. CRIMMINS

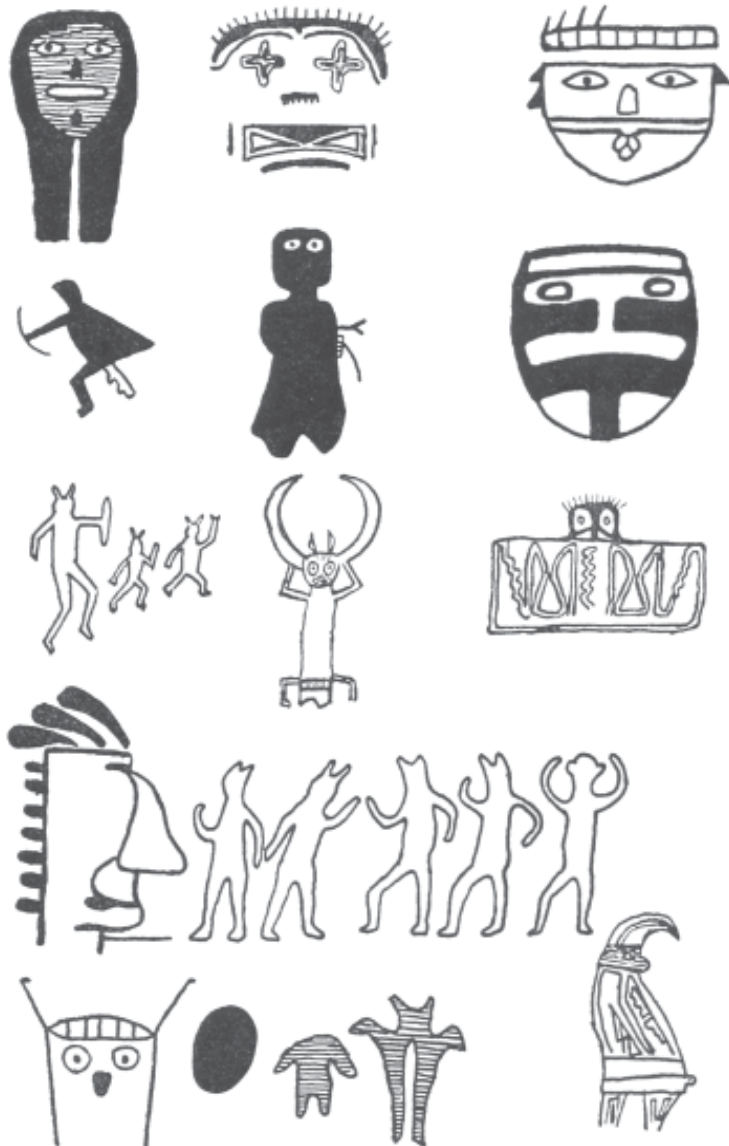
There is a giant pile of granite known as the Hueco Tanks thirty miles east-northeast of El Paso. These tanks were a landmark for the emigrants to California from 1849 on, and before that they had been used for many centuries by various tribes of Indians.

Captain Randolph Marcy, 5th U. S. Infantry, in laying out a new route from El Paso to Fort Smith,

Arkansas, camped at this place in September 1849. He remarked about the great natural beauty of the place and many Indian rock pictures decorating the walls of the caves.

John Russell Bartlett, the chief of the American-Mexican boundary commission, passed there the following year and was much impressed with their unusual geologic formations. He copied many of the pictographs as shown in his Personal Narratives, U. S. Mexican Boundary Commission 1850-54.

Figure 4
PICTOGRAPHS, HUECO TANKS.



Geology of the Area

This group of rocks is an igneous intrusion, forced up through the earth's surface many millions of years ago, which accounts for their appearance in an upright position. This happened long before the Rocky Mountains appeared above the level of the sea, and when a large part of the present United States was covered with water, from the Hueco Tanks to the Labrador Shelf on the east. Therefore no cretaceous animal life is found below these rocks. These rocks form a great natural amphitheatre, with huge rocks thrown upright in wild confusion, extending about a mile in length, half a mile in width, and form one hundred to one hundred and fifty feet in height. Much of the granite is in place, while huge boulders are piled up like pebbles on the sides of the summit.

Favored Location

These tanks cover an area of about five hundred acres, and the rocks are in three groups forming a natural amphitheatre. Water is usually found in some rock water holes. This place has been a favorite resort of the Indians since the earliest prehistoric

days. This is evidenced by the large circular mortar holes worn in the solid granite from twelve to fifteen inches deep. In these holes they ground and crushed their corn, grain, seeds, and acorns.

These rocks are surrounded by a barren desert and the nearest permanent water is the Rio Grande about thirty miles away. Consequently these Tanks were of great value to the hunters of this region, who would lie there in concealment and kill game as it came to the water holes. It was important that proper shelter should be available for the protection of the hunters' families, and therefore it is probable that these caves were marked with the sign of ownership, just as we brand cattle. This may have been the origin of many of the pictographs, especially the animalistic types. It seems to have been the custom of most of the primitive races of America to take the names of animals singly or in combination.

Pictographs

Many of the caves near the mortar holes are decorated with pictographs. They are usually of the following colors: Black, red, white, yellow, and one green. The black pictures are the most common and are made from a paint composed of grease and charcoal. The red pictures are from hematite or cinnabar and the yellow ones are made from an ochreous sandstone. The white was made from either kaolin, gypsum, or lime. The green pictures are characteristic of the Navajo Indians of northern New Mexico and Arizona, and their paint was made from a copper oxide.

The groups of figures have been divided into the symbolic, the meaning of most of this is unknown; the animalistic in which the animal is usually recognized, and the anthropomorphic in which the human element is shown. Many of the caves have the same figure repeated and they may be totemic signatures of the owners of the caves.

Human Figures

Under an overhanging rock is a large tank measuring about thirty by eight feet and in it there is a permanent water supply. This tank contains as much as four feet of water at times and has for thousands of years been a popular camping place. The granite has been worn so smooth, that you cannot walk over the slopes in leather soled shoes, without slipping and falling.

The walls near the tank are covered with many white rock pictures, showing human figures dancing. One shows the rabbit dance which took place before their big rabbit drives, which was a prayer for success in

Figure 5
 PICTOGRAPHS, HUECO TANKS. ANIMALISTIC.

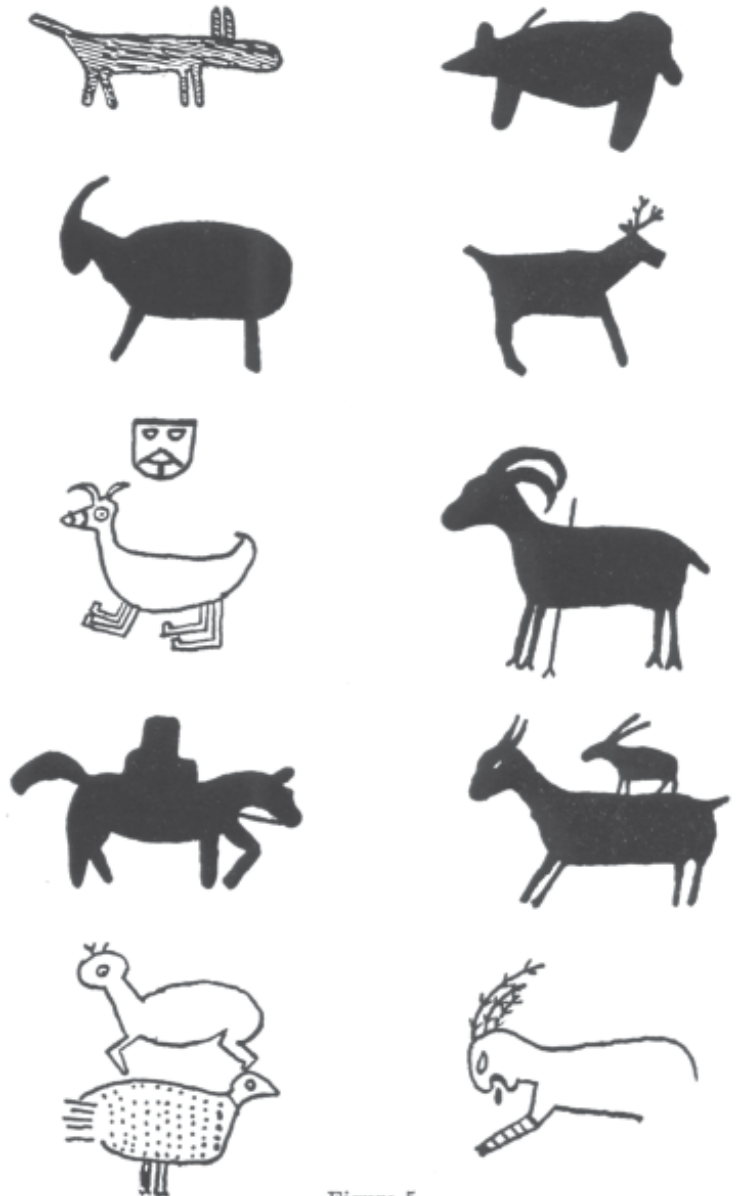


FIGURE 5

their hunt. Another is a huge red sun with a white snake projecting upwards from it. There was one picture found in this group of the human hand. This picture is usually associated with the Basket Maker culture of more than three thousand years ago. We also find some pictures not unlike those of the Mayas of Yucatan of about two thousand years ago. We have a picture painted in red of a god-like figure wearing plumes on his head. Others show circular numerals similar to those of the Mayas and Aztecs.

“Council Chamber”

There is a cave near the mouth of the amphitheatre which has a large flat table-like rock that has been worn smooth on top. It is the largest cave thereabouts, and is called “The Council Chamber Cave.” It has two large white snakes painted on the wall and each is over fifty feet long and about a foot wide. Bartlett reports that the Indians held councils in the great amphitheatre. On one occasion after the Indians had committed depredations and murders around El Paso they were trailed by the Mexicans to this amphitheatre.

They were driven to the far end and then built a wall of rocks from one perpendicular rock to the other. Here they were besieged and being cut off from food and water, they were eventually overcome and one hundred and fifty were killed.

A Site Worthy of Preservation

There are about two thousand Indian rock pictures at the Hueco Tanks. Many of these pictures have been destroyed and defaced by vandals, during the past eighty years. Even Bartlett in his “Personal Narrative,” Vol. I, pages 172 and 173 wrote as follows in reference to the Indian rock pictures:

“Over them are figures of late travelers and emigrants” who have taken this means to immortalize their names and let posterity know that they were on their way to California.”

There are few places in the world where such an interesting collection of pictographs can be found in such an easily accessible location. The State of Texas should follow the example of other States in preserving their archeological sites for the study of present and future generations.

Figure 6
PICTOGRAPHS, HUECO TANKS, SYMBOLIC.



THE QUATERNARY MAMMALS OF TEXAS

BY C. A. HOWARD

The Upper Tertiary or Pliocene Age closes with a world rich in life, a world replete with Asiatic and African influence. This age is followed by the Quaternary. This latter age is the one to which this paper is confined.

The cenozoic age, which includes the Quaternary, is also called the age of mammals because of their predominance and importance from the beginning of the era to and including the present. As will be noted the era is divided into two periods, Tertiary and Quaternary, the first lasting until the appearance of the great ice sheets and the second from that time to the present. They were of very unequal duration, the former being several millions of years long, the latter perhaps less than one million.

While the Tertiary period does not come under our subject, it is well to make this brief mention of it to better show its specific place in Cenozoic time. The Pleistocene age is nearly always referred to as the Glacial period. While glaciation is an important factor in this age, the ice sheet did not advance as far south as Texas; the southernmost boundary being that of the north borderland of Kansas, although the great North American ice sheet covered four million square miles.

The map shows where the Quaternary formations of Texas are found. A brief description of these formations are as follows: Lafayette, Lizzie, Uvalde and Reynosa gravels and sands of Gulf Coastal Plain, Port Hudson, Beaumont or Coast Clays, and Columbia stream terrace deposits of Gulf Coastal Plain,

Undifferentiated alluvial sand, gravel, and clay deposits of the intermontane areas of Trans-Pecos, Texas.

In many other parts of Texas there are deposits of Pleistocene Age. These consist of three kinds: 1. The



Figure 7
MAP OF TEXAS SHOWING QUATERNARY DEPOSITS,
AND FOSSIL MAMMAL BONE LOCATIONS.

Lafayette Sands, Clays and Gravels forming the cappings of the upland surfaces over much of Texas and also forming the deposits of the higher stream terraces in the Edwards Plateau; 2. The second bottoms or terraces of Texas streams, generally known as the Columbia deposits; 3. The clays and sands of the Gulf Coast Country, as already mentioned.

Professor Osborn points out that the mammals of the Quaternary have by no means progressed as far in America as in Europe. It will be many years before the succession can be worked out with precision. According to Osborn's arrangement there are three successive Pleistocene faunas, two of which appear to have coincided with interglacial stages, and the third with the last re-establishment of glacial conditions on a grand scale. The Mammalian fauna of the Quaternary is almost wholly peculiar. It differs greatly from the Tertiary fauna preceding it and the present succeeding fauna. The species are, moreover, very numerous and many of them are of extraordinary size, for it is the culmination of the Mammalian age.

We shall now see what mammals the Quaternary formations of Texas have produced. In listing the various animals we shall also describe the formation in which the fossils were found and also give the county and specific location when possible.

In the Lizzie gravel, Wharton County, previously described by Kennedy as the Columbia sands, are found the Equus beds, so named from bones of the ancient horse.

In the Gulf Coast area West of the Guadalupe River the formation includes beds of white limestone, lime conglomerate in which limestone and flint pebbles are cemented with lime, and gray and ash colored sand, silt and clay, which are in places calcareous, in general having a strong resemblance to those of the Reynosa formation. Here are found many vertebrate fossils of early Pleistocene age, such as *Equus Complicatus*, *Equus Francisci* Hay, *Trucifelis Fatalis*, *Elephas Imperator*, *Bison Latifrons*, and *Glyptodon*. Outcrops of the formation appear in Victoria, Jackson, Lavaca, Colorado, Wharton, Austin, Fort Bend, Goliad, Bee, San Patricio, Duval, and Jim Wells. Nueces and Brooks Counties. It forms the Alice terrace. The formation extends eastward into Eastern Texas and Louisiana.

Early Pleistocene vertebrates were collected more than seventy-five years ago by William Hough of San Felipe, Austin County, from certain beds in the banks of the Brazos River and were described by Dr. Wm. Carpenter. The species included *Mastodon*, *Elephas Columbi*, a tapir, *Bison latifrons*, *Mylodon* and *Elephas Imperator*. At a depth of twenty-five feet in a well at

Lizzie, Wharton County, a well preserved skull of a fossil horse was taken from a bed of sand and small pebbles cemented together in places with lime. The skull was the species *Equus francisci*, Hay.

The remains of a mastodon have been taken from the banks of Caleta Creek, eight miles West-Southwest of Victoria.

From beds on Taranchua Creek, a branch of San Diego Creek, vertebrate fossils of Pleistocene age were collected by Wm. Taylor and G. W. Marnock and identified by Cope. The species include *Elephas primigenius* Blum, *Canis* sp., *Glyptodon petaliferus* Cope, *Equus tan* Cope, *Equus semiplicatus* Cope, *Equus excelsus* Leidy, *Equus occidentalis* Leidy and *Equus crenidens* Cope. The beds in which the fossils occur consist of limy sand and gravel.

In terrace No. 2 along the Brazos River forty to fifty-five feet above the bed of the river the deposit consists largely of red sandy clay but has more or less gravel in its basal part. A considerable vertebrate fauna has been collected from this terrace by Dr. Mark Francis of the Texas A. & M. College at Munson Shoals, five miles Southeast of Stone City. The specimens were found from twenty to forty feet above the stream. The forms identified by O. P. Hay include *Equus*, *Megatherium*, *Mastodon*, *Gomphotherium*, *Elephas Columbi*, and *Testudo Crassiscutata*. Terrace No. 2 is well shown at Waco, Valley Junction, Stone City, near Clay, Hidalgo Bluff, San Felipe, Simonton, Arcola and Brazoria.

A number of fossils have been found in the materials covering the terraces along the Colorado River. Thus in terrace No. 2 at Austin the tooth of a mammoth and a fossil turtle (*Terrapene Whitneyi*) have been found and in the same terrace at Stones Ford the tooth of a Mastodon. About two miles East of the State insane Asylum at Austin a molar of *Equus excelsus* Leidy, a very early Pleistocene species was found in terrace No. 6 at Ridge Top. At Hemphill Bend, near Goodman, the skeleton of a Modern Buffalo was found about 10 feet below the top of terrace No. 1. Five miles upstream from Bay City a tooth of *Elephas Columbi* was found.

Dr. E. W. Shuler has described in a very interesting manner the occurrence of several fossil Pleistocene

mammals that have been taken from sand and gravel beds in and around Dallas. The terraces on either side of the Trinity River are remnants of ancient flood plains. The highest of these is found in Oak Cliff as seen Northeast and Southwest of Cliff Park. The gravel and clay of these deposits has a reddish color. The gravel contains considerable clay and broken fragments of chalk rock. In the various sand beds that have been opened there have been found numerous fossils.

Fossil skulls, more or less complete, of thirteen elephants have been found in these sand and gravel pits around the City of Dallas since the first specimen was noted in 1887. With each skull has been found bones from other parts of the skeleton. Three fine specimens of the skulls have been preserved in Northern universities. One occupies a place of honor in the Peabody Museum of Yale University. One of the largest specimens is to be seen only partially mounted in the Hyer Hall of Science at Dallas. Besides the bones of the Imperial Elephant have been found the bones of *Equus Scotti*, the Texas horse, an ancient Bison, species undetermined, bones of smaller animals, as yet undetermined and bony scutes of the giant sloth.

Dr. Shuler in a letter to Professor R. S. Lull of Yale, March 1921, lists a few Mammalian fossils found in one of the principal sand beds. They are as follows:

Class Mammalia.

Order Carnivora.

Family Felidae.

Subfamily Machaerodontinae.

**Smilodon fatalis* (Leidy) Cranium.

Order Artiodactyla.

Family Cervidae.

**Odocoileus* sp. Humerus, antler.

Family Antilocapridae.

**Tetrameryx shuleri*, gen et sp Nov. cranium, maxillary.

Family Bovidae.

**Bison alleni* Marsh. Left mandible.

Family Camelidae.

**Camelops huerfanensis dallasi*, suosp, Nov, skull, etc.

Camel, gen et sp indet, cannon bone.

Order Perissodactyla.

Family Equidae.

**Equus cf. fraternus* Leidy, cannon bone humerus.

Order Proboscidea.

Family Elephantidae.

Subfamily mammatinae.

**Elephas Columbi* Falconer.

Professor Lull further describes the fossils:

**Smilodon cf. Fatalis* (Leidy).

A finely preserved occiput of a large sabre-tooth cat is present. Its affinities with *Smilodon* are clearly shown by the relatively great vertical extent of the mastoid processes, together with their being directed downward and forward so that the auricular fossa is nearly closed below, whereas in *Felis* it is wide open and the vertical extent of the Mastoids is relatively slight. The occipital condyles are also *Smilodon*-like and show a greater habitual range of vertical movement than in *Felis*. All this is correlated with the great development of the sternomastoid muscle in *Smilodon* for use in striking its prey and is highly diagnostic of the genus.

**Odocoileus* Sp.

Two specimens—One is a single spike-like antler which had apparently been shed by its owner and the other the distal end of a left humerus. They pertain to a deer somewhat smaller than the black-tailed deer of today, the antler, of course, being that shed by a yearling buck. It is complete, except on the tip, and shows no sign of branching. The humerus is essentially indistinguishable from that of *Odocoileus*, except for proportions and size.

**Camelops Huerfanensis Dallasi*, Subsq. Nov.

The material consists of a broken but well preserved skull, a cervical and a dorsal vertebra, right ulno-radius, astragalus, and metatarsal, the last incomplete. The remains indicate an animal about the stature of a modern Arabian Camel or Dromedary.

Camel, Gen, Et Sp. Indet.

An almost perfect rear cannon-bone represents a considerably smaller camel than that last named and the ratios from measurements indicate a very short-footed camel for its bulk.

Quaternary deposits occupy the greater part of the El Paso quadrangle. The bases of the mountains are buried by accumulations of debris and the Hulco Bolson is underlain by unconsolidated material. The Rio Grande Valley is covered with river alluvium. Pleistocene fossils have been found in the upper part of the bolson deposits. These deposits consist chiefly of gravel, sand and clay derived from the disintegration of the rocks of the highlands.

Several fossil bones were found in 1906 in Rous' gravel pit at the head of North Virginia Street, El Paso. They were obtained at two horizons in cross-bedded sand and gravel, thirty and sixty feet below the top of an erosion of the bolson plain at the base of the Franklin Mountains. The bones include the teeth of a Mammoth and of a horse and the jawbones and teeth of a tapir, which have been determined by Dr. J. W. Gidley of the National Museum to represent **Elephas Columbi*, *Equus Complicatus*, and *Tapirus Haysii*.

In beds extensively exposed along the South side of Rock Creek or Tule Canyon which runs in a Northeasterly direction diagonally across the Southeast part of Deaf Smith County and toward the east into Randall County where it joins Paloduro Creek, are found many fossils of Pleistocene age, a division of the Quaternary. The formation represents a period of river or flood-plain formation laying down broad bands of fluidite, of alluvial and aeolian origin, composed of cross-bedded sands, gravels and clays. The mammals represented consist wholly of land forms and some of the bones show weather-checking. They contain the characteristic lower Pleistocene forms: the horse (**Equus*), the elephant (**Elephas imperator*), the great sloth (**Myiodon sodalis*), two camels or cameloids (**Halomeniscus sulcatus* H. *Macrocephalus*), two large land tortoises and a peccary (**Platygonus*).

Only a few days ago Dr. E. W. Shuler, Head of the Department of Geology and Paleontology in Southern Methodist University, called the writer's attention to a fine group of fossils sent to him by an experienced collector from Donley County. There were in the group about seven different species of horse (the fossils consisted chiefly of teeth and jaw bones containing teeth). Also a few small foot bones of a sabre-tooth cat, and many other mammal bones as yet unidentified.

Texas seems to have been especially blessed with at least three Quaternary mammals that we think may merit special description, due to the fact that their fossil remains have been reported from such a wide range over the State. They are **Equus*, the horse, **Mammoth*, the elephants, and the *Mastodon*.

Equus.

Although reported from many Texas Counties, the principal locality seems to be in the Panhandle in Donley County, where at least seven different species have come to light and perhaps at least two more to be suspected. From the Rock Creek beds already mentioned comes the *E. Semiplicatus*, which in certain cranial characters, as well as in the size and proportions of its teeth, seems to present a close relationship to the Ass (*E. Asinus*). On the staked plains of central Texas has been found *E. scotti*, intermediate in size between *E. complicatus* and *E. pacificus*, with a long face, relatively large head, long body, short neck, resembling in its proportions the quagga (*E. burchelli*). From Southwestern Texas comes also *E. giganteus*, the largest species of horse hitherto recorded, the teeth exceeding those of the largest modern draught horses by more than one third of the diameter of the latter.

The Mammoth and Mastodon (after Prof. H. F. Osborn's *Mammoths and Mastodons of North America*).

The Mammoth

Today nearly everyone knows that the Mammoth was a sort of big, hairy elephant, now extinct. It may be said in passing that the Mastodon is only a second or third cousin of the Mammoth, but that the existing elephant of Asia is a very near relative. Popularly, the Mammoth is supposed to have been a colossus, but his actual height was not as great as generally supposed. Somewhere near thirteen feet in height seems to be a good average to place on the Mammoth.

This great beast seems to have very early in its life been stricken with the "Wanderlust" as have the various races of man. Not only to overcome changes of environment, but also to gratify their intelligent curiosity ever to explore fresh fields, they have gone to the very ends of the earth and have far surpassed man in

adapting their clothing and teeth to all possible conditions of life. Thus the romances of elephant migration and conquest are second only to the romances of human migration and conquest. Variety is the spice of elephant life as it is of human life. The reaching out in every direction for every kind of food, every kind of habitat, is in itself the cause of divergent evolution and adaptation. So strong was the migratory impulse that only six out of sixteen races of Mastodons and elephants failed to reach America.

Texas abounds in Mammoth remains. Bones or teeth have been reported from nearly every part of the State. Indeed, few Counties are without Mammoth relics of some kind.

The Mastodon

The Mastodon must have appeared very much like any other elephant, though a little shorter in the legs and somewhat more heavily built than either of the living species, while the head was a trifle flatter and the jaw much longer. The tusks vary, sometimes bowing outwards, sometimes upwards to form a half circle. They were never as long as the largest Mammoth tusks, but to make up for this they were a shade stronger for their length. The size of the Mastodon has often been over-estimated. Some say they did not attain the height of a full grown African elephant. In great contrast to the Mammoth were the teeth of Mastodons. The crown or grinding face of the tooth is formed by more or less regular cone-shaped or pyramidal-shaped projections, covered with enamel. (See Plate 26 opposite Page 86, Volume 2, Bulletin 1930 Texas A. 8~ P. Soc., showing difference in Mammoth and Mastodon teeth). The range of the Mastodon in Texas while not as wide as the Mammoth covered a considerable area.

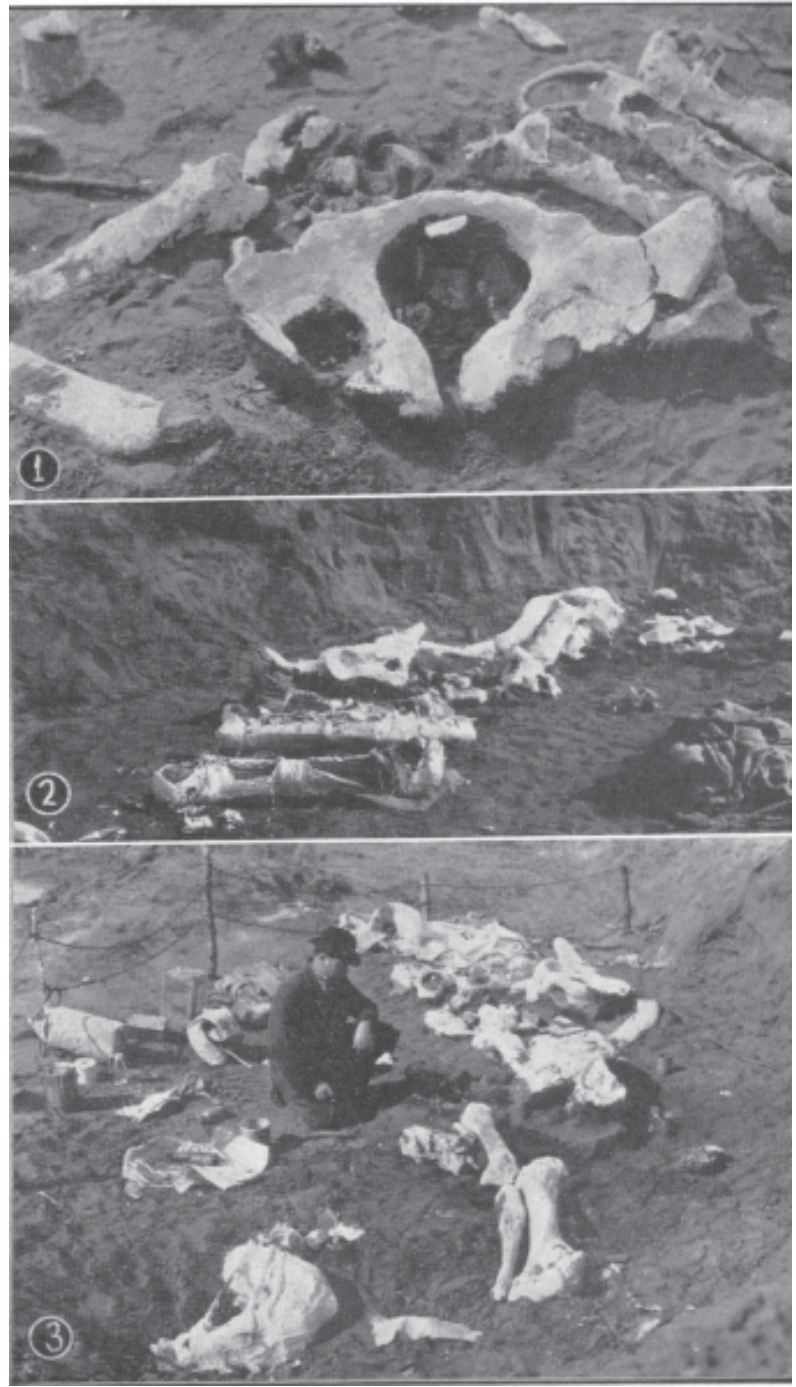


Plate 4
COLUMBIAN MAMMOTH, FOUND ABOUT
THREE MILES SOUTH OF DALLAS

1. Pelvic bones, upside down.
2. Large leg bones in foreground; side of pelvic bone, and skull with tusks in back ground.

Serrate-Toothed Mastodon *(*Serridentinus Productus*) *Tree Browsing*

The fossil remains of this species of elephant are found in much older deposits than the Quaternary and, therefore, it does not come under our assignment of "Quaternary Mammals." However, due to the fact that the animal is a remarkable one whose history is equally remarkable and better still, whose remains have been found in Texas and only at one other place in North America, the temptation is too great to pass up a brief mention of such an animal, especially when ~such a wonderful description is given by one of the greatest authorities on fossil and living elephants, Prof. H. F. Osborn. The Serridentines, or serrate-toothed Mastodons have only recently, as a result of investigation, become distinguished from the long-jawed Mastodons on the basis of the structure of the relatively few teeth found in other parts of the world.

They form a race of their own, to which the generic name *Serridentinus* has been given. Enroute to America one member of this race succumbed and left a fossil jaw on one of the ancient rivers of Mongolia and here two teeth were unearthed by an American Expedition. Eight thousand miles eastward and southward of this spot, which is in the desert of Gobi, the Americanized descendants are found in the marls near Santa Fe, New Mexico, and in the ancient river sands near Clarendon, Texas, in a formation of Lower Pliocene Age. A beautiful restoration has been made and is now in the American Museum of Natural History, New York, from a nearly complete skeleton of a Serridentine found in Northern Texas. A photo shows the Mastodon to be a tree browser, and is reaching for foliage with its

proboscis, aided by a lower jaw with tusks of medium length, a jaw more elongate than in the true Mastodons but less elongate than in the extremely long-jawed forms. The species, while very bulky, is by no means as massive as the ordinary Mastodons nor as high.

From ancient river alluvium, sands and gravels in terraces along the banks of the Colorado River in Bastrop County, and the Trinity River in Liberty County, comes fossil bones, skulls, horn cores of the great Bison (*Bison latifrons*). The early and gigantic form *B. latifrons* reflects the favorable conditions of life during the age contemporary with the Mammoth and Mastodon in Texas and elsewhere where their bones have been found. The horn cores are so long and thick that they exceed by two feet on each side those of the existing old and new world bison. Horns in one Northern museum measure six feet and six inches along the curve from tip to tip. Another specimen measures six feet across from tip to tip and eight feet and six inches along the curve. This appears to be the record in size; although the complete skeleton is unknown we may judge from the size of the skull that this great Bison far exceeds any of its living relatives.

Texas offers a great field for Paleontological research. Few other places are so rich. Some species of fossil mammal remains have been found here that so far have not been found at any other place. Fragments of other fossil mammals have been found that give us only a vague idea of what the animal looked like and only future exploration will ultimately give us this much needed information, as well as the possibility of still bringing to light other forms that are still unknown in this part of the country.

TABLE OF COMPARATIVE HEIGHT OF CERTAIN
ELEPHANTS AND MASTODONS IN GENERAL

<i>Common Name</i>	<i>Scientific Name</i>	<i>Height</i>
Imperial Mammoth	<i>Archidiskodon imperator</i>	13 feet 6 inches
African Elephant	<i>Loxodonta africana</i>	11 " 4 "
Indian Elephant	<i>Elephas indicus</i>	10 "
American Mastodon	<i>Mastodon Americanus</i>	9 " 6 "
TEXAS SERRIDENTINE	<i>Serridentinus productus</i>	5 " 8 "
Young Congo Elephant	<i>Loxodonta African Pumilio</i>	4 " 5 "
Fayiiim Moerithere	<i>Moeritherium andrewsi</i>	2 " 1 "

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TEXAS TECH ARCHAEOLOGICAL EXPEDITION SUMMER 1930

BY W. C. HOLDEN

The archeological activities of Texas Technological College during the past year have centered around the attempt to explain the relationship between the slab-stone house culture along the Canadian River in the Panhandle of Texas and the Pueblo culture of the Southwest.

Prior to this past summer no slab-stone ruins of the Panhandle type had been reported on the Canadian River west of Tucumcari, New Mexico. It seemed to be a reasonable theory that if the Panhandle slab-stone culture were related to the Pueblo culture there should be some indications of such a connection between Tucumcari and the Pecos valley. The most eastern pueblo ruins reported on until the summer of 1929 were those on the Tecolote River about a mile below the village of Tecolote on the Las Vegas-Santa Fe highway. During the summer of 1929 Dr. J. Alden Mason and party from the Museum of the University of Pennsylvania reported the finding of a ruin near the town of Watrous, N. M., located at the confluence of the Mora River and Sapello Creek. In his report Dr. Mason said in part: "In architecture the site somewhat resembles that on the Canadian (in the Panhandle), the underground walls and floors being made of adobe mud, but smooth and finished. However, instead of enclosing single rooms, the walls were partitions between rooms, and the group on the ground excavated consisted of a dozen or more. The same superposition of floors was noted and the same charred beams and lumps of fire-baked clay with the impressions of poles or reeds. The latter were unusually frequent, and charred beams rare. In contradistinction to the Texas site, potsherds were common and flaked implements very rare; the country evidently did not produce much flint. The pottery was of unmistakable Pueblo type, mainly black corrugated ware but with a fair quantity of painted black on white and a few pieces of black on red.*"

The discovery of a ruin almost mid-way between the Pecos valley and Tucumcari resembling the

Canadian ruins in architecture and containing unmistakable Pueblo potsherds made the possibility of establishing a relationship between the Panhandle and Pueblo cultures seem a little bit nearer at hand. It seemed clear that the most vital region to work, in attempting to solve this problem of relationships was between the Tecolote River west of Las Vegas and Tucumcari. It was decided to explore minutely the intervening region for more ruins; then to begin with known Pueblo and pre-Pueblo ruins on the Tecolote and excavate typical ruins towards the east to known Canadian ruins of the Panhandle type, noting where and how the transition from the Pueblo to Panhandle culture took place.

Tecolote Ruin

With a program like this in view the first camp for the field school conducted by the College in July-August 1930 was made at San Geronimo Ranger Station on the Tecolote River some eighteen miles west of Las Vegas. From this place exploring expeditions were sent out along the Gallinas and Tecolote Rivers, affluents of the Pecos, and along Sapello Creek and Mora River, tributaries of the Canadian. A number of slab-stone ruins of the single room Panhandle type were found, some within ten miles of Las Vegas. Mr. William Elfield of that place was instrumental in locating these. Time did not permit of the excavation of any of this type of ruin in the Las Vegas vicinity.

Excavations at Tecolote

The second week of August was spent excavating in a pre-Pueblo ruin on the Tecolote. There are three known groups of ruins on the Tecolote River. The group where we worked is located on the south bank of the river about a mile below the Mexican village of Tecolote. The ruins consist of ten mounds varying in size from 24 feet to 180 feet and in height from 2 to 7 feet, and scattered over an area approximately 900 feet long and 430 feet wide.

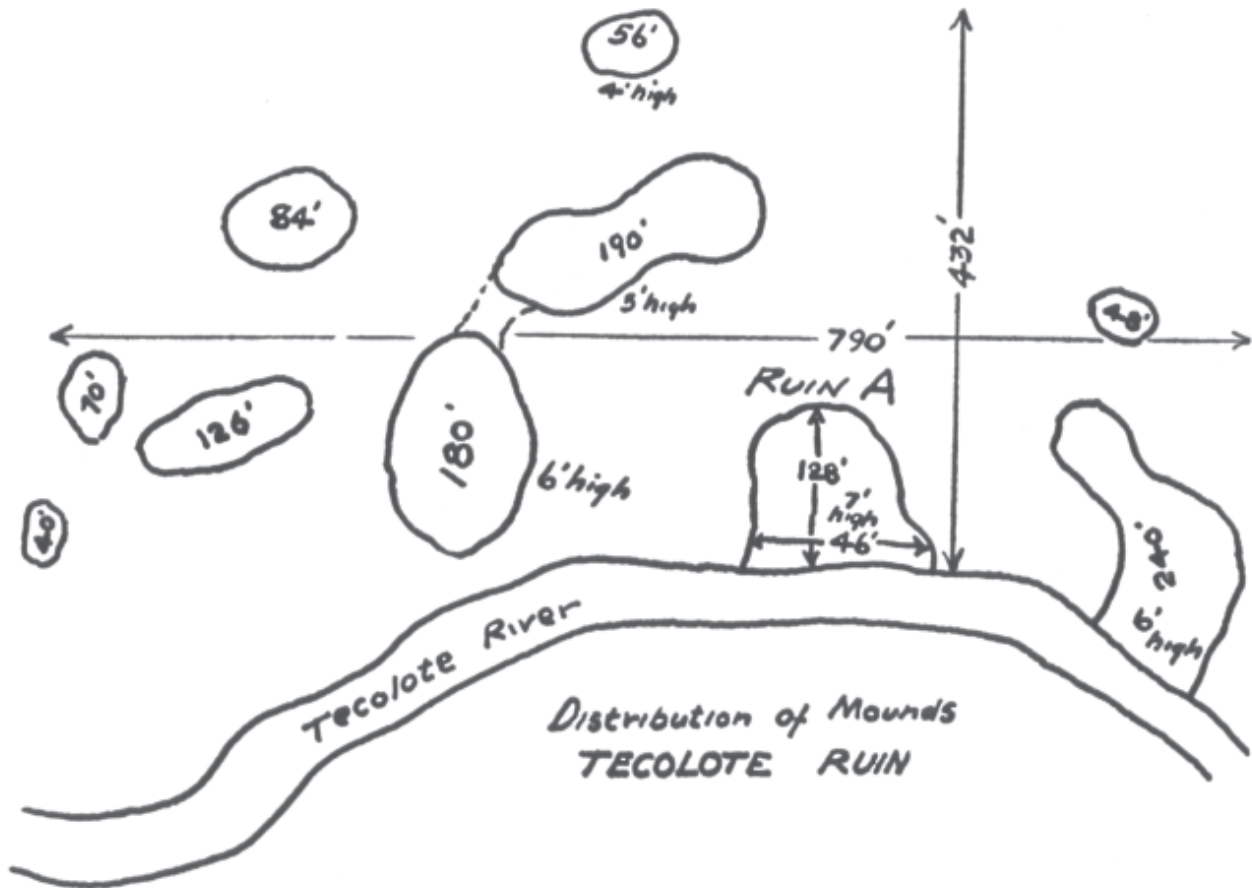


Figure 8
TECOLOTE RUIN, DISTRIBUTION OF MOUNDS

Our work was confined to Mound A. The north part of this mound has been carried away by the river's washing the bank away beneath it. Here and there along the perpendicular cliff can be seen cross sections of walls of horizontal rock masonry. Because of the fact that it is in immediate danger of being carried away by the cutting back of the river, we selected this mound for our excavations. A series of three rooms on the west side of the mound and adjacent to the river bank had already been excavated by two ladies from Pennsylvania during the summer of 1929. We were unable to learn their names or whether or not their results have been published. The walls are still exposed as they were left. Rooms (a) and (b) are approximately 10 feet square. Room (c) is approximately 7 by 10 feet. The north wall of room (c) is still in place; the north wall of (b) is partially gone and all of the north wall of (a) has fallen into the river. The walls of the rooms still standing are between 36 and 40

inches high and 10 inches thick, and made of brownish sandstone. The most interesting thing about these rooms is that they are built over an older and more massive ruin. Cutting diagonally across and running underneath room (c) about three feet high, 12 inches thick and of the same material as the upper walls is a wall but of far superior workmanship. See wall x, y, z, in Figure 9.

Some 16 feet east of room (c) is room (d) which was excavated by our party. This room is 15 feet in diameter and semi-circular. The north part of the wall has fallen into the river. A segment is gone out of the part of the wall still standing. (The missing segment is indicated by a dotted line on Figure 9). The floor level in (d) was found at a depth of about 30 inches. Something like a half bushel of potsherds were found on or near the floor level. Among them there seem to be fragments of three whole pots which probably can be restored. The sherds for the

most part are black on white and charred corrugated ware with an occasional black on red. The floor was made of small flat rocks covered with adobe.

The major part of our excavations consisted in digging a longitudinal trench along the crest of the mound beginning at the river bank and running 52 feet south, and a traverse trench 28 feet long cutting the longitudinal trench about the center. For convenience will hereafter refer to k o, l o, m o and n o, on Figure 9 respectively as north trench, east trench, south trench, and west trench.

Contrary to our expectations, we encountered but few walls. Three inches below the surface in the east trench a wall was found running in a north and south direction. On tracing the wall out to the south it was found to end abruptly six feet from the East Trench. On following it to the north it veered northeastwardly to the bank. Four feet from the bank another wall branched off to the east for 14 feet, and then it turned southeast for 16 feet where it ended. The purpose of both these walls is not easy to explain as they do not seem to be connected with a house in any way (see walls f g and f h in Figure 9). Trench k m (north and south trenches combined) was dug through an old dump heap to undisturbed soil. The original ground level is three and one half feet below the present surface on the north end of the trench at the river bank and seven feet below the present surface on the south end of the trench. This indicates that the original ground level sloped rather sharply from where the river bank is at the present toward the south. Judging from the position of what is left of the ruins and from the thickness of the dump heap to the south, it is highly probable that the main body of the ruins has been carried away by the river, and that only the most southern walls remain. Wall f h was built a long time after the place was first inhabited, as is evidenced by the fact that its base at the south end rests on three and one half feet of dump heap. Since the wall was built another three and one half feet of dump heap was accumulated.

Four boxes of potsherds and artifacts were taken from the trenches. The material is now in our workshop awaiting study regarding stratification. Potsherds were plentiful and of the following kinds; black on white, incised, and crude grey, coiled cooking ware, fire blackened. It seems that the amount of black on white becomes more scarce towards the bottom.

Artifacts

Aside from potsherds the north trench contained an excellent stone hammer, found just below the surface; numerous broken bones of buffalo, deer, antelope, turkey and small rodents; three manos were found at depths of 6, 8, and 40 inches, four arrow points were found at 12, 20, and 40 inches, a scattering of charcoal and bits of wood, several ash beds and a thin ash stratum, a bone needle was found at 42 inches; and a turquoise pendant was found at a depth of 40 inches. The pendant is almost one half inch square and has a hole in one corner. The East trench yielded at a depth of two inches a well-shaped polished celt, five and one-fourth inches long and two inches wide at the butt end; three arrowheads, at depths of 7, 16, and 48 inches. A bone awl was found at 40 inches, a shell ornament at 24 inches, several ash beds, and potsherds were distributed as in the north trench.

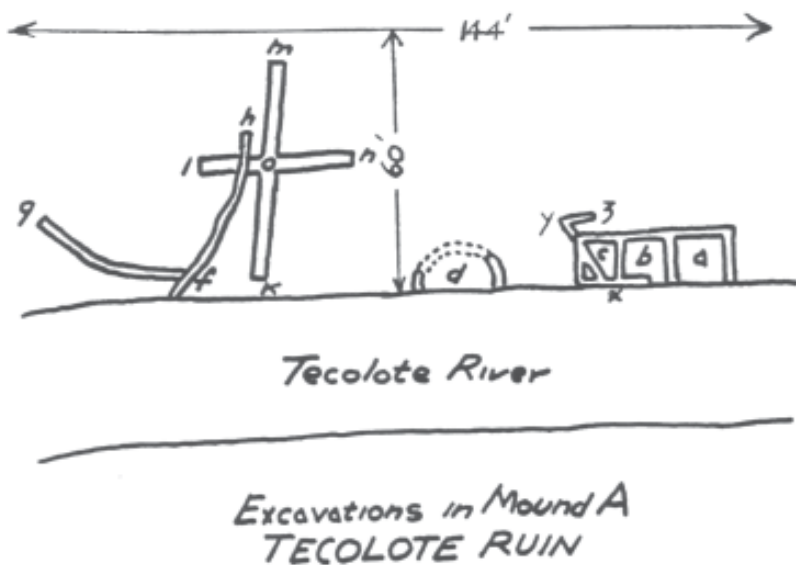


Figure 9

TECOLOTE RUIN, EXCAVATIONS IN MOUND A.

The South trench, aside from potsherds, contained a metate at a depth of 16 inches, a mano at 12 inches, two broken pots at 16 inches, one black on white and the other a plain, blackened, cooking bowl. A stone ax was found at 24 inches, a bone needle at 32 inches, a bone awl at 42 inches, a fragment of human skull at 40 inches, burnt corn cobs at 50 inches, an arrowhead at 52 inches, a burial at 64 inches, a flint knife at 72 inches, and scattered broken bones and ash deposits. The burial was in a small oval vault of flat rocks. The skeleton was in embryonic position with the head towards the southeast. The bones had deteriorated so badly that only a few fragments of skull and four teeth could be taken out.

The west trench was the most interesting of all from the standpoint of artifacts. Aside from an abundance of potsherds, charcoal, ashes, and animal bones, it contained an arrowhead at a depth of 12 inches, a mano at 24 inches and four bone awls at 24, 26, 28, and 34 inches. Burnt corn cobs were found at 24 inches, an arrow shaft polishing stone at 16 inches, a pot handle at 18 inches, a shell pendant at 32 inches, and a shell necklace at 40 inches.

Burial

A perfect pre-Pueblo burial was found at 40 inches. The skeleton was lying in embryonic position on its left side with its head toward the south and facing west. It was in fair condition but the skull cracked badly when exposed to the air. With the skeleton were two mortuary pots. One was black on white, about 8 inches in diameter and 4 inches deep, with a conventionalized terrapin design in the bottom, and in perfect condition. The other was a corrugated cooking pot about five inches

in diameter and eight inches deep. It was lying on its side and had been crushed by the large flat stone covering the skeleton. Both pots contained bones of small animals.

Terrace Floor

A peculiar thing about mound A was a layer of small flat stones about 16 inches below the surface. The stones were one and a half to two inches thick, two to twelve inches in diameter and placed as one would pave a floor. The layer was encountered in all the trenches and could be traced for fifty or sixty feet along the perpendicular river bank. As the layer occurred outside the rooms no one was able to advance a plausible theory as to its purpose. It may have been that the yard around the pueblo was paved at one time. Another feature worth noting was that hard chunks of adobe were found here and there in the trenches.

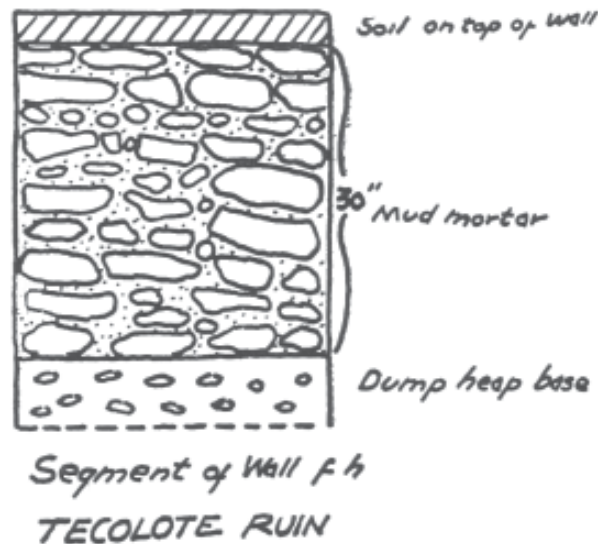


Figure 10
TECOLOTE RUIN, SEGMENT OF WALL

A great deal more work will have to be done on the Tecolote ruins before any conclusions can be drawn.

The Tierra Blanca Ruin

On August 14 our party left Tecolote and went to Hereford, Texas, where we spent four days excavating. The ruins are located on a place owned by Mr. Tom Ivy, eight miles east of Hereford on Tierra Blanca Creek. These ruins were first reported February 23, 1925 by Mr. Jobe H. Green, amateur archeologist of Hereford. Mr. Green sent Dr. H. P. Mera, at present, staff archeologist of the Laboratory of Anthropology at Santa Fe, a description of the ruins together with specimens of potsherds of the true glazed type. Dr. Mera has since

insisted that Texas Technological College make a more intensive investigation of the Tierra Blanca Ruins. In view of the fact that decorated pottery of true Pueblo type was found in typical slab-stone ruins, it seemed probable that these ruins might prove to be the “key” that we have been searching for to show the real relationship of the Panhandle culture to the Pueblo culture. Accordingly we made out plans to work a few days at Hereford. The Tierra Blanca is a beautiful stream fed by springs.

The ruins are located on a point of the south bank—on the general plains level—commanding a view for miles up and down the valley. At this place the creek channel meanders close to the south bank within a hundred yards of the ruins. A strong spring in the south bank of the creek channel insured fresh water for the ancient inhabitants of the ruins. There are about a dozen of the ruins, more or less circular in shape, varying from six to thirty feet in diameter, and scattered over about four acres of ground. The buildings were originally laid out in an irregular fashion with apparently no thought whatever of defense, aside from the fact that they commanded a splendid view. In appearance and construction, these ruins are of the true Panhandle type. They are not nearly so imposing as those on the Tarbox or Antelope Creeks, but very similar to hundreds of ruins to be found in the Canadian valley.

Due to the hardness of the ground we concentrated our work on one ruin, the most promising of the group. It was approximately 23 feet in diameter north and south, and 27 feet east and west. The floor level was from 16 to 18 inches below the surface, most of which we almost completely uncovered. For convenience we divided the room into six sections like a round pie cut in six parts. Section I was toward the southwest, section II towards the south, and so on around. We took the soil out in 6 inch layers.

Artifacts

The first layer of six inches contained four potsherds, a few flint flakes, several fragments of mussel shells, a few flakes of obsidian, and a considerable quantity of broken buffalo bones. Of the potsherds, three were glazed polychrome and one was dark grey, plain cooking ware, fire-blackened.

The second layer contained sixteen sherds; one perfect arrow point, one and one fourth inches long; three scrapers; several flint flakes; two pieces of charcoal; and broken animal bones. Of the potsherds, one was red ware, one white, and fourteen polychrome.

The third layer reached to the old floor level. It contained nine potsherds, some mussel shells, a flake of obsidian, several flint flakes, one reamer, and a small quantity of broken bones. Of the nine potsherds, six were red and polychrome of the Pueblo type and three were plain, crude grey of the Canadian type.

Among the potsherds of the Pueblo type mentioned above, Glazes II, IV, and V have been identified.

Conclusion

Evidence is rather too scant as yet to hazard a conclusion in respect to the finding of Pueblo pottery in ruins of typical Canadian architecture. The present indications however do not establish any relationship between the slab-stone culture of the Panhandle and the Pueblo Culture of New Mexico. It is our opinion that Pueblo Indians much later made temporary camps at these old slab-stone ruins on the Tierra Blanca for the purpose of hunting buffalo. Conditions were ideal there for such a camp. It is probable that their selection of this site was due to its fine water supply, the proximity to buffalo hunting grounds and the fact that these houses of an earlier people afforded them some shelter. If this be correct, we are as far from explaining the Canadian and Pueblo relationship as we were before.

TEXAS COASTAL POTTERY

BY GEORGE C. MARTIN

The surfaces of many campsites in the coastal section of Texas lying between Matagorda and Baffin bays are littered with lumps of hard-baked and burned clay. The pieces are irregular in size and shape, and when found on the surface are usually much weathered. Some show actual contact with fire and soot, others being merely baked with heat.

In my early investigations of these campsites the clay lumps were accounted for as the result of campfires built directly on clay surfaces, but I began to find them in places where they could not have been created in such a manner. They were numerous in the shifting sand-hills south of Falfurias and plentiful on the sandy campsites on the north end of Padre island, on the Live Oak Peninsula, and at Ingleside. They were found on the surface and in the topsoil of blackland campsites on Copano bay, and on Oso and Petronella creeks. Occasionally they were found in shell-heaps. In many cases they were in sand five, ten, even fifteen feet above any clay strata, and on Padre island were a mile or more from any clay. They contain no tempering shell as do the sherds from pottery and were not residue lumps of the paste from which pottery was manufactured. Even when found on clay surfaces their content of sand appears to be far greater than that of the clay on which they rested.

Some might be accounted for as the remains of clay coatings of fish cooked under the coals of fires, such method of preparation being witnessed, and the fish partaken of, by Mr. Sam Allardyce at a small Indian encampment in the vicinity of Matagorda Bay in the early eighteen-seventies, but it is doubtful if such coatings would have been baked to such an extent that they would not have long since disintegrated in the moisture to which they have been subjected.

Manufacture of Pottery

Altogether, the lumps were very puzzling and the reason for their existence did not begin to dawn upon me until a freshly eroded bank on Oso creek, Nueces

county, yielded numerous unweathered baked and burned lumps many of which had one smooth side. Some of these surfaces were convex, others concave. Several fitted roughly together and had certainly formed part of a cast of the inside of a pot. Evidently they had something to do with the manufacture of pottery, but, there was still not enough evidence to indicate the why and wherefor of them. Conclusive evidence of the method of their creation and the reason therefor was yielded by a site on a small island in the Playa Lodosa, Aransas county (Site 81, Martin and Potter "Preliminary Archaeological Survey"). A heavy downpour had deeply eroded the banks just previous to one of my visits to the site and in one spot I found a bed of baked clay-lumps in place. Other lumps and numerous sherds were scattered over the newly exposed surface. Where the lumps were bedded in place they showed that they had once formed one solid bed that had been crumbled by heat, and in the center thereof were three hemi-spherical depressions wherein the bases of clay vessels had once stood. Many of the scattered loose pieces showed the convex and concave surfaces previously noted on specimens from the bank of Oso creek. Beyond question I had found a place where pottery had been fired by Karankawan Indians or by some coastal tribe which made pottery corresponding exactly with that found on known Karankawan sites.

Process of Firing Pottery

Close study of the refuse permits me to describe the process of firing which was as follows:—After the vessels had been shaped and dried, a shallow hole was dug into the soil and the bottom of it thickly covered with a specially prepared mixture of dampened sand and clay put together in such proportions that it could be readily crumbled after it was baked. The pots which were to be fired were set into this flooring and more of the mixed clay and sand was introduced into the hole and packed around, in, and over the vessels. The entire mass was then

permitted to dry and fires were built over it and kept burning until the desired result was attained. After cooling the mass was picked to pieces, the pots were taken out and the sandy clay removed from their interiors in small lumps. The burned and sooty specimens were those which had come into direct contact with the fires on the surface, those merely baked being from the interior of the mass and the insides of the pots.

Confirmatory evidence that this was the actual method of firing was found in the form of potsherds from this same site which were given to Mr. Samuel Woolford, connected with the Witte Museum, San Antonio, for examination. Mr. Woolford succeeded in fitting together and reconstructing about one-fifth of a bowl and was surprised to find that the upper portion was of a deep red color shading three to four inches below the edge into dark brown. No better proof that the heat had been applied from above the vessel could possibly be desired. Some of the local clays contain much oxide of iron and when pastes are made of such the vessels attain a deep red color where the heat is greatest, shading into dark and light brown where less heat has been applied. Evidence that the practice of filling vessels with packed sandy clay before burning obtained as far inland as San Antonio was also found by Mr. Woolford in the form of a cast of the interior of the neck of a water-bottle of burned clay. This cast was found in the soil in Brackenridge Park, in the confines of the city.

Earthenware Handles

Gatschet states, in his work on the Karankawa Indians, that pots with handles were unknown to this tribe. This is incorrect. Earthen handles were rare, but are occasionally found on campsites known to have been occupied by Indians classified as Karankawan. Specimens are included in the George C. Martin

Texas Coastal Collection in the Witte Museum, San Antonio. Of this type of handle the four known existing specimens show that they were attached vertically. They were made by rolling the paste between the hands until it attained the desired length and thickness. Holes were made in the walls of the vessel to which the handles were to be attached and the two ends thrust through these to the interior whereupon the ends were expanded by pressure and merged into the walls of the pot with moistened fingers. The final process was to mold the materials of the handles and of the outside of the vessel together by moistening and rubbing. Actually the handles were riveted to the pot.

Handles of Fiber or Hide

The common type of handle used in the coastal section of Texas was made of fiber or hide and run through holes bored in the sides of the vessel and twisted. Occasionally the holes were made in the walls before the material had dried, pushed through with a twig or fishbone, but the common method was drilling after the vessels had been fired. Sherds show these holes were made commonly about one half inch from the edge. Sometimes only one hole was made on each side of the vessel, sometimes two holes to the side, these one-half to one inch apart. Cooking pots were used in direct contact with the fire and when suspended the fiber or hide handles were thickly covered with clay which prevented burning. Such coverings of handles were of a temporary nature as they did not usually come closely enough into contact with the heat to become permanently baked, but one specimen about four inches in length and showing the impression of a twisted cord having passed through it was found by the writer on a Copano bay site in Aransas county. Edges of potsherds that have been drilled for suspension are quite common on coastal sites.

POTTERY OF THE EL PASO REGION

BY EILEEN E. ALVES

The pottery found in the vicinity of El Paso, Texas, presents an amazing number of different types. A collection of sherds made from one of the wind swept, water washed village sites, about half a mile long by a quarter of a mile wide, situated within fifty miles of El Paso, will include a representation of types known in Arizona, New Mexico, and Old Mexico, as well as types less widely scattered.

The sherds described in this article are *surface finds only*, no known stratigraphic work of any importance having been done in this locality. Very few refuse piles, or remains of buildings suitable for stratigraphic work, have been found in the ruins near here.

This paper is a mere statement of pottery found, and does not pretend to do more than report the many types of pottery scattered on mesa and plain within a fifty miles radius of El Paso.

Red and Black on Brown

A red and black on brown pottery is found here in the greatest abundance,

sharing with Chuperdero as being the dominant type of pottery in this region. It is called El Paso Black and Red on Brown, or El Paso Polychrome.

A whole bowl found near Newman, New Mexico, contained several beads, twelve beautifully made arrow points, pieces of asbestos,

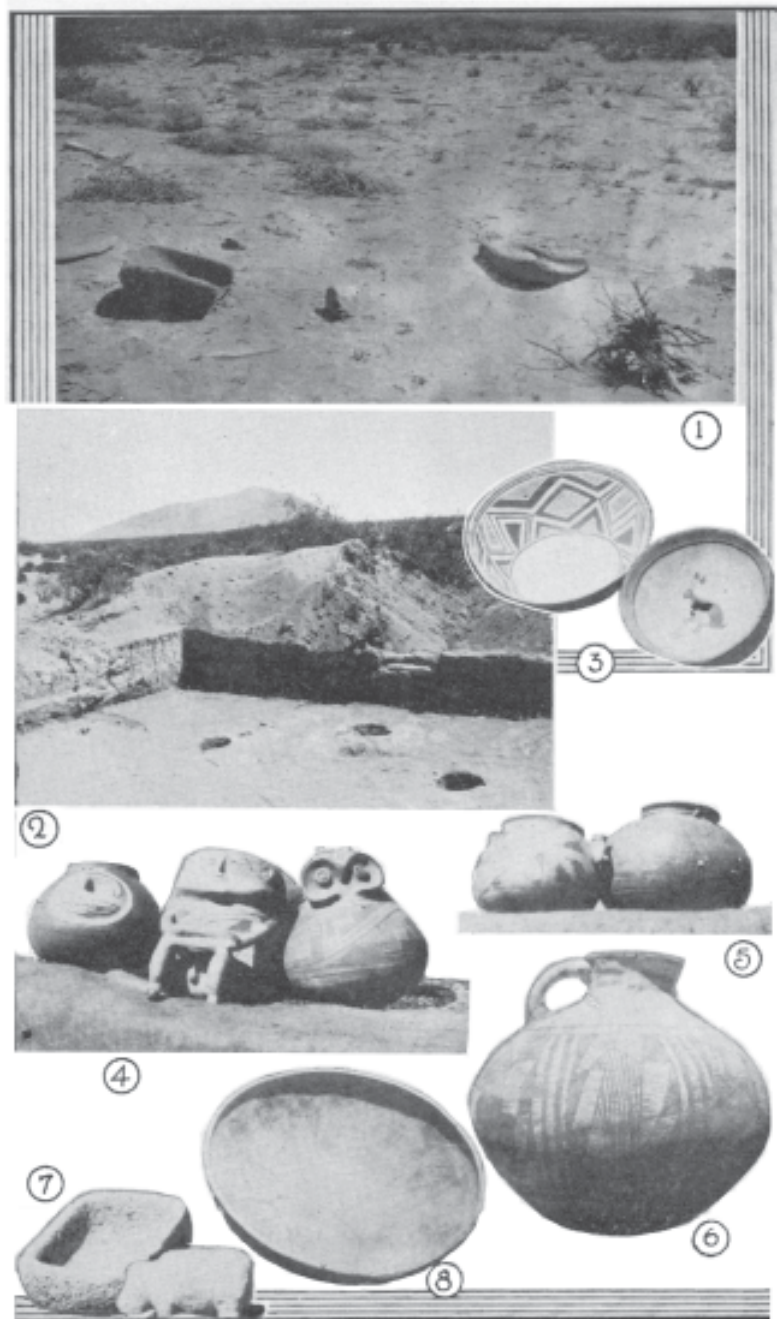


Plate 5

POTTERY SITES, AND POTTERY OF EL PASO DISTRICT

1. Campsite San Adreas Mountains, Jornada del Muerto Range Reserve.
2. Excavations at Hot Wells, Texas.
3. Mimbres pottery.
4. Chihuahua Pottery.
5. Chihuahua Pottery, polychrome.
6. Chuperdero Black and White Pottery Jug, Three Rivers, New Mexico.
7. Stone bowl, and animal effigy.
8. Bowl.

and two lumps of some other mineral. The black and red geometrical figures on this coarse brown bowl make a rough but handsome appearance.

This pottery is found in great quantities as far south as Casas Grande in Mexico, but seems to fade out towards Three Rivers, New Mexico.

Chuperdero

Another common example here is the black on white pottery called Chuperdero; very different from the beautiful black on white Mimbres. This Chuperdero pottery is a familiar type of sherd on our old village sites. The square base, the grey color and the rough striated interiors as if done by a coarse brush, and the rather crude decorations are among its characteristics.

A few sherds, apparently of this same ware, found at Hot Wells Ranch had a very delicate pink wash over the interior. Otherwise it resembled the same black on white Chuperdero. Most likely it was simply an individual idea of the potter making it, without any significance.

Little Colorado and Middle Gila Polychrome.

These two kinds of pottery or very close relations are found in sufficient quantities to put them out of the stray or intrusive class. They are usually represented in every village site although in very small quantities.

Mimbres and Casas Grande Polychrome

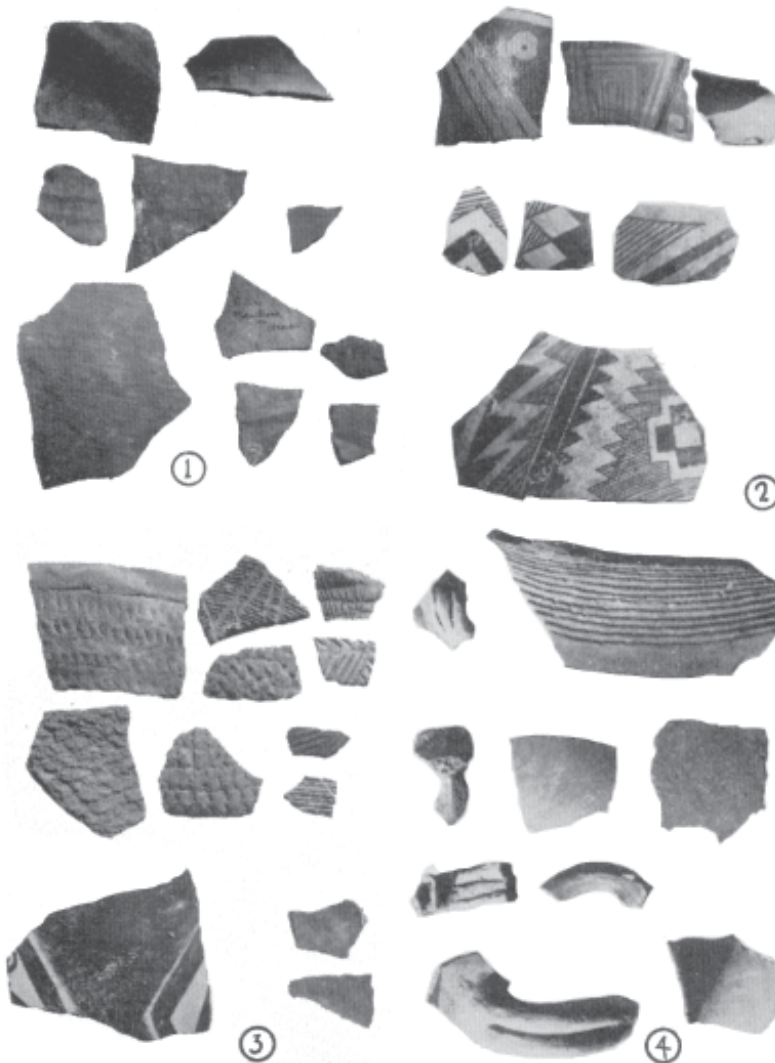
Mimbres is ordinarily found at every site, which is true in a much lesser degree with Casas Grande or Chihuahua polychrome. It is generally conceded that Mimbres is the older of the two. The clear cut designs of black on white, the smooth interior, and the naturalistic or geometric figures are of extreme beauty.

Three fourths of a wonderful bowl was found along the Ruidoso River in the White Mountains. It had a naturalistic design of a mountain sheep filled in with a very complicated geometric pattern. This may tend to carry Mimbres culture rather further

Plate 6

POTTERY OF EL PASO DISTRICT

1. El Paso Red and Black on Brown.
2. Top: Chihuahua.
Middle: Chuperdero.
Bottom: Mimbres.
3. Top: Corrugated and coiled ware.
Bottom, left: Middle Gila Polychrome, variation.
Bottom, right: Little Colorado, variation.
4. Miscellaneous; handles, coarse, brown, and buff ware.



east than was at first suspected. Perfect pieces of this pottery are found in great numbers near Deming, New Mexico, the center of this culture. There are several fine collections here gathered from the immediate vicinity of Deming—one of which contains a fine example of Mimbres polychrome which is very rare.

Chihuahua, or Casas Grande Polychrome

Of Chihuahua pottery, the sherds mostly found are the polychrome painted ware, beautifully made of fine clay, and very artistically decorated. This ware is generally conceded to have reached the high water mark in prehistoric ceramics.

In line, color and material Chihuahua stands easily first, but Mimbres runs it a very close second.

Miscellaneous

Corrugated and red ware are also found as well as many incised pieces. Painted birds are reported, and also several pottery animals. At the Hueco Tanks a small clay arm was found with a bracelet around it, very similar to some from San Juan de Teotihuacan far to the south, near the City of Mexico.

Recent acquisitions to our collection are four food bowls in red and black, and a red on terracotta bowl, all from our district—and apparently rather rare.

ARCHAEOLOGICAL NOTES OF THE BIG BEND REGION

BY VICTOR J. SMITH

During the past few years, studies and surveys conducted by the University of Texas and several Texas scientific societies have established the fact that Texas is an area containing a great variety of cultural evidence, destined to become outstanding in its contributions of knowledge concerning prehistoric man in North America. Texas has within its boundaries climatic conditions that range from almost tropical to conditions in many respects equal to the northern portion of the temperate zone. This paper deals with the Big Bend area, that section of the State lying west of the Pecos River

The importance of the Big Bend, or Trans-Pecos section, as an archeological field may readily be visualized if a map is consulted and its relationship with districts to the east and north determined, together with the fact that it either borders on, or is a part of, the Southwestern Division.

Climatic conditions in the Big Bend are more nearly like those of the Southwestern states than other parts of Texas to the east. Naturally such semi-arid conditions have been favorable to the preservation of specimens which, in many sections would have long ago perished. Such dry weather conditions, together with a rugged topography, offer numerous sites where fragile materials have been preserved in a bone dry state for many years. Mountains in the vicinity range from 300 to 3,000 feet above the adjoining plains or valleys with their peaks from 5,000 to 9,000 feet above sea level. The rock shelters found in these mountains will be mentioned in a later paragraph. The many caves in limestone or "lava" rock, however, offered unusual opportunities for shelter; the mountains provided conditions of refuge not usual to a level country; game abounded in the section; and springs and mountain streams, always provided a much more sure supply of water to the Indian than a casual observance of the country today would lead one to believe.

So far as possible accurate records have been made covering sites in this section of the State. It is important that complete ones be secured before the damage or entire loss of materials make investigations impossible. For example, pictographs in certain localities are being rapidly obliterated by vandals, and treasure hunters are digging into much valuable scientific material with no thought of the havoc being wrought to anthropological research. The records referred to include field notes, maps, drawings, photographs, and museum specimens. Sites from which such evidence has been gathered number 168 and range in size or importance from small open camps to extensive sites indicating habitation for possibly thousands of years.

Open Camps

In a discussion of open camp sites, it should be said that the Big Bend is known as an Apache country and that the Mescalero branch of the tribe is supposed to have occupied the section as far back as authentic history can trace. The very geographic location of the area, however, has always made it subject to forays, migrations, and hunting expeditions. History records the fact that the Comanches from east of the Pecos river made inroads into the Apache territory. As Texas became more settled, these inroads became more frequent until finally the Davis and Chisos Mountains became the scene of the last stand of the Indian in Texas, the last group of any numerical importance being driven out of the Big Bend in 1870.

Many of the open camp sites show evidence of scant use, therefore, these may have been occupied by the Comanches, who were unused to the rock shelters and preferred tents with other forms of prairie living. There can be little doubt that the Comanches, when traveling quickly as they often did used the caves for temporary occupation. Types

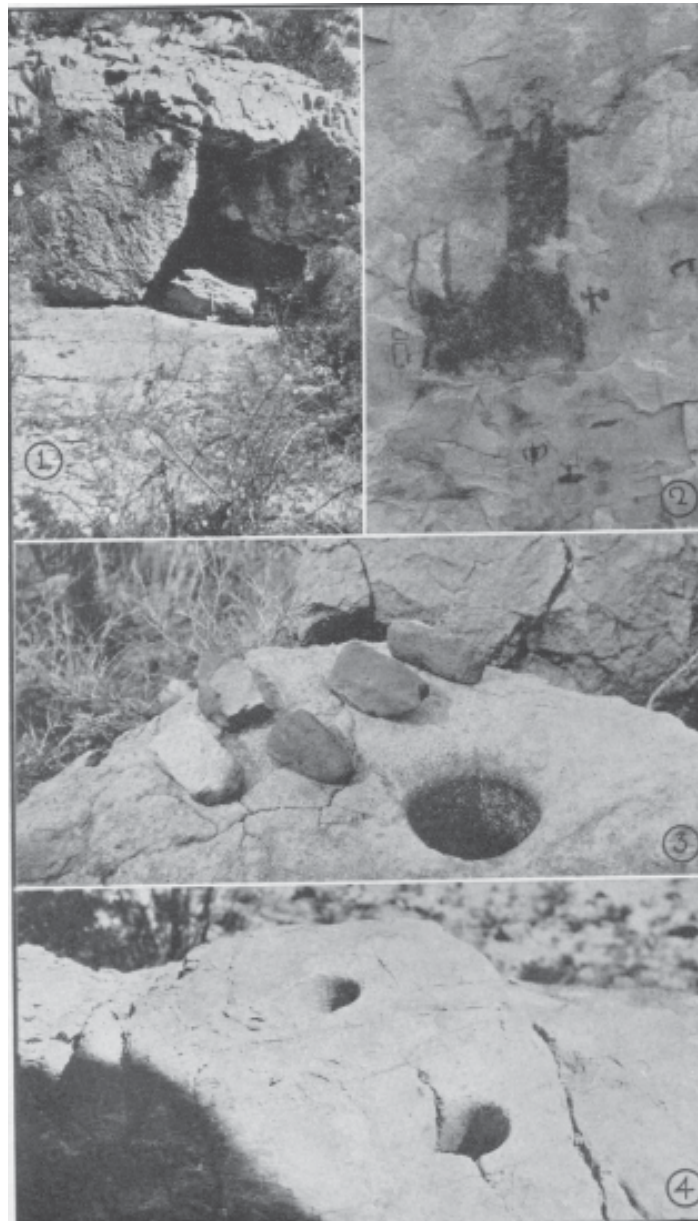


Plate 7
BIG BEND AREA

1. A typical dry rock shelter. The rock in the mouth of this cave is almost completely covered with "V" shaped lines.
2. Pictographs. Aqua Frio Bluff, Brewster County, Texas. These interesting figures all in red. Small figures about 7" in height. With the exception of the horse and rider here shown, only one additional site has yielded evidences of white influence among the pictographs of the Big Bend. This illustration also shows the man with inverted bow which occurs in many widely scattered localities.
3. A mortar with fragments of pestles found near. This hole is eight inches in diameter and eighteen inches deep. It is the most perfect specimen known to the writer. "Volcano Village Site," Jeff Davis County.
4. Mortars at Molino Cliff, Brewster County. These represent two of the sixteen on the elevated shelf of rock. The marks of the human body are still clearly visible.

of artifacts yielded by the open camps are: metates, manos, scrapers, arrowheads, and some rocks with lines or inscriptions. Rock circles still mark the location of tepees. Burnt rock mounds are found in abundance but as a rule there is no evidence of extensive camping in the immediate vicinity.

Practically all camps, regardless of type, are situated within a mile of a water supply.

Rock Shelters

Swallows have nested, and both wild and domestic animals have lived in the shelters and caves for ages, thus contributing much to the cave deposits. Also rocks have fallen from the roof in many instances; and there are large accumulations of ashes which treasure hunters have often "stirred," all of which produced a condition making accurate investigation difficult. Large masses of bulky materials must be moved as well as an exceedingly fine dry dust constantly to be contended with. But the very condition that has just been described has made possible the preservation of some very unusual and fragile types of specimens—available only because of the exceeding dryness and possible chemical assistance secured by the presence of ashes.

The rock shelters which have been mentioned are found in canyons, at the faces of bluffs, or at the top of the talus. The most important of these sites take the form of long open shelters with overhanging rocks which afford protection, or they are caves extending back into the rock. All of the caves, save a few with irregular rock floors, are covered with litter from six inches to six feet in depth. The last mentioned type of shelter varies from ten to thirty feet in width at the mouth and from ten to fifty feet in depth. Such shelters, of course, afford unusually good protection from the weather (many of them face south). Indians often added to the comfort and safety of these shelters by building walls in front or by closing undesirable openings with rough masonry or rock piling.

Rock Shelter Artifacts

The bones of animals, as might be expected, are found in great profusion—split bones being found

in all of the larger caves and the bones of deer, bear, and antelope are rather common. Implements made from bone are restricted to the awl type.

Grinding Devices

These are the mortar and pestle, and the metate and mano. Measurements of hundreds of mortar holes made in living rocks indicate that the average diameter is seven and one-half inches and the average depth is fourteen inches. Often there is a "side rest" of shallow depth. The cross section shape of the typical mortar hole is like that of a conical projectile. It is our conclusion that, once a depth of fourteen or more inches was reached, another such grinding hole was developed, starting at some gas hole or depression in the rock. This change was made necessary because of the difficulty in securing rock pounding stones or pestles of sufficient length. It is probably true also that stones tied to stick handles may have been used in some of the seventeen to twenty inch holes. The size range of these grinding "mills" vary from the smallest smooth pocket to a maximum of 12" in diameter by 24" deep.

In these mortars such food as mesquite beans, acorns, corn, and similar materials were pulverized.

The characteristic pestle is circular in cross section (usually broken when found) and generally from eleven to fourteen inches long when undamaged. The point or nose is the distinguishing part, being round, and slightly pointed with an evident worn surface. At one location where the rock was rather hard red sandstone, the smooth, almost polished, surface of the rock indicated clearly long contact with the human body just as may be observed at the mouth of narrow caves. This glossy surface indicated that the squaw sat flat with legs on each side of the mortar hole while she did the laborious work at the mill.

Metates and Manos

Almost as common as the mortar and pestle are the many metates and mano stones to be found in all types of camps and among excavated specimens. A typical metate is about twelve or fourteen inches

wide, sixteen to eighteen inches long, has a concave surface dished about 1 1/2" to 2" deep, and weighs from 25 to 175 pounds, according to thickness. The texture varies from a very coarse lava formation to a very smooth surface and exceptions to the preceding range to huge specimens in living rock, deep basins going entirely through the stone, and exceedingly heavy artifacts.

The typical mano, or grinding stone, is an oval stone which fits a large hand well and has the general shape of a cake of soap.

Other Artifacts

Other stone artifacts include a variety of weapons. Almost 90% of the arrowheads or points found in the open are of rough material and represent rather unskilled or hasty workmanship. No flint mines of importance have been found and it is assumed that this shortage of material accounts for the type of craftsmanship. A number of very finely wrought flints, however, have been found, notably those from the "Santiago Peak Grave" and the "Livermore Cache." At this latter place 1250 museum specimens were unearthed, most of which are small points representing good material and workmanship.

A few spearheads indicate nothing unusual as to type and but a single axe or stone hatchet probably represent an imported specimen. I should mention, however, a single specimen of unusual interest. This is a small hafted hatchet, still set into an agave stalk of 2" diameter; the handle was burned off a short distance from the blade, which was of good quality flint.

Scrapers and Knives

We may close this brief discussion of stone implements by mentioning the knife and scraper. The former is found in exceedingly crude form and the latter is usually of the turtle back type and exhibits a variety of sizes and degrees of workmanship. It is believed that the scrapers and knives were used in the preparation of skins. Quite often a large rock surface over a large area will be found smooth and glossy, indicating a probable

place for dressing and working upon the skins of animals.

Artifacts of Wood

We have believed that the collection of wooden artifacts is much more important than that of stone, even though the effort involved is greater and the results achieved are always much less extensive and showy.

A brief tabulation of such articles of wood follows:

(a) Fire sticks. These are of soft punky wood, about 3/8" in diameter with the characteristic holes allowing air. Much fine bark and vegetable matter accompany the cave finds.

(b) A "wooden knife" or shaft straightener. This is a single specimen which might formerly have been an atl-atl converted into another implement because of damage. The size, material (polished post oak), shape, and characteristic carving leads to the above conclusion. The diagonal hole in this specimen is about one inch in diameter and is highly polished from constant rubbing.

(c) Sharpened sticks. The diameter varies from 1/2" to 3/8" and they are a foot or more long. Possibly they were used as forks or skewers.

(d) Sticks wrapped about with fiber string. One of these specimens was wrapped with fiber bristles indicating its use as a crude brush.

(e) Large sticks placed for the protection of burials or caches. Sometimes bent and tied at the top. Larger pieces were used for firewood.

(f) Shafts. Possibly used with the atl-atl.

(g) Throwing sticks (atl-atl). Typical size, 5-8" thick, 1" wide, and 14" long.

Artifacts of Fiber

Almost of equal importance with the above are the materials made from the fiber of desert plants.

(a) Baskets are largely of coiled bowl shaped types and without decoration. The largest sizes are nine inches high and twenty inches in diameter.

As this is being written additional types of smaller baskets have been placed in the Museum but, as yet, neither classified nor studied.

(b) Sacks, nets, storage sacks, and containers. A variety of woven articles evidently used to carry children, store or carry food, or for the burial of infants. Similar in weave to the mats but of finer texture and sometimes openwork resembling a coarse fish net.

(c) Mats. Several types of weave and edging.

(d) Sandals. With thongs, vary in sizes from child to man. Most of these specimens are badly worn but a variety of weaving methods may be observed. No leather footgear was found.

(e) String and rope work. Hundreds of short pieces of string have been found in the caves. These range in size from 1-16" in diameter to ½". Two types of manufacturing include a three strand spiral twisted string and a three strand plait of smaller string.

A large number of chewed fiber "cuds" often showing the marks of human teeth, seems to indicate that the fiber was softened in this manner before being twisted into string.

Large numbers of specimens include more roughly made materials used for tying. While there is no fishing in the district away from the Rio Grande, some of the finer materials suggests a net, possibly for catching rabbits.

Other Cave Artifacts

Other items in a typical list of cave finds include charcoal, ochre, crude salt, paint balls, gourds (one 18" high and decorated, evidently a grain storage), small corn cobs, firewood, cactus hulls, ashes, acorns, Spanish walnut shells, flint chippings, rocks used about the camp fire, crayon, and coils of fiber. These coils, sometimes with strings holding the material in place, resemble pot rests or basket rests but may have been merely materials held in storage. The very limited pottery finds indicate late imported specimens or only the crudest beginnings of pottery work.

Ornaments

Another important phase of ethnological study is that of the ornament, since it represents the most advanced progress made by Neolithic man. Possibly beads form the most important group in a study of ornaments as they relate to the section under discussion. The specimens collected range from a single piece to as many as 70 found in one grave. These beads fall, according to size, shape, and material, into the following groups:

1. Tubular, cylindrical—thigh bone of fowl.
2. Short cylindrical bone—quite smooth and sometimes polished.
3. Discoidal beads—bones.
4. Round and Oval beads—turquoise.
5. Seed beads—elliptical shape—holes size of pin.

In some cases beads are found strung on a cord but usually the string has long since rotted away. One of the tubular bone ornaments is marked with a tabulation consisting of nineteen small marks or scores. Turquoise is found near Valentine, Texas.

Pendants

Closely associated with beads as ornaments are pendants, two classes of which have been observed. The largest group in size is typically of a triangular shape wrought from a rather soft white stone. Next in size are the ovate type varying from ¾" to 1½" in length and about 3-32" thick. These are usually made from materials resembling shell but they do not reflect colors like mother-of-pearl.

Charms

Another group of specimens border upon a classification between ornaments and pictographs. These are charms, pocket pieces, and problematical articles. Among them are found a stone article about the shape of a small doughnut; the shoulder blade of a deer inscribed with tiny black figures of snakes, animals, and conventional lines; a hemispherical stone carved with lines indicating the eyes, nose, and mouth of a man; flat oval stone objects with painted figures; and polished pebbles.

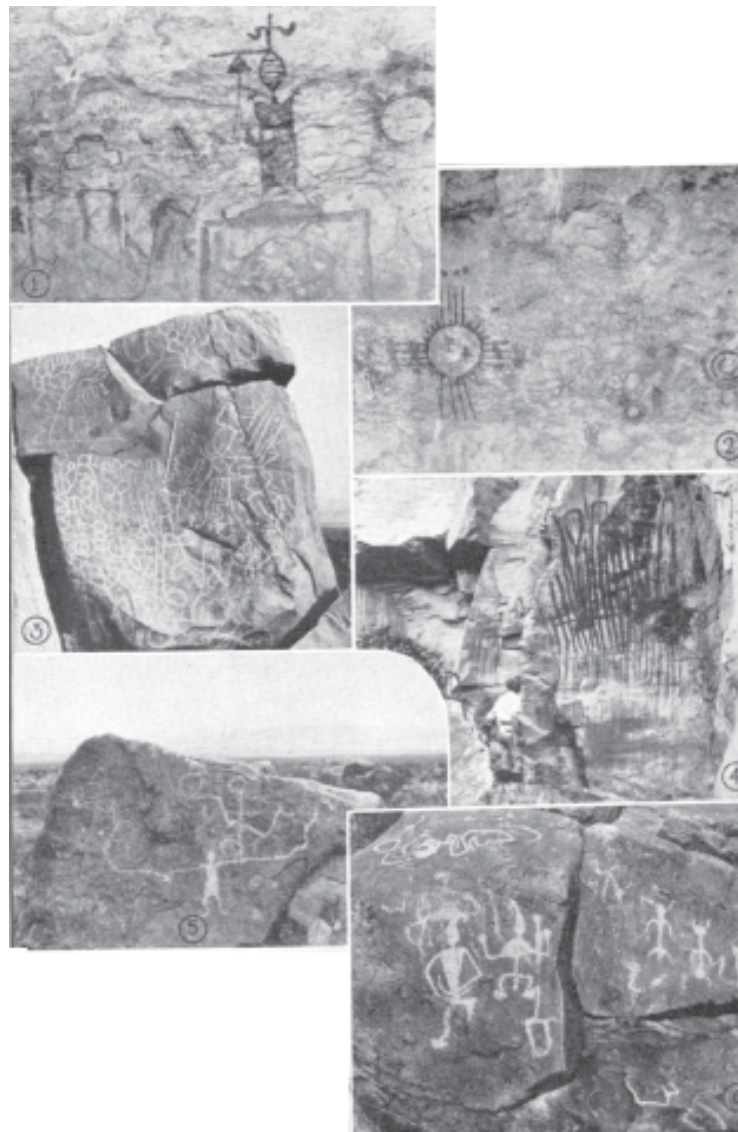


Plate 8

PICTOGRAPHS AND PETROGLYPHS, BIG BEND AREA

1. Pictographs at Painted Springs near Dryden. Ancient hand prints are shown dimly as compared with more recent drawings.
2. Pictographs at Painted Springs near Dryden. Sun symbol, men, animals, conventional symbols, and an eagle with outstretched wings and body in various colors of concentric circles.
3. Lobo Petroglyphs near Valentine. This huge rock (note two foot rule) is covered with conventional symbols which continue around the edge and over the top.
4. Pictographs in Nation's Canyon, Jeff Davis County. The tall snake figures are in red and the stripes to the left are in white orange, and red. At the base of the cliff a shoulder blade of a deer was found, upon which had been painted tiny pictures representing snakes, a mountain goat, and conventional figures
5. Lobo Petroglyphs near Valentine. This is said to be a snake dance figure.
6. Lobo Petroglyphs near Valentine. The drawings have no pigment but secure their tone by the freshness of the rock removed as compared with the older surface. No chalk or other material was used to bring out the contrast in taking these photographs.

Pictographs

The paintings more commonly found are pictographs. It should be said the Big Bend is a fertile field for the study of pictographs. Their abundance is probably due to an excellent supply of cinnabar and other pigments and partly because of sheltered rock surfaces which have preserved the drawings. Twenty-three sites have been recorded which have pictographs in varying numbers. Most of the pigments are red (cinnabar). Other colors, in order of numbers and importance, are: Orange, white, yellow and black. In many cases crayons were used to apply the color, in others a brush. Handprints were sometimes sprayed from the mouth or the hand dipped for the process.

Two great divisions include the types of drawings used. These are the geometric forms in one group and the figures of men and animals in another. In the former are found dots, circles, rectangular shapes, lines, arcs, spirals, triangular shapes, and many elaborate combinations, possibly representing maps or conventionalized forms conveying messages to those familiar with their key. Animals, sometimes most realistic in their expression of action, form a large group and the human figure another. Hunting scenes in which both appear are frequently observed but weapons of the hunt are primitive and not those of European influence. In fact, with the exception of but two locations, one of these quite minor, there is to be found no white influence among the pictographs messages left by ancient man. Speculation as to the age of the pictographs is fruitless but evidence

indicates that they reach back to basket maker times. Some locations reveal old painting superimposed upon one or two layers still more ancient.

Petroglyphs

Of still greater age are the petroglyphs, laboriously pecked upon the rock by hand, which are often so old that the once fresh lines are so dimmed with age that they are traced with difficulty. Only two petroglyph locations are important, but these are extensive and present valuable fields for study.

Pottery

It may be said with some certainty that the Big Bend Indians did not make or use pottery to any extent.

Basket Makers

This brings us to our most important conclusion, namely, that there is constantly accumulating evidence in the deeper finds representing a culture so closely resembling Basket Maker that anthropologists are warranted in considering a major portion of the Big Bend well within the area admitted as basket maker territory. Space forbids a detailed tabulation of evidence bearing upon this point but future investigations will show the same evidences over an area extending to the east as far as the Devil's River and the Pecos Valley.

ARCHAEOLOGICAL SURVEY OF THE NORTH PANHANDLE OF TEXAS

BY FLOYD V. STUDER

This report briefly lists the results of the archeological researches of the writer in the Texas Panhandle region during the past twenty-four years. During this period 110 major ruins have been located and platted. A careful record of the minor artifacts has also been kept.

The section of the State covered by this report is characterized by high level plains which are cut by east and west drainages of the Canadian and other streams on which sandstone, limestone and other materials outcrop, all of which were used extensively by the pre-historic inhabitants. While the Plains are generally bare of trees, the river courses are usually lined with cottonwood, hackberry, willow and chinaberry trees; with an abundance of mesquite trees on the Plains along the various tributaries of the larger rivers. Wild animal life and game are abundant in this area, and the bones of these are found in practically every site.

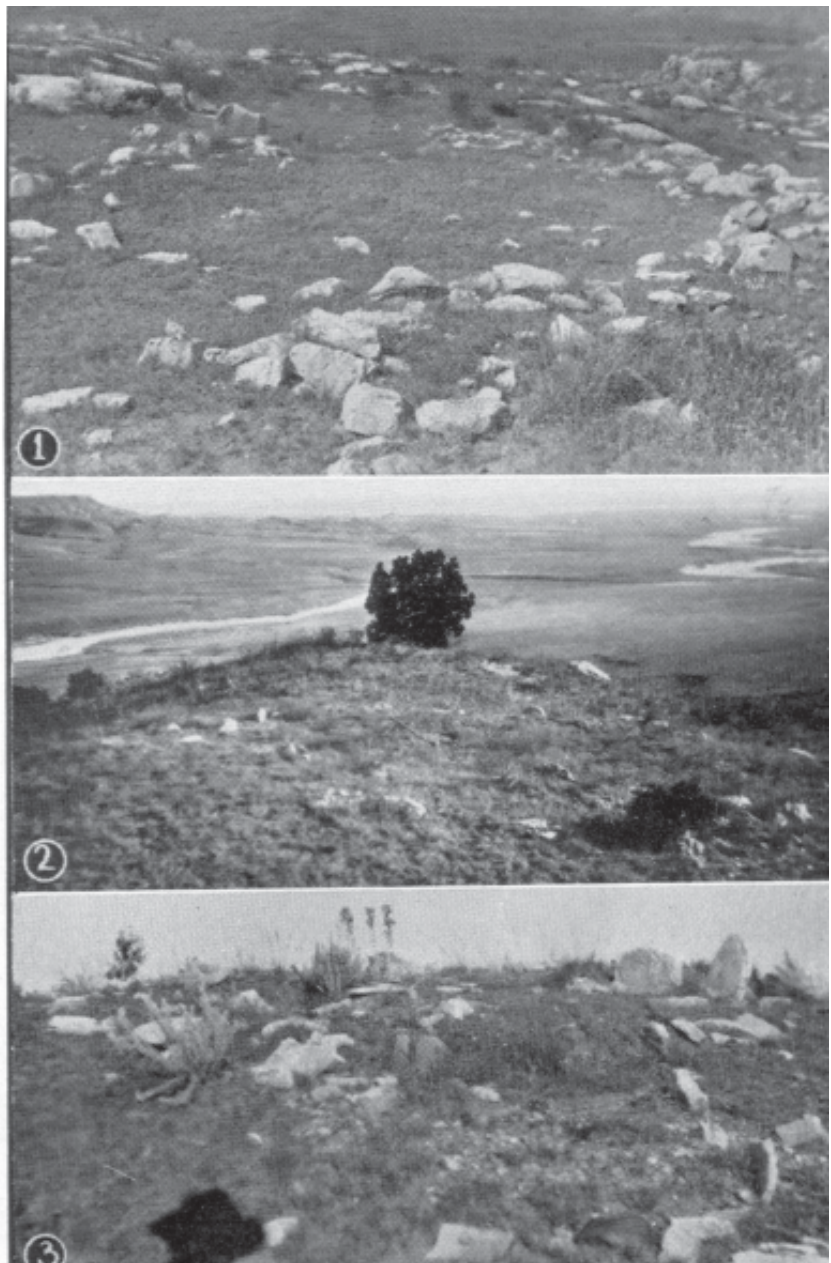
The prehistoric ruins are characterized by a type of location which apparently was chosen primarily for protection from warring tribes and the elements. Even a convenient water supply was sacrificed, though most of the streams carry water throughout the year and numerous springs are found.

The general characteristics of each type of site in this section will be given, with accompanying artifacts, rather than a specific description of any particular site.

Plate 9

TYPICAL POST BASKET MAKER SITES, NORTH PANHANDLE OF TEXAS

1. Large rectangular room in center, outlined by projecting stones showing outside walls.
2. Group of rooms. Several walls outlined by projecting stones,
3. Small group of rooms on rim of flat topped hill overlooking Canadian river.



Post Basket Maker

Many Post Basket Maker sites recorded show later occupation by the Plains tribes. Many of the Post Basket Maker sites are entirely covered, their presence being indicated by sherds, flint, etc., carried to the surface by rodents.

The Post Basket Maker sites are characterized by masonry and pottery. Some of the sites consist of only three rooms; one site is known to have 55 rooms and the rooms in all of the sites will vary from six or seven feet across to twenty or thirty feet, and are usually square or rectangular in shape.

Typical Post Basket Maker pottery is coarse, heavy ware, tempered usually with mica, but sand and shell were also used as temper. All of it is of the "basket" type, showing the basket weave impressions. Occasionally, thin types are found.

The inside of the pottery is smooth and is covered both inside and out with a slip which is most frequently either of a dull greenish grey or black, and less frequently of a light red. The majority of the sherds are heavily blackened with soot from use.

In only two of these sites has typical pueblo pottery, as identified

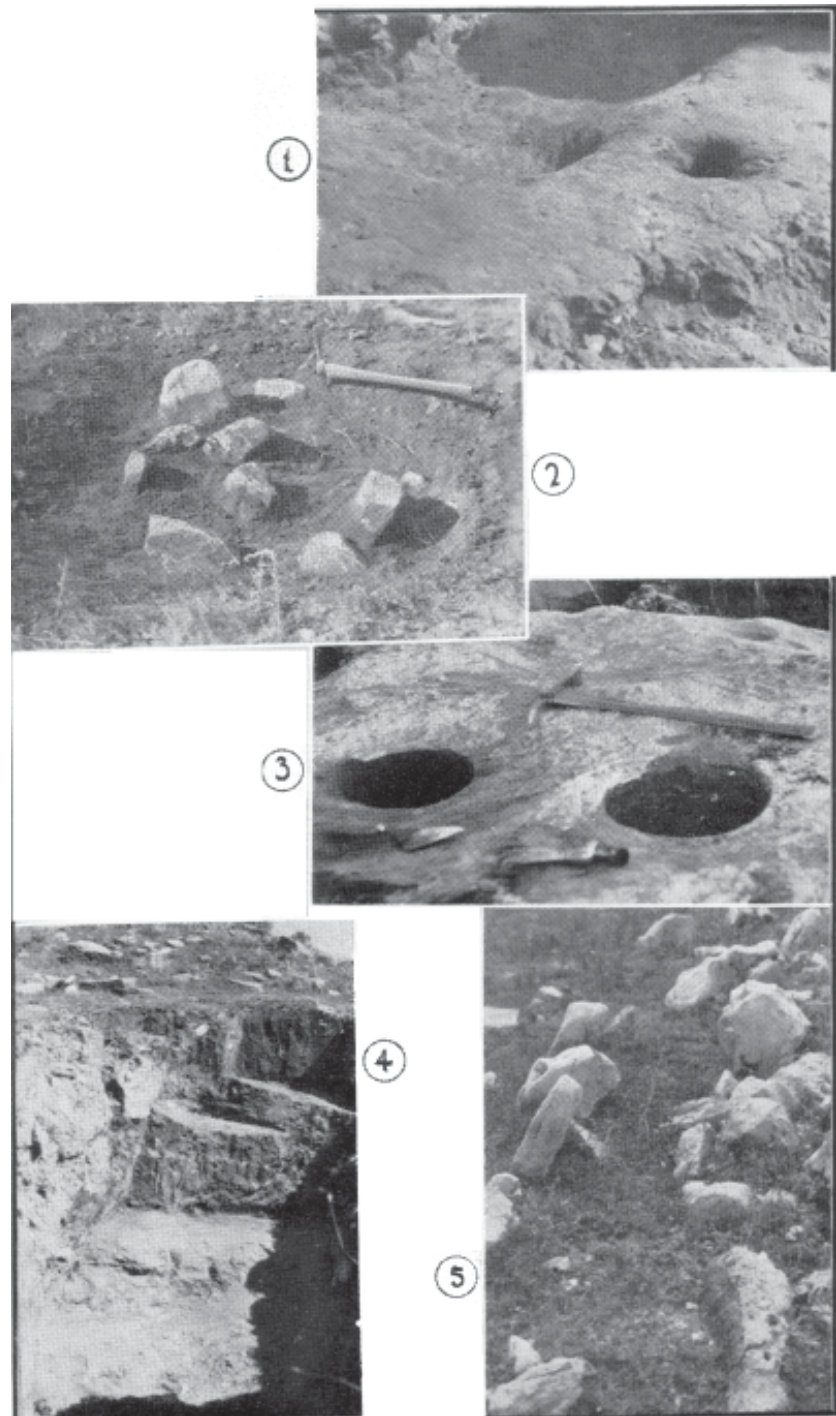


Plate 10

POST BASKET MAKER SITES

1. Floor in Post Basket Maker site. Shows fireplace adjoining ash pit, and post holes.
2. Small cist adjoining Post Basket Maker site. Three feet in diameter and 20" deep. Resting on a layer of stones the size of one's fist, and immediately below the stones showing on the surface, were two sections of antlers, approximately 7" long. Beneath these, was fill consisting of loose soil.
3. Round mortar holes in stone ledge.
4. Four superimposed floors in Post Basket Maker site. In each instance, the floor of packed and smoothed clay was laid on top of debris filled with ash and charcoal, bones, and artifacts.
5. Wall of Post Basket Maker site. Two rows of vertically laid stones.

by Dr. A. V. Kidder and Dr. Warren K. Moorehead, been found. At one of these sites, No. 63, four superimposed floor levels have been found.

The masonry of the Post Basket Maker sites is generally of the vertically laid wall type, consisting of two parallel rows of stone slabs set on edge with the centers filled with adobe and stones. The outside stones are from three to eight inches thick, and sometimes measure as much as thirty-six by forty-eight inches. Some of the walls are only 12 inches thick, and others are 40, the average being 30 inches.

The roofs were evidently of thatch covered with adobe, as indicated by frequently found remains of burned clay which show distinct marks of reeds and small twigs.

The floors of the rooms are of clay, with fire pits of either plaster or adobe, or of small flat stones in the form of hearths. Cists and post holes are also frequently found in the floors.

The artifacts accompanying this type of site are: Metates and manos, beveled projectile points and knives and double beveled knives; notched knives; scrapers; drills; and in one site, a tubular pipe.

Bone, flakes of flint, charcoal and ashes, all appear in abundance. Obsidian flakes are frequent.

Pottery; bone implements; incised bones; basketry; corn, mussel shell, hammer stones of flint and quartzite, and abrading stones of "rottenstone," are also found.

At one Post Basket Maker site there is horizontal masonry, consisting of a wall four feet high in the corner of a room. The other masonry at this site, which is near the New Mexico line, is vertical. At another site, No. 28, one room shows horizontal masonry over vertical masonry. There are four layers of horizontal stones in evidence.

Sand Dune Site

One site unusual to the Panhandle section is located in a large drifting sand dune, the dune is about 20 feet high and is close to shallow water. It

is 110 miles Southwest of Amarillo, and outside of the Canadian river area.

The site covers several acres, and the large hearths and heavy debris, suggest long occupation.

Black on white pottery, and coiled and finger decorated types occur; also a red slip, all distinctly pueblo and not Post Basket Maker.

Obsidian objects, one copper point, and a copper ring, buffalo bones, and a complete buffalo skull were found.

Here, an unusually large number of scrapers smaller than those appearing at the typical Post Basket Maker sites were found, and incidentally, the largest scraper known in this part of the State.

Plains Sites

The Plains sites are of historical occurrence, and frequently are located at old Post Basket Maker sites, where the foundation stones were used for hearths and rings of stones show where they held down tepee edges.

Pottery found at the Plains sites is a smooth coarse ware, rather thin without decoration and usually tempered with coarse clean sand.

At a Plains site four miles from Post Basket Maker Site No. 5-G. C. at the head of a spring, many artifacts and fragments of flint, hearths, buffalo bones and charcoal were found. Most significant of all, ashes, flint, charcoal, and buffalo bones occur in a high embankment adjoining a small stream fourteen feet below the soil surface.

The typical Plains sites artifacts are:

Plains pottery (not found at all of the sites); metates, of thinner slabs of stone than the Post Basket Maker, but of the same material. All projectile points, knives, and scrapers are heavier and coarser than the typical Post Basket Maker types.

Small hearths, bone, and large scrapers are characteristic of the Plains sites.

Rock Shelters

The rock shelters in this area, so far as known have not been used for habitations, but in them pictographs and petroglyphs appear. Also the burial described in this paper.

However, a rock ledge facing south, 8 to 15 feet high and extending for several hundred feet, in the immediate vicinity of the shelter in which the burial was found, has been extensively used. This ledge shows a heavy accumulation of debris along its entire base and there is evidence of a Post Basket Maker site in connection with it, as well as a Plains site.

A fine supply of water near at hand was probably the main attraction, as well as the protection the site provided.

Cliff Dwelling

At the Post Basket Maker site in the vicinity of the location just described, a part of the ledge has been utilized as a room wall, similar to the cliff dwelling sites to the west of this section.

Burials

Three or four types of burial occur within this area.

Post Basket Maker

Some of these are found within the abandoned rooms of ruins, as at the Handley ruins. Other similar burials are within close proximity to the various Post Basket Maker sites.

Rock Shelter

A few rock shelter burials are found, that near Post Basket Maker Site No. 15 was completely sealed with horizontal masonry. Pack rat holes had caused water to run into this burial, but several bone fragments were found and there were quite a number of pieces of typical Post Basket Maker pottery.

Rock Circles

Other types of burials were surrounded by small circles of vertically set stones. Artifacts are only found in some of these, while in others there are no skeletal remains.

Rock Mounds

Some burials occur with the skeletal remains entirely covered with a small mound of loose stones.

Recent

One burial accompanied by metal artifacts and glass beads was found in soil, along a small water course. There were no stones about the grave.

A similar burial was also found accompanied by metal artifacts and glass beads, but entirely enclosed with small stones and resting on stone.

Pictographs and Petroglyphs

Both incised and beautifully painted rock pictures are found in this area, a great number of them occurring at the rock shelter site described in this paper.

Flint Mine

Flint mines have been located at two places in this section.

Site No. 58 is an unusually large agatized dolomite quarry. Most of the flint is in brilliant colors. Evidence indicates that thousands of tons of this material have been taken out. A bird's eye view from a distance shows the top and sides of the mesa to be pock-marked with large excavations, which extend for six tenths of a mile. Many workshops adjoin the site for a distance of a mile or more.

Such mines are not very plentiful in Northwest Texas, although there are several outcroppings of agatized dolomite on the north side of the Canadian river, but none of them were worked so extensively as this one. This prehistoric quarry is located within a mile and a half of the large Post Basket Maker

Site No. 28. There are also many Plains sites adjoining the quarry.

There is another primitive mine of some consequence between Silverton and Clarendon. This agatized dolomite appears to be easily worked as many projectiles from small points to the largest

spear heads are found made from this material. Various types of scrapers, knives, hammer stones, axes, awls, hoes, and lances made from the same material occur throughout this section. But there are also found artifacts made from other materials.

Plate 11

NORTH PANHANDLE OF TEXAS ARTIFACTS

1. Typical Metate from Post Basket Maker site
 2. Moccasin Last.
 - a. Side view.
 - b. View from above.
 - c. Sole.
 3. Typical Post Basket Maker projectile points.
 4. Typical knives, Post Basket Maker sites.
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RECENT ARCHAEOLOGICAL RESEARCHES IN THE ABILENE SECTION

BY DR. CYRUS N. RAY

PREHISTORIC TEXAS BURIALS

SANDSTONE RECORDS OF ANCIENT MEN AND ANIMALS

The Stone Grave People

Late in 1930 Mr. W. J. Van London and the writer were kindly granted permission to make archeological examination of the De La Fosse ranch by the owner, Mr. George De La Fosse. At this place Hubbard Creek turns north and crosses the paved highway between the towns of Albany and Breckenridge, Texas at a place ten miles west of Breckenridge. On the west side of the bridge and on the south side of the road the ground rises gradually at first, and then steeply to a high rocky ridge which parallels the east and west course of the creek at this place for a mile or more. All along the foot of the hill are gullies and where these cut through the rather high north banks of the creek are exposed outcrops of a stratum of camp site debris which lies buried under ten inches of soil. It consists of burnt rocks, numerous mussel shells, flint flakes, hammerstones, manos, metates, scrapers, and a few heavily patinated broken projectile points. These artifacts have a thick white shell of patina on the outside with blue flint centers.

While we were examining this site the writer noticed about an inch of what appeared to be the rounded edge of a metate projecting out of the ground. Upon digging this out, it was found to consist of one half of a broken metate setting on edge which was one of a small oval enclosure of buried flat stones set on edge. The center was found to be filled in with more flat stones laid horizontally. When these were removed to a depth of two feet a skeleton was exposed which was lying on its right side with the head to the west and facing south. The knees were flexed and the thighs flexed on the body. The arms were flexed and the hands rested on each side of the head.

The broken metate set at the head was the only artifact found although many rotten shell flakes may have been remains of shell ornaments.

Another Stone Grave

About a half mile farther up the same side of the creek in a high bank the writer, on a later trip, observed small portions of the edges of three flat stones projecting from the soil slope. Upon digging these out another oval enclosure of flat stones set on edge was found and again the center was filled with long flat stones set horizontally and below these also rested a skeleton lying in the flexed or embryonic position which also had the head to the west and facing the south and the hands on either side of the face. There were no artifacts in the grave although as before there were many flakes of rotten mussel shells and considerable charcoal mixed in the soil, however there were no signs of fire on either bones or stones.

Stone Grave Skeleton Exposed by Erosion

Mr. L. A. Beyer living four miles northwest of Abilene has a valley field which was crossed by the meanderings of a small creek branch which was usually dry. A few years ago he dug a ditch four feet deep through the valley to straighten the stream. After a heavy rain a skeleton in good condition washed out of the bottom. Mr. Beyer realizing that the bones might be of scientific interest excavated them carefully and brought them to town. The writer secured these bones and visited the site with Mr. Beyer. This skeleton from all accounts lay in no special order, nor was it in a stone grave. Stream erosion had washed it out of the bottom of the ditch at a depth from the surface of four feet. It came from an old valley floor level which has since been covered with that depth of soil. At this four foot level at several other places along the same ditch erosion had exposed small hearth rings composed of burnt stones three or four inches in diameter and flint flakes. Also a few portions of broken flint artifacts had eroded out. This skeleton had all the

peculiar anatomical features of the other Stone Grave skeletons. Its absence from the typical grave is unexplained; however, the frontal bone on each side just above the outer ends of the orbits shows six long deep scratches in the bone, three over each eye as though they had been made by some cat like animal in trying to scratch out the eyes. The wounds must have been quite severe.

Burial in Waterless Camp Site

Ten miles south of Merkel, Texas is a small dry creek branch of Mulberry Creek which carries no water except immediately after rains, however this creek branch has a quite extensive old camp site on both of its banks. The larger part of the camp debris lies on a neck of high ground left between two creeks where another smaller creek joins Mulberry creek. From all evidences this camp site has been covered with considerable soil since its abandonment but the reverse process is now under way and its margins are being gullied and washed away. The site shows several burnt rock mounds of smaller size, and erosion has exposed an almost continuous layer containing burnt rocks, mussel shells, flint chips, manos, metates, scrapers, hammerstones, knives and many of the larger sized so-called arrow heads (they may have been atlatl heads).

The site bears every indication of having been the permanent camp site of a populous village over a considerable period of time. There is now no spring, water hole, nor permanent water supply within many miles of this site. During the greater part of the year this site presents an appearance as dry as that of any part of this section. Either the site must have existed when climatic conditions were more moist and such

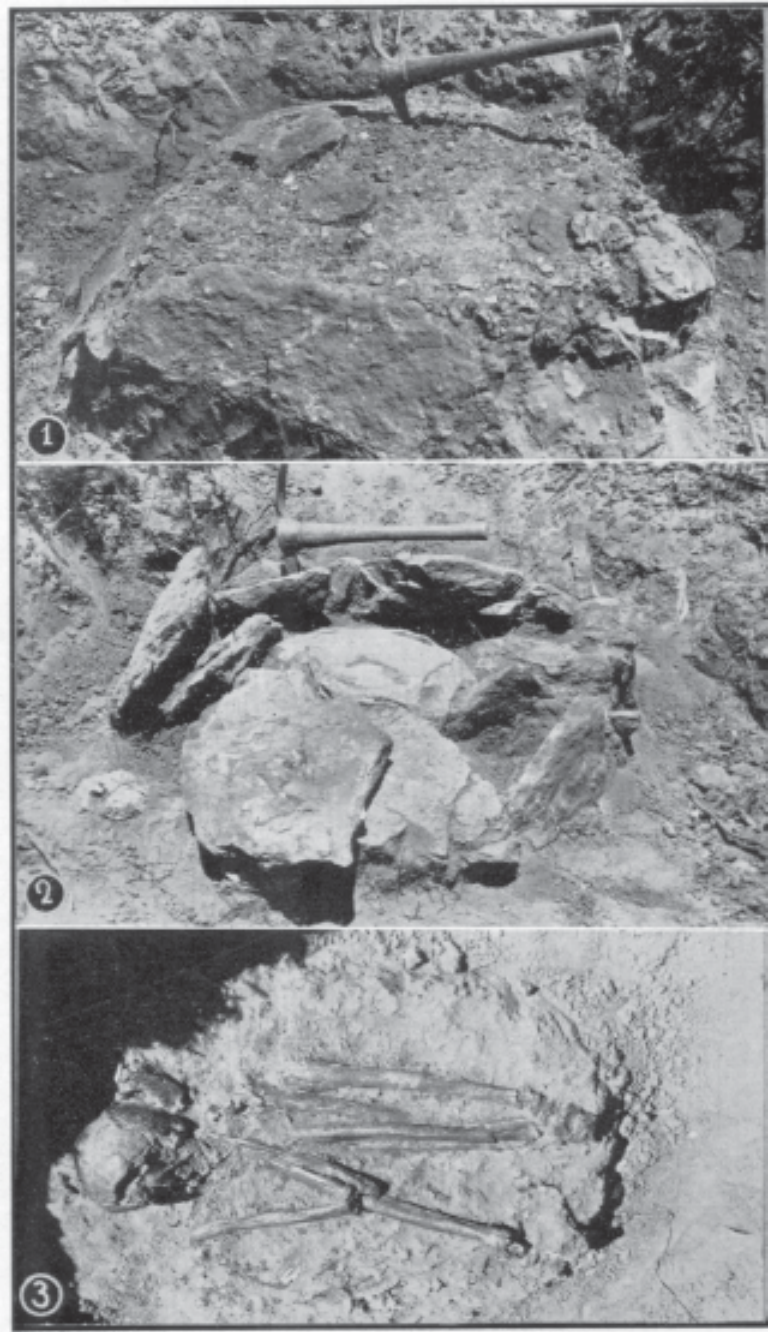


Plate 12

STONE GRAVE BURIAL IN WATERLESS CAMPSITE

1. View after top soil has been removed from over grave stones.
2. View of gravestones after the dirt had been removed from between them. The oval ring of stones in this grave had evidently fallen inward. In the usual stone grave, the outside ring of stones sets on edge sometimes vertically and sometimes leaning slightly outward at the tops.
3. View showing skeleton in place after removal of grave stones. Mussel shell in foreground beside ribs.

small branches contained permanent water, or a spring on the site has vanished. It is certain that no primitive camp site could be maintained there now. This burial also was under a stone grave made very similarly to the others. The skeleton also lay in the flexed position with the head to the west but in this case the face was turned to the north. The bones

were small and contained all of the peculiar features of the type.

Lying against the ribs on the right side were the remains of a tortoise shell and beside them and also in contact with the ribs was nearly all of one side of a large mussel shell; this shell was polished somewhat on the outside and the hinge projection had been sawed off even with the inside rim of the shell and polished smooth. This shell probably had been in use as a spoon. The skeleton lay about two feet deep, covered by the rocks which were almost entirely covered with soil, and the general appearance seemed to indicate that soil accretion had covered almost all of the grave stones since the burial so that there was little on the surface to indicate its location. The level on which the skeleton lay appeared to have been an old occupied floor level and was full of flint flakes. At a distance of eighteen inches north of the skeleton and on the same level a crude patinated flint drill or awl was found.

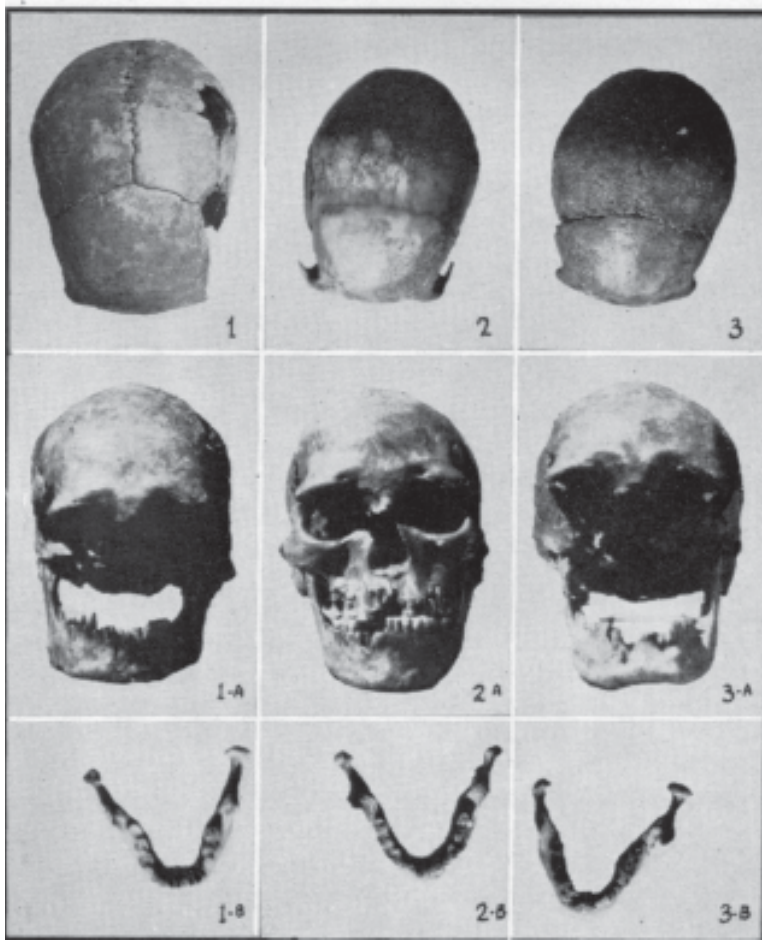


Plate 13
STONE GRAVE SKULLS

1. Skull from De La Fosse Ranch, Shackelford County. Top.
 - 1a. Facial aspect; note heavy brow ridges.
 - 1b. Lower jaw.
2. Skull from Beyer farm, found four miles from Abilene. Top.
 - 2a. Facial aspect.
 - 2b. Lower jaw.
3. Skull from dry campsite, Taylor County. Top.
 - 3a. Facial aspect.
 - 3b. Lower jaw.

The Bones of Peculiar Type

The four skeletons from the sites described above are so similar that the same description will fit all of them. While found in three different places separated many miles apart the racial anatomical peculiarities in these four skeletons show more agreement in characters than one could reasonably expect in the nearest relatives.

The first skeletons found in this region having anything like comparable features were the two very primitive skeletons found under six and one-half feet of horizontally laid undisturbed clay strata on the Clear Fork of the Brazos River near Albany, Texas and described in *The Scientific American* of May 1929 issue.

The skeletons then found were incomplete in that parts of the ends of

some of the long bones were gone; however in each case the other end of the other bone was usually intact. By comparisons the shape of the whole shaft could be found.

These skeletons were buried in stone graves and were lying in flexed position facing south and with the hands lying on either side of the face.

The striking features of these skeletons were as follows: the skulls were long and narrow and the eye brow ridges extremely heavy, the shin bones or tibiae were nearly flat on cross section, the thigh bones or femora were curved or bowed from front to back similar to neanderthal femora, the forearm bones or radii were curved and the lower jaws were massive, with heavy much worn teeth. These two skeletons were of people of good size and height and were heavily constructed in all of their parts.

Similar to Clear Fork People

The method of burial of the Clear Fork people was the same as that of the diminutive Stone Grave People. The peculiarities of the Clear Fork People were all present in the Stone Grave People in modified or lessened degree except that while the Clear Fork People were large, heavy and tall, the Stone Grave People were very small.

The Stone Grave People all had unusually heavy eyebrow ridges but theirs were not as extremely developed as those of the Clear Fork People. All had antero-postero curvature of the femora, all had flattened tibiae, all had short thick lower jaws with much worn teeth, and all had low foreheads and long narrow skulls. The writer would not describe the chins as being as prominent as those of the modern Indians but still they had chins. The ascending rami of the lower jaws of all were unusually wide and short. The lower jaws while short from front to back

were very wide spreading. The lower molar teeth of some jaws were worn down very much from the outside edges in a peculiar manner.



Plate 14

EGG-SHAPED SKULL, AND CURVED FEMORA

1. Facial aspect of egg-shaped skull.
2. Top of egg-shaped skull.
3. Lower jaw of egg-shaped skull
4. Beyer skeleton curved femora on right. Modern straight femora on left. An iron knife was found with the skeleton showing the straight femora.
5. Articulated knee joint of the Beyer skeleton.

Probably Descendants of Clear Fork People

We have thus seen that the four Stone Grave People have the same anatomical characteristics in somewhat lessened degree as the Clear Fork People and also used the same type of burial customs. The difference in the earth levels or strata in which they lived would indicate that this type of man lived in the Abilene region throughout a long period of time before being superseded by the more modern type. Long enough indeed to become both very much smaller in size and less brutal in appearance. However the Stone Graves themselves and associated camp sites are well covered with soil except where erosion has exposed them. The associated flints when broken show a blue flint center and a thick shell of white patina going into the stone rather deeply. Thus we not only have extreme patina but in one case a total disappearance of a water supply adequate for a large village, which facts would seem to indicate that even the Stone Grave People lived very long ago.

Fortunately whole femora and tibiae and nearly whole skulls were found of this race. The femora and tibiae of both legs of the skeleton found on the Beyer place were in good condition.

People With Bent Knees

When an attempt is made to fit together the thigh and shin bones at the knees and to extend them in the position assumed by the knee joint in modern man when the leg is straight or extended the bones are found not to fit together. The only position in which these bones appear to have functioned is with a marked bend at the knee.

Sand Dune Burials

Two burials in Sand Dune Culture Camp sites have been excavated by the writer and the sites where portions of two additional ones were found have been visited and the bones examined.

A Sand Dune skeleton was found by the writer exposed in the bottom of a sand blowout near Hawley, Texas. This skeleton lay in the usual flexed position with the head to the north and facing east. No artifacts were found with it but numerous small

bird or blow gun points had been found above it prior to its exposure by the sand being blown off of it.

Another skeleton was excavated in the bottom of a sand blow out in Callahan County where the sand had blown off down deep enough so that the skull was smashed by the farmer's plow. On digging below the skull fragments the skeleton was found sitting upright but also arranged in the flexed position described previously.

Sand Dune Skeletons Also Peculiar

It appears that bones are not preserved in as good condition in the sand as are those in clay soils, however the writer has examined skulls and long bones from four Sand Dune Burials and is able to state that in each of the cases examined the skulls were long and narrow with heavy lower jaws and much worn teeth. The eyebrow ridges were unusually prominent and there was a marked antero postero curvature of the thigh bones. The articular ends however were usually too much decayed to make any comparisons of the joints.

Peculiar Egg Shaped Skull

In the 1929 issue of the Bulletin the writer described the finding of a skeleton having a small low narrow egg shaped skull which also had curved thigh bones. This skull was dissimilar to all others found near here in having no palpable eye brow ridges. However this skull was exceedingly low and unusually narrow in the frontal region. When viewed from above it had an egg shaped outline with the small end in front, with this skeleton were two petrified beads. One was made of a Gulf of Mexico sea shell of which the spiral had been removed and small holes bored in each end. The other was bored longitudinally and was made from the center of a conch shell. Both were somewhat over an inch in length.

Femoral Curvature Common in Texas

The writer has some much curved femora sent him from near Rockport, Texas (on the Texas coast) by Mr. George C. Martin. The writer also has in his

collection a markedly curved femur found in a stone covered grave by a farmer at a site four miles northeast of Abilene. The skull was given to some country doctor and the writer never was able to trace it or get a description of it.

Peculiar Features Not Accidental

Thus we see from the numerous instances cited that the peculiar anatomical features described above were not instances of disease or of accidental or monstrous deformation but were instead racial features of wide territorial distribution which probably existed during a long period of prehistoric time.

Since stone age hearth site strata of prehistoric man have been found by the writer extending from present soil levels down to depths as great as twenty-four to twenty-seven feet below the present soil surface, along streams of the same region, we should expect to some time find the remains of a kind of man of an even more brutal type than any yet found.

Sandstone Records of Ancient Men and Animals

Among the most convincing evidences of ancient man in Texas are the records he left in the hard sandstone ledges near his ancient camp sites. The deep erosion shown by hard sandstone ledges filled with mortar holes which were so situated that nothing but natural rainfall and wind erosion could have operated on them is very interesting.

Two years ago the writer investigated a site on the Douthit Ranch located thirty-five miles southwest of Colorado, Texas and

a report on this unusual site was printed in the 1930 issue of the Society Bulletin. The eighty-five oval or boat shaped mortar holes found were not only of an unusual shape not previously described, in so far as the writer knows, but a majority showed evidences of such extreme erosion of hard stone that one is justified in believing them to be very old. It was then noted that a few of the mortar holes which were situated near the centers of the large

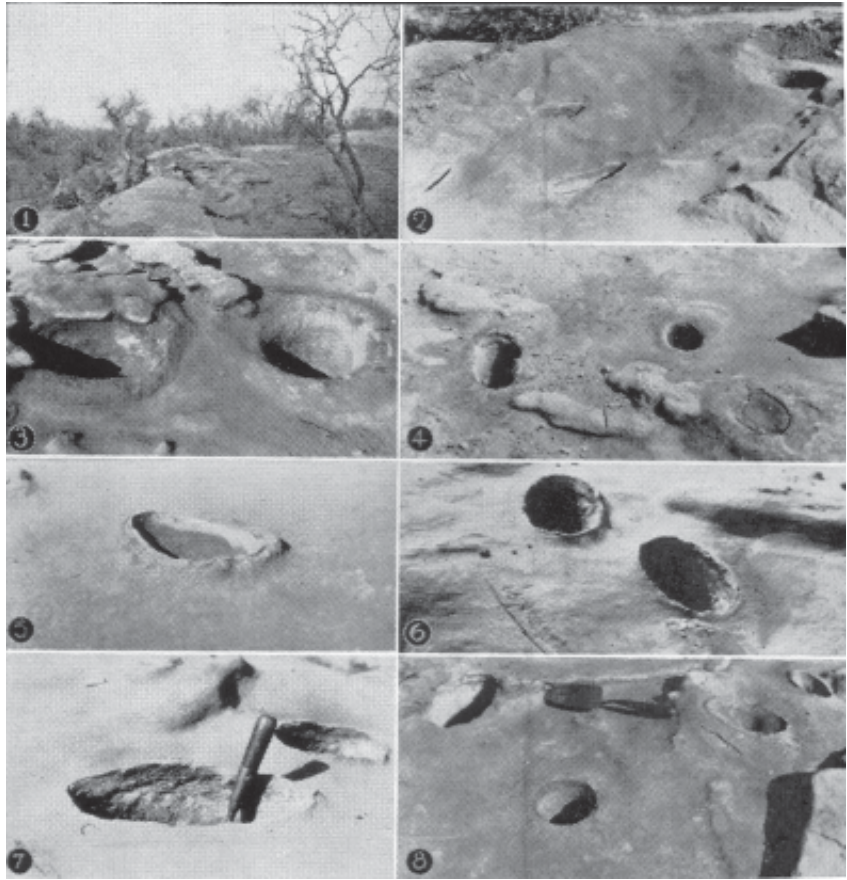


Plate 15
SITE NEAR LORRAINE, TEXAS

1. Shows a view of the oval mortar hole near Lorraine, Texas. Mr. Van London in center.
2. Shows one good round mortar hole at right side of picture and the shallow remnants of three ancient mortar holes to left
3. Shows two mortar holes with raised edges.
4. Shows remnants of bottoms of three eroded mortar holes
5. Shows an oval eroded mortar hole with raised margins
6. Shows two eroded oval mortar holes with raised edges.
7. Two eroded oval mortar holes.
8. Round mortar hole in foreground. Three eroded bottoms of oval mortar holes in upper corners of picture.



Plate 16
SEVEN WELLS SITE

1. Shows where bison ascended sandstone ledge from water hole.
2. Shows individual bison tracks in foreground and trench full of tracks in background.
3. Shows five distinct tracks where trail crosses convex stone in path.
4. Shows tracks where the bison ascended a steep ledge and in lifting their hoofs up from one track to the other, their cloven hoofs cut twin grooves in the stone.
5. One of the five tracks on the convex stone.

stones had evidently been filled at an early date with wind blown soil in which a grass sod had grown which had protected them. These were from sixteen to seventeen inches deep and from fifteen to seventeen inches long and eight inches wide at the centers. The sides sloped to points at the ends. Their general shape was similar to the inside of a canoe. However those nearer the sloping edges of the ledge had eroded away in varying degrees down to some which only showed the bottoms of holes which were only one and a half inches in depth.

Recently Mr. W. J. Van London stated that he believed that he had found three other oval mortar hole sites of the same type in the same County. While on the way to these three sites yet another oval mortar hole site was found by the writer and Mr. Van London on two low sandstone ledges just above Champion Creek, situated on each side of a dirt road which parallels the Bankhead Highway a mile south and three miles west of Loraine, Texas. On the north side of the road two oval mortar holes were visible on the exposed part of a ledge which was mostly covered with soil and it is probable that more holes are covered up there. Across the creek on the south side of the road is a ledge in which sixty-five oval and five round mortar holes were counted. Most of the oval mortar holes in this site were eroded badly and exhibited indications of extreme age and erosion similar to those of the Douthit Ranch. A new feature was the presence of the five round holes. It is probable that the round holes are the work of people of a later period as they are in a much better state of preservation wherever found, than those of oval type.

A peculiar thing noticed at this site was that the edges of many of the eroded oval mortar holes remained considerably higher than the surrounding rock surfaces as

though the substance which had been ground in them had gone into the walls of the holes and caused them to become harder than the surrounding sandstone so that the stone between them had eroded more rapidly. A white substance still adhered to the insides of some of the holes.

The Seven Wells Site

We then visited a site situated on Champion Creek seven miles southeast of Colorado, Texas. Here a smaller creek joins Champion Creek and both have channels through steep vertical walls of sandstone. In the stone bed of Champion Creek there are several large deep well like holes from which there is a spring flow of water in even the driest of seasons. The writer had often heard of the existence of buffalo tracks or trails worn into the solid rocks leading down to the water at this place but was not prepared for the sight which confronted him. It appears that there were three places in the steep banks where the bison could go down to water. Converging on these were five well marked bison trails which evidently had been made by thousands of buffaloes following each other in single file down to water, each carefully stepping into the others tracks.¹ This had gone on throughout ages of time until the hard stone was worn away by the countless hoof beats into deep individual tracks showing the shape of the buffaloes hoofs in the rocks. Even the two parallel grooves worn in the ends of the holes, as the cloven hoofs were withdrawn from the holes, remain plainly showing. In most places the stone has been worn down into trenches or trails with the holes in the bottoms but at one or two places there are rocks in the trail which show no trenches but the tracks go across these and connect at each end with the track filled trenches. One of these stones with a raised slightly convex sloping surface has five evenly spaced tracks on it. These track holes are from six to eight inches deep. No buffaloes have existed in the region since the seventies, yet the foot track holes are as symmetrical and rounded as though just made. One of the track trails was sixty yards long, one was forty yards, one was twenty-six, one fifteen, and another ten yards long.

This must have been a place of considerable interest to primitive man, there is a camp site on the higher land above it which contains much flint debris. Just below the Indian camp site and on a slightly higher level of the ledge just east of the animal track holes, are a large group of oval mortar holes made in bed rock. At this and several other smaller groups nearby, eighty-five oval, and three round mortar holes were counted. At this site also the oval mortar holes showed the same indications of extreme age and erosion as those previously reported. The three round holes at this place were also in good condition. One peculiarity of the two types of mortar holes noticed by the writer was that he never has seen oval mortar holes except in large groupings. On the contrary he never has seen a group of round mortar holes exceeding seven in number. The usual number is four or five and this is true whether found alone or in association with a large group of oval holes.

There not only were numerous mortar holes to be found in the bed rock ledges at the Seven Wells Site but also several typical portable shallow sandstone slab metates of the type so common near Abilene were seen in local collections. The manos were also of similar forms. It is possible that this form of portable milling stone represents a third period of occupation by peoples using grinding tools besides the round and boat shaped mortar hole peoples. Where this phase comes in is not nearly so evident as the relative ages of the two types of mortar holes.

Colorado River Site

From this place we proceeded to a stone quarry on top of a high hill above the Colorado River. This is situated one half mile west of Colorado, Texas. Here there was a smaller oval mortar hole site on the ledge on top of the hill. The holes were on the opposite side of the top of the hill from the River. This seems peculiar when there were accessible ledges on the River side of the hill top.

Many of the mortar holes at this place have been destroyed by road building quarry operations but some still remain.

Morgan's Creek Site

Four miles west of Colorado, Texas, the paved highway crosses a small creek known as Morgan's Creek. The valley of this creek and the low hills near it on the north side of the road are strewn at irregular intervals with very large abrupt sandstone ledge outcrops which are usually slightly sloping or flat on top. Many of these ledges are covered with oval mortar holes. Quite a number were inspected and Mr. Van London stated that they were to be found for a considerable distance along this creek. Just after crossing the bridge going west and ascending a little hill on the highway we stopped and walked to the creek only a short distance below. Here were two large stone outcrops. The south mass had many ancient oval mortar holes in the middle of the top portion. Across the west and south edges and in rows across the center were some deep, straight, round, bored holes of a diameter of two and one-half to three inches. These holes were located about three feet apart and were a foot or more deep. For what purpose they had been drilled and at what time there was no indication. They may have been test holes made by early prospectors attracted by the mortar holes or may have been made to hold poles to support a brush arbor built by Indians of the last century. It is unlikely that they are very old.

Indian Grave

In the northwest wall of the sandstone mass lying close by on the north, is an opening extending back several feet which is about three feet high. In the bottom of this Mr. Van London found about eight inches of hard packed sand. On sifting it some very small human bone fragments, and hundreds of small blue and white glass beads of the size which modern Indians used in decorating moccasins were found. A few larger red, white and blue beads were found, and a small round brass bell shaped like a sleigh bell, a brass arrow head, and a smooth brass button with the makers name in English printed on its back were found.

This was evidently the grave of a recent Indian, probably of the period of the last Indian occupation of Texas. Its nearness to the mortar holes had no significance except that both were beside a water hole which had attracted man throughout a long period of time.

Mortar Hole Camp Site

On the other side of the creek is a low rocky ridge which shows much flint chips and rotten mussel shell fragments where gully erosion has exposed the old land surface. This camp site yielded few artifacts for two reasons. It has been hunted over by local arrow head collectors for a long time and also for the reason that most of the camp site surface is still covered with soil.

However at this site some mano stones and one small metate were found. The manos differ somewhat from the flat type most commonly found near Abilene in being more rounded and much thicker.

Grooved Hammers Found

One distinctive culture feature of the Colorado, Texas, region is the presence of large quartzite grooved hammers. They were made from smooth water worn quartzite boulders in which a ring was pecked about the middle to fit a handle. Of only four stone hammers in the two large Abilene collections three were found close to Colorado, Texas.

It is understood that such hammers are frequently found in that region. In so far as the writer knows none have ever been found within fifty miles of Abilene despite its abundant camp sites at different levels going back to a remote period. The problem of what were used as pestles in the oval mortar holes is yet unsolved, they may have been made of wood.

Study of the associated artifacts and of the territorial distribution of each type of mortar holes should shed much light on the distribution of ancient Texas cultures.

San Saba County Mortar Holes

On a trip with Mr. J. F. Morrison one hundred and fifty miles southeast of Abilene four relatively well preserved round mortar holes were found on Mr. William Motes' place located eleven miles north of San Saba, Texas. These holes were in a flat ledge of limestone in the bed of a small creek branch. Immediately above them on a slight rise of ground was a typical Texas burnt rock mound thirty-five feet across.

On a later trip to the place with Mr. Henry Dixon a hole was dug in the center down to the original white lime soil. The mound was forty inches thick and contained small burnt lime stones, much powdery coal black earth and occasional mussel shells. No artifacts and few flint flakes were found. Whether it was built by the round mortar hole people or not cannot yet be determined but the evidence is suggestive. On another similar ledge located about a hundred yards farther up the Creek are the remaining bottoms of two typical boat-shaped mortar holes. What is left of these holes are now only one and three-fourths inches deep. If these holes were originally fifteen to seventeen inches deep like some well protected holes on the Douthit Ranch it must have taken a tremendous lapse of time for the infrequent flow of water of this usually dry creek branch to have worn the whole surface of this hard limestone ledge down to that extent.

Mortar Holes Widely Distributed in Texas

On a ledge of limestone in the edge of Christoval, Texas, which is situated in the burnt rock mound area one hundred and twenty miles southwest of Abilene, is another group containing seven well preserved round mortar holes. This type of mortar hole is usually perfectly circular in outline at the

top and tubular on cross section. The average hole is ten or twelve inches deep and seven or eight inches in diameter at the top.

At Paint Rock, Texas, situated seventy miles south of Abilene and in the burnt rock mound area, are four round mortar holes located on a ledge of rock on the west side of the north end of the River bridge. Near Paint Rock is a notable collection of Indian rock paintings which press reports say are soon to be destroyed.

It is a sad commentary on our state of culture when prehistoric remains of such great scientific value are permitted to be destroyed in quarry operations when usually such regions are full of unpainted limestone of no scientific value. It is probable that some of the paintings at Paint Rock are rather ancient. A gully immediately below them has exposed hearths fifty-three inches below the surface.

Round mortar holes have been reported from the Alpine region hundreds of miles southwest of Abilene by both Mr. Victor J. Smith and Mr. Henry J. Fletcher. Mortar holes of undetermined type have been reported from the Pecos River region. Dr. J. Alden Mason stated to the writer that he had observed some oval type mortar holes in New Mexico near a shelter. Mr. E. B. Sayles has reported oval mortar holes on Mulberry Creek south of Merkel, Texas, on Oak Creek in Coke County near a rock shelter, and near Breckenridge, Texas, and round holes south of Merkel in Taylor County. Oval mortar holes have also been reported from near Stephenville, Texas.

1. Natives of the region state that a few old men still living in the region shot bison in these trails in the 1860's and 70's.

FIELD WORK OF MEMBERS

Mrs. R. B. Alves, of El Paso, reports that the activities of herself and some other members of the El Paso Archeological Society have been mainly devoted, during the past year, to the gathering and recording of potsherds in her district. Archeological evidence in many of the sites in that area is rapidly disappearing through present use of the land. Approximately forty sites have been located which contain pottery.

Sam Chamberlain, of Refugio, is carrying on a survey of the Coast from the mouth of the Colorado River to the Rio Grande.

Colonel M. L. Crimmins, of El Paso, has devoted most of his time during the past year, to giving lectures on archeological and historical subjects. Pictographs of the Hueco Tanks, Chronicles of the Aztecs, Zuni Folk Tales, and History of the Messila Valley are some of the topics covered by Colonel Crimmins in lectures, and talks over the radio.

Henry E. Elrod, of Houston, reports a survey made in Uvalde County. Between thirty and forty middens were examined, without excavation. No pottery or bone was found. The middens consisted of burnt stone, ashes, and charcoal and many were quite extensive. One covered an area between three and four acres and was about 6 feet high. Curiosity seekers had hunted for arrow heads, but had left the principal artifacts, consisting of scrapers, knives, hammer-stones, etc.

The common type of artifact found was a type of scraper made from a thin flake of flint and roughly shaped with the cutting edge retouched in a symmetrical arc.

The territory covered extended over both branches of the Frio River from Concan up Frio Canyon to the head waters thereof.

George C. Martin, of Rockport, and *Mr. S. W. Woolford*, of San Antonio, have headed a small expedition to the Big Bend, section for the Witte Museum at San Antonio. Mr. Martin has continued

his investigations along the Texas Coast in the vicinity of Corpus Christi.

Mrs. Annie Moran, of Weatherford, reports that many sites are to be found in Parker and adjoining counties, but little research has been made in this part of the State. Metates and manos, and mortars and pestles are found; the projectiles are finely made. One stone object, highly polished, was found, drilled with two holes, one from each side. The positions of these holes does not suggest that the artifact was an ornament, and Mrs. Moran believes it was part of a fire-making implement.

Dr. J. E. Pearce and A. T. Jackson, of the Department of Anthropology, University of Texas, have had an expedition in east Texas throughout the summer. It is hoped that the results of Dr. Pearce's investigations will be made public at an early date as he has been carrying on researches in different parts of the State for a number of years.

During 1931 *Dr. Cyrus N. Ray* has made one trip to San Saba County and three trips to Colorado, Texas, for the study of mortar hole sites.

In Taylor County, a covered site has been found in the highest and oldest terrace of a stream. Far above the present flood water level of the adjoining stream, and five feet below the present ground level is a hearth of burned rock, charcoal and ashes, overlaid with horizontally deposited beds of clay and gravel. A new stream bed and terrace have been formed below the terrace in which the hearth is located.

Two additional sites in which mammoth bones occur have been found.

Many additional surface archeological sites have been located, three of which contained pottery sherds.

On a trip to Sagerton, Texas, some campsites located by Mr. P. L. Summers were visited. On the Clark farm near an old spring is a surface pottery

site containing unpatinated flint artifacts and bone.

Remains of several much older sites on the Double Mountain Fork of the Brazos River at different levels from the surface down to a depth of about eight feet were found. There seems to be little flint in this area and many artifacts have been made from quartzite. Manos and metates are found.

E. B. Sayles, of Abilene, reports that during the past year his work has been largely exploratory. He has located and plotted thirteen new sites in this section. The principal of these are: A large campsite occupied by pottery users, covering approximately fifteen acres, and showing evidence of longer occupation than other similar sites recorded by this observer. Two small rock shelters have been found, and a dual burial in a rock mound grave located on a high point. One of the burials had been almost entirely destroyed by cremation, and many of the bones of the other likewise charred. A new site at which numerous mammoth bones are eroding out, has been located, and from the condition of these bones it appears that this is an original deposit and not a redeposit as is frequently the case with similar bones found in gravel.

Field trips have been made in the Abilene section with Dr. Cyrus N. Ray for the purpose of photographing several of his sites.

An exploratory trip was made to the sand dune area to the northwest of Odessa where a number of sites discovered by T. J. Kellis of Wickett were visited. Here black on white pottery was found.

Several days were spent at Amarillo looking over some of the numerous sites located in that section by Floyd V. Studer.



Plate 17

1. Burned rock midden on Frio River in Uvalde County. Located on survey by Henry E. Elrod.
2. Hematite objects. Small polished hematite of iron celts are occasionally found in Jones, Taylor, and Shackelford Counties. The double bitted hematite celt on the right is an unusual form. The three artifacts on the left are chipped and unpolished hematite; the lower one is a scraper. The three middle artifacts are the usual form of polished hematite celts.
3. Double bitted stone axe from Castron County, New Mexico. Collection of El Paso Archeological Society. Length 6 21-32 inches; width 2 1-8 inches; greatest thickness, 5-8 inch. Polished with irregularly beveled corners.

Victor J. Smith, of Alpine, reports that during the past year additional notes, photographs, specimens from representative sites, occupied by Indians, in the whole Big Bend area have been added to the Museum collections at Alpine as a result of the work in the field.

Eight new locations have been discovered, making a total of 165 now plotted in this area. On some of the old sites, intensive work has been carried on, including the recording of pictographs.

Floyd V. Studer, of Amarillo, reports that a total of 115 archeological sites have now been located and plotted by him in the Panhandle area.

At some of the Post Basket Maker sites circular rooms have been observed for a number of years, but only recently has it appeared that these have any special significance. Only proper and complete excavation will determine, however, if such circular rooms are akin to the Kiva.

Significant among the finds made during the past year were charred corn cobs and pieces of compressed clay showing impressions of corn cobs found at two widely separated Post Basket sites.

Work is now being done at three sites with the view of completely excavating them as quickly as time and proper work will warrant.

In paleontology, three new Triassic reptile beds have been located together with several Pleistocene deposits. The skull containing the tusks of a mastodon was found a short distance from Amarillo, and this was excavated for the Panhandle Plains Historical Society museum at Canyon, where it will be mounted for exhibit. A number of

teeth and caudal vertebrae of a small dinosaur in the Triassic beds were found; also two new turtle beds.

At a site found by Mr. Studer, Dr. Case of the University of Michigan excavated the armor plate and vertebrae in place of a phytosaur.

Hundreds of specimens represented by teeth and individual bones of horse, camel, rhinoceros, dog, and other forms of mammals of the Pleistocene and Pliocene were collected during the past year from local sites.

Mrs. Maud D. Sullivan, of El Paso, reporting for the El Paso Archeological Society, writes that during the past year members of this organization have made field trips in the vicinity of El Paso and have collected a number of specimens. These have been added to the Society's Museum.

Of unusual interest among the finds made by members, is a double bitted axe found by Mr. Ellwood C. Erdis. Such specimens are not commonly found.

A number of village sites have been located in the El Paso district. These occupy either the Rio Grande bottom lands, the edges of low mesas, the high mesa, or the prairie. Mimbres, Pueblo, Black and Brown Hueco Tanks, and Chihuahua pottery are the common types found on the sites.

Metates, manos, mortar holes, and obsidian artifacts are all characteristic. Kitchen middens have not been located in this section, the artifacts and camp debris being scattered. Hearth stones have been observed, as well as the adobe foundations of houses.

SECRETARY AND TREASURER REPORTS

Audited Statement for period ending October 25, 1930:

RECIEPTS:

Balance, October 25, 1929	\$17.29	
Cash, meeting, October, 1929	23.00	
Sales of Bulletin No. 1	75.00	
Memberships paid	249.00	\$364.29
DISBURSEMENTS:	206.52	

Balance, cash on hand	\$157.77	
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Statement by Secretary-Treasurer to October 6, 1931:

RECIEPTS:

Balance, October 25, 1930	\$157.77	
Meeting, cash, October 1930	33.25	
Sales of Bulletins No. 1 and 2	52.05	
Membership paid	<u>216.00</u>	\$459.07

DISBURSEMENTS		<u>302.13</u>
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Balance, cash on hand	\$156.94	
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E. B. SAYLES, Secretary-Treasurer

The Second Annual meeting of the Society was held at Abilene on October 25, 1930.

During the morning sessions, following the President's address, papers were read by: Dr. W. C. Holden, Explorations in Northwest Texas; Col. M. L. Crimmins, The Hueco Tanks Pictographs; Prof. Victor J. Smith, an Introduction to the Archaeology of the Big Bend Section; Floyd V. Studer, Exploring the Texas Panhandle; Dr. J. E. Pearce, Central and East Texas Archaeological Surveys; Roscoe P. Conkling, The Remains of Extinct Animal Life in Connection with Human Artifacts in Caves near El Paso.

Pottery, slides, drawings and photographs were shown in connection with the papers read.

All officers were re-elected for the period ending October 1931, Earl Ingerson to replace Prof. Otto O. Watts as Recording Secretary.

Committees were named to take steps for the protection of pictographs and petroglyphs in Texas, and to further closer relationship between various societies in Texas whose members are interested in allied subjects.

Dues for the period ending October 1931 were assessed at \$3.00.

During the past year three program meetings have been held in Abilene.

EARL INGERSON, Recording Secretary