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The Addicks Dam Site
I. An Archeological Survey of the Addicks
Dam Basin, Southeast Texas
By JOE BEN WHEAT

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AN ARCHEOLOGICAL SURVEY OF THE ADDICKS DAM BASIN, SOUTHEAST TEXAS

By JOE BEN WHEAT

INTRODUCTION

The archeological survey of the Addicks Dam Basin was initiated in March 1947 by the writer as a part of the River Basin Surveys. The initial phase of the operation involved the locating, testing, and evaluation of all sites likely to be damaged or lost through the construction of the reservoir and associated channel rectification and subsequent inundation, silting, etc. This phase culminated in the partial excavation of two sites, begun late in May and concluded on July 15, 1947.

This paper constitutes a report on the survey and excavation of the Addicks Dam Basin sites. The area is poorly known historically and almost unknown archeologically.¹ Sporadic collecting has been done by amateurs in plowed fields, stream channel exposures, as well as some minor digging into two or three known middens, but the existence of numerous small middens located along the drainage ways was unsuspected. Since this research marks the first major archeological research done in the area, the results have been presented in some detail. The construction of a local chronology and correlation with other areas has been carried as far as the data warrants. The lack of strictly comparable published material has made such correlation difficult.

The Addicks Dam, on South Mayde Creek, is one of two flood prevention dams designed to protect the city of Houston, Tex., from flooding by the waters of Buffalo Bayou, a tributary of the San Jacinto River. This project, under the direction of the United States Corps of Engineers, consists of the already completed Barker Dam, on the main channel of Buffalo Bayou, and Addicks Dam, under construction at the time of the survey, which will impound the flood waters of South Mayde, Langham, Horsepen, Bear, and Turkey Creeks, permitting the

¹ Pearce, 1932 *a* and 1932 *b*, briefly mentions the area under consideration, basing his remarks on the collections of several local amateurs and upon a few short visits to some of the sites around Galveston Bay. Sayles, 1935, combined survey data and ethnohistorical material to propose an Attacapan Phase chiefly historic in time. These data will be further considered below.

main channels to maintain a normal flow. A third project, White Oak Dam, to be constructed on White Oak Creek, is under consideration at the present time.

Addicks Dam lies about 16 miles west of the city of Houston, to the north of highway U S 90 and the Missouri, Kansas, & Texas Railway. It is of earthen construction, the earth having been taken from borrow pits on either side of the embankment. The construction of this dam was initiated in 1943 and continued intermittently during the war years. At the time of the survey it was nearing completion.

The numbering of sites follows the system in use by the Texas Council of Archeology. This numbering system is as follows: The State of Texas is divided into a number of quadrangles, each circumscribing 1 degree of latitude and longitude and numbered consecutively, beginning in the northwest corner and running from west to east. These are divided into four equal subquadrangles, lettered A, B, C, and D, also beginning in the northwest quadrant. The lettered subquadrangles are further divided into 9 units, each comprising 10 minutes of longitude and latitude. Sites are numbered serially, as reported, within the smallest unit; e. g., 66A6-1: 66 (major quadrangle) A (subquadrangle) 6 (subunit) - 1 (serial number of site). The prefix, 42, is placed before the site number to indicate the State of Texas in the alphabetical order followed by the Smithsonian Institution.

Projectile point names are, for the most part, those in use by the University of Texas, and the present specimens have, in each case, been checked by Krieger, Kelley, or Campbell, of the university staff. Other named types will be discussed below.

The cultural manifestations of the Addicks Dam Basin have been arbitrarily divided into three periods or levels of occupation, these being termed lower, middle, and upper levels respectively. The basis of this division will be discussed below.

ENVIRONMENT

The Coastal Plain Physiographic Province is a well-defined lowland that borders the coasts of the Gulf of Mexico and the Atlantic Ocean from Yucatan to southern New England (Atwood, 1940, p. 25). That part of it which extends from the Mississippi Alluvial Plain westward and southward along the Texas coast into Mexico is termed the West Gulf Coastal Plain (Fenneman, 1938, p. 100). It is this subarea with which we are presently concerned, for it is in this region that the Addicks Dam Basin is situated.

TOPOGRAPHY

The topographic features closely reflect the geological substructure. The coastal plain proper is nowhere very wide, not exceeding 100 miles in most areas. Sand reefs parallel the entire Texas coast, broken

occasionally by shallow inlets to the lagoons that lie between them and the mainland. One of these expands into Galveston Bay (Atwood, 1940, p. 56) (fig. 4). From this young coast the land grades

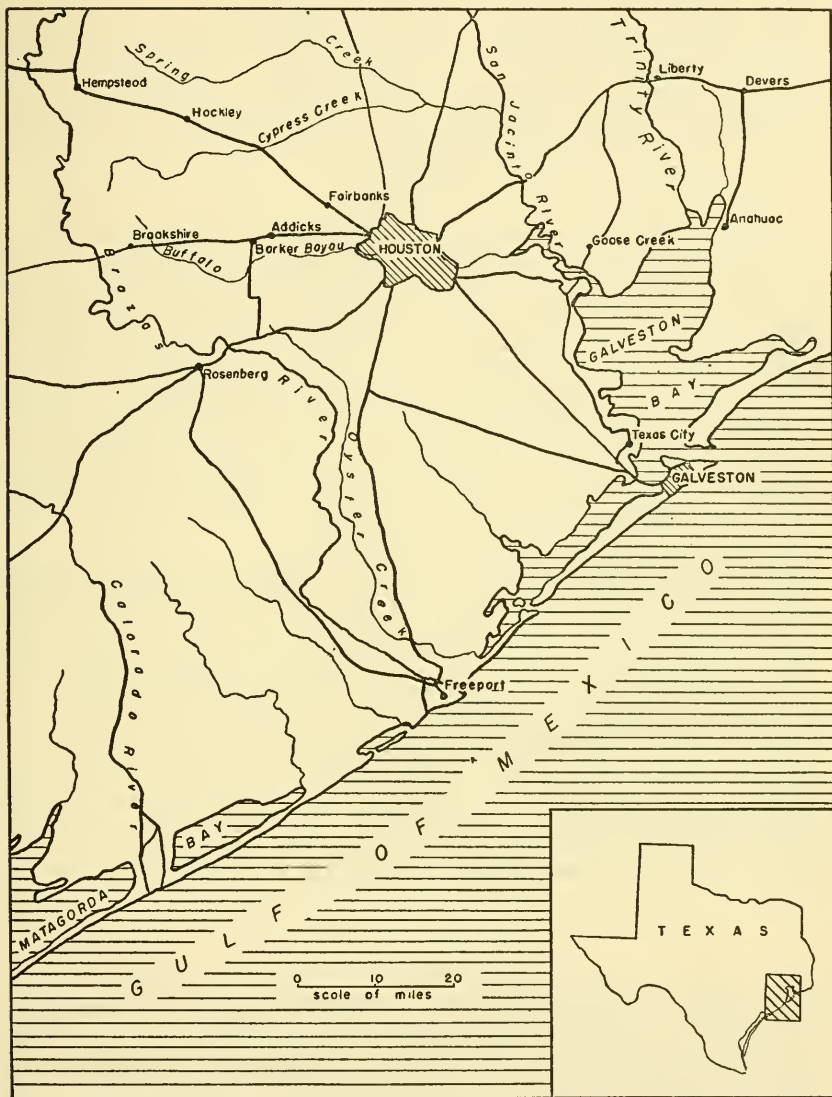


FIGURE 4.—Map of general area.

gently inland to a mature coastal plain which is a nearly featureless broad lowland. Shallow, wind-eroded pits, locally termed “blow-outs” or “hog-wallows,” and small clustered knolls of disputed origin occur in the area, but neither is of sufficient magnitude to relieve greatly the monotony of this level land (Plummer, 1932, pp. 792-793).

Inland from the low, swampy coast lies a belt of prairie covered with tall, deep-rooted grasses. A few trees are now found in this area, but true forest cover begins to the north and east, continuing throughout the eastward extension of the Coastal Plain Province.

The Addicks Dam Basin is situated about midway on this plain. Its mean altitude is about 30 m. (98.42 feet). A fringe of forest encompasses it, but a few miles farther south this finally gives way to the open prairie by which the Indians had easy access to the coast.

GEOLOGY

Geologically the area is a homoclinal structural plain, composed of overlapping formations which dip gently toward the coast. At their inner border they outcrop as a series of belts or low cuestas, roughly paralleling the coast. The older formations are marine in origin, having been laid down during periods of submergence, and are separated by erosional unconformities resulting from alternate periods of emergence and submergence. Since late Tertiary times the area has been above water for the most part (Chamberlin and Salisbury, 1930, p. 734), and the subsequent formations are largely of fluvial deposition (Atwood, 1940, p. 57).

The present land surface of the coastal plain is Quaternary in origin. The Lissie formation, of Pleistocene age, unconformably overlies sands of Pliocene age and outcrops in a belt some 30 miles wide, bounded on the north by the Hockley Escarpment. Its southern boundary is formed by the unconformably overlying Beaumont clays of late Pleistocene age which extend nearly to the present coast. Unconformably overlying both the Lissie and the Beaumont formations over most of the plain is a topsoil composed principally of river deposits, while the present coastline is formed by wind- and marine-laid sands. Along the stream courses there are terrace deposits, also of recent age (Plummer, 1932, pp. 781-795).

DRAINAGE SYSTEM

The region is characterized by a young drainage system (Sutherland, 1908, p. 243). The older, pre-Pleistocene rivers, such as the Sabine, Neches, Trinity, Brazos, and Colorado, head upon the older formations of the interior and pass completely across the coastal plain, through which they have cut deep grooves (Fenneman, 1906, p. 12). Gravel bars of these streams furnished the Indians with a ready source of poor-grade flints. However, the water courses of the San Jacinto River, Buffalo Bayou, Clear, Oyster, San Bernard, and Caney Creeks, are confined to the plain itself or head at strong springs along its northern border, and hence are younger or post-Pleistocene (Fenneman, 1906, p. 12). Nevertheless, much of the

area is poorly drained, and small ponds and lakes hold runoff water during the rainy season.

The stream courses are fringed by trees and are usually bordered by discontinuous natural levees in the form of sand and silt knolls which permit overflowing into the bottomlands adjacent to the channels. These sand and silt or clay knolls are quite noticeable along the water courses and occasionally occur on the plain where, as residual levees, they exist as a remnant of the plain's aggradation. It was on these natural knolls that the Indians established their camps. Buffalo Bayou rises along the Waller-Harris County line, flows south and east through the northeastern part of Fort Bend County, and then eastward through a relatively deep and narrow channel to the city of Houston. From this point to its confluence with the San Jacinto River, the stream widens and today forms the upper part of the Houston Ship Channel which opens into Galveston Bay. It has a number of tributaries, the largest of which are Brays Bayou, White Oak Bayou, Greens Bayou, Turkey Creek, and South Mayde Creek.

The Addicks Dam Basin controls the flood waters of Turkey Creek and South Mayde Creek. Although Turkey Creek is an independent stream, and before the construction of the dam emptied directly into Buffalo Bayou, it is intermittent, and the volume of water it carries is small. The main tributary of South Mayde Creek is Langham Creek, which is itself fed by Horsepen and Bear Creeks. These streams flow through tree-bordered channels, the banks of which are, in places, thickly overgrown with thorny vines and underbrush. The channels are cut through the recent alluvial fill and into the Beaumont clay. While the streams are normally shallow and carry a small volume of water, they nevertheless afforded a permanent water supply for the Indians. During flood periods, however, these streams frequently overflow their banks and inundate wide areas of bottomland, so that the natural knolls and levees are at that time the only land above water. For this reason, they were important to the aboriginal inhabitants.

CLIMATE

The West Gulf Coastal Plain has a humid subtropical climate (Blair, 1942, p. 191). Long and hot summers are characteristic of the area, but summer winds from the Gulf relieve temperatures that occasionally soar above 38° C. (100° F.). During this period the relative humidity is about 70 percent, and the high temperatures during most of that time make for somewhat oppressive summers. During the winters the winds are variable, but frequently blow from the continental interior, bringing chilling weather in their wake. For the most part, however, the winters are mild and pleasant.

The climatological data from Houston may be summarized as being almost precisely that of the Addicks Dam Basin, since it lies only 16 miles to the east, at the same altitude above sea level, and about the same distance inland from the Gulf. The mean annual temperature is 20.61° C. (69.10° F.), with a range of 10° C. (30° F.). The coldest month, January, has a mean temperature of 11.83° C. (53.30° F.), and the warmest, July, 28.50° C. (83.30° F.). Eighty-one days have temperatures of 32.20° C. (90.00° F.) or above, and only 9 days have temperatures of 0° C. (32.00° F.) or lower. The growing season is 294 days. The wettest month is May, with 11.88 cm. (4.68 inches), and the driest is February, with 7.53 cm. (2.97 inches). Ninety-nine days have 0.025 cm. (0.01 inch) or more of moisture, and the average annual precipitation is 1.15 m. (46.00 inches) (Blair, 1942, p. 195).

BIOTA

The Austroriparian Biotic Province is characterized by the pine and hardwood forests of the southeastern United States. Numerous swamps and marshes occur along the coast and the inland waterways. Both mammalian and avian fauna of the area are characteristically rather dark in color and none of the mammals are known to hibernate in winter. This province includes that part of the West Gulf Coastal Plain which lies east of the 95th degree of longitude, swinging west to include the area immediately north and west of Galveston Bay (Dice, 1943, map facing p. 4, and pp. 18-21). On the west it is bounded by the Texan Province. The Addicks Dam Basin, then, lies just within the Austroriparian Province but within easy reach of the Texan. The fauna utilized by the aboriginal inhabitants, as borne out by the archeological remains, is transitional between these two zones, being primarily that of the eastern province, but having, in addition, some forms typical of the western. Ethnohistorical, as well as archeological, data testify that the Indians took advantage of this transitional position in their utilization of game.

Buffalo Bayou is the approximate boundary between the Broom Sedge and Water Grass Prairie fringing the coast and the oak-pine forest that extends north to the Red River. A few miles to the northwest a tongue of prairie grassland extends into a belt of oak-hickory forest that parallels, and forms the western border of, the oak-pine forest. The trees that primarily compose the oak-pine forest are the short-leaf pine (*Pinus echinata* Mill.), yellow oak (*Quercus velutina* Lam.), bitternut (*Hickoria cordiformis* (Wang) Britton), but other oaks and pines do occur (Shantz and Zon, 1924, p. 14).

The prairie cover is largely dominated by broom sedges (*Andropogon glomeratus*, *A. saccharoides*, *A. furcatus*), and switch grass (*Panicum virgatum*), which merges farther south with water grass

(*Paspalum* sp.) and finally with marsh grasses of the coast (Shantz and Zon, 1924, p. 17).

A varied fauna previously occupied the region but has been much decimated since the intensive settlement by Caucasians. The Virginia deer (*Odocoileus virginianus texanus*) and black bear (*Ursus americanus*) have virtually disappeared since the 1880's. A few of the smaller animals are still present, though not common. Some of these are the bobcat (*Lynx rufus texanus*), the raccoon (*Procyon lotor*), the gray and the western fox squirrels (*Sciurus carolinensis*, *S. niger rufiventer*), and a number of rodents. The copperhead (*Agkistrodon mokasen* Beauvois), the eastern rattlesnake (*Crotalus horridus* Linne), and the coral snake (*Micrurus fulvius fulvius* (Linne)), are present, as are many snakes of nonpoisonous varieties. Fish, clams, and turtles are present in most of the streams in the area, and while many birds are found, the Indians apparently made only limited use of them.

The environment with which we are concerned may be considered a relatively favored one. The regularity of topography, together with the stream and bay systems, made for easy passage from one area to another by land or water, while sheltered sites for encampment were plentiful. The native products of forest and plain were easily available and many forms of wild game could be found in this transitional zone. The exploitation of these varied resources was further aided by a mild climate and must have assured the aboriginal inhabitants of at least a minimal food supply.

ETHNOHISTORY

The relationship of the historic Indian occupants of an area to the proto- and prehistoric inhabitants may be of either of two classes. If the ethnohistorical evidence indicates a cultural similarity to the archeological evidence, not explainable entirely in terms of environmental factors, then it may be reasonable to assume an ethnic, or at least a cultural, continuum. If, however, the evidence points to a hiatus or a severe modification between the archeological and the ethnological sequence, one must consider that ethnic or cultural movements have transpired and that it is not safe to infer a direct relationship between the two. For this reason, it seems wise to ascertain the cultural attributes of the historic peoples of the area to as full an extent as they may be useful in determining whether such a cultural continuum does exist.

Furthermore, an ethnohistorical insight into the nature of the relationships between the Indians themselves, and between them and the Europeans with whom they came in contact, may shed light on

problems reflected in the archeological data only by tangible, imperishable artifacts without the human context.

Although some of the tribes living about Galveston Bay were among the first of the native American peoples to come in contact with the Europeans, the data preserved to us from the period are singularly vague and scanty. Not until the beginning of the Mission Era in the middle eighteenth century do we have full reports of the area, and these are principally concerned with the governmental, political, and religious aspects of the Spanish colonization and, therefore, shed little light upon the ethnological problems which face us. There are, however, many documents in the archives of Spain, France, Mexico, Texas, and Louisiana which, when translated, edited, collated, and published, may well illumine some of the lacunae in our knowledge.

EARLY EXPLORATION OF THE GALVESTON BAY AREA

On November 6, 1528, a boatload of survivors of the Narvaez expedition was cast ashore on the western end of an island which they named *Isla Malhado*, purportedly the present Galveston Island. Alvar Nuñez Cabeza de Vaca, one of the shipwrecked men, in his narrative of the expedition, gives us the first report of the Indians of the region; for although Alonzo de Piñeda, in the service of Francisco de Garay, had sailed along the Gulf Coast in 1519, making a map and claiming the land for the Spanish Crown, he left no records of the inland groups (Castañeda, 1936, pp. 7-8).

For a period of 6 years, De Vaca lived among these peoples, part of the time as a slave, later as a trader and healer, finally to escape to Mexico where he arrived, with three companions, in the year 1536 (Hodge, 1907, pp. 5-7). It is difficult to use the data afforded by De Vaca's chronicle because of its vagueness from an ethnological point of view. Some of his statements are at variance with later information, assuming that the identification of *Isla Malhado* as Galveston Island is correct, and that the Indians called *Han* and *Capoques* were respectively the *Akokisa* and the *Cocos*, as suggested by Hodge (1907, note 4, p. 54). The fact that the narrative was written several years after most of the action had taken place may well explain some of the seeming discrepancies.

Following the sojourn of De Vaca was a period of nearly a century before the Indians in the vicinity of the Bay were again visited. During that time De Soto explored a considerable part of the southeastern United States, and his successor, Moscoso, in the year 1542, visited the *Hasinai* territory to the north (Swanton, 1946, pp. 39-59). La Salle established his colony on *Matagorda Bay* and in 1686, and again in 1687, passed near, if not across, the headwaters of *Buffalo Bayou* in his attempt to reach the French settlements in Can-

ada (Castañeda, 1936, map following p. 444). Alonso de Leon, Jr., likewise passed through the area in his fourth and fifth entradas in the years 1689 and 1690 (Castañeda, 1936, map following p. 444). None of these expeditions resulted in information concerning the natives of the Galveston Bay area.

Simars de Bellisle, a young French officer, landed with four companions on the Texas coast at Galveston Bay late in the year 1719. During the ensuing weeks, all but De Bellisle perished of hunger. Following the death of his companions, he joined a group of Indians who enslaved him and subjected him to many inhumanities. After some time he was given to a widow as a husband, but nevertheless continued to serve as a slave. Through the intervention of some Hasinai Indians, he was rescued and returned to the French settlement of Nacatoches on February 10, 1721 (Folmer, 1940, pp. 204-225).

From the account of De Bellisle, one gains a general picture of the manner of life of his captors. Like De Vaca's narrative, De Bellisle's report suffers from the paucity of specific data necessary for the reconstruction of a full cultural picture. Nonetheless, most of his story is borne out by later research.

In August 1721, De Bellisle returned to Galveston Bay with Bernard de la Harpe in the ship *Subtile*, commanded by Jean Berenger. With De Bellisle as his guide, De la Harpe landed and contacted the Indians, requesting permission to establish a settlement. The denial of this request by the Indians, because they feared reprisal for the ill-treatment meted out to De Bellisle, led De la Harpe to carry away nine of them to New Orleans (Folmer, 1940, pp. 204-225). Simars de Bellisle called these Indians among whom he had lived "Caux," but their almost positive identification as Akokisa rests on the vocabulary taken down by Berenger from the nine Indians taken on board the *Subtile* (Swanton, 1946, p. 85).

In 1727, the engineer, Alvarez Barreyro, crossed the area in execution of orders by General Rivera, who was then making an inspection of the northern frontier of New Spain, but the trip had no permanent results in the form of ethnographic data (Bolton, 1914, vol. 1, p. 52).

Rumors of French incursion in the neighborhood of Galveston Bay at last stirred the Spanish to concerted action, and in 1745 Capt. Don Joaquin de Orobio Bazterra was dispatched to investigate. In the early months of 1746 he arrived among the Bidais and a short time later among the Akokisa. Here the rumors were confirmed to the extent that French traders annually came into the territory to buy skins and to supply the Indians with needed commodities. Orobio Bazterra found no permanent French settlement, but the promise of one perhaps prompted a second visit to the area later the same year (Bolton, 1915, pp. 328-332).

FOUNDING OF THE MISSIONS

The founding of three missions on the San Gabriel River—San Francisco, Nuestra Señora de la Candelario, and San Ildefonso—took place during 1749. Although these missions are not in the immediate region of Galveston Bay, the last named concerns us briefly, since it was at San Ildefonso that the Akokisa, Bidais, and Deadoses, all of the Attakapa linguistic stock, were first congregated. After several years of trouble and dissension between the religious and the military, the missions were finally abandoned in the summer of 1755 (Bolton, 1915, pp. 50-55).

During the previous year a French trader, Joseph Blancpain, and four companions were arrested by the Spanish in the village of El Orcoquisac on the lower Trinity River. Governor Barrios sent Domingo del Rio among the Akokisa and the Bidai with gifts and instructions to investigate the reaction of the Indians to the arrest of the Frenchmen. The report of Del Rio caused Barrios to dispatch a garrison to El Orcoquisac, which took up its post late in 1755 (Bolton, 1915, pp. 337-342).

The following year a presidio named San Agustin de Ahumada was established in the Indian town of El Orcoquisac, a few leagues above the mouth of the Trinity. A mission was established nearby and given the name Nuestra Señora de la Luz. (It is interesting that 50 Tlascalan Indian families from Mexico were then settled there.) Fifteen years of hardship, turmoil, strife between religious and military, and constant threat of relocation ended in 1771 with the final abandonment of both presidio and mission (Bolton 1915, pp. 342-374).

Following the withdrawal of the Spanish, French traders again came into the area, and the English began shortly thereafter to make overtures to the Indians. By 1805 the main town of the Akokisa was reported to be on the west side of the Colorado River, and they then disappear from the records (Swanton, 1946, p. 86).

THE HISTORIC INDIANS AROUND GALVESTON BAY

The identity of the Indian tribes inhabiting the lower Trinity River and the region to the north and northwest of the Bay may be inferred with considerable surety. The Han, who occupied the eastern end of De Vaca's Isla Malhado, are believed to be the Akokisa, the name "Han" being a synonym for the Attakapa and Akokisa word for house (Swanton, 1946, p. 85). The Capoques, occupying the western end of the island, were probably the Cocos of Karankawa affiliation (Hodge, 1907, p. 54). That De Bellisle's captors were Akokisa seems certain, since our sole vocabulary of this language was recorded by

Berenger from the nine Indians of this group who were carried back to New Orleans by De la Harpe (Swanton, 1946, p. 85). Orobio Bazterra is explicit as to the identity of the Indians around the mouth of the Trinity and to the north and west. From Orobio Bazterra's data, Bolton identifies the location of the four or five rancherias of these people as along Spring Creek, which parallels Buffalo Bayou a few miles to the north, and, like it, empties into the San Jacinto (Bolton, 1915, p. 333). The Bidai, who occupied territory farther inland to the northwest, told Orobio that the Akokisa ranged from the Neches River to a point halfway between the Trinity and the Brazos (Bolton, 1915, note 14, p. 334). Most of the contemporary maps are also explicit in the location of the Akokisa and other coastal and inland tribes (Pichardo, 1931, cf. maps following pp. 350, 388, 474; Bolton, 1915, pp. 350, 382). The Attakapa, of whom the Akokisa are western relatives, extend eastward into southwestern Louisiana. Swanton places the Patiri, Bidai, and Deadose, all related to the Akokisa, along the upper course and tributaries of the San Jacinto and Trinity Rivers (Swanton, 1946, map following p. 1). The Mayeye lived west of the Bidai, and south of the Bidai, toward the coast, lived the Cocos, of Karankawan stock. By 1779, according to Morfi, these tribes had united and established themselves on the coast between the Colorado and the Brazos (Morfi, 1935, p. 81). Occupying the coast, westward from the mouth of the Brazos, were the Karankawa (Gatschet, 1891, pp. 45-46, and map following p. 46). Some place them as far east as the west side of Galveston Bay. From the evidence cited above, it appears that the sites of the Addicks Basin fall within the geographic range of the Akokisa.

THE CULTURE OF THE GALVESTON BAY INDIANS

Swanton states that:

The Attakapa, although upon the coast of the Gulf of Mexico, were actually just beyond the southeastern area proper. Along with the tribes westward of them, to and beyond the Rio Grande, they were characterized by a loose organization, a low culture, and the existence of cannibalistic practices in something more than merely ritual form. [Swanton, 1928, pp. 712-713.]

The annual economic cycle of the Akokisa and the related tribes was simple, the search for natural food determining their location. The winter season was passed in permanent or semipermanent camps. De Vaca says that because of the weather they ". . . retire to their huts and ranches, torpid and incapable of exertion" (Hodge, 1907, p. 57). De Bellisle also infers this, and describes the summer as a period of wandering in search of food "because they possess no cabins or fields" (Folmer, 1940, pp. 216-217). Bolton (1915, p. 334) says

that they went periodically back and forth between coast and interior with the changes of the season, although they lived in relatively fixed villages. Orobio Bazterra reported in 1745 that they lived in "villages" (Bolton, 1915, p. 330). It can be seen that, in general, these tribes were transitional between the southeastern pattern and that of the coastal groups to the southwest.

Hunting, fishing, and gathering formed the main subsistence pattern. These tribes appear to have had little or no agriculture, at least until the time of Orobio. Deer, bear, and occasionally bison were hunted, and it is interesting to note that by 1719 they had adopted bison hunting from horseback (Folmer, 1940, p. 219). De Bellisle mentions the gathering of bird eggs in quantity, and the use of shellfish is noted by him as well as by De Vaca. Edible roots, "wild potatoes," are noted by both (Folmer, 1940, p. 215 et seq.; Hodge, 1907, p. 45 et seq.), and many other kinds of wild plants were undoubtedly utilized.

Cannibalism is affirmed by De Bellisle and many other later writers (Folmer, 1940, p. 219; Swanton, 1928, pp. 712-713), so that it is somewhat surprising that De Vaca states that the Indians were appalled when the Spaniards, of necessity, ate each other (Hodge, 1907, pp. 49-50). It does not seem likely, however, that cannibalism was economically important.

The type of housing used by the Akokisa may only be inferred. De Bellisle states that they had no "cabins," but this statement may refer only to their summer rounds. Moreover, he may have used the term in the European sense of a permanent wooden or stone structure. De Vaca mentions "houses of mats," but the reference is so general that it does not greatly clarify the problem (Hodge, 1907, p. 52). Orobio Bazterra speaks of the Bidai winter habitation as bearskin tents (Bolton, 1915, p. 330), and, since the Bidai are relatives of the Akokisa, it seems safe to infer that some similar form prevailed there.

Pottery is mentioned by both Cabeza de Vaca and De Bellisle, but neither gives the provenience or details of shape, size, or decoration of the vessels. Swanton (1946, p. 737) states that the Attakapa received most of their pots in exchange for other products from either the Karankawa or the Avoyel, and probably from the Caddo also. Flint was obtained from the Avoyel and passed along to the Karankawa. Trade was also carried on with some of the interior peoples, as De Vaca points out (Hodge, 1907, pp. 56, 61).

Social organization and nonmaterial culture have been described in some detail elsewhere, by Bolton (1914, 1915), Swanton (1911, 1928, 1946), Gatschet (1891), De Vaca (Hodge, 1907), De Bellisle (Folmer, 1940), and others. Since these subjects are not of primary concern for the purpose of this paper, the reader is referred to the original sources.

DESCRIPTIONS OF ADDICKS BASIN SITES

Nine sites were recorded during the survey of the Addicks Dam Basin and the associated outlet channel construction (fig. 5). Three

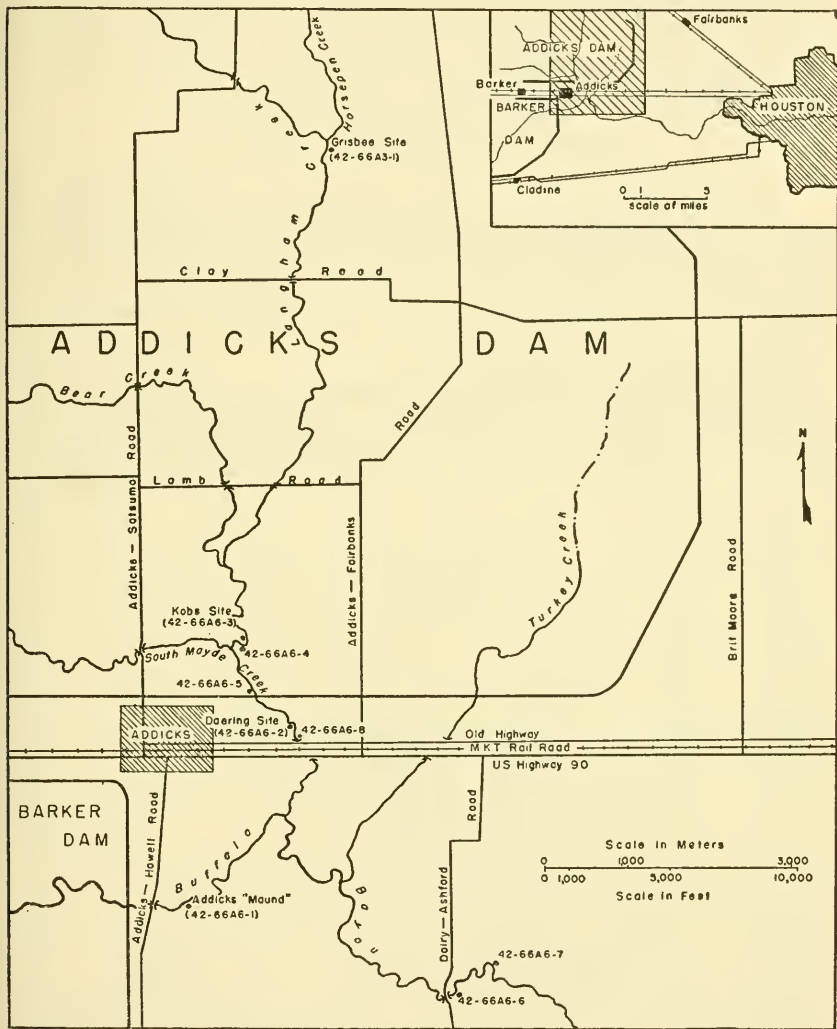


FIGURE 5.—Map of site distribution with inset showing relation of Addicks Dam, Barker Dam, and Houston, Tex. Wide-hatched area on inset shows zone covered by main map.

of these sites are on the main channel of Buffalo Bayou, three on South Mayde Creek, and the remaining three on Langham Creek. No sites were located on Bear Creek or Turkey Creek within the area surveyed, and it seems likely, because of their relatively small size and the re-

stricted amount of water carried by them, that they were not commonly used as permanent camping areas. The survey was largely concentrated in those areas where it seemed probable that damage from construction, silting, or indiscriminate digging might occur.

The three sites located on Buffalo Bayou are the Addicks or Habermacher "Mound" (42/66A6-1), upstream from the Buffalo Bayou-South Mayde Creek confluence, and sites 42/66A6-6 and 42/66A6-7, downstream from this confluence in the order named.

THE ADDICKS "MOUND" (42/66A6-1)

The Addicks "Mound" (42/66A6-1) was not an artificial mound but rather an extensive midden deposit located on the south side of the main channel of Buffalo Bayou (figs. 5, 6). Before the channel rec-

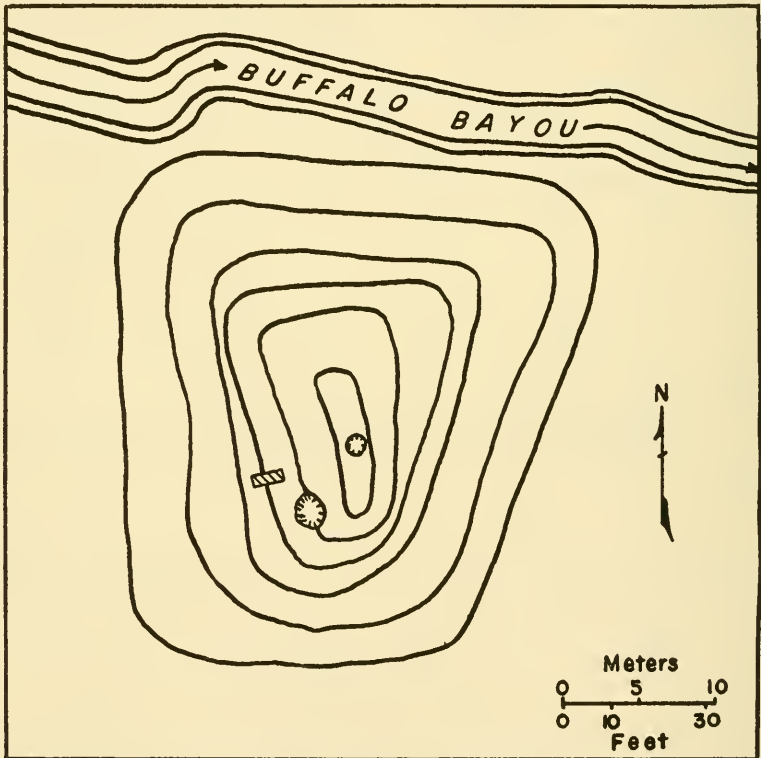


FIGURE 6.—Sketch map, Addicks "Mound" (42/66A6-1).

tification program for Barker Dam changed its course, the stream locally took a northeasterly direction for about a mile to its confluence with South Mayde Creek. The midden accumulation, 1.28 m. (4.20

feet) thick, rested on a natural clay knoll. The combined height of midden and knoll above the surrounding land surface was approximately 1.82 m. (6.00 feet). On its north-south axis the site measured 33.52 m. (110.00 feet) and on the east-west axis 30.48 m. (100.00 feet). A few meters to the southwest of the midden was a small linear depression, probably a segment of an old stream channel. About 20.00 m. (65.61 feet) to the east, the main channel of the Bayou was joined by a northeasterly flowing shallow slough. Several large oaks were growing on the midden itself, and the bottom land of the valley floor supported a number of hardwood trees, pines, and some undergrowth of bushy shrubs.

For a number of years past, the midden had been known as an Indian "mound" by local farmers and collectors from Houston and neighboring towns. Sporadic digging for collecting purposes had been carried on by several individuals. Stanley Morse, one of the collectors, brought the site to the attention of W. M. Black, an engineering student of Houston.

In 1941 Mr. Black made a small excavation to a depth of about 30 cm. (0.98 foot) which resulted in the finding of a few projectile points, potsherds, and other midden debris such as animal bone and mussel shell.

Early in 1942, when it became obvious that channel rectification work would result in damage to the site, Black returned, surveyed the site, and prepared a contour map (fig. 6). He then made a second excavation. This pit was 60 cm. (1.96 feet) wide, 1.80 m. (5.90 feet) long, and penetrated the sterile clay underlying the midden. This was reached at a depth of 1.28 m. (4.20 feet). The pit was excavated in arbitrary levels averaging 15 cm. (0.49 foot), and the material recovered was segregated by the level. Some of this material was given to the Smithsonian Institution by Mr. Black and is included in this report.

No definite stratification was noted by Black. However, he describes the midden fill as "loose, black loam." Numerous bone fragments, clamshells, small gastropods, and pieces of turtle carapace and plastron occurred in the fill. Pottery was reported as abundant in the upper part, occurring less frequently toward the bottom of the midden. (The segregated sample donated to the Smithsonian contained no pottery from the lowest levels.) Projectile points in the upper 15–30 cm. (0.49–0.98 foot) included small arrow points—Perdiz Point Stem and Scalthorn Stemmed—and the larger Gary Stemmed points. None of the smaller points were found below this depth.

In May 1942, a third excavation by Mr. Black resulted in the finding of a burial.

Burial No. 1:

Location: Test pit 3.

Position: Semiflexed on right side; head oriented to northeast, face twisted back and down.

Arms: Folded in front of chest with hands to chin.

Legs: Loosely pulled up at about right angle to body with feet close against pelvis.

Age: Adult.

Sex: Male (?).

Associated objects: A large gray flint knife 63 mm. (0.206 foot) wide by 202 mm. (0.66 foot) long, placed between the parallel forearms. Remains of what appeared to be seed or perhaps wooden beads were found in the chest region.

Remarks: Bone condition was good.

During the completion of the Barker Dam outlet works, the midden was razed and the material placed in a dump heap. It was later covered by the embankment of the rectified channel. The site is now virtually destroyed, only about 30 cm. (0.98 foot) of the midden base remaining in situ exposed in the channel face.

SITE 42/66A6-6

Site 42/66A6-6 lies about 2 miles downstream on the main channel of Buffalo Bayou and almost directly east from the Addicks "Mound" (fig. 5). This is a small midden, 22 m. (72.17 feet) long on a north-south axis by 12 m. (39.37 feet) on an east-west axis. It rests on a low, broad, natural sandy rise on the south bank of the bayou where the stream turns into a north meander through open woods of oak, willow, and a few pine.

A small test pit, made to ascertain the depth of deposit and nature of the fill, resulted in the recovery of several plain ware potsherds. No projectile points or other stone artifacts were found, although flint chips occurred in the deposit. No stratigraphic test was made because of the objection of the tenant; moreover, the midden would not be damaged in the channel rectification since the new channel was projected to pass some distance to the north, isolating the site on a dry meander.

Two hundred meters (656.16 feet) to the west, in a formerly cultivated field, a surface camp site was reported but could not be verified upon investigation.

SITE 42/66A6-7

A short distance downstream from site 42/66A6-6 Buffalo Bayou makes a small horseshoe bend toward the north. Sixteen meters (52.49 feet) east of where the bayou turns south again, on the north side of the stream, is a low, sandy knoll, 22 m. (72.17 feet) on its north-south axis by 16 m. (52.49 feet) on its east-west axis. The site

number 42/66A6-7 was assigned to this knoll (fig. 5). It had been intermittently used by the Indians as a camping place, but occupation was never of sufficient duration or continuity to result in the formation of a midden.

From the grass roots to a depth of 15 cm. (0.49 foot), sparse camp debris occurred in the sand. One potsherd and a few unaltered flint chips comprise the collection made at this site.

Below its confluence with Langham Creek, South Mayde Creek flows in a general southeasterly direction for about 1,850 m. (6,069.53 feet), then curves sharply to the southwest to flow some 750 m. (2,460.62 feet) before emptying into Buffalo Bayou. Three sites are located on South Mayde Creek. These are: Site 42/66A6-8, the Doering site (42/66A6-2), and site 42/66A6-5, upstream in the order named.

SITE 42/66A6-8

Site 42/66A6-8 is a small surface camp on the east bank of the creek approximately 100 m. (328.08 feet) north of the Missouri, Kansas, & Texas Railway bridge (fig. 5). Scant camp debris is eroding from grass-root level over an area of about 5 m. (16.40 feet). Further testing was not undertaken because of the superficial nature of the deposit.

THE DOERING SITE (42/66A6-2)

The Doering site is located some 200 m. (656.16 feet) northwest of site 42/66A6-8 (fig. 5). A short slough joins South Mayde Creek at this point, and the stream veers to the northeast for about 100 m. (328.08 feet) before resuming its normal southeasterly course. The north bank is somewhat lower than the south. It is composed principally of a reworked sandy deposit which is brush covered and supports a few willow trees (fig. 7). Beyond these, on higher ground, are oaks and other hardwood trees. The south bank forms a low escarpment. The site consists of a midden deposit 1.20 m. (3.93 feet) in depth overlying the clay which is the main constituent of the escarpment. The midden rises about 75 cm. (2.46 feet) above the surrounding area, the bottom of the midden being 45 cm. (1.47 feet) below the level of the adjacent bottom land. It is 36.50 m. (119.75 feet) long on an axis parallel to the stream, and 16.50 m. (54.13 feet) across on the north-south axis. Open forest surrounds the site, while several pines and a few oaks, some of which attain a diameter of 30 to 40 cm. (0.98 to 1.31 feet), grow on the midden itself. There is less undergrowth on the site than is usual along the stream banks, probably because of the better drainage afforded by the slope of the midden.

The highest part of the midden is westward of the center and immediately adjacent to the creek. From here it slopes gently to the east

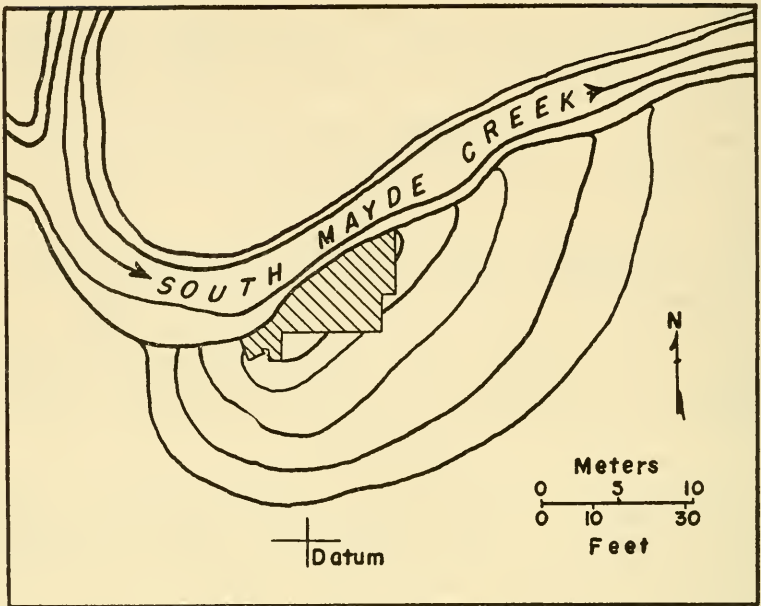


FIGURE 7.—Sketch map, Doering site (42/66A6-2). Hatched area denotes area excavated.

and south, and somewhat more steeply to the north and west. Along the creek bank the midden deposit is exposed in a vertical face where the southward cutting action of the stream during flood conditions has resulted in the dissolution of a considerable portion of the site. The midden soil thus precipitated into the flood waters was transported in suspension. Heavier components, however, such as potsherds, ground and flaked stone artifacts, and a quantity of stone debris, found lodgment in irregularities of the stream bed. A search of the stream bed during low water yielded about 700 artifacts which will be referred to as the "stream bed collection." While these are not useful for stratigraphic purposes, they extend the typological range of some of the material classes found in situ in the midden. Several of the types were not duplicated in any of the excavations, however, and their exact stratigraphic relationships must await further research in the area.

At one time the midden had been used as a barnyard, the highest part being occupied by a pigpen. This structure was carried away by a flood several years ago, and there remained no surface indication of its ever having been there. Several iron nails found in the upper few centimeters of the deposit, however, may be attributed to this source.

A large tree on the south side of the site was chosen for a datum point, and a north-south base line was established from this datum through the center of the site to the creek scarp (fig. 8). The site was laid out

in a grid of 1 m. (3.28 feet) squares numbered from the datum north along the base line and east or west along lines intersecting the base line at right angles. The stake nearest the datum became the designator for that square. Excavation was by arbitrary levels of 15 cm. (0.49 foot). All material from each 15 cm. (0.49 foot) level and 1 m. (3.28 feet) square was screened and the artifacts segregated.

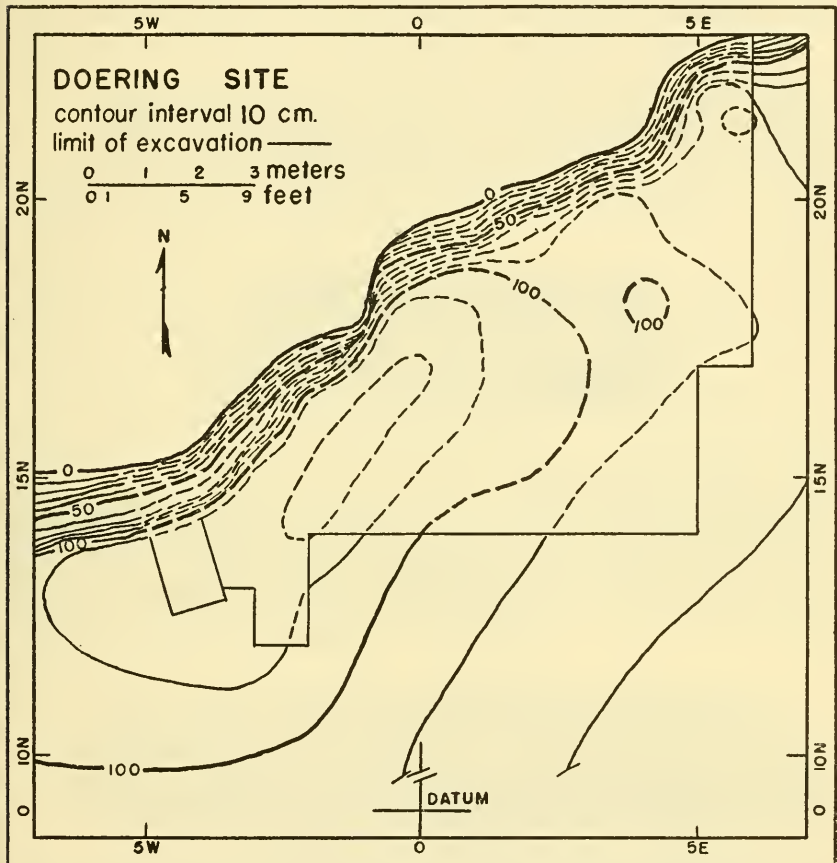


FIGURE 8.—Contour map and plan of excavation, Doering site (42/66A6-2).

Depth was measured from surface at the level of the designator stake for that square. Because of the relatively gentle slope of the midden this system, in effect, resulted in the peeling of the deposit in 15 cm. (0.49 foot) layers. Profiles were measured by the use of a carpenter's hand level, the drop or rise being measured from each stake with a rigid steel tape. These profiles were then plotted on graph paper, the profiles along 0E/W, 14N/S, and 17N/S being used as controls for the construction of a contour map (fig. 8).

The physical stratigraphy of the Doering site is simple (fig. 9). From the surface to a depth of 20 cm. (0.65 foot) the deposit consists of midden soil, sandy in texture, light tan in color, and quite friable. The lightness of color may be the result of weathering out or bleaching of the humic content by oxidation in place. However, occupation, judging from the artifact content, seems to have been less frequent or of lesser density during the deposition of this material, and the color may, therefore, be the result of less inclusion of organic matter.

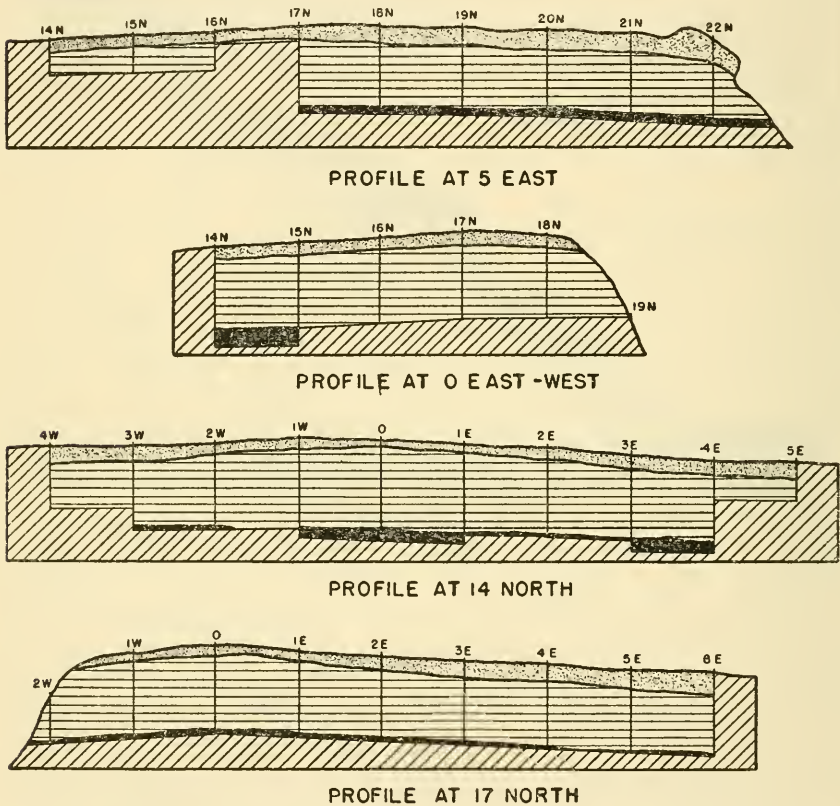


FIGURE 9.—Profiles, Doering site (42/66A6-2). Light stippling, weathered midden zone; horizontal hatching, midden deposit; black, sterile clay knoll; diagonal hatching, unexcavated.

Below 20 cm. (0.65 foot) the organic discoloration of the midden increases to the depth of 75 cm. (2.46 feet). There is less sand admixture, and clay content increases. From 45 to 75 cm. (1.47 to 2.46 feet) the midden is somewhat indurated, and this zone marks the period of the most concentrated occupation. Animal bone fragments, including human bones, were most frequent at this level, although they occur in considerable quantity in the lower levels as well.

From 75 cm. (2.46 feet) to the bottom of the midden deposit the soil is dark in color, heavy in consistency, and contains much moisture, making it difficult to screen. It is primarily of clay with decreasing organic content near the base of the deposit. A blending of the midden soil with the upper part of the clay knoll upon which it rests masks the precise transition from the one to the other. Below 1.20 m. (3.93 feet) the clay, which is devoid of artifacts or other occupational debris, is dense and indurated, of yellow color, and contains ferrous inclusions in the form of pebbles and root molds. It underlies the midden to the bottom of the creek and to an unknown depth below.

Artifacts were relatively fewer in the level from grass roots to 20 cm. (0.65 foot). Projectile points of Perdiz¹ Pointed Stem, with its related types, and Gary Stemmed were present in about equal quantities. Pottery was predominant over lithic material.

Below 20 cm. (0.65 foot) and down to 90 cm. (2.95 feet), the Gary Stemmed points numerically predominated over other types. At 90 cm. they were replaced in frequency by expanding stem forms. Pottery was relatively abundant to a depth of 75 cm. (2.46 feet). Below this depth, however, it was absent or extremely rare.

Four burials were found in the Doering site. Three of these were flexed while the other was loosely semiflexed. Although all of these interments probably were made in pits, it was not possible to define them, except in Burial 3, because of the homogeneity of the midden deposit. This burial was intrusive through the lower part of Burial 2, and in that section where it cut through the earlier burial, an arc of the pit was defined by the bones removed. No artifacts were definitely associated with any of the burials. Bone condition was uniformly poor, probably due to soil conditions.

Burial No. 1 (fig. 10, a):

Location: 18N/0E and 18N/1E.

Depth: 90 cm. (2.95 feet) to skull.

Matrix: Midden earth.

Position: Semiflexed on right side; head oriented to east, facing north.

Arms: Upper right arm along side, entire lower arm absent; left arm loosely folded across the abdominal region; hands missing.

Legs: Right leg loosely flexed; left leg on top of right leg; feet missing.

Age: Adult.

Sex: Female (?).

Associated Objects: A number of deer bones and two broken flint artifacts occurred near the burial, but probably represent midden debris rather than intentional burial offerings.

Remarks: This burial was much disturbed, the skull broken and scattered over an area about 1 m. (3.28 feet) square. Many bones were missing and the rest fragmentary.

¹ See chapter on Material Culture for complete information on these named projectile point types.

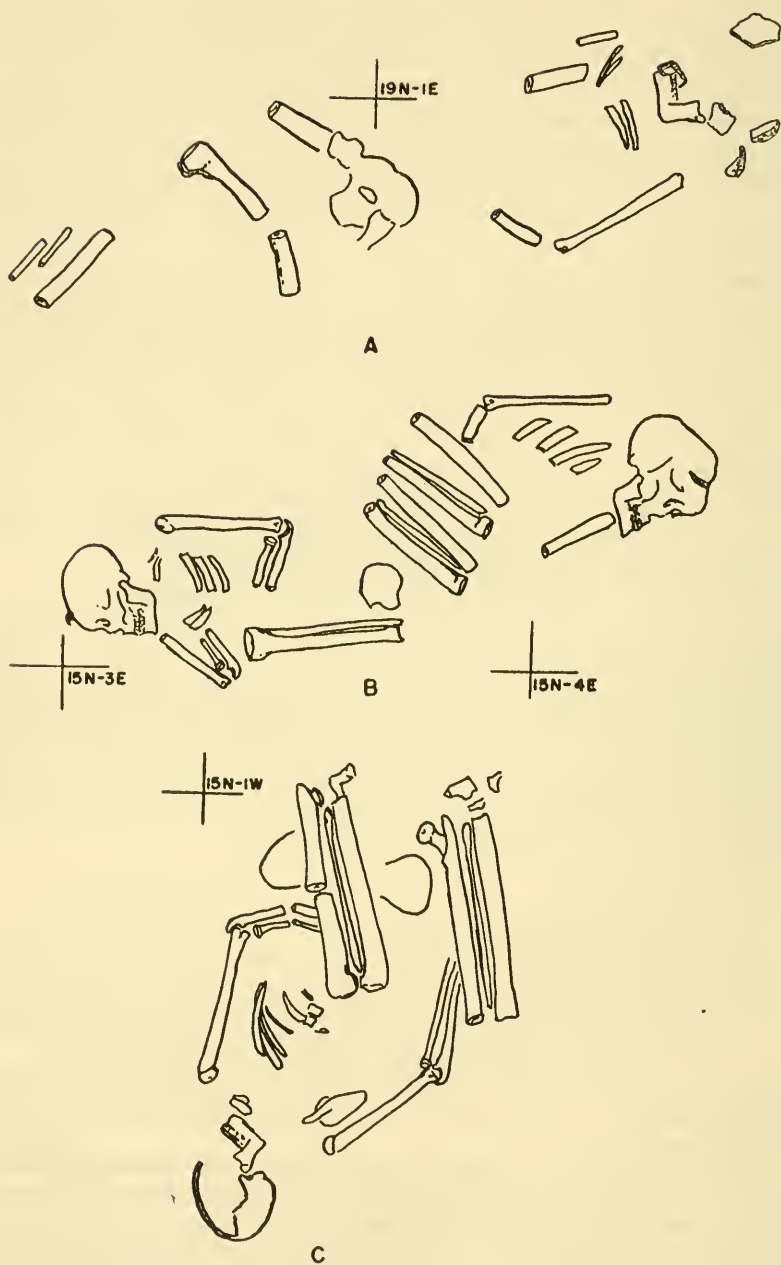


FIGURE 10.—Burials, Doering site (42/66A6-2). *A*, Burial 1. *B*, Burials 2 and 3. *C*, Burial 4.

Burial No. 2 (fig. 10, b):

Location: 15N/3E.

Depth: 32 cm. (1.04 feet) to skull.

Matrix: Midden earth.

Position: Tightly flexed on back; head oriented to west, facing south.

Arms: Right arm folded closely over the right leg; left arm loosely folded, probably over the left leg at time of interment; both hands missing.

Legs: Right leg pulled tightly back against body; left leg and left innominate bone removed at time of intrusion of Burial No. 3.

Age: Adult.

Sex: Female.

Associated Objects: None.

Remarks: The lower left part of the body of this burial had been removed by the intrusion of the pit for Burial No. 3.

Burial No. 3 (fig. 10, b):

Location: 15N/3E-15N/4E.

Depth: 33 cm. (1.08 feet) to skull.

Matrix: Midden earth.

Position: Flexed on left side; head oriented to east, facing south.

Arms: Right arm placed across the legs; left arm incomplete, only a fragment of humerus represented; hands missing.

Legs: Right leg on top of left leg, both pulled against body.

Age: Adult.

Sex: Male.

Associated Objects: None.

Remarks: This burial was inhumed in a pit intrusive through the lower left side of Burial No. 2. Large roots penetrating the skull had forced it apart at the sutures and elsewhere had broken the long bones.

Burial No. 4 (fig. 10, c):

Location: 14N/0W.

Depth: 33 cm. (1.08 feet) to skull.

Matrix: Midden earth.

Position: Loosely flexed on back; head oriented to southwest, facing northwest.

Arms: Right arm alongside the body and partially underneath the right leg; left arm folded across the lower part of the body under the legs.

Legs: Both legs loosely flexed to the right side of the body.

Age: Adult.

Sex: Male.

Associated Objects: A large double-pointed drill was found beneath the body, but was not certainly included as grave goods.

Remarks: Some of the bones were penetrated by root growth, but the preservation was generally better than that of any other burial from this site. Several of the long bones displayed pathological growths and lesions.

SITE 42/66A6-5

Neither the precise location nor the nature of site 42/66A6-5 is known, since it was destroyed as a consequence of the construction

work of the Addicks Dam embankment (fig. 5). A number of stone artifacts were collected from a scraped surface over a relatively restricted area on the west side of South Mayde Creek, immediately adjacent to the stream and between the present dam embankment and the borrow pit that parallels it on the inside of the dam. Inclusions of dark earth were visible in the embankment fill. However, no artifacts were found in them, and the question of whether they represent midden debris remains unanswered.

Projectile points, fragmentary blades, scrapers, and worked flakes comprise the artifacts found at this site. No potsherds were recovered, although unshaped lumps of burnt clay were noted. During the construction of the dam, earth-moving machines had cast up and demolished an unknown number of burials. No artifacts were noted at the time, however, and the area was presumed to have been an unrecorded Caucasian cemetery.

From the point where it is joined by Horsepen Creek, Langham Creek flows in a general southerly to southwesterly direction to its confluence with Bear Creek (fig. 5). Below this, it follows a meandering course, its general trend slightly east of south, until it debauches into South Mayde Creek which flows in from the west. Three sites are located along Langham Creek. Two of these, site 42/66A6-4 and the Kobs site (42/66A6-3), are upstream in the order named from the South Mayde Creek-Langham Creek junction but below the mouth of Bear Creek. The Grisbee site (42/66A3-1) is on Langham Creek just below the mouth of Horsepen Creek.

SITE 42/66A6-4

Site 42/66A6-4 is located on the south side of an east to west meander of Langham Creek, about 150 m. (492.12 feet) above its confluence with South Madye Creek (fig. 5). A troughlike depression lies between the midden and the stream some 10 m. (32.80 feet) to the north (fig. 11). It is parallel both to the stream and the long axis of the midden and probably represents the stream channel at the time the site was occupied. About 20 m. (65.61 feet) east of the midden at the point where the creek turns west from its more normal southerly course it is joined by an intermittent contributory from the northeast. Rather open woods of oak and large pine lie to the east and the stream course is lined by willow trees. The midden is 27 m. (88.58 feet) along its east-west axis, 15 m. (49.21 feet) across the north-south axis, and rises approximately 60 cm. (1.96 feet) above the flood plain. It is somewhat higher at the eastern end and slopes gently off to the south and west. There is an irregular, shallow depression in the southwest quadrant of the site where the former owner, Mr. Kobs, had buried a horse.

Two test pits were dug on this site. The first was 60 cm. (1.96 feet) by 1 m. (3.28 feet) in size and was excavated by 30 cm. (0.98 foot) levels to determine the nature and vertical extent of the deposit. A

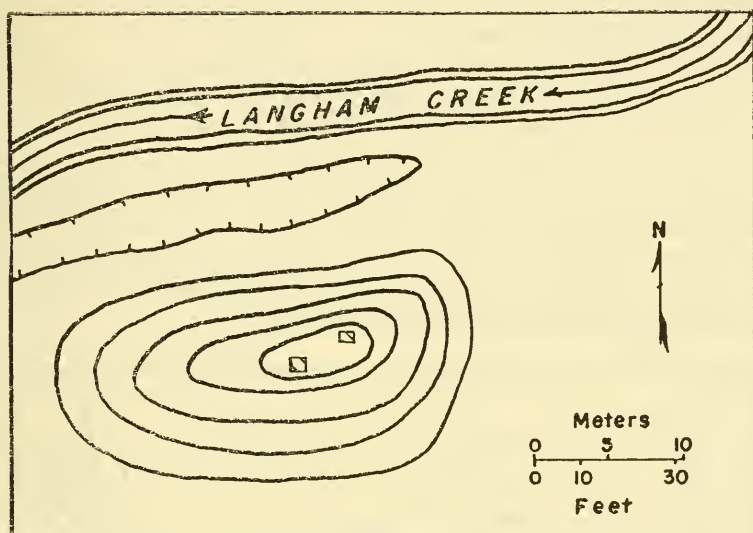


FIGURE 11.—Sketch map, site 42/66A6-4, showing test pits.

second pit, 1 m. (3.28 feet) square, was dug to check further the stratigraphy of the site. Arbitrary levels of 15 cm. (0.49 foot) thickness were taken out and the material segregated by level. The base of the midden deposit was reached at a depth of 85 cm. (2.78 feet) (fig. 12).

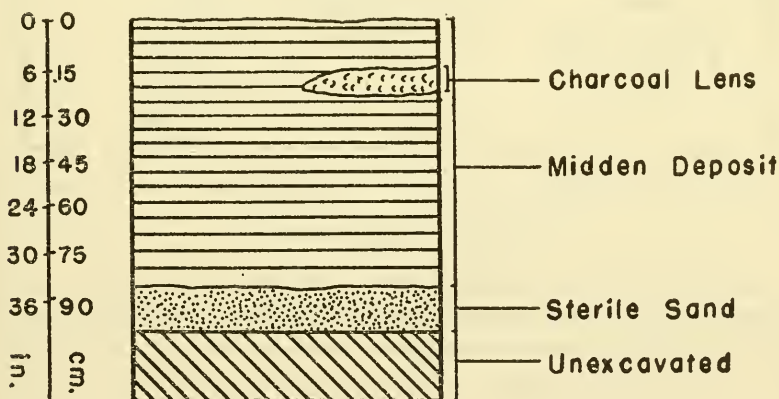


FIGURE 12.—Stratigraphic section, site 42/66A6-4.

From the grass roots to a depth of about 30 cm. (0.98 foot) the midden soil was quite sandy and dark in color. A charcoal lens of hardwood burl 10 cm. (0.32 foot) thick and 40 by 50 cm. (1.31 by 1.64 feet) in

area was encountered at a depth of 15 cm. (0.49 foot). From 30 to 60 cm. (0.98 to 1.96 feet) the midden contained less sand admixture and, although friable when dry, was somewhat more consolidated than the earth above it. Below 60 cm. (1.96 feet) the sandiness of the midden increased until a stratum of sandy clay was encountered. This layer was probably, at least in part, water-laid. Clean yellowish-white sand, devoid of cultural material but with pebbly inclusions of rusty clay, was reached at a total depth of 85 cm. (2.78 feet).

The site was comparatively poor in artifact yield. In the upper 45 cm. (1.47 feet) small projectile points of the types termed Perdiz Pointed Stem and Eddy Stemmed were found, and in addition, a few larger pieces. Below 45 cm. (1.47 feet) only large projectile points were found. Potsherds occurred throughout the deposit. One sherd from a flat-bottomed jar was found in this site.

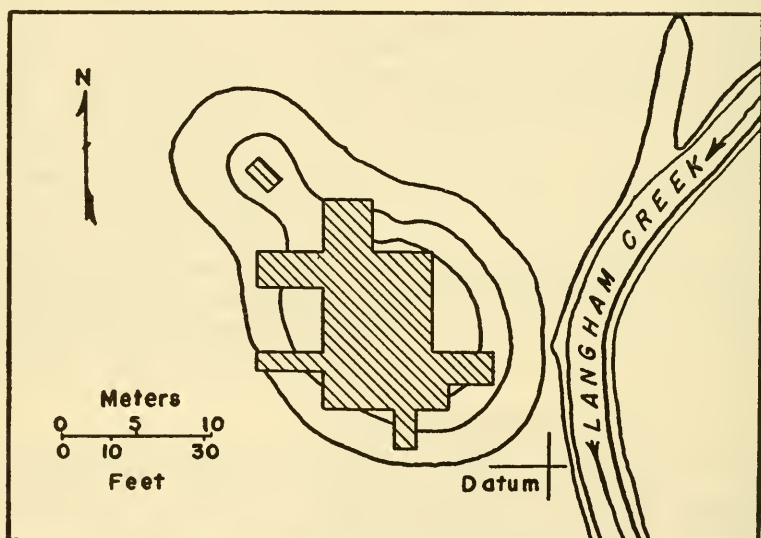


FIGURE 13.—Sketch map, Kobs site (42/66A6-3). Hatched area denotes area excavated.

THE KOBS SITE (42/66A6-3)

The Kobs site is located about 100 m. (328.08 feet) northeast of site 42/66A6-4 and on the opposite side of Langham Creek (fig. 5). In the vicinity of the site the creek flows southeast until it is joined by a southward flowing slough. Here it turns south past the eastern perimeter of the Kobs site and continues for some 90 m. (295.27 feet) to where it is joined by another slough and veers west past site 42/66A6-4 (fig. 13).

The site is a low, broad midden deposit rising 37 cm. (1.21 feet) above the flood plain (fig. 14). It is 18 m. (59.05 feet) across the shorter northeast-southwest axis and 24 m. (78.74 feet) across the

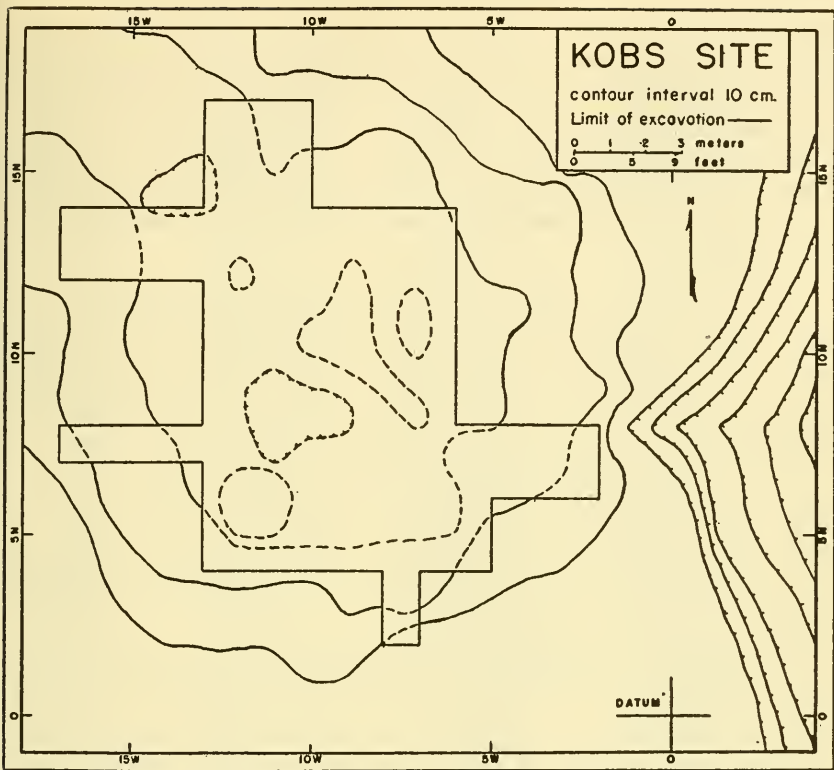


FIGURE 14.—Contour map and plan of excavation, Kobs site (42/66A6-3).

northwest-southeast axis. While the knoll upon which the midden rests is somewhat pear-shaped, the zone of occupation was more or less confined to the larger portion adjacent to the stream. The site is generally highest in the central portion and slopes very gently to the perimeter. There was a shallow depression some 2.50 m. (8.20 feet) in diameter in the southwest quadrant of the site, and immediately to the south was an isolated hummock of material probably derived from the depression. The highest point on the midden was on this hummock. The origin of this depression could not be precisely determined, but it may have been the result of the uprooting of a tree. A second possibility is that it represents previous digging by animals or by man. A second depression, about the same size as the first, lies along the northwest periphery of the site. The site itself was much overgrown by blackberry and other thorny vines and several trees, while the surrounding flood plain supported rather open woods of oak and pine. The stream channel is lined with willow trees.

A datum point was established at the base of a large oak tree to the southeast of the midden. A base line was established from the datum to another tree northeast of the midden, the magnetic compass orien-

tation being 345°. As in the Doering site, a grid system of 1 m. (3.28 feet) squares was staked off, and excavation was by arbitrary levels of 15 cm. (0.49 foot). All the material was screened and the artifacts were segregated by square and level. Profiles established by using an architect's telescopic level and target rod were plotted on standard graph paper, and from this a contour map was prepared (fig. 14). Depth was measured from the surface level of the designator stake for each square.

The uppermost stratum of the site consists of sandy midden soil, light tan in color, and varying in thickness from a few centimeters at the center of the site to some 30 cm. (0.98 foot) about the perimeter (fig. 15). While the color may reflect, in part, a weathering out of the organic stains common to human occupation, it is probable that occupation was not constant, and, furthermore, that some of the sand is the result of aggradation by natural agencies. Below the light-colored sandy layer is a stratum of dark, sandy midden deposit to a maximum depth of 75 cm. (2.46 feet). This deposit fans out toward the perimeter of the site. Since this stratum produced the largest number of artifacts and animal bones, it seems likely that this zone marks the period of densest occupation.

Conformably underlying the midden proper is a knoll of unknown depth composed of very light-colored, water-laid sand. As in the Doering site, the precise transition from the knoll to the overlying midden deposit is masked by the blending of the sand composing the knoll with the lower part of the midden. Although artifacts occur but infrequently in this stratum, they nevertheless indicate limited occupation of the site during a period when the knoll was still aggrading.

Artifacts from the Kobs site were most numerous in the dark midden zone. The majority of the projectile points in this stratum were Perdiz Pointed Stem, Alba Barbed, and Eddy and Scalthorn Stemmed. At the base of the midden deposit these were of about equal occurrence with Gary Stemmed points, indicating that the transition from the use of the large points to the smaller ones was already well under way. Pottery occurred frequently in this layer.

All the projectile points from the sand knoll are large, the majority being Gary Stemmed points. Pottery was quite rare in this stratum. In the upper part of the knoll several sherds of a Tchefuncte Stamped pottery jar were found, giving us one of our most important chronological clues and affording a tentative cross-dating with the early Tchefuncte cultures of the Lower Mississippi Valley.

Three burials were found in the Kobs site. Two of these were flexed, while the third was semiflexed. Two were buried in pits dug into the sand knoll, easily recognized because of the dark midden fill.

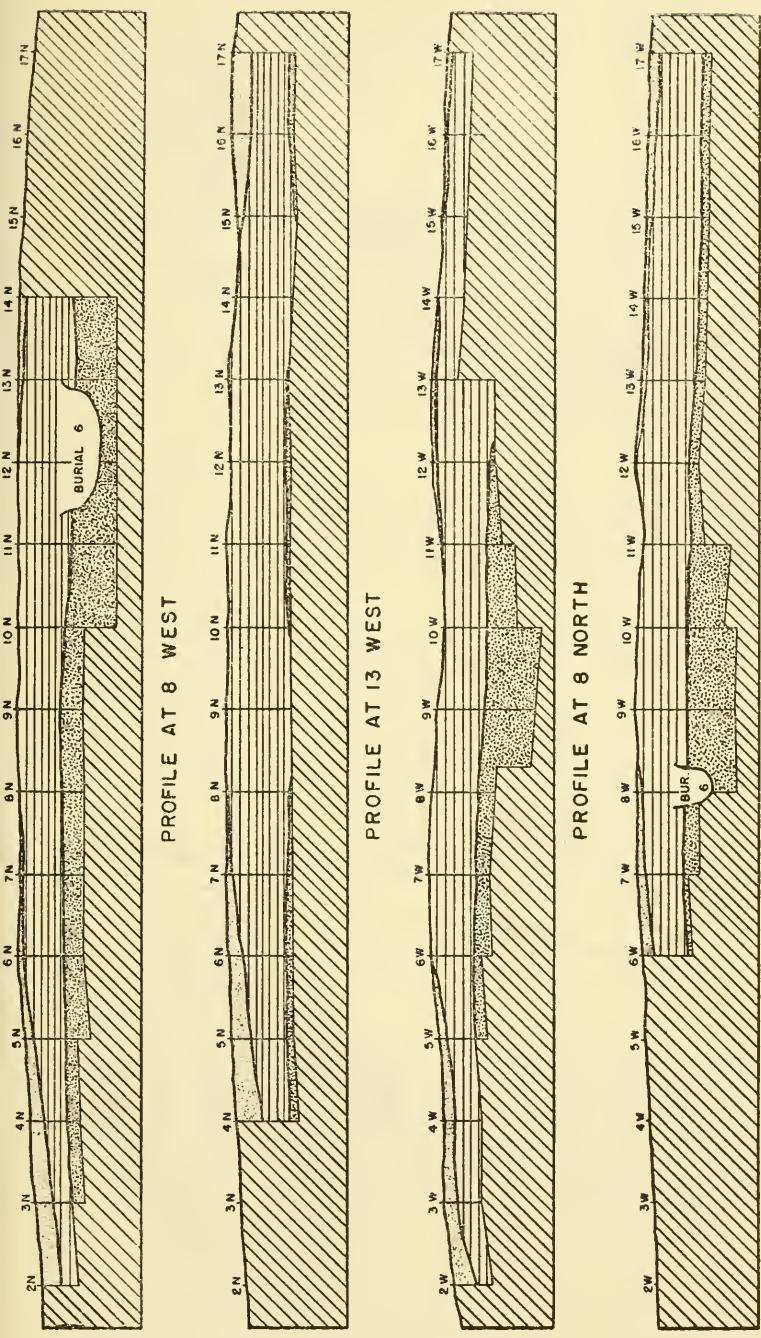


FIGURE 15.—Profiles, Kobs site (42/66A6-3). Light stippling, weathered midden zone; horizontal hatching, midden deposit; dark stippling, sand knoll; diagonal hatching, unexcavated.

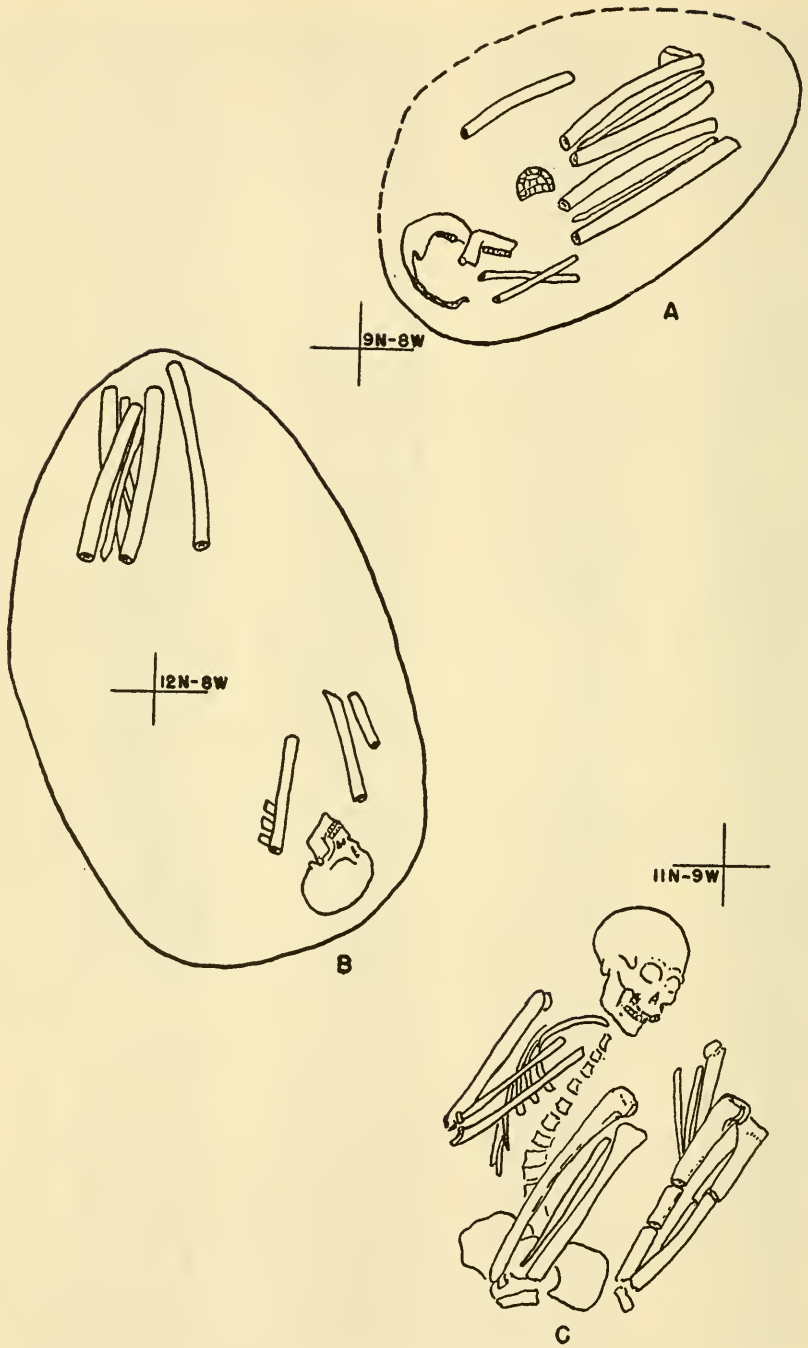


FIGURE 16.—Burials, Kobs site (42/66A6-3). *A.* Burial 5. *B.* Burial 6. *C.* Burial 7.

The third burial probably was also interred in a pit, but inasmuch as there was no penetration into the white sand of the knoll, none could be defined. Burial numbers were continued serially from those of the Doering site.

Burial No. 5 (fig. 16, a):

Location: 9N/7W.

Depth: 72 cm. (2.36 feet) to skull.

Matrix: Midden fill in oval pit 85 cm. (2.78 feet) long and of indeterminate width and depth. Pit well defined on south side by contrast of midden material with white sand of the knoll.

Position: Flexed on back; head oriented to southwest, facing southeast.

Arms: Right arm tightly folded against itself, hand to chin; left arm folded alongside chest, hand to left shoulder.

Legs: The legs were pulled close to and on top of body with lower legs rotated medially so that the feet crossed each other above the pelvis.

Age: Adult.

Sex: Female.

Associated Objects: Half of a small turtle shell with a few pebbles beneath it, found on top of the chest, may have been a rattle.

Remarks: Bone condition fair; some breakage due to ground pressure.

Burial No. 6 (fig. 16, b):

Location: 11N/7W-12N/7W-11N/8W-12N/8W, center of burial pit almost directly under designator stake for square 12N/8W.

Depth: 70 cm. (2.29 feet) to skull.

Matrix: Midden fill in elongated oval pit, 120 cm. (3.93 feet) long, 67 cm. (2.19 feet) wide, 40 cm. (1.31 feet) deep, excavated from midden into white sand of knoll.

Position: Semiflexed on right side; head oriented to southeast, facing northeast.

Arms: Upper right arm across chest to front of body, lower arm and hand missing; left arm folded alongside body, hand to left shoulder.

Legs: Upper legs form approximately a 140° angle with the body, the lower legs folded tightly against them.

Age: Adult.

Sex: Female.

Associated Objects: None.

Remarks: A number of bones were missing, including the left and right radii, left ulna, the lower vertebrae, pelvis, hand and foot bones, and most of the ribs. The leg bones were separated from the upper body by a distance much greater than normal. This, together with the number of missing bones, suggests the possibility that the body was partly decomposed before burial and that some attempt at rearticulation had been made.

Burial No. 7 (fig. 16, c):

Location: 10N/9W.

Depth: 40 cm. (1.31 feet) to skull.

Matrix: Midden fill.

Position: Flexed on left side, almost on its back; head oriented north-north-east, facing southeast.

Arms: Right arm folded along side, hand (missing) between right shoulder and chin; left arm tightly folded beneath the left leg, hand under left side of face.

Legs: Pulled close to chest, feet at pelvis.

Age: Adult.

Sex: Male.

Associated Objects: None.

Remarks: Best preserved skeleton from the site. No burial pit visible because of homogeneity of midden earth.

THE GRISBEE SITE (42/66A3-1)

The Grisbee site is located at the north end of a westward meander of Langham Creek about 150 m. (492.12 feet) south of its junction with Horsepen Creek (fig. 5). At the south end of the meander, potsherds, lithic artifacts, and other camp debris are eroding from a stratum about 10 cm. (0.32 foot) in thickness underlying an average 20 cm. (0.75 foot) of alluvial fill. The area encompassed by the meander supports a cover of small pine trees, many of them of second growth. Along the stream are oaks and other hardwood trees, as well as willows and a few larger pines. Approximately 20 m. (65.61 feet) above the site an intermittent tributary joins the main channel of Langham Creek from the northeast.

The site consists of a midden deposit 90 cm. (2.95 feet) thick overlying a kidney-shaped knoll which parallels the bend of the stream on the southeast bank as it turns into the westward meander (fig. 17).

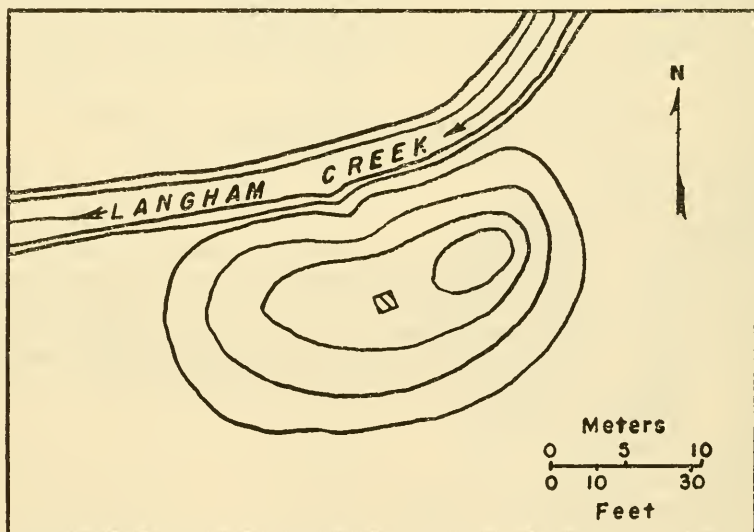


FIGURE 17.—Sketch map, Grisbee site (42/66A3-1), showing test pit.

The site is 15 m. (49.21 feet) across its northeast-southwest axis and 27 m. (88.58 feet) across its northwest-southeast axis. The northeastern end rises sharply to approximately 45 cm. (1.47 feet) above the flood plain and the midden slopes gently to the south and west. The site is undergoing some lateral erosion on the edge next to the creek in the form of a miniature gully cutting headward into the central portion of the midden. The remainder of the surface is stabilized by an undergrowth of thorny vines and low bushes. Three large oak trees are growing on the lower slopes of the midden.

A stratigraphic test pit 1.20 m. (3.93 feet) square was excavated by 15 cm. (0.49 foot) arbitrary levels, approximately in the center of the midden (fig. 18). From the surface to a depth of 15 cm. (0.49 foot) was an indurated crust of topsoil and sparse midden deposit, compacted, perhaps, by the pressure of the hooves of grazing cattle (fig. 16, *b*). Below this crust the midden earth was cohesive.

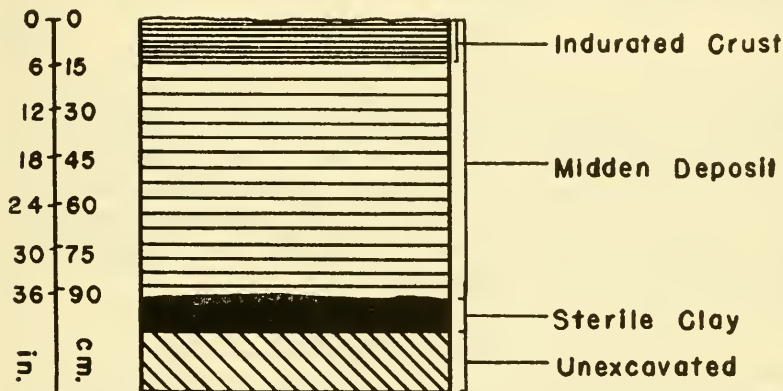


FIGURE 18.—Stratigraphic section, Grisbee site (42/66A3-1).

From 45 to 75 cm. (1.47 to 2.46 feet) the organic content of the deposit greatly increased, making it more friable and perceptibly darker in color. Most of the artifacts obtained at this site come from this level, which probably represents the period of heaviest occupation. Below this level the midden continued to a total depth of 90 cm. (2.95 feet) where it rested conformably upon the sterile clay composing the knoll.

The uppermost 60 cm. (1.96 feet) of the deposit contained Perdiz Pointed Stem and other upper level types, as well as a few Gary Stemmed projectile points. Below this level only the larger points were found. Potsherds occurred in all levels of the midden but were infrequent in level 75-90. One sherd from the base of a flat-bottomed vessel and two small rodlike pieces of pottery that may have been limbs of pottery figurines were unusual finds in this site.

MATERIAL CULTURE

Approximately 7,000 artifacts were recovered from the Addicks Basin sites, the great majority deriving from the Doering and Kobs middens, and most of the remainder from those sites surveyed and tested by the survey. The group of artifacts from the Addicks "Mound" (42/66A6-1) were donated to the Smithsonian Institution by Marshall Black of Houston.

Twenty-five artifacts were made of bone, antler, or shell by cutting, grinding, drilling, and polishing; 45 of granular stone by pecking or abrasion, tubular drilling, and polishing; and 1,870 of flint, chert, mineralized wood, chalcedony, and other crypto-crystalline, siliceous materials by percussion and pressure flaking. A few specimens of earthy minerals were, for the most part, of unaltered tabular or nodular form. The rest of the collection consists of about 5,000 potsherds and a few miscellaneous objects of clay.

POTTERY COMPLEX

The indigenous pottery of the region about the northern end of Galveston Bay consists of a single, highly variable ware divided into two subtypes, decoration serving as the primary criterion for the separation. These subtypes are tentatively named Goose Creek Plain and Goose Creek Incised (Campbell, n. d.). With the exception of a few sherds of intrusive wares, described below, all ceramic material falls into the above categories.

GOOSE CREEK PLAIN

Paste.

Method of Manufacture: Coiled. Sherds frequently break along coil junctions and often show oxidation between the coils where they were not sufficiently wedged before firing. Coils average 8 mm. (0.31 inch) in width.

Temper: Usually consists of sand of rounded quartz particles of variable size, although in some cases the sand is fine and of regular size. A few sherds, probably from two vessels, show calcium phosphate temper particles, and a number of sherds from the upper levels of the Kobs site appear to have clay or sherd temper. It seems probable that the calcium phosphate tempered sherds are from intrusive vessels.

Texture: Medium coarse to fine and compact, determined by the amount and size of the sand-temper particles. Some sherds seem to be almost pure sand, and the texture is like that of fine-grained sandstone. A few, however, are compact and fine-grained, the sand-temper particles firmly embedded in the clay. In cross section many of the sherds show coil laminae diagonal to the vertical axis of the vessel wall.

Hardness: Varies from 1.5 to 3.5 (Mohs' Scale), the average being about 2.5.

Color: Ranges from orange-red through reddish browns, brownish grays, and into very dark grays or black. Cores vary from reddish to black.

Ten sherds, selected at random and matched with the standard colors of Maerz and Paul,² show the following variations: 4A11, 5A11, 5E12, 6H11, 12C2, 14E6, 15A4, 15C8, 16A2, and 16A3. While this by no means exhausts the range of nuance of color, it shows the general variation. All the variations in color apparently are the result of uneven firing. A few sherds show remnants of a dark red wash or film applied on both interior and exterior.

Surface finish.

Usually smooth on both interior and exterior, with some variation of wall thickness resulting from uneven scraping and in some cases, perhaps, by finishing in the paddle-and-anvil technique. Marks produced by a denticulated instrument are occasionally visible on one or both surfaces. Exteriors sometimes have the surface scraped diagonally to the vertical axis of the vessel; and the interiors of a few sherds show vertical polishing marks on a dense black surface. Floating of fine particles of the paste to the surface was commonly used to produce a smooth finish. Such surfaces erode easily. Cracking of the surface occurs occasionally.

Form.

Wall Thickness: Range is 2 mm. to 10 mm. (0.08 to 0.39 inch); average, 6 mm. (0.23 inch).

Rim: Usually vertical, a few slightly outcurving. Thickness of the wall is ordinarily decreased toward the lip, usually from the vessel's interior, but occasionally from both interior and exterior (fig. 19).

Lip: Normally allowed to come to a relatively sharp edge (fig. 19, *a-e*), but sometimes flattened (fig. 19, *m-t*) or rounded (fig. 19, *f-l*). Lip notching is common, usually on the interior edge, but occasionally on the outer edge, and sometimes across the lip. Rim sherds from two vessels show notches formed by pinching with opposed thumb and fingernails creating a deeply scalloped effect. The lip of one rim sherd has been enlarged to form a lug (fig. 19, *v, w*).

Body: No whole vessels were found, but two shapes have been determined from partly reconstructed pieces. One of these is a deep bowl with full round sides incurving slightly at the rim (pl. 31, *d*; fig. 20, *d*). The second form is a small jar with slightly outcurving rim and sides that curve gently to a full round bottom (fig. 20, *a*).

Size: Forty-four rim sherds (including five partially restored vessels) have a range of diameters from 6 cm. (2.37 inches) to 44 cm. (17.50 inches). Twenty-four of these fall in the 20 to 30 cm. (7.81 to 11.80 inches) range, the remainder being distributed about equally. Depth may be defined only in the five partially restored vessels and varies from circa 15 to 25 cm. (5.90 to 9.68 inches).

Bases: Perhaps the most common base form is round; but pointed or conoidal forms are of frequent occurrence (Fig. 21). Bases are usually thickened at the center and frequently form a distinct node. Two bases are round and flat, the transition from base to wall marked by a distinct angle, and another apparently flattened squarish in outline.

²Maerz and Paul, 1930. The notation system refers to plate number, file, and rank, in the order given.

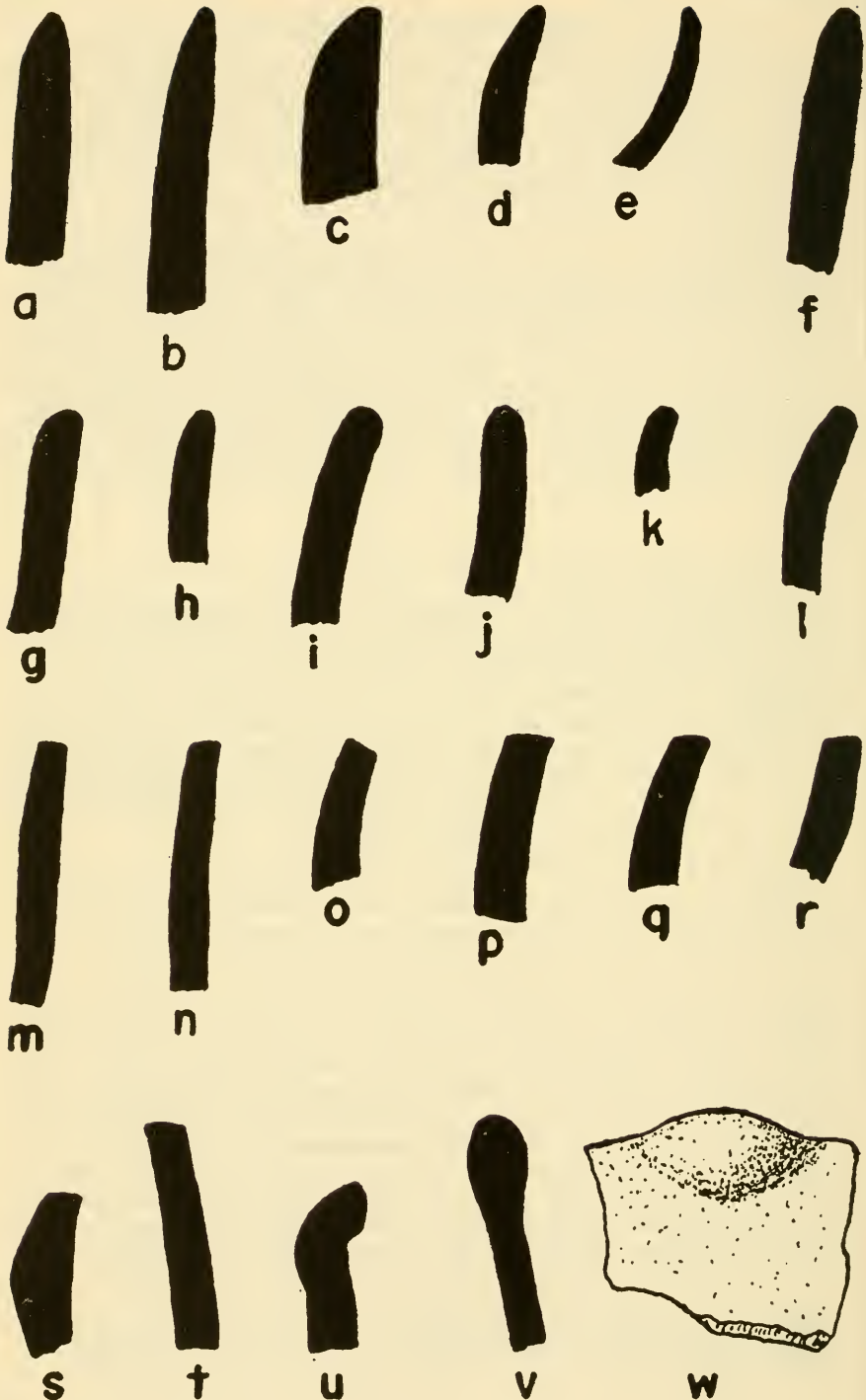


FIGURE 19.—Pottery: Rim and lip profiles. *a-e*, Sharp edge. *f-l*, Rounded edge. *m-t*, Flattened edge. *u*, Sharp outcurve. *v, w*, Lug. Interiors to left.

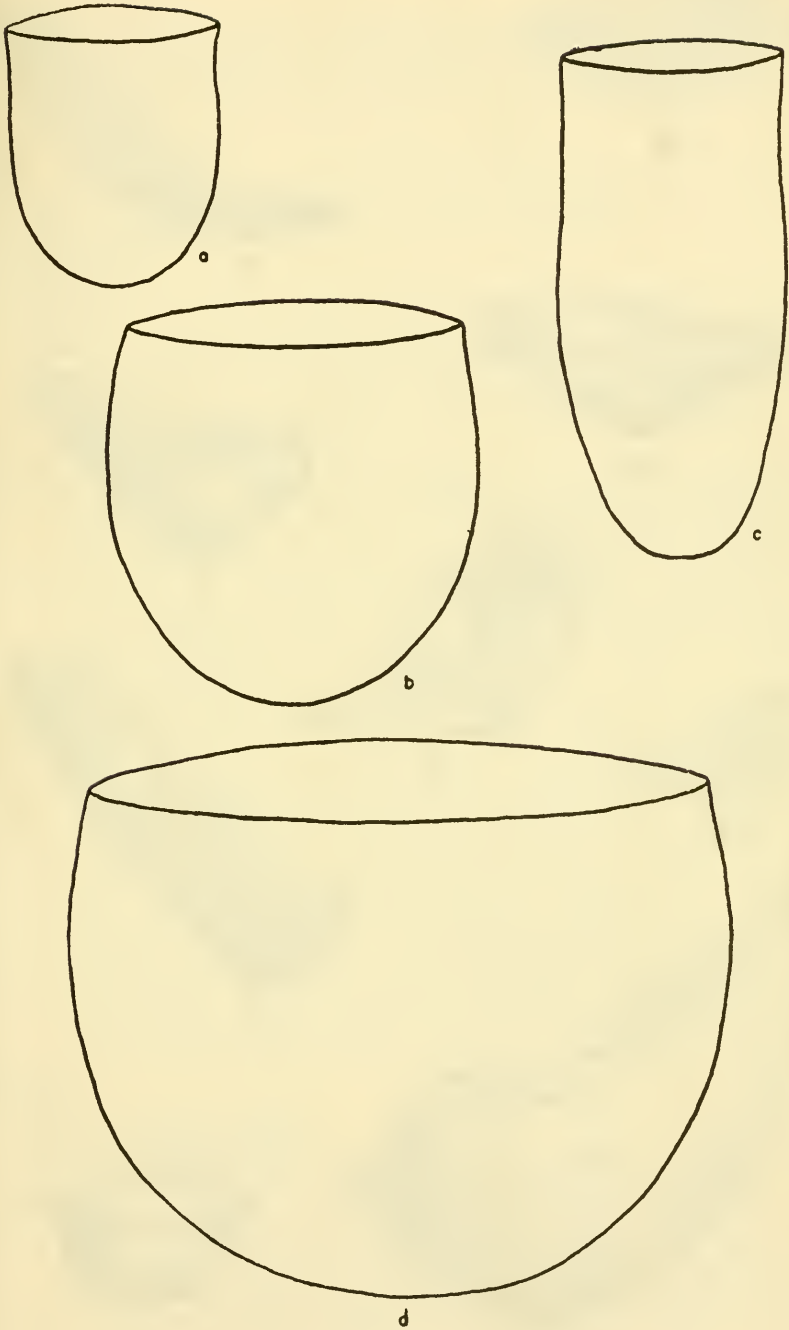


FIGURE 20.—Pottery: Vessel shapes.

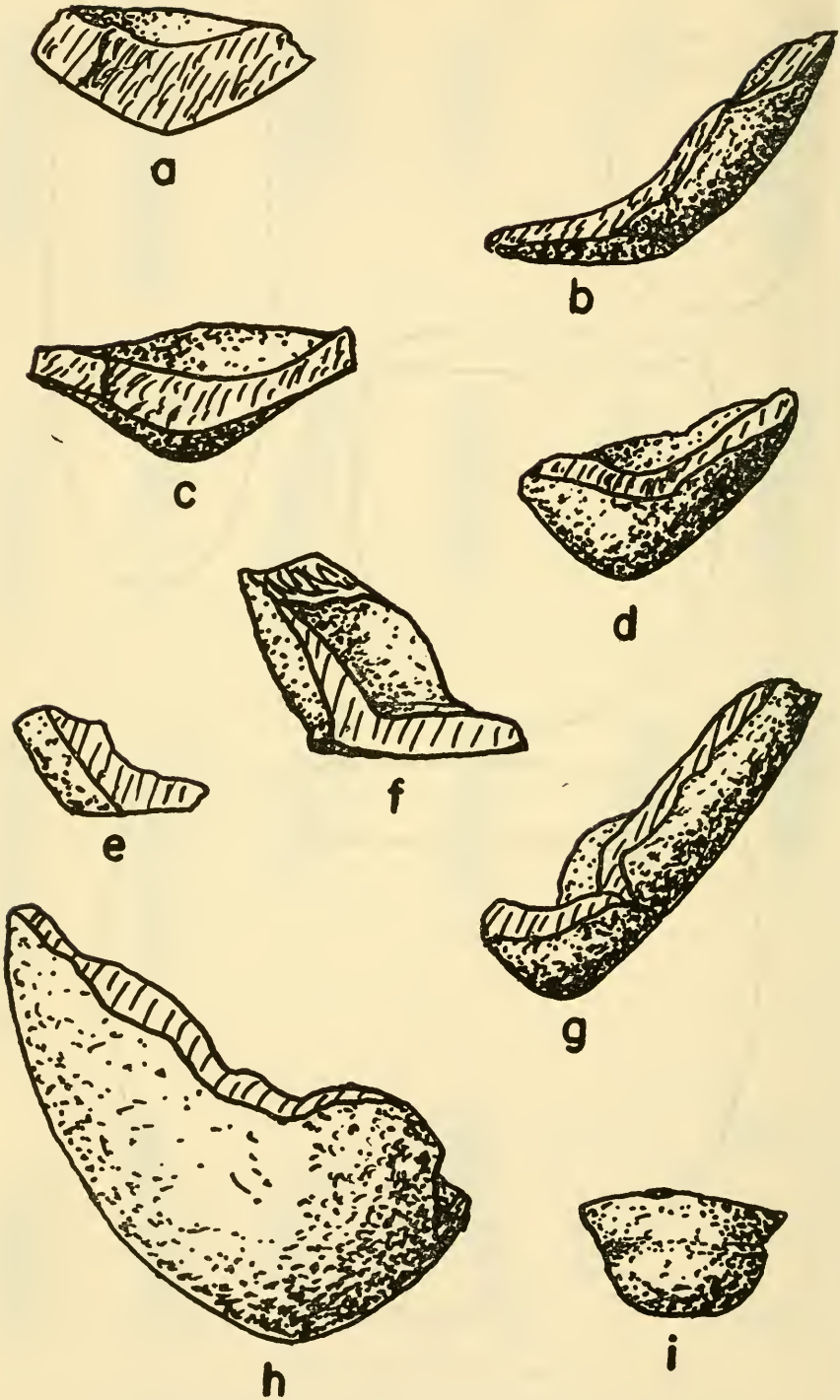


FIGURE 21.—Pottery: Base shapes.

Distribution.

Insufficient data are at hand to define the complete distribution of the type, but its present known range is a zone some 30 miles wide along the northern periphery of Galveston Bay and an unknown distance northeast and northwest.

GOOSE CREEK INCISED

Paste.

Paste features as described above for Goose Creek Plain.

Surface finish.

As described above.

Decoration.

The zone of decoration is confined to the rim section in all specimens recovered. Design elements are simple and are produced by incising the wet clay with a sharp implement. A few sherds combine incision with punctuation, and sherds from a single vessel show punctuation used alone as the decorative technique.

The most common form of design is single, dual, or, infrequently, multiple lines around the circumference of the vessel just below and parallel to the lip (pl. 32, *a-g*). These vary from fine, evenly incised lines to crude ones drawn with a rough tool. A variation of this style is the inclusion of a wavy or zig-zag line between parallel framing lines (pl. 32, *h*). These latter elements are sometimes pendant from a straight top line and occasionally appear singly or paired, independently of straight framing lines (pl. 32, *i-m*). The character of execution of these lines varies considerably.

Triangles, pendant from a straight line or alternating between double parallel lines, are frequently hatched and sometimes cross-hatched (pl. 33, *a-c*). Double concentric triangles occur infrequently (pl. 33, *d, e*). Ladderlike elements and parallel rows of punctuation sometimes form triangles or other geometric figures (pl. 33, *g-i*). The ladderlike elements are formed by parallel incised lines which are connected by short, equidistant transverse lines at more or less regular intervals. Punctations are usually quite small, about 1 mm. (0.039 inch) wide and 1.5 mm. (0.059 inch) long, and are made with a small pointed tool. On one rim sherd, parallel paired rows of three punctuations each, made with a small hollow instrument (perhaps a cane section) pressed into the clay at an angle so as to produce a crescentic punctation, are pendant from the lowermost of three parallel incised straight lines (pl. 33, *j*).

Form.

Rim: As described above.

Lip: As described above.

Body: Two shapes have been distinguished for Goose Creek Incised from the partial restoration of three vessels. One form is represented by two deep, narrow jars with nearly vertical sides (pl. 31, *a, b*; fig. 20, *c*). The jar is slightly constricted below the rim, but the basic shape is semi-cylindrical. The bottom converges gently to a rounded or conoidal base. The second form is a wide-mouth jar which expands slightly from the mouth to an elongate, globular body and a full round base (pl. 31, *c*; fig. 20, *d*).

TCHFUNCTE STAMPED

Five sherds have been identified as Tchefuncte Stamped (Ford and Quimby, 1945, pp. 56-57; pl. 30, *f*) ware (pl. 33, *k*).³ These sherds, all part of the rim of a single vessel, vary somewhat from the usual Tchefuncte type in their relative thinness, the deepness of the lip notching, and in that the temper is sand. It should be stated that sand and grit tempering was not unknown, either in the Tchefuncte period or in Tchefuncte Stamped ware itself. The rim is slightly flaring and the lip is roughly notched on the outside. Below the rim and parallel to it is a row of rocker-stamped impressions produced by a forked implement, the lower part being more heavily impressed than the upper. Pendant from this are parallel vertical rows of rocker-stamped impressions. These rows measure 7 mm. (0.28 inch) wide, and the distance between rows varies from 5 to 10 mm. (0.20 to 0.39 inch). A single crack-lacing hole, drilled from the outside, is 25 mm. (0.96 inch) below the lip.

UNIDENTIFIED WARES

Fifteen sherds from the wall of a single vessel have not been identified as to type (pl. 33, *l*, *m*). The entire exterior surface is decorated by lines formed with a denticulated implement and arranged in rows parallel to the rim of the vessel, then crossed by both vertical and diagonal rows of parallel lines.

A single sherd has asphalt adhering to it and may be intrusive from the Rockport Focus (Sayles, 1935, pp. 35-40, table 5).

MISCELLANEOUS OBJECTS OF CLAY

Clay Rods.—Four small, round pieces of pottery range from 7 to 9 mm. (0.28 to 0.36 inch) in diameter. Length cannot be determined accurately since all specimens are fragmentary. Two are broken at both ends, one terminates in a rounding point, and the other has a tapering point. They do not appear to have been handles or lugs for pots, and it is difficult to imagine a utilitarian function for them. Although no identifiable figurines were found, these objects may be limbs from broken specimens. These are from levels 30-45 and 45-60 in the Grisbee site, and levels 30-60 and 60-75 in the Kobs site.

Two somewhat flattened rods of clay are twisted across each other and are pressed together to form a single object. It is from level 30-45 in the Kobs site.

Worked Sherd.—A single sherd, roughly rectangular in outline, has a small projection on one end, formed by notches ground in from the sides. This may have served as a pendant.

CERAMIC STRATIGRAPHY

Because the apparent paucity of sherd material in the lower levels of the Doering and Kobs middens implied the possibility of a non-ceramic horizon, stratitests were made to determine the validity of such an hypothesis. Five contiguous meter squares, each penetrating to sterile native soil beneath the midden, were chosen at both the Kobs

³ George I. Quimby has examined these sherds and confirmed the identification. Dr. James B. Griffin does not fully concur in this identification. However, basically the sherds so closely resemble Tchefuncte Stamped, and inasmuch as there is no other known type to which they can be assigned, I have retained the original allocation.

and Doering sites to serve as check squares. Test pit 2 at site 42/66A6-4, and test pit 1 at the Grisbee site, while not equivalent in cubature, are included to show comparative data from other sites.⁴

Table 1 shows the sherd count from the stratitest squares by level from each of the sites.

TABLE 1.—*Sherd count from stratitest squares at Doering, Kobs, 42/66A6-4, and Grisbee sites*

Level	Sites							
	Doering		Kobs		42/66A6-4		Grisbee	
	1 P	2 I	1 P	2 I	1 P	2 I	1 P	2 I
0-15.....	7	-----	19	-----	6	-----	3	-----
15-30.....	15	-----	61	-----	11	-----	11	-----
30-45.....	20	2	70	4	8	-----	49	-----
45-60.....	12	-----	59	2	18	-----	106	1
60-75.....	1	-----	32	-----	7	-----	14	1
75-90.....	1	-----	23	-----	1	-----	2	1
90-105.....	3	-----	12	-----	-----	-----	-----	-----
105-120.....	1	-----	6	-----	-----	-----	-----	-----

1 P = Goose Creek Plain.
2 I = Goose Creek Incised.

Analysis of the data in table 1 indicates that in the Kobs and Grisbee sites and in site 42/66A6-4 pottery increased rather uniformly in frequency from the lowest level, reached a maximum, and then declined before the abandonment of the site. This is not true of the Doering site. While the sherd count of the stratitest squares for the Kobs, 42/66A6-4, and Grisbee sites appears to reflect closely the usually observed conditions occurring elsewhere in the sites, the count of the Doering site requires clarification.

A single sherd from the stratitest occurred in level 105-120. There was a total of five sherds from level 90-105, including three from the stratitest; and from level 75-90 there were three sherds, including one from the stratitest. This makes a total of nine sherds found below level 60-75. The stratitest count for level 60-75 presents a discrepancy, inasmuch as only one sherd was found in the stratitest, while the uncontrolled count for the level is 48, making a total of 49 sherds. Above 60-75 the stratitest count shows a uniform frequency increase to level 30-45, and above that, a decrease. This appears to be representative of the conditions throughout the rest of the site.

The stratitest sherd count indicates that Goose Creek Incised is both scarce and limited in its distribution to the upper levels. The vertical distribution of the incised ware, however, is not confined to the levels indicated by the stratitests but has, instead, a continuous

⁴ Stratitest squares for the various sites are as follows: Doering: 18N/1E, 18N/2E, 18N/3E, 18N/4E, and 18N/5E. Kobs: 9N/10W, 10N/10W, 11N/10W, 11N/9W, and 11N/8W. 42/66A6-4: Test pit 2. Grisbee site: Test pit 1.

distribution upward from level 75-90, depending upon the interpretation given the occurrence of sherds below 60-75, at the Doering site.

The actual percentage of incised to plain ware cannot be assessed accurately since decoration is confined to the rim and upper part of the body, and basal and lower body sherds may have come from either plain or incised ware. However, judging from rim sherds, the plain ware clearly predominated.

Although sharp lipped profiles predominate numerically over both flattened and rounded forms at all levels, there is no indication that they are appreciably older (table 2). There are too few rim sherds at the lower levels to supply satisfactory chronologic criteria.

Table 2 shows the vertical distribution of the various rim profiles.

TABLE 2.—*Frequency distribution by site and level of rim profiles*

Level	Profiles								
	Sharp lip			Flat lip			Round lip		
	¹ D	² K	Total	¹ D	² K	Total	¹ D	² K	Total
0-15.....	6	25	31	4	22	26	3	14	17
15-30.....	10	31	41	9	21	30	14	15	29
30-45.....	6	25	31	6	18	24	5	10	15
45-60.....	8	24	32	5	10	15	2	10	12
60-75.....	4	21	25	1	12	13	1	9	10
75-90.....	1	3	4	-----	1	1	1	-----	1
90-105.....	-----	4	4	-----	-----	-----	-----	-----	-----
105-120.....	-----	-----	-----	-----	-----	-----	-----	-----	-----
Total.....	35	133	168	26	59	85	26	58	84

¹ D = Doering site.

² K = Kobs site.

DISCUSSION

As previously mentioned, a total of nine sherds was recovered from below level 60-75 in the Doering site. With level 60-75 appears a sudden definite increase in frequency of pottery, an increase which continues until a maximum is reached, and then a decrease, probably due to decreasing usage of the site.

This situation may be explained in several ways: One, that pottery was introduced early in the occupancy of the site but, for some reason, did not become popular for a considerable period of time. Two, that while the occupants of the lower levels of the Doering site were in contact with pottery-making peoples from whom they received occasional pieces in trade, they made none themselves before middle-level times. (Since the sherds from the lower levels are indistinguishable from middle- and upper-level material and form a typological series, this explanation does not seem probable.) Three, that pottery was not introduced until level 60-75 and that the nine sherds found below this

level represent material displaced downward by rodent disturbance or the disturbance incident to dwelling on the site. The possibility of dual occupancy of the site may be ruled out since there is no break in the stratigraphy, and the lithic complex forms a continuum. On the whole, the third possibility seems the most likely explanation to the writer. Further support is vouchsafed this interpretation by an examination of the other materials from the lower levels. Leaving aside any typological considerations, the bulk of the lithic complexes, together with the bone and antler materials, effectively demonstrate this.

An extraction of data from tables 3, 4, 6, and 7 (below) yields the following results in comparison with the total number of sherds from the lower levels:

	<i>Miscellaneous artifacts</i>	<i>Sherds</i>
Level 60-75-----	149	49
Level 75-90-----	110	3
Level 90-105-----	84	5
Level 105-120-----	7	1

Thus, the clear predominance of bone, antler, and lithic materials tends to bear out the essentially nonceramic character of the lower levels.

By way of contrast, in the earliest levels of the remaining sites, pottery is already strongly represented in comparison with the lithic complex. Further, the increase in frequency of sherds from the lower levels upward to the maximum seems correlated with the increasing frequency of occupation of the sites as attested by a similar increase in the bone, antler, shell, and lithic remains. Taken together, these data show that pottery was already an important component of the total culture complex when occupation of the Kobs and Grisbee sites and site 42/66A6-4 began. Upon this basis the lower stratigraphic levels of these sites would correlate with the middle stratigraphic levels of the Doering site.

Chronologically, two factors are of importance. The first of these is the presence of Tchefuncte Stamped ware, intrusive into the pottery complex of the lower level of the Kobs site. This intrusion would seem to fix a relative point in time for the occupation of the Kobs site. Since it is found in an assemblage in which pottery is already significant, it is probable that the intrusion occurred comparatively late in the Tchefuncte period. If one accepts the A. D. 500-900 dating assigned the Tchefuncte by Martin, Quimby, and Collier (1947, p. 401), a date nearer the A. D. 900 terminus would seem most likely for the earliest deposits at the Kobs site. Recently, radiocarbon dates have been published for the Tchefuncte Culture (Arnold and Libby, 1951).

These dates, A. D. 1317 \pm 150, and 717 \pm 250 are confusing. The earlier date falls near the middle range originally postulated, but the later one is much too late to be accepted at face value. In terms of dates for other southeastern cultures of a similar technological stage of advancement both seem too late. On the whole, it would seem best to withhold acceptance of either of the radiocarbon dates until further information is forthcoming.

The second important factor is the apparent introduction of pottery to the established lithic complex of the lower levels of the Doering site, an event usually held to delimit the Archaic from the later Southeastern horizons (Sears, 1948, pp. 122-124). Considering the data from the Kobs site as our most secure chronological tie for the middle and early levels, it seems not unlikely that the lower, nonceramic levels of the Doering site antedate those of the Kobs site by perhaps several centuries.

Of possible chronological interest, although of minor importance, is the stratigraphically late appearance of new aplastics, calcium phosphate, and perhaps sherd temper. However, sand temper continues to predominate here as in the lower levels of all sites examined. It is this essential uniformity of Goose Creek wares throughout both their vertical and areal distribution that renders them, per se, of little value as time markers.

Briefly, the most salient structural features of the Goose Creek wares are: Sand-tempered paste; vessels made by the coiling technique and usually thinned by scraping; surface normally smoothed by floating the smaller particles to the surface to form a mechanical slip, but occasional other treatments; few and simple shapes, the most characteristic being elongated globular jars with slightly constricted necks and wide mouths, and large, deep, wide-mouthed bowls of simple contour; bases are round, truncated conoidal, or conoidal, and frequently terminate in a distinct node; rims are simple and direct, for the most part, and have rounded, flattened, or relatively sharp-edged lips, in order of their increasing importance.

As a preliminary statement, it may be noted that these traits stand in sharp contrast to the Mississippi culture pottery complex (Deuel, 1935, pp. 437 et seq.). The pottery complex of the Addicks Basin belongs to the predominantly smooth or plain surface tradition of the Southeast.⁵ This tradition, developing out of the various fiber-tempered plain types, consists of a series of clay and sand-tempered wares, Tchefuncte Plain, Mandeville Plain, St. Johns, and Weeden Island Plain, and their associated incised and stamped wares,⁵ to which may now be added the Goose Creek wares.

⁵ Griffin, 1949, personal communication.

The specific resemblance of the elongate globular jar with conoidal base to jars of the Northern Woodland groups (Anonymous, 1943, p. 396) raises an interesting problem. The shape is not common in the Southeast, occurring only in Florida (Moore, 1902, pp. 159, 300; figs. 52, 270). However, the surface treatment of all pottery recovered from the Addicks Basin sites is typically Southeastern, and only the shape of these jars is reminiscent of the Woodland vessels. Paddle stamping, the prevalent surface treatment of Woodland pottery, was not found. The question of the ultimate derivation of this shape is one for a specialist and lies beyond the limits of this paper.

The decoration of Goose Creek Incised is confined to the rim and upper wall of the vessel. Lip notching, incising, and punctation are used singly or in combination to form simple geometric designs. These decorative techniques are typically Southeastern, although they also occur elsewhere.

Specific relationships at the early levels seem to be confined to the Tchefuncte Culture of the Lower Mississippi Valley. From the middle levels of the Doering site a single sherd which has a thick, flattened globule of bitumen or asphalt adhering to the surface may be intrusive from the Rockport Focus (Sayles, 1935, pp. 35-40; table 5) which centers along the Gulf Coast south and west of the Addicks Dam Basin.⁶ It is possible, however, that the asphaltum is accidental, since it was used to a considerable extent in the hafting of projectile points. On the late horizon an unidentified trade ware, characterized by an all-over design produced by a dentate instrument, and a more compact paste, is represented by sherds from a single vessel. It cannot be related to a known source. Also late in the occupancy of the Addicks sites calcium phosphate and perhaps sherd temper make an appearance, but whether these aplastics were used locally in the manufacture of pottery or represent trade relationships is not yet determined.

Pearce (1932 a, p. 51) records much use of slips and paints on the pottery of the Galveston Bay region. This was not confirmed by our excavations. Floating of the surface to produce a mechanical slip is characteristic, but there was no evidence of a true slip. Paint appears to be confined to a wash or film of red occasionally present on both interior and exterior of vessels. This trait may be related to the red filming technique of the Tchefuncte Culture, although the tempering and thickness differ somewhat (Griffin, 1949, personal communication).

Gatschet (1891, pp. 24, 69) records the presence of pottery for the Karankawa Indians but leaves no description, so we cannot examine the possible affiliations of the ware with the Goose Creek

⁶ Rockport Phase of Sayles.

wares. Archeologically, sites presumed to be Karankawan have been investigated by Sayles (1935, pp. 35-40), Martin (1929, pp. 50-57; 1931, pp. 53-56), and Potter (1930, pp. 41-44). While asphalt, used both as a paint in decoration and for producing a waterproof coating on the interior of vessels, may be considered the hallmark of Karankawa pottery, Martin (1929, p. 56) distinguishes one type which differs in paste and treatment. The paste is described as being harder and less porous, and seldom shows the use of asphalt. The aplastic is not identified, however, and it is impossible to determine the likelihood of linkages with the Goose Creek wares. Both lip notching and incising occur, as well as asphalt painting. Potter (1930, p. 42), however, states that nearly all decorated vessels are very thin-walled (2-4 mm. (0.08-0.16 inch)) and are reinforced or waterproofed by an interior coating of asphalt. Furthermore, the lip notching is preponderantly deep notching or grooving completely across the lip of the vessel, in contrast to the typical shallow interior or exterior notching characteristic of the Goose Creek ware (Potter, 1930, p. 43, pl. 7, Nos. 5-10). Jar and bottle shapes occur in the Karankawa series but are significantly different. The small, deep, simple-contoured, wide-mouth bowl, while much smaller in the asphalt painted group, is a logical counterpart, in shape, to the larger bowl forms in the Goose Creek series (Potter, 1930, p. 44, pl. 8, No. 15). Thus, while there are significant differences, there are, nevertheless, some similarities of shape and decorative technique which suggest possible interchange of certain traits, at least during the late period from which all the reconstructed vessels from the Addicks Basin have come.

The Attakapan Phase suggested by Sayles (1935, p. 41) is characterized by sand-tempered pottery decorated with incised lines, non-distinctive lithic complex, and usually the presence of European trade goods. Since no details are given, it is not possible to correlate this phase with the sites excavated in the Addicks Basin. Further, none of the Addicks Basin sites produced any evidence of historic contact. However, as defined by Sayles, this phase may represent the historic focus of the culture of the peoples of the Addicks Basin area. On the whole, the general paucity of extra-areal contacts points to the relative isolation of the Addicks Basin peoples.

LITHIC COMPLEX

If cultures predominantly lithic in complexion are to be correlated satisfactorily with each other and with groups whose history is largely told in ceramic terms, then we must pay the same attention to artifacts of stone, bone, shell, etc., that has yielded such valuable results in the study of pottery. We must arrive at an intelligent classifica-

tion based not upon one or two features, such as outline or flaking technique, but upon the totality of inherent traits that make one group of artifacts distinct from another. The range of variation within the type must be realized, and distribution in space and time recognized and plotted. It is incumbent that the word description of nonpottery artifacts be as clear and accurate as possible and be fully documented by photographs and drawings. When we have accumulated such a corpus of data we shall be in a position better to define and understand the relations of groups of people who, while differing in their economic adaptations, are alike in leaving a heritage limited to imperishable bits of stone and pottery.

In this paper projectile points have been classified according to the Typological Concept as defined by Krieger (1944, p. 271-288). The binominal system of nomenclature for projectile points in use by the Texas Council of Archeologists, and recently adopted by the Southwestern Archeological Conference, Point of Pines, Ariz., has been used in this report. This system, long used in pottery designation, combines the type-site name and a word or phrase descriptive of the most characteristic or consistent feature of the projectile point.

As previously stated, named projectile point types are those which, for the most part, have been established by Kelley, Krieger, or Campbell, of the University of Texas, and the present specimens have in each case been checked by them.⁷ One new type, Kobs Triangular, has been established on the data furnished by the Addicks Dam Basin excavations. The remaining named types have been designated by several different investigators and will be discussed under the proper headings below.

A number of provisional types have been set up. These have been numbered rather than named, inasmuch as our data are altogether too scanty to establish them on a firmer foundation. They may be considered as "working groups" in the sense that this term is used by Krieger (1944, p. 280, fig. 25). It is entirely probable that some of them may be consolidated into more inclusive types. It is equally possible that fuller information may require further subdivision. In any event, it has been thought best to describe them in detail and to place them on record as a basis for future work in this and neighboring areas.

For conciseness in description, data are presented in expanded outline form, and certain descriptive conventions have been adopted. Points whose width equals or exceeds their length are considered to

⁷ Although references to the names of several of these types have previously appeared in print, the present paper constitutes their first description at length. However, type descriptions based on greater areal sampling are to be published by the responsible individuals cited above.

be of broad proportions. Long or narrow proportioned points are those in which length is as much as, or more than, twice the width. Points whose length-breadth relations are intermediate are designated as of medium proportions. "Contracting stem" is used to describe tangs which increase in width from the base to the point of intersection with the blade; "expanding stem" implies the reverse condition. A "Remarks" section has been included to cover such data as deviations from norm and temporal and areal range. No attempt has been made to exhaust the literature concerning distribution, since the varying treatments and the gaps in areal coverage make such distribution studies hazardous at present. Distribution, where given, is simply to point out certain basic similarities of form, technique, and size of typologically similar artifacts in other areas in an attempt to generalize upon areas of possible influence.

The stratigraphic sequence of projectile points in the Addicks Dam Basin sites is of particular significance, since it provides a relative chronological framework by which the different sites may be temporally equated. This is the more important since pottery, usually the most sensitive criterion, did not here reveal significant variations in style or structure which might serve to distinguish the wares of one period from those of a later date.

Projectile points may be divided into two major groups: the generally smaller and lighter arrow points whose occurrence is confined to the upper levels of all the middens tested; and the larger, heavier dart points found chiefly in the middle and lower levels. Certain types, represented only in the stream-bed collection, cannot be placed precisely in the relative chronology and have, therefore, been grouped separately until further excavation shall reveal their correct placement.

The following tabulation shows the breakdown of the lithic complex into its component categories:

Artifacts of stone:

Chipped stone:

Projectile points:

Upper Level types:

Perdiz Pointed Stem.....	113
Sealhorn Stemmed.....	12
Eddy Stemmed.....	17
Alba Barbed.....	34
Kobs Triangular.....	34
Provisional Type 1.....	4
Provisional Type 2.....	3
Provisional Type 3.....	1
Provisional Type 4.....	1

Total Upper Level types..... 219

Artifacts of stone—Continued

Chipped stone—Continued

Projectile points—Continued

Middle and Lower Level types:

Gary Stemmed.....	518
Provisional Type 5.....	2
Wells Contracting Stem.....	1
Provisional Type 6.....	25
Provisional Type 7.....	23
Provisional Type 8.....	13
Provisional Type 9.....	8
Provisional Type 10.....	9
Provisional Type 11.....	22
Provisional Type 12.....	28
Provisional Type 13.....	6
Provisional Type 14.....	8
Provisional Type 15.....	1
Provisional Type 16.....	2
Provisional Type 17.....	5
Provisional Type 18.....	15
Provisional Type 19.....	18
Provisional Type 20.....	6
Pedernales Indented Base.....	2
Provisional Type 21.....	2
Provisional Type 22.....	12
Provisional Type 23.....	21
Provisional Type 24.....	3
Clovis Fluted (?).....	1

Total Middle and Lower Level types..... 751

Unplaced types:

Provisional Type 25.....	1
Provisional Type 26.....	1
Provisional Type 27.....	2
Provisional Type 28.....	1
Provisional Type 29.....	4
Provisional Type 30.....	6
Provisional Type 31.....	1
Provisional Type 32.....	1
Copena Point (?).....	1
Plainview Point.....	1
Baird Beveled Point.....	2
Nontypable fragments.....	284

Total Unplaced types..... 305

Total projectile points..... 1, 275

Artifacts of stone—Continued

Chipped stone—Continued

Implements:

Knives:

Type 1a.....	2
Type 1b.....	1
Type 1c.....	1
Type 1d.....	8
Type 2.....	100
Type 3.....	53
Type 4.....	13
Type 5.....	6
Type 6a.....	1
Type 6b.....	1

Total knives..... 186

Scrapers:

End Scrapers, Stemmed.....	5
End Scrapers, Large.....	3
End Scrapers, Small.....	7
Side Scrapers, Large.....	5
Side Scrapers, Small.....	20
Flake Scrapers.....	260

Total scrapers..... 300

Choppers:

One end unmodified.....	20
Both ends modified.....	54
Chipped Celt.....	1

Total choppers..... 75

Drills:

Type 1a.....	5
Type 1b.....	4
Type 1c.....	4
Type 2a.....	3
Type 2b.....	3
Type 3.....	1

Total drills..... 20

Gravers..... 13

Eccentric flint..... 1

34

Total implements..... 595

Total chipped stone..... 1, 870

Artifacts of stone—Continued

Ground stone:

Atlatl weights (banner stones).....	2
Sandstone abraders or saws.....	41
Milling stone.....	1
Handstone.....	1

Total ground stone artifacts..... 45

Miscellaneous stone:

Paint pigments.....	18
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Total artifacts of stone..... 1, 933

PROJECTILE POINTS

UPPER LEVEL TYPES

Perdiz Pointed Stem (pl. 34, a-n); 113 Specimens.

Proportions: Usually medium but sometimes long and slender.

Blade: Edges normally straight, occasionally convex or concave, frequently serrated.

Shoulders: Prominent to barbed.

Stem: Most frequently long relative to total length of point, and contracting to a pointed or slightly rounding base.

Average dimensions: Length, 33 mm. (1.31 inches); width, 19 mm. (0.75 inch); thickness, 4 mm. (0.15 inch).

Provenience: See table 3.

Remarks: This type of point is the most characteristic of the upper levels in all sites tested and excavated. They are small, light in weight, and since they are commonly made from a thin flake, one side often shows most of the flaking. Workmanship varies considerably, but they are usually well made. The Perdiz Pointed Stem is one of the type projectiles for the Toyah Focus (Kelley, 1947 a, p. 122) which Kelley dates at circa A. D. 1500. It is a component of the lithic complex of the Frankston Focus of northeast Texas which Krieger dates between 1400 and 1600,⁹ when it is replaced by Cuney Stemmed, a type not occurring in the Addicks Dam Basin sites. The Perdiz Pointed Stem type has a wide distribution over most of Texas, occurring from Trans-Pecos in the southwestern part of the state, across a broad central belt to northeastern Texas. These finds represent a southeastern extension of their known distribution.

Scalhorn Stemmed (pl. 34, o-s); 12 specimens.

Proportions: Long and narrow.

Blade: Edges straight and frequently serrated.

Shoulders: Straight to barbed, but usually obscured because of wide base.

Stem: Expanding to flaring, formed by diagonal notches from basal corner or just above; base straight to convex.

Average dimensions: Length, 36 mm. (1.43 inches); width, 17 mm. (0.68 inch); thickness, 3 mm. (0.12 inch).

Provenience: See table 3.

⁹ Krieger, personal conference.

Remarks: Appear stratigraphically later than Perdiz Pointed Stem, both here and in the type area. Distribution limited to central and eastern Texas, centering around Tyler.¹⁰

TABLE 3.—*Provenience of Upper Level types of projectile points*¹

Type	Site	Level						Total
		0-15	15-30	30-45	45-60	60-75	Unlocated	
Perdiz Pointed Stem.....	D	8	5	1	1	1	2 4	20
	K	32	38	9	6	1	1	87
	4	2	1	1				4
	G				2			2
Scalhorn Stemmed.....	D	2					2 2	4
	K	1		3	2			6
	G		1	1				2
Eddy Stemmed.....	D	1						1
	K	4	9	1	2			16
Alba Barbed.....	D		2				2 3	5
	K	4	10	3	8	1		26
	G	1		1	1			3
Kobs Triangular.....	D		1				2 3	4
	K	6	6	10	4	2		28
	G				2			2
Type P-1.....	D	1	1				2 1	3
Type P-2.....	K				1			1
Type P-3.....	K		1			1		3
Type P-4.....	K			1				1
	K			1				1

¹ Symbols: D = Doering; K = Kobs; 4 = 42/66A6-4; G = Grisbee.

² = From stream bed collection; type P = Provisional type.

Eddy Stemmed (pl. 34, t-x); 17 specimens.

Proportions: Broad to medium.

Blade: Edges straight, occasionally serrated.

Shoulders: Barbed but obscured by flaring base.

Stem: Expanding to flaring, formed by diagonal notches from basal corner, as in the Scalhorn Stemmed; base straight to convex.

Average dimensions: Length, 23 mm. (0.90 inch); width, 17 mm. (0.68 inch); thickness, 3 mm. (0.12 inch).

Provenience: See table 3.

Remarks: Chronological and distributional data as for Schalhorn Stemmed.¹¹

Alba Barbed (pl. 35, a-h); 34 specimens.

Proportions: Medium to long.

Blade: Usually concave from barbs to midblade, convex to tip; a few are straight to slightly convex; frequently serrated.

Shoulders: None.

Stem: Notches flaked upward from base form both stem and barbs, usually of approximately equal width; base convex to straight.

Average dimensions: Length, 39 mm. (1.56 inches); width, 22 mm. (0.87 inch); thickness, 4 mm. (0.15 inch).

Provenience: See table 3.

Remarks: These points appear at about the same level as the Perdiz Pointed Stems, although the latter seem to predominate in the uppermost levels. The type is known from Henrietta Focus, north central Texas (Krieger, 1946, p. 140), and the Gibson Aspect in northeastern Texas (Krieger, 1946, p. 157). It is earlier in the Gibson Aspect foci than in Henrietta Focus and ranges in time perhaps from A. D. 1200 to 1650.

¹⁰ Kelley, personal conference.

¹¹ Kelley, personal conference.

Kobs Triangular (pl. 35, i, j); 34 specimens.

Proportions: Medium to long.

Blade: Usually concave from base to midblade, convex to tip; a few are straight to convex, sometimes serrated; basically triangular.

Base: Usually convex.

Average dimensions: Length, 45 mm. (1.78 inches); width, 22 mm. (0.87 inch); thickness, 4 mm. (0.15 inch).

Provenience: See table 3.

Remarks: These points have all the shape and size characteristics of the Alba Barbed type except the notching, which produces both stem and barbs in the latter. Distribution is considered to be generally similar, as well, with perhaps a greater concentration of the Kobs Triangular in the eastern range of the type.¹²

MISCELLANEOUS UPPER LEVEL TYPES

Provisional Type 1 (pl. 35, p); 4 specimens.

Proportions: Long and narrow.

Blade: Edges convex.

Shoulders: Prominent but obscured by flaring stem.

Stem: Wide expanding stem formed by deep U-shaped lateral or diagonal notches; strongly convex base.

Dimensions (only one whole specimen): Length, 50 mm. (1.96 inches); width, 21 mm. (0.87 inch); thickness, 5 mm. (0.20 inch).

Provenience: See table 3.

Remarks: These are larger than usual for upper level projectile points. The workmanship is good. Distribution in time and space is unknown.

Provisional Type 2 (pl. 35, m-o); 3 specimens.

Proportions: Long and narrow.

Blade: Slightly convex edges and rather thick in cross section.

Shoulders: Tend to squareness but are not prominent.

Stem: Relatively short and squarish with parallel edges and bases somewhat convex.

Average dimensions: Length, 65 mm. (2.56 inches); width, 19 mm. (0.75 inch); thickness, 8 mm. (0.31 inch).

Provenience: See table 3.

Remarks: Like Provisional Type 1, these are longer than is common in upper level types. Workmanship is above average for this area. Temporal and areal distribution unknown.

Provisional Type 3 (pl. 35, k); 1 specimen.

Proportions: Medium; blade broad, stem relatively long.

Blade: Edges straight.

Shoulders: Poorly defined.

Stem: Concave edges; contracts gently from the shoulders to midstem from where it expands to a slightly concave base; stem and basal edges heavily ground.

Dimensions: Length 28 mm. (1.09 inches) of which 12 mm. (0.46 inch) is blade length; width, 15 mm. (0.59 inch); thickness obscured by thermal fracture on both faces of the blade.

Provenience: See table 3.

¹² Krieger, personal conference.

Provisional Type 4 (pl. 35, I); 1 specimen.

Proportions: Medium.

Blade: Edges parallel to midblade, asymmetrically convex to tip; edges ground smooth along parallel portion.

Base: Concave.

Dimensions: Length, 39 mm. (1.56 inches); width, 19 mm. (0.75 inch); thickness, 7 mm. (0.28 inch).

Provenience: See table 3.

Remarks: The end of the blade has been roughly reflaked to its present asymmetric shape. It seems likely that this is an earlier piece which had been picked up and reused by the later occupants of the site. Spatial and temporal distribution unknown.

MIDDLE AND LOWER LEVEL PROJECTILE POINTS

Gary Stemmed (pl. 36, a-y); 518 specimens.

Proportions: Commonly medium, but a few are of broad or narrow proportions.

Blade: Edges vary from convex to somewhat concave and are frequently asymmetrical.

Shoulders: Prominent, rarely barbed; an occasional point has only one shoulder.

Stem: Usually contracts from the shoulder to form a tapered or rounded stem, although a very few have parallel or even slightly expanding sides. Base is normally pointed, but in some cases is convex or straight. The majority of these convex or straight base points are the result of leaving the unmodified original striking platform of the flake to form the butt of the stem. Asphaltum was often used on the stem as an adhesive for binding it to the shaft.

Average dimensions: Length, 47 mm. (1.87 inches); width, 26 mm. (1.03 inches); thickness, 8 mm. (0.31 inch). There is a considerable size range in these points, depending somewhat upon material and workmanship.

Provenience: See table 4.

Remarks: The Gary Stemmed point is the most characteristic type of the middle levels. Workmanship ranges from extremely crude percussion flaked examples to well-made pressure retouched points. This depends in part upon the material: Flint, quartzite, mineralized wood, and one point of fine-grained sandstone. Typologically similar projectile points have a wide range both in space and time. Without attempting to give a complete distribution, a few pertinent occurrences may be noted. It is similar to, if not identical with, the simple haft 1 B of the Tchefuncte period (Ford and Quimby, 1945, fig. 8, *h, i*), and most, if not all, of the points designated as types simple haft 1 A, 1 C, 1 D, 2 A, 2 B, and 2 C of the Marksville period (Ford and Willey, 1940, figs. 45, 46). Poverty Point in northern Louisiana (Webb, C. H., 1948, fig. 44, 1, 2, and 4); sites Lu^v 65, Lu^v 67, Lu^v 72, Lu^v 92, and Ct^v 27 in the Pickwick Basin (Webb, Wm. S. and DeJarnette, 1942, pls. 207, 226, 227, 236, 257, and 293); site 5 in the Norris Basin (Webb, Wm. S., 1938, pl. 31 *b*); Indian Knoll (Webb, Wm. S., 1946, fig. 32, *c*); Lake Tohopekaliga, Florida (Watson, 1948, fig. 23, *g, h*); and Stalling's Island (Clafin, 1931, pls. 55, 56) all yield points of a similar pattern. It is common in pottery sites in northeast Texas (Krieger, 1946, p. 117). Furthermore, it is listed as one of the most common forms of the Woodland Pattern of the north-

ern United States (Anonymous, 1943, p. 396 and fig. 39, I b). The temporal distribution within this geographical range is Archaic to Temple Mound II, perhaps later. Within the sites of the Addicks Basin, the Gary Stemmed point earlier displaces a group of expanding stemmed points in favor, and is finally, itself, largely replaced by the small arrow points of the upper levels. The variation within the type range of the Addicks specimens seems to have little, if any, chronological significance per se. The importance of the group lies in the predominant role it played during the middle level of occupation.

TABLE 4.—*Provenience of Middle and Lower Level types of projectile points*¹

Projectile point type	Site	Level								Total	
		0-15	15-30	30-45	45-60	60-75	75-90	90-105	105-120		Unlocated
Gary Stemmed.....	D	6	25	32	48	52	30	11	1	*243	448
	K	1	5	13	10	9	2	4	2		47
	4				2	2	2				6
Wells Ctg. Stem.....	G			1	4	8	4				17
	D						1				1
Type P-5.....	D						1			*1	1
Type P-6.....	G						1				1
	D		2	2	2		2	5		*12	25
Type P-7.....	D			1		1	3	2	2	*13	22
	K				1						1
Type P-8.....	D				1	3	2	2		*4	12
	K				1						1
Type P-9.....	D		1			2	2			*1	6
	G		1			1					2
Type P-10.....	D			1		1				*2	4
	K					3					3
Type P-11.....	5									2	2
	D			1		1	4	2		*12	20
Type P-12.....	K					1					1
	D				1	1					1
Type P-13.....	D				1	3	1	1		*22	28
	K		1							*2	3
Type P-14.....	G					1					1
	D								1	*7	8
Type P-15.....	D							1		1	
Type P-16.....	K					1		1			2
Type P-17.....	D						1			*4	5
Type P-18.....	D				1	1	2	3		*7	14
	K							1			1
Type P-19.....	D							1		*16	17
Type P-20.....	5									1	1
Pedernales Ind.....	D						1	2		*3	6
	D						1			*1	2
Type P-21.....	D				1			1			2
Type P-22.....	D				1		1			*8	10
	K					1					1
Type P-23.....	G				1						1
	D					2	2	1		*14	19
Type P-24.....	K					1					1
	G						1				1
Clovis Fluted (?).....	D				1	1					2
	K									1	1

¹ Symbols: D=Doering, K=Kobs, 4=42/66A6-4, 5=42/66A6-5, G=Grisbee sites; Type P=Provisional type; Pedernales Ind.=Pedernales Indented Base; *=Stream bed collection from Doering site.

Provisional Type 5 (pl. 37, o); 2 specimens.

Proportions: Medium.

Blade: Edges convex.

Shoulders: Well defined.

Stem: Short, contracting, bifurcate.

Dimensions (1 specimen): Length, 41 mm. (1.61 inches); width, 22 mm. (0.87 inch); thickness, 11 mm. (0.43 inch).

Provenience: See table 4.

Wells Contracting Stem (pl. 37, s); 1 specimen (broken).

Proportions: Narrow.

Blade: Less wide than stem, edges convex (?); distal end broken.

Shoulders: None.

Stem: Long, narrow, contracts from midpoint of blade; base straight; stem and basal edges ground smooth.

Dimensions: Length, *circa* 70 mm. (?) (2.75 inches); width, 19 mm. (0.75 inch); thickness, 7 mm. (0.28 inch). Length of stem, 32 mm. (1.28 inches).

Provenience: See table 4.

Remarks: Basically a narrow leaf-shaped point. The stem is demarked by grinding and by a greater width than the blade, forming, in effect, a reverse shoulder. The known range of the Wells Contracting Stem form centers in northeast Texas and may be fairly late, but it is certainly precontact.

Provisional Type 6 (pl. 37, d, e); 25 specimens.

Proportions: Medium to narrow.

Blade: Edges convex to straight, rarely concave.

Shoulders: Usually poorly defined, sometimes square.

Stem: Slightly to widely expanding, formed by relatively broad and shallow notches diagonally flaked from the basal corners; bases mostly convex, occasionally straight.

Average dimensions: Length, 45 mm. (1.78 inches); width, 21 mm. (0.84 inch); thickness, 6 mm. (0.23 inch).

Provenience: See table 4.

Remarks: Although somewhat similar points occur in the Poverty Point site in northern Louisiana (Webb, C. H., 1948, fig. 44, 4), in general their temporal and geographical range is not known.

Provisional Type 7 (pl. 37, f-h); 23 specimens.

Proportions: Medium.

Blade: Edges convex.

Shoulders: Obscured by width of stem and base.

Stem: Flaring, as wide as blade; lateral notches are usually broad and shallow, sometimes narrow; bases generally straight.

Average dimensions: Length, 39 mm. (1.56 inches); width, 20 mm. (0.78 inch); thickness, 6 mm. (0.23 inch).

Provenience: See table 4.

Remarks: Rough but not poor workmanship and somewhat smaller than the majority of Middle and Lower Level points. The complete range in space and time is not known, but the shape occurs at site Ct^o 27 in the Pickwick Basin (Webb, Wm. S., and DeJarnette, 1942, pl. 294, 1, type listed as No. 47); at site Ma^o 4 in the Wheeler Basin (Webb, Wm. S., 1939, pl. 108, b); in Missouri (Wedel, 1943, pl. 12, c-e); and is listed as one of the basic shapes of the Woodland Pattern (Anonymous, 1943, fig. 39, d).

Provisional Type 8 (pl. 37, i, j); 13 specimens.

Proportions: Narrow to medium.

Blade: Forms a compound curve, concave from shoulders to midblade, convex to tip.

Shoulders: Prominent but not barbed.

Stem: Somewhat expanding, frequently ground smooth; base is straight to convex.

Average dimensions: Length, 60 mm. (2.37 inches); width, 25 mm. (0.96 inch); thickness, 8 mm. (0.31 inch).

Provenience: See table 4.

Remarks: These points are larger than average for the site, and the workmanship is good. The type is quite similar to the simple haft 1 A of the Tchefuncte and Marksville cultures (Ford and Quimby, 1945, fig. 8, a, b, c, and e) and to some of the points from site Ct^v 17 in the Wheeler Basin (Webb, Wm. S., 1939, pl. 27, a). Its complete range is not known.

Provisional Type 9 (pl. 37, k, l); 8 specimens.

Proportions: Broad.

Blade: Edges convex.

Shoulders: Slightly barbed, occasionally straight.

Stem: Gently to widely expanding, formed by notches from the basal corners; bases are convex.

Average dimensions: Length, 35 mm. (1.37 inches); width, 24 mm. (0.93 inch); thickness, 5 mm. (0.20 inch).

Provenience: See table 4.

Remarks: Complete areal and spatial distribution unknown, but at least one other southeastern occurrence is at Hiwassie Island (Lewis and Kneberg, 1946, pl. 66B, upper row).

Provisional Type 10 (pl. 37, m, n); 9 specimens.

Proportions: Narrow.

Blade: Edges gently convex.

Shoulders: Obscured by width of stem.

Stem: Expanding, formed by broad, shallow, lateral notches; base convex; basal and notch edges frequently smoothed by grinding.

Average dimensions: Length, 40 mm. (1.59 inches); width, 17 mm. (0.68 inch); thickness, 6 mm. (0.23 inch).

Provenience: See table 4.

Provisional Type 11 (pl. 37, a-c); 20 specimens.

Proportions: Medium to narrow.

Blade: Edges predominantly straight but some show slight convexity or concavity.

Shoulders: Not prominent, obscured by wide expanding stem.

Stem: Expanding to flaring; formed by broad, shallow, irregular, lateral notches some distance above the base; base usually convex but sometimes straight.

Average dimensions: Length, 54 mm. (2.12 inches); width, 22 mm. (0.87 inch); thickness, 8 mm. (0.31 inch).

Provenience: See table 4.

Remarks: Appears in site Mg^v 2 in the Wheeler Basin, an early horizon (Webb, Wm. S., 1939, pl. 83, a, row 3, No. 2), and also in Mississippi (Brown, 1926, fig. 28, second row, last two specimens), but without context. Its complete distribution in space and time is not known.

Provisional Type 12 (pl. 37, p, q); 28 specimens.

Proportions: Narrow to medium.

Blade: Edges form compound curve, concave from shoulders to midblade, convex to tip.

Shoulders: Prominent, rarely barbed.

Stem: Vary from slightly contracting to somewhat expanding, frequently of a bulbous shape and smoothed by abrasion; stem constitutes from one-third to one-fourth of the total length of the point; base convex to rounding.

Average dimensions: Length, 65 mm. (2.56 inches); width, 25 mm. (0.96 inch); thickness, 8 mm. (0.31 inch).

Provenience: See table 4.

Remarks: In general appearance this type is quite similar to Provisional Type 8, the chief difference being in the consistently longer, occasionally bulbous stem of the present type. Temporal and spatial distribution unknown.

Provisional Type 13 (pl. 37, r); 6 specimens.

Proportions: Medium.

Blade: Edges convex to straight.

Shoulders: Slightly barbed to poorly defined.

Stem: Relatively long, parallel-sided; bases indented; basal and stem edges sometimes ground.

Average dimensions: Length, 55 mm. (1.65 inches); width, 23 mm. (0.90 inch); thickness, 7 mm. (0.28 inch).

Provenience: See table 4.

Remarks: Points of similar shape but generally larger and inferior in workmanship occur over a wide range to the west of the Addicks Basin. They seem to center on the Edwards Plateau, occurring as far north as Abilene (Sayles, 1935, pl. 14, *b*, *c*, and *g*), west to the Pecos River (Pearce and Jackson, 1933, pl. 12, *a*, 6), east to the Black and Grand Prairies near Dallas (Bryan, 1930, pl. 24, 4), and on the plateau proper (Jackson, 1938, pl. 4, 1; Pearce, 1932 a, pl. 10, No. 20; and Kelley, 1947, pl. 14, 1).

Provisional Type 14 (pl. 37, t); 8 specimens.

Proportions: Narrow.

Blade: Edges straight to slightly convex.

Shoulders: Barbed.

Stem: Short relative to total point length, gently expanding; base straight.

Average dimensions: Length, 45 mm. (1.78 inches); width, 22 mm. (0.87 inch); thickness, 4.50 mm. (0.17 inch).

Provenience: See table 4.

Provisional Type 15 (pl. 38, a); specimen.

Proportions: Narrow.

Blade: Convex.

Shoulders: Indeterminate because of broken condition of point.

Stem: Basically parallel-sided, edges slightly concave; base somewhat concave; stem and basal edges ground smooth.

Dimensions: Length, circa 80 mm. (?) (3.14 inches); width, 21 mm. (0.84 inch); thickness, 7 mm. (0.28 inch).

Provenience: See table 4.

Remarks: Specimen broken and small central segment was not recovered. Workmanship excellent, the flaking of the blade is basically collateral with minute retouching along the blade edges. This point somewhat resembles the Scottsbluff points which Webb (Webb, C. H., 1948, fig. 45, Nos. 1-5) reports from northern Louisiana. If it actually falls into that category, the Addicks Basin find marks the southernmost occurrence yet noted.

Provisional Type 16 (pl. 38, b); 2 specimens.

Proportions: Medium.

Blade: Basically leaf-shaped, edges convex from tip to intersection with stem.

Shoulders: None.

Stem: Parallel-sided or slightly contracting; base concave; basal and stem edges ground.

Dimensions (larger specimen): Length, 67 mm. (2.64 inches); width, 31 mm. (1.21 inches); thickness, 9 mm. (0.36 inch).

Provenience: See table 4.

Remarks: Workmanship excellent with broad, parallel flakes on the faces of the blade. Typologically similar points occur at Nebo Hill in western Missouri (Shippee, 1948, pl. 2, Ah, Ch) where they are considered to be reworked blades from the more typical elongate, lanceolate variety. Others somewhat resembling these occur at site Ft-42 on Lime Creek in Nebraska (Schultz and Frankforter, 1948, fig. 12, specimen 7555).

Provisional Type 17 (pl. 38, c); 5 specimens.

Proportions: Medium to narrow.

Blade: Convex edges describe parabola from shoulder to tip.

Shoulders: Prominent, square.

Stem: Square, edges parallel; base straight.

Average dimensions: Length, 59 mm. (2.32 inches); width, 25 mm. (0.96 inch); thickness, 8 mm. (0.31 inch).

Provenience: See table 4.

Remarks: Workmanship is excellent. Points of this type occur in site Lu° 86 in the Wheeler Basin (Webb, Wm. S., 1939, pl. 12, b), in Indian Knoll (Webb, Wm. S., 1946, fig. 32, a, rows 1 and 2), and the type is listed as one of the basic Woodland Pattern shapes (Anonymous, 1943, fig. 39, 1e).

Provisional Type 18 (pl. 38, d); 15 specimens.

Proportions: Medium.

Blade: Edges convex.

Shoulders: Prominent to barbed.

Stem: Slightly expanding, formed by diagonal notches from the basal corners; bases convex.

Average dimensions: Length, 55 mm. (2.16 inches); width, 32 mm. (1.28 inches); thickness, 6 mm. (0.23 inch).

Provenience: See table 4.

Provisional Type 19 (pl. 38, e, f); 18 specimens.

Proportions: Medium.

Blade: Edges straight, occasionally serrated.

Shoulders: Prominent.

Stem: Large relative to total point size; edges usually parallel; base slightly concave to convex, generally straight; basal and stem edges may be lightly ground.

Average dimensions: Length, 55 mm. (2.16 inches); width, 29 mm. (1.14 inches); thickness, 7 mm. (0.28 inch).

Provenience: See table 4.

Remarks: Points of this shape occur in Mississippi (Brown, 1926, fig. 28, row 4, second and third specimens), at site Lu° 92 in the Pickwick Basin (Webb, Wm. S. and DeJarnette, 1942, pl. 257, 1, second row

second specimen), and are a component of the collections from the Morhiss site¹³ in Victoria County, Tex., southwest of the Addicks Basin.

Provisional Type 20 (pl. 38, g, h); 6 specimens.

Proportions: Medium to narrow.

Blade: Edges convex.

Shoulders: Usually obscured by flaring stem.

Stem: Flaring, sometimes as wide as blade, formed by lateral notches immediately above the base; base straight.

Average dimensions: Length, 50 mm. (1.96 inches); width, 25 mm. (0.96 inch); thickness, 6 mm. (0.23 inch).

Provenience: See table 4.

Remarks: Points of this characteristic shape occur in a considerable size range, the larger ones appearing in the Southeast, both as knives and as projectile points (Webb, Wm. S. and DeJarnette, 1942, pl. 236, middle row, third specimen from right), in the Central Plains area (Wedel, 1943, pl. 12, a-g), and the type is one of the basic Woodland Pattern shapes (Anonymous, 1943, fig. 39, 1a).

Pedernales Indented Base (pl. 38, i); 2 specimens.

Proportions: Medium to narrow.

Blade: Edges convex to straight.

Shoulders: Straight to slightly barbed.

Stem: Edges parallel; base concave to deeply indented.

Dimensions: Length, probably 90 to 100 mm. (3.53 to 3.92 inches) (both specimens broken); width, 37 and 40 mm. (1.46 and 1.59 inches); thickness, 7 and 9 mm. (0.28 and 0.36 inch).

Provenience: See table 4.

Remarks: This type of point is characteristic of sites along the middle course of the Colorado River of central Texas.¹⁴

Provisional Type 21 (pl. 38, j); 2 specimens.

Proportions: Narrow.

Blade: Broad relative to total length; edges convex.

Shoulders: Well defined.

Stem: Long relative to total length; edges parallel; base straight; stem edges ground.

Dimensions: Length, 35 and 45 mm. (1.37 and 1.78 inches); width, 24 mm. (0.93 inch); thickness, 5 mm. (0.20 inch).

Provenience: See table 4.

Remarks: The distribution of this type is poorly known. One occurrence of a similar point is at site No. 5 in the Norris Basin in eastern Tennessee (Webb, Wm. S., 1938, pl. 31, third row, second from left).

Provisional Type 22 (pl. 38, n); 12 specimens.

Proportions: Narrow to medium.

Blade: Edges convex.

Shoulders: Well defined.

Stem: Slightly expanding; base convex to straight.

Average dimensions: Length, 36 mm. (1.43 inches); width, 16 mm. (0.63 inch); thickness, 5 mm. (0.20 inch).

Provenience: See table 4.

¹³ Collections in Museum of Anthropology, University of Texas, Austin, Tex.

¹⁴ Kelley, personal conference.

Provisional Type 23 (pl. 38, k); 21 specimens.

Proportions: Narrow.

Blade: Edges strongly convex.

Base: Convex to round.

Average dimensions: Length, 55 mm. (2.16 inches); width, 20 mm. (0.78 inch); thickness, 9 mm. (0.36 inch).

Provenience: See table 4.

Remarks: The leaf-shaped blade is one of the basic types of the Woodland Pattern (Anonymous, 1943, fig. 39, If). It is likely that these specimens are too small to have been used for anything but projectile points. Much larger pieces of the same shape also occur and are discussed below under the heading Knives.

Provisional Type 24 (pl. 38, m); 3 specimens (broken).

Proportions: Medium to broad.

Blade: Convex edges converge strongly toward tip.

Base: Concave with several parallel longitudinal basal thinning flakes on either face of the blade; very small lateral notches immediately above the base give the effect of ears; basal and notch edges ground smooth.

Dimensions: Length, probably near 35 mm. (1.37 inches); width, 29 mm. (1.14 inches); thickness, 5 mm. (0.20 inch).

Provenience: See table 4.

Clovis Fluted (?) (pl. 38, D); 1 specimen (broken).

Proportions: Indeterminate, probably narrow.

Blade: Edges convex, expanding from base toward midblade; lateral edges ground; fluted on both faces.

Base: Concave, basal edge ground.

Dimensions: Indeterminable; present length, 40 mm. (1.59 inches).

Provenience: See table 4.

Remarks: Two fragments of this point were recovered, one from the stream bed, the other from the Doering midden, and fitted together. It is interesting to note that the piece from the stream bed is patinated a tannish cream color while the fragment from the midden is colored a very light cream. This is an excellent demonstration of the effect of immediate environment on patination. The southern distribution of the fluted forms is poorly known, very few having been found in context. They occur in the Abilene region to the west (Bryan, Kirk and Ray, C. N., 1938) and in northern Louisiana (Webb, C. H., 1948, fig. 45, 6-8) to the north. While this occurrence may argue for a relatively recent survival of the type, it is the opinion of the writer that it represents a fossil point picked up and reused by the later occupants.

UNPLACED PROJECTILE POINT TYPES

All of the following projectile points, with the exception of No. c, Plate 39, from site 42/66A6-5, are from the stream bed at the Doering site. Since they were not duplicated in the excavated series, their relative stratigraphic position may only be inferred at the present time.

Provisional Type 25 (pl. 39, b); 1 specimen.

Proportions: Narrow.

Blade: Edges convex.

Shoulders: Well defined.

Stem: Relatively long, contracting from shoulders; base straight.

Dimensions: Length, 62 mm. (2.45 inches); width, 28 mm. (1.09 inches); thickness, 11 mm. (0.43 inch).

Provisional Type 26 (pl. 39, c); 1 specimen.

Proportions: Narrow.

Blade: Concave to midblade and convex to tip (broken); beveled on opposite faces.

Shoulders: Poorly defined.

Stem: Contracts from shoulders and then expands slightly to base; base concave; stem and basal edges heavily ground.

Dimensions: Length, indeterminate; width, 19 mm. (0.75 inch); thickness, 7 mm. (0.28 inch).

Remarks: This form resembles, superficially at least, the beveled points of the Brazos River Phase of Sayles (1935, pl. 11, a-e).

Provisional Type 27 (pl. 39, h); 2 specimens (broken).

Proportions: Medium.

Blade: Edges straight.

Shoulders: Prominent, square.

Stem: Large, contracting, with straight edges; base convex; basal and stem edges ground.

Dimensions: Length, about 70 mm. (2.75 inches); width, 37 mm. (1.46 inches); thickness, 8 mm. (0.31 inch).

Remarks: Workmanship excellent. These points occur in the Morhiss site in Victoria County, Tex.¹⁵

Provisional Type 28 (pl. 39, g); 1 specimen (broken).

Proportions: Narrow.

Blade: Edges convex.

Shoulders: Well defined, square.

Stem: Large, contracting, with convex edges; base probably round or pointed; stem edges ground.

Dimensions: Length, about 95 mm. (?) (3.73 inches); width, 30 mm. (1.18 inches); thickness, 7 mm. (0.28 inch).

Remarks: This form also occurs as a component of the Morhiss site lithic complex. Workmanship excellent.

Provisional Type 29 (pl. 39, i, j); 4 specimens.

Proportions: Medium over-all with broad blade.

Blade: Edges straight to convex.

Shoulders: Medium.

Stem: Long and wide, edges parallel; base convex.

Dimensions: Length, 38 mm. (1.50 inches); width, 21 mm. (0.84 inch); thickness, 6 mm. (0.23 inch). Stems average 21 mm. (0.84 inch) in length.

Remarks: Because of the relative size of the stems, there is a possibility that these are reworked from larger points, although only one seems actually to have been rechipped. On the whole, it seems likely that they constitute a type. A single example of the type is illustrated by Moorehead (1931, fig. 2, lower row, third specimen) from Yell County, Ark., and another similar point from site JO 2, an Adena site in eastern Kentucky (Webb, Wm. S., 1942, pp. 310, 315, and fig. 7, 3K), but the complete range in time and space is unknown.

¹⁵ Collections, Museum of Anthropology, University of Texas, Austin, Tex.

Provisional Type 30 (pl. 39, k, l); 6 specimens.

Proportions: Medium.

Blade: Edges straight to somewhat convex.

Shoulders: Medium.

Stem: Edges parallel to slightly expanding; bases straight and tend to form a square with the stem.

Average dimensions: Length, 38 mm. (1.50 inches); width, 24 mm. (0.93 inch); thickness, 7 mm. (0.28 inch).

Provisional Type 31 (pl. 39, d); 1 specimen (broken).

Proportions: Medium.

Blade: Asymmetric, edges convex.

Shoulders: One side has a small barb, the other a broad, long, curved barb.

Stem: Shape unknown, probably asymmetric in direction opposite to large barb.

Dimensions: Length, about 43 mm. (?) (1.71 inches); width, 33 mm. (1.31 inches); thickness, 4 mm. (0.15 inch).

Provisional Type 32 (pl. 39, e); 1 specimen (broken).

Proportions: Broad.

Blade: Edges convex.

Shoulders: Prominent.

Stem: Short, broad, with slightly expanding edges; base convex; stem and basal edges ground.

Dimensions: Length, indeterminate; width, 28 mm. (1.09 inches); thickness, 5 mm. (0.20 inch).

Copena Point (pl. 39, a); 1 specimen.

Proportions: Narrow.

Blade: Edges form compound curve, concave just above the base, convex at midblade, and then concave to the tip.

Base: Slightly convex.

Dimensions: Length, 76 mm. (2.98 inches); width, 21 mm. (0.84 inch); thickness, 9 mm. (0.36 inch).

Remarks: This point corresponds to the less finished type as reported by Webb and DeJarnette (1942, pl. 207, 2) for the Pickwick Basin.

Plainview Point (pl. 39, f); 1 specimen.

Proportions: Narrow.

Blade: Parallel edges, asymmetrically convex to tip; end of blade resharpened by much inferior technique; flaking basically collateral with parallel flake scars meeting along a slight dorsal ridge; lateral edges ground.

Base: Slightly concave; edge ground.

Dimensions: Length, 39 mm. (1.56 inches); width, 17 mm. (0.68 inch) at mid-blade; thickness, 4 mm. (0.15 inch).

Remarks: Although its dimensions are somewhat less than those of points from the type station (Sellards, Evans, Meade, and Krieger, 1947, p. 939 and table 4, pp. 943, 944), this specimen probably should be considered a Plainview point.¹⁰

¹⁰ Krieger, personal conference.

Baird Beveled Point (pl. 39, *m, n*); 2 specimens.

Proportions: Medium.

Blade: Triangular, edges straight; longitudinal thinning flakes on both faces of one, on one face of the other.

Base: One concave, one convex.

Dimensions: Length, 41 and 44 mm. (1.61 and 1.75 inches); width, 26 and 27 mm. (1.03 and 1.06 inches); thickness, 6 mm. (0.23 inch).

Remarks: Points of this form occur both in central Texas (Ray, C. N., 1938, pl. 25, 1, row 5, Clear Fork Dart 3; and Kelley, 1947 b, pl. X, 6) and in the South Gulf Coastal area (Sayles, 1935, pl. 25, *h*). These points may, therefore, represent trade relations with either area, although the central Texas area seems most likely since several other central Texas types also occur as trade specimens.

PROJECTILE POINT STRATIGRAPHY

An examination of table 5 and figure 22 reveals several trends significant in the establishment of a relative chronology for the Addicks Dam Basin sites. Considering the Doering site alone for the moment, these are: (1) The greater variety of miscellaneous point types from the lower levels in relation to the Gary Stemmed group (except level 105-120 where the number of points recovered is too small to be statistically important); (2) the increasing dominance of the Gary type to level 30-45, in which it constitutes nearly 85 percent of all forms present; (3) the increasing importance of the Perdiz Pointed Stem and its associated forms in the two upper levels of the site.

As already mentioned above, the data of the lowest level are insecure, since only four points were found. It is perhaps significant that only one of these, or 25 percent of the total for that level, was of the Gary Stemmed type; but the smallness of the sample renders unsound any definite conclusions based on the occurrence of this type.

From level 90-105 up, however, the evidence is clear that the miscellaneous group of points, nearly all of which are expanding or parallel-sided stemmed varieties, give way, as a group, as the Gary Stemmed type gains in favor and importance.

The appearance of the Perdiz Pointed Stem, Alba Barbed, and associated types marks the initiation of the rapid encroachment of the small projectile points. This event probably heralds the introduction of the bow and arrow. The occurrence of a single Perdiz Pointed Stem point in each of levels 60-75, 45-60, and 30-45 poses an interesting problem. It may be that the Doering site peoples, through trade, warfare, or otherwise, had come into contact with peoples already using the type some time prior to its main introduction. It is likewise possible that, although introduced earlier, it did not gain a strong foothold until relatively late in the occupancy of the site. The most probable explanation, however, at least for the two lower occurrences, is that they represent dislocations due to dis-

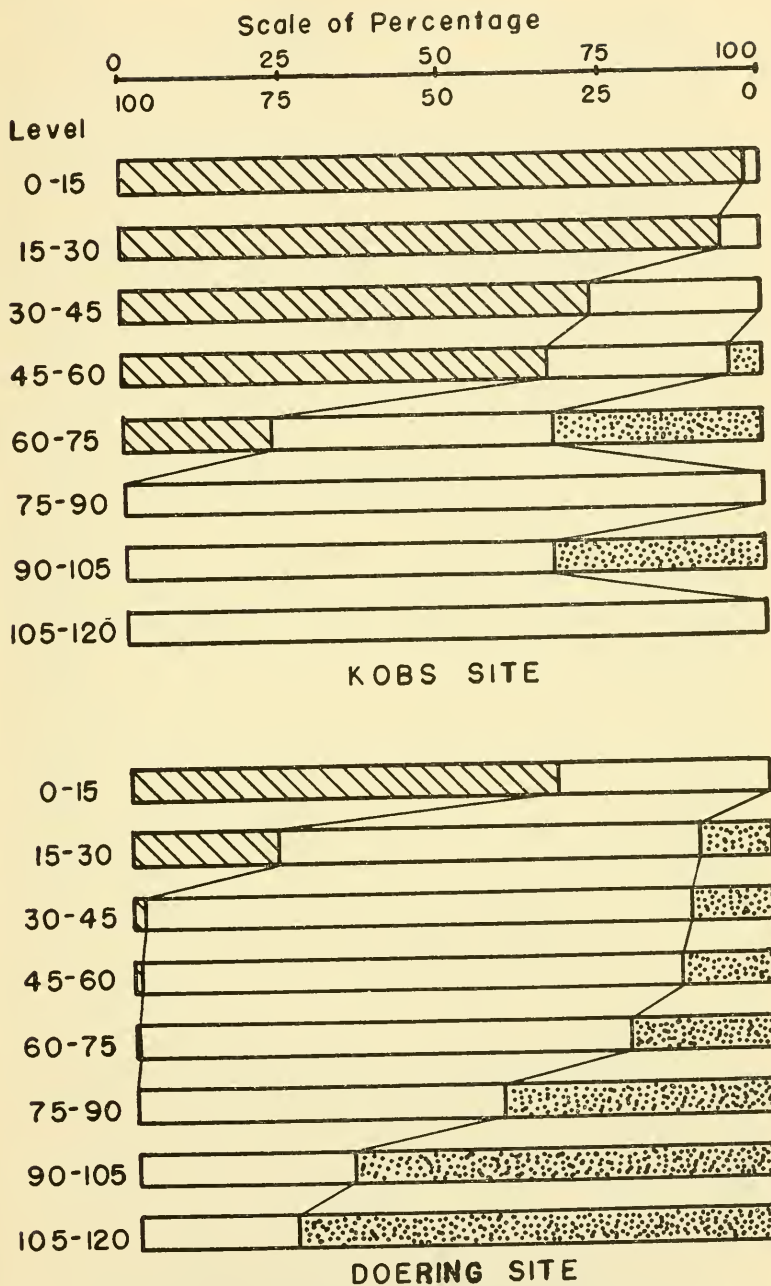


FIGURE 22.—Graph showing comparative projectile point stratigraphy of Doering and Kobs sites. Diagonal hatching, upper level types; blank, Gary Stemmed type; dotted area, other lower and middle level types.

TABLE 5.—Percentage distribution of projectile points from Doering and Kobs sites by type and level 1

Projectile point type	Percentage distribution of projectile points in indicated levels—Doering site															
	0-15		15-30		30-45		45-60		60-75		75-90		90-105		105-120	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Perdz Pointed Stem.....	8	44.44														
Sealhorn Stemmed.....	2	11.11														
Eddy Stemmed.....	1	5.55														
Alba Barbed.....			2	5.26												
Kobs Triangular.....	1	5.55														
Provisional Type 1.....																
Provisional Type 2.....																
Provisional Type 3.....																
Provisional Type 4.....																
Gary Contracting Stem.....	6	33.33	25	65.75	32	84.16	48	84.00	52	76.44	30	57.00	11	34.37	1	25.00
Provisional Type 6.....			2	5.26	2	5.26	2	3.50				2	3.84	5	15.62	
Provisional Type 7.....					1	2.63			1	1.47	3	5.76	2	6.25	2	50.00
Provisional Type 8.....								1	1.75	3	4.41	2	3.84	2	6.25	
Provisional Type 9.....			1	2.63					2	2.94	2	3.84				
Provisional Type 10.....					1	2.63			1	1.47	4	7.69	2	6.25		
Provisional Type 11.....			1	2.63	1	2.63	1	1.75	3	4.41	1	1.92	1	3.12		
Provisional Type 12.....																
Provisional Type 13.....			1	2.63												
Provisional Type 14.....																
Provisional Type 15.....																
Provisional Type 16.....																
Provisional Type 17.....																
Provisional Type 18.....												1	1.92			
Provisional Type 19.....							1	1.75	1	1.47	2	3.84	3	9.37		
Provisional Type 20.....																
Provisional Type 21.....																
Pedernales Indented Base.....																
Provisional Type 22.....							1	1.75			1	1.92	2	6.25		
Provisional Type 23.....							1	1.75			1	1.92	1	3.12		
Provisional Type 24.....							1	1.75	2	2.94	2	3.84				
Clovis Fluted (?).....									1	1.47			1	3.12		
Total.....	18	100.00	38	100.00	38	100.00	57	100.00	68	100.00	52	100.00	32	100.00	4	100.00

Percentage distribution of projectile points in indicated levels—Kobs site

Projectile point type	0-15		15-30		30-45		45-60		60-75		75-90		90-105		105-120	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Perdiz Pointed Stem.....	32	66.56	38	54.72	9	21.95	6	16.66	1	4.76						
Scalhorn Stemmed.....	1	2.08	3	7.31	3	7.31	2	5.55								
Eddy Stemmed.....	4	8.33	9	13.04	1	2.43	2	5.55								
Alba Barbed.....	4	8.33	10	14.49	3	7.31	8	22.22	1	4.76						
Kobs Triangular.....	6	12.50	6	8.69	10	24.39	4	11.11	2	9.52						
Provisional Type 1.....			1	1.44			1	2.77	1	4.76						
Provisional Type 2.....						2.43										
Provisional Type 3.....					1	2.43										
Gary Contracting Stem.....	1	2.08	5	7.24	13	31.70	10	27.77	9	42.85	2	100.00	4	66.66	3	100.00
Provisional Type 6.....							1	2.77								
Provisional Type 7.....							1	2.77								
Provisional Type 8.....																
Provisional Type 9.....																
Provisional Type 10.....									2	9.52						
Provisional Type 11.....									1	4.76						
Provisional Type 12.....									1	4.76						
Provisional Type 13.....																
Provisional Type 14.....																
Provisional Type 15.....																
Provisional Type 16.....																
Provisional Type 17.....																
Provisional Type 18.....																
Provisional Type 19.....																
Provisional Type 20.....																
FedermaesIndentedBase.....																
Provisional Type 21.....																
Provisional Type 22.....																
Provisional Type 23.....																
Provisional Type 24.....																
Clovis Fluted (?).....																
Total.....	48	100.00	69	100.00	41	100.00	36	100.00	21	100.00	2	100.00	6	100.00	3	100.00

¹ Provisional Type 5 was found only at the Grisbee site and therefore does not appear in this table.

turbances caused by rodent action or the digging of burial or other pits during the normal course of living on the site.

Regardless of the interpretation given to the seemingly aberrant early occurrences of the Perdiz Pointed Stem points, once the small points became firmly established they quickly replaced the larger, heavier Gary Stemmed group in favor and comprise 66 percent of the forms recovered from the upper levels.

Turning now to the Kobs site, it may be noted that stratigraphically the most important factor is the continuation of the trend observed in the upper levels of the Doering site, the growing dominance of the small projectile points. Indeed, in the uppermost level this trend results in an almost complete replacement of the Gary Stemmed and associated point types.

Below level 60-75 in the sand knoll, too few points were recovered to constitute satisfactory evidence. This is not surprising when it is recalled that below this level occupation must have been on a somewhat intermittent basis, since it did not result in the formation of a true midden deposit. The majority of the 11 points from the sand knoll are of the Gary Stemmed type. On the basis of the projectile points alone, the lower levels of the Kobs site would equate temporally with levels 45-60 and 30-45 of the Doering site; but the occurrence of Tchefuncte Stamped trade ware in the same horizon renders this interpretation unsatisfactory. On the whole, it seems best to reserve judgment on this matter.

In the lowest level of the midden deposit, however, the Perdiz Pointed Stem and associated types comprise 25 percent of all points found; the Gary Stemmed group, 43 percent; and miscellaneous middle level types comprise the remaining percentage. In the top level, the Perdiz Pointed Stem and cognate forms constitute 98 percent of the total points, having almost entirely replaced the larger types of the lower levels.

DISCUSSION

By regrouping into graphic form the comparative stratigraphic data for the Doering and Kobs sites, contained in table 5, the nature of the sequence may be more clearly visualized (fig. 22). The replacement of earlier expanding stemmed forms by the Gary Stemmed type, and the appearance and growing predominance of the Alba Barbed, Perdiz Pointed Stem, and associated types, offer a criterion of relative chronology. Disregarding, for the moment, the three Perdiz Pointed Stem occurrences from below level 15-30 at the Doering site, the most obvious correlation is between level 15-30, Doering site, and level 60-75, Kobs site. This correlation is largely borne out by a comparison of the relative percentages of the Gary Stemmed forms from the two sites. If, however, the level 60-75

appearance of the Perdiz Pointed Stem is not fortuitous, the correlation would be between level 60-75 at each site. For the most part, the first correlation seems the more likely one.

No adequate assessment of site 42/66A6-4 or of the Grisbee site is possible because of the limited nature of the testing operations carried on. Tentatively, however, they may be equated with the Kobs and Doering sites, using the appearance of the Perdiz Pointed Stem type as an arbitrary criterion of temporal equality. On this basis, level 30-45 of site 42/66A6-4 and level 45-60 of the Grisbee site (see table 3) would equate with level 60-75 of the Kobs site and level 15-30 or level 60-75 of the Doering site, depending upon the interpretation given the lowest stratigraphical occurrence of the Perdiz Pointed Stem points there.

The occurrences of projectile point types such as the Clovis Fluted (?), Scottsbluff (?), and Plainview points, and those resembling the Nebo Hill points (Provisional Type 16), in the Addicks Basin sites present themselves as an interesting problem but, nevertheless, are somewhat apart from the main chronological story. With the exception of the two resembling the Nebo Hill points, there is only one of each type, and one of these, the Plainview point, did not occur in context but rather in the stream bed. Whether it washed out of the midden, and if so, from what level, or whether it may have eroded out of the clay below the midden, cannot be answered. It is perhaps significant that the Clovis Fluted (?) and the Scottsbluff (?) points both occur in level 90-105, and the Provisional Type 16 (Nebo Hill (?)) points in the Kobs site sand knoll. Regardless of this, however, their chronological significance will remain obscure until they are found in a pure site or in sufficient concentration and in context to prove them Paleo-Indian, or until a body of data is gathered which demonstrates them to be a minor but consistent component of the lithic complex of the Southeastern Archaic. Until this situation has been resolved, it is best to lend little weight to their presence.

The most secure chronological tie of the projectile sequence lies in the upper level appearance of arrow points that have been dated elsewhere following different lines of evidence.¹⁷ The arrival of the Perdiz Pointed Stem and related points probably was not before 1450 A. D. Once they were introduced, they rapidly replaced the larger and heavier dart points of the middle and lower levels. Going back in time from the upper level, the most significant factor is the decreasing frequency of a miscellaneous group of parallel-sided and expanding-stemmed projectile points whose distribution, where known, seems to be primarily among the earlier horizons of the Southeast. The

¹⁷ Kelley, 1947 a, p. 127, uses a minimum date of 1500 A. D. Krieger, 1947, personal conference, dates the Alba Barbed and Perdiz Pointed Stem at circa 1450 A. D.

percentage relationships of the various projectile point types may then tentatively express relative chronology.

Turning now to extra-areal relations of the middle and lower levels, one of the most widespread projectile point types over the Southeast is the type here designated Gary Stemmed. Typologically similar points occur consistently in Stalling's Island, Indian Knoll, a number of sites in the Pickwick Basin, Poverty Point, and the Marksville and Tchefuncte horizons of the Lower Mississippi Valley.¹⁸ The remainder of the middle and lower level points seem to occur sporadically throughout early sites and horizons of the Southeast, with some survival into later horizons as well. Of the 23 types for which some distributional data have been noted, 11 types comprising some 600 points appear to have an almost exclusive Southeastern distribution. Seven types, represented by a total of 15 points, are types whose distribution is essentially Texan, occurring for the most part in the sequences of the Edwards Plateau and the Abilene district. Four types, the Clovis Fluted (?), Scottsbluff (?), Nebo Hill (?), and the Plainview points have distributions in time and space which, as pointed out above, are at present beyond the scope of this paper. Provisional Type 19 occurs as a type both in the Southeast and in the Morhiss site on the Texas Gulf Coast. While the dearth of published material for certain parts of the Texas area to the west has probably introduced some distortions into the distributional picture, there is nevertheless an overwhelming majority of types which appear to be both early and Southeastern. The few examples of definite Texas types are, then, most easily explained as intrusive specimens. This solution accords well with the evidence of the ceramic complex, pointing to a basic Southeastern culture pattern.

The introduction of the arrow points of the Alba Barbed, Perdiz Pointed Stem, and the other related types, marks a shift in the direction of influence from the Southeast to west and northwest, a trend noticeable in the other artifacts as well.

MISCELLANEOUS LITHIC ARTIFACTS

KNIVES

Stemmed Knife, Type 1a (pl. 40, a); 2 specimens.

Proportions: Narrow.

Blade: Edges convex.

Shoulders: Prominent.

Stem: Slightly expanding; base convex.

Dimensions: (larger specimen) Length, 108 mm. (4.25 inches); width, 38 mm. (1.50 inches); thickness, 10 mm. (0.39 inch).

Provenience: See table 6.

¹⁸ The data for the distribution of the types under consideration have been given above under the Remarks section for each specific form.

TABLE 6.—Provenience of knives, scrapers, choppers, celt, drills, miscellaneous chipped stone, ground stone, and paint pigments¹

Type of artifact	Site	Level								Unlocated	Total
		0-15	15-30	30-45	45-60	60-75	75-90	90-105	105-120		
Knives :											
Type 1a.....	D									*2	2
Type 1b.....	K			1							1
Type 1c.....	K		1								1
Type 1d.....	D					1				*7	8
Type 2.....	D	2	1	4	10	14	9	4		*38	82
	K	2	3	2	3	3			1		14
	5									4	4
Type 3.....	D	1	2	1	4	3	2	5		*28	46
	K	1	1	2	3						7
	D		1		2		1	1		*3	8
Type 4.....	K	1	1		1	2					5
Type 5.....	D		1			2				*3	6
Type 6a.....	K	1									1
Type 6b.....	K	1									1
Scrapers:											
Stemmed end.....	D				2			1		*1	4
	G					1					1
Large end.....	D		1							*1	2
	K	1									1
Small end.....	D	2	2							*1	5
	K				1			1			2
Large side.....	D									*2	2
	K	1		1					1		3
Small side.....	D	3	3		1	1		1		*1	10
	K	3	2	1	1	1	1				9
	5									1	1
Flake.....	D	9	14	22	21	45	37	28	1	*5	182
	K	19	21	19	10	3		1	2	2	77
	G						1				1
Choppers :											
One end unmodified.....	D	1		1	2	1	1	2		*9	17
	K	1				2					3
Both ends modified.....	D		1	3	1	5	6	4		*31	51
	K		1			1	1				3
Celt.....	D					1				*1	1
Drills :											
Type 1a.....	D	1								*1	2
	K		2	1							3
Type 1b.....	K		2		2						4
Type 1c.....	K	2		1	1						4
Type 2a.....	D		1					1			1
	K										1
Type 2b.....	D					1		1			2
	K		1								1
Type 3.....	D									1	1
Miscellaneous :											
Gravers.....	D	2		1		2	2	1		*2	10
	K	1	1								2
	G						1				1
Eccentric flint.....	D					1					1
Ground :											
Atlatl weights.....	D									*2	2
Sandstone saws and abraders.....	D		1								1
	K										40
Milling stone.....	A		1								1
Handstone.....	A		1								1
Paint pigments.....	D			2	1	5	4			*1	13
	K	1									1
	G	1					3				4

¹ Symbols: D=Doering site; K=Kobs site; G=Grisbee site; A=Addicks "Mound"; 5=site 42/66A6-5; * = From stream bed collection.

Stemmed Knife, Type 1b (pl. 40, b); 1 specimen.

Proportions: Narrow.

Blade: Edges convex.

Shoulders: Obscured by width of base.

Stem: Flaring, formed by wide, deep, lateral notches just above the base; base concave. Short longitudinal flakes thin the base on either face.

Dimensions: Length, 81 mm. (3.18 inches); width, 32 mm. (1.28 inches); thickness, 7 mm. (0.28 inch).

Provenience: See table 6.

Remarks: Knives of this form are not common in the Southeast, but similar forms are illustrated by Clafin (1931, pl. 61) for Stalling's Island, Ga., and by Moore (1902, p. 183, fig. 96) for northwestern Florida.

Stemmed Knife, Type 1c (pl. 40, c); 1 specimen.

Proportions: Narrow.

Blade: Edges convex.

Shoulders: Poorly defined.

Stem: Contracting to round base.

Dimensions: Length, 71 mm. (2.79 inches); width, 25 mm. (0.96 inch); thickness, 7 mm. (0.28 inch).

Provenience: See table 6.

Stemmed Knife, Type 1d (pl. 40, d, e); 8 specimens.

Proportions: Medium to broad.

Blade: Edges convex with rounding point.

Shoulders: Prominent to slightly barbed.

Stem: Contracting to expanding.

Average dimensions: Length, 35 mm. (1.37 inches); width, 30 mm. (1.18 inches); thickness, 8 mm. (0.31 inch).

Provenience: See table 6.

Remarks: Judging from the variability of this group, it seems likely that some, if not all, of these are reworked from broken projectile points. Like the stemmed scrapers, they have a wide distribution through the Southeast. Some occurrences are: Stalling's Island (Clafin, 1931, pl. 64), Mississippi (Brown, 1926, figs. 40, 41), and Indian Knoll (Webb, Wm. S., 1946, fig. 35, *d*, third row), where Webb calls them choppers.

Leaf-Shaped Knife, Type 2 (pl. 40, f, g); 100 specimens.

Proportions: Narrow to medium.

Blade: Convex edges. Shape varies from symmetric to asymmetric.

Base: Convex to round.

Average dimensions: Length, 75 mm. (2.95 inches); width, 23 mm. (0.90 inch); thickness, 9 mm. (0.36 inch). Considerable individual variability range.

Provenience: See table 6.

Remarks: Workmanship varies from crude percussion-chipped blades to carefully made pressure-flaked and retouched ones. These range widely in space and time, and consequently are of little value for tracing areal and temporal relationships.

Triangular Knife, Type 3 (pl. 40, h, i); 53 specimens.

Proportions: Medium.

Blade: Edges straight to somewhat convex.

Base: Straight to slightly convex.

Average dimensions: Length, 70 mm. (2.75 inches); width, 28 mm. (1.09 inches); thickness, 10 mm. (0.39 inch).

Provenience: See table 6.

Remarks: As in Type 2 above, workmanship varies considerably. Temporal and areal distribution unknown.

Ovoid Knife, Type 4 (pl. 41, a, b); 13 specimens.

Proportions: Medium to broad.

Blade: Circular to ovoid in outline.

Average dimensions: Length, 65 mm. (2.56 inches); width, 47 mm. (1.84 inches); thickness, 9 mm. (0.36 inch).

Provenience: See table 6.

Remarks: Workmanship usually good. Their range in time and space is so wide that they are inherently poor as diagnostics of diffusion.

Long Narrow Knife, Type 5 (pl. 41, e) 6 specimens.

Proportions: Narrow.

Blade: Edges roughly parallel. Some are left with thickened center as if to form finger and thumb grip.

Average dimensions: Length, 102 mm. (4.00 inches); width, 23 mm. (0.90 inch); thickness, 13 mm. (0.51 inch) at thickened center.

Provenience: See table 6.

Remarks: This form would have functioned admirably for the opening of shellfish, being, in fact, very similar to the present-day commercial knife used for that purpose. However, few shells were found in the Addicks Basin sites. Distribution in space and time unknown.

Beveled Knife, Type 6a (pl. 41, c); 1 specimen (broken).

Proportions: Narrow.

Blade: Edges straight, formed by beveling on opposite faces of the blade.

Base: Convex.

Dimensions: Length, 95 mm. (3.73 inches) estimated; width, 29 mm. (1.14 inches); thickness, 5 mm. (0.20 inch).

Provenience: See table 6.

Remarks: This specialized form of knife and its companion form, Type 6b, have a wide distribution in the Southern Plains region, extending eastward from Pecos Pueblo (Kidder, 1932, pp. 30-34, figs. 13-16) across northern Texas into the historic Caddo area in northeast Texas. Poteet (1938, p. 245), in her distributional survey of the various forms of beveled knives, believes them to be very recent. The most recent data shows them to belong to the late horizons south of the Red River (Krieger, 1946, p. 142). The type occurs in the protohistoric Austin Focus of central Texas, and where specific data is obtainable for northeast Texas, it appears to be historic (Krieger, 1946, p. 142). On the basis of its occurrence in the Antelope Creek Focus of the Texas Panhandle, where it represents a southern extension of a typically Plains form, it would date not earlier than 1300 A. D. (Krieger, 1946, p. 71) and would be increasingly later as it diffused south and east. The Addicks Basin specimens probably do not date much earlier than 1450 A. D.

Beveled Knife, Type 6b (pl. 41, d); 1 specimen.

Proportions: Narrow.

Blade: Diamond-shaped with straight edges. Each pair of parallel edges formed by beveling from same face, and the opposing edges by beveling on opposite face.

Dimensions: Length, 99 mm. (3.89 inches); width, 26 mm. (1.03 inches); thickness, 6 mm. (0.23 inch).

Provenience: See table 6.

Remarks: See remarks section for beveled knife, Type 6a, above.

SCRAPERS

Stemmed End Scrapers (pl. 42, b, c); 5 specimens.

Proportions: Medium to broad.

Blade: Convex to round with high angle scraping edge.

Shoulders: Weak to prominent.

Stem: Vary from parallel to widely expanding; base concave to convex.

Average dimensions: Length, 28 mm. (1.09 inches); width, 24 mm. (0.93 inch); thickness, 9 mm. (0.36 inch).

Provenience: See table 6.

Remarks: While these may have been fashioned originally as scrapers, it seems likely that some of them are broken projectile points. Variants of the form are widely distributed throughout the Southeast. They occur in the Archaic of western Tennessee (Lewis and Kneberg, 1947, pl. 4), Stalling's Island, Ga. (Claffin, 1931, pl. 64), Mississippi (Brown, 1926, figs. 39, 42), Hiwassie Island (Lewis and Kneberg, 1946, pl. 65, d), Indian Knoll (Webb, Wm. S., 1946, fig. 35, c), and western Missouri (Wedel, 1943, pl. 14, l-n).

Large End Scrapers (pl. 42, a); 3 specimens.

Proportions: Medium to long.

Blade: Large, planoconvex, with high angle scraping or planing edge at right angle to long axis; taper from convex scraping edge to round or pointed base.

Average dimensions: Length, 65 mm. (2.56 inches); width, 40 mm. (1.59 inches); thickness, 22 mm. (0.87 inch).

Provenience: See table 6.

Remarks: Made from large, selected flakes. Temporal and spatial distribution unknown.

Small End Scrapers (pl. 42, d, e); 7 specimens.

Proportions: Medium.

Blade: Convex ended with high angle scraping edge.

Average dimensions: Length, 31 mm. (1.21 inches); width, 35 mm. (1.37 inches); thickness, 12 mm. (0.46 inch).

Provenience: See table 6.

Remarks: Thick random flakes with most of work confined to scraping edge. Temporal and geographical range unknown.

Small Side Scrapers (pl. 42, f-i); 20 specimens.

Proportions: Narrow to medium.

Blade: Variable in size and shape, commonly have definitely beveled lateral scraping edges; some are made from prismatic flakes and flaked around entire perimeter.

Average dimensions: Length, 64 mm. (2.51 inches); width, 27 mm. (1.06 inches); thickness, 6 mm. (0.23 inch).

Provenience: See table 6.

Remarks: Made from relatively thin, selected flakes. Time and space range not known.

Flake Scrapers (not illustrated) 260 specimens.

Proportions: Variable.

Blade: Random flakes with localized scraping edges resulting, for the most part, from the shearing action of use rather than any intentional flaking. A few have small concave scraping edges which could have been used for scraping shafts.

Average dimensions: Length, 23 mm. (0.90 inch); width, 18 mm. (0.71 inch); thickness, 4 mm. (0.15 inch).

Provenience: See table 6.

CHOPPERS

Choppers with one end unmodified (pl. 43, a, b); 20 specimens.

Choppers are small river cobbles or pebbles which have a cutting edge fashioned on one extremity and occasionally along the lateral edges by rough percussion flaking. One or more surfaces remain unworked to serve as a handhold. Some of them resemble the large so-called "fist axes" of the central Texas cultures but are much smaller. They vary considerably in size, but average dimensions are: Length, 70 mm. (2.75 inches); width, 40 mm. (1.59 inches); thickness, 26 mm. (1.03 inches). *Provenience:* See table 6.

Choppers with both ends modified (pl. 43, c, e); 54 specimens.

For the most part, these choppers are roughly leaf-shaped or ovoid in outline and percussion-chipped on all edges, but some are small cobbles with both extremities flaked to a chopping edge, leaving the central portion unmodified. Both natural cobbles and large flakes were utilized. Size is quite variable, but average dimensions are: Length, 85 mm. (3.34 inches); width, 42 mm. (1.65 inches); thickness, 21 mm. (0.84 inch). *Provenience:* See table 6.

Celt (pl. 43, d); 1 specimen.

This is a large leaf-shaped piece of good percussion workmanship. Its dimensions are: Length, 137 mm. (5.37 inches); width, 53 mm. (2.09 inches); thickness, 22 mm. (0.87 inch). *Provenience:* See table 6.

DRILLS

Expanding Base, Type 1a (pl. 44, a, b); 5 specimens (broken).

Base: Slightly expanding to flaring, well shaped, sometimes ovoid in outline.

Shaft: Nearly round, relatively long.

Average dimensions: Length, indeterminate; width: base, 18 mm. (0.71 inch); shaft, 8 mm. (0.31 inch); thickness, 6 mm. (0.23 inch).

Provenience: See table 6.

Remarks: This drill form is widespread in the United States. Some Southeast occurrences are Hiwassie Island (Lewis and Kneberg, 1946, pls. 65, d, and 66, c), Missouri (Wedel, 1943, pl. 14, g), Indian Knoll (Webb, Wm. S., 1946, fig. 33), sites Lu° 59 and Lu° 92 in the Pickwick Basin (Webb, Wm. S. and DeJarnette, 1942, pls. 159, 2; 257, 1), Western Tennessee Archaic (Lewis and Kneberg, 1947, pl. 5), sites Ct° 17 and Li° 36 in the Wheeler Basin (Webb, Wm. S., 1939, pls. 27 and 77, b), and the Crooks site in central Louisiana (Ford and Willey, 1940, fig. 47, j).

Expanding Base, Type 1b (pl. 44, c, d); 4 specimens.

Base: Expanding, unshaped flake, irregular in outline.

Shaft: Tapering, lozenge-shaped or flattish in cross section.

Average dimensions: Length, over-all, 26 mm. (1.03 inch); shaft, 18 mm. (0.71 inch); width, over-all, 19 mm. (0.75 inch); shaft (midpoint), 6 mm. (0.23 inch); thickness, 4 mm. (0.15 inch).

Provenience: See table 6.

Remarks: Similar drill types occur at Stalling's Island (Claffin, 1931, pl. 65), sites Lu° 59 and Lu° 72 in the Pickwick Basin (Webb, Wm. S. and DeJarnette, 1942, pls. 159, 2; 236, 2), site Ct° 17 in the Wheeler Basin (Webb, Wm. S., 1939, pl. 27), and the Harrell site in north-central Texas (Krieger, 1946, fig. 7).

Expanding Base, Type 1c (pl. 44, e, f); 4 specimens.

Base: Expanding, unshaped flake, irregular in outline.

Shaft: Short, tapering. One shaft formed by beveling from opposite faces of the flake. Flattened in cross section.

Average dimensions: Length, over-all, 23 mm. (0.90 inch); shaft, 9 mm. (0.36 inch); width, over-all, 18 mm. (0.71 inch); shaft (midpoint), 4 mm. (0.15 inch); thickness, 5 mm. (0.20 inch).

Provenience: See table 6.

Remarks: While of apparently limited distribution, this type also occurs at site Ma° 46 in the Wheeler Basin (Webb, Wm. S., 1939, pl. 115, b).

Stemmed Drill, Type 2a (pl. 44, j); 3 specimens.

Stem: Parallel-sided.

Shaft: Short, tapering.

Average dimensions: Length, over-all, 47 mm. (1.84 inches); shaft, 10 mm. (0.39 inch); width, over-all, 17 mm. (0.68 inch); shaft (midpoint), 4 mm. (0.15 inch); thickness, 6 mm. (0.23 inch).

Provenience: See table 6.

Remarks: These specimens are made from, or resemble, projectile points on which short shafts have been flaked on the distal end, and they may have been used as awls rather than drills. They tend to have a southern distribution, occurring at sites Lu° 59, Lu° 67, Lu° 72, and Ct° 27 in the Pickwick Basin (Webb, Wm. S. and DeJarnette, 1942, pls. 159, 2; 227; 236, 2; and 294, 1); site Ct° 17 in the Wheeler Basin (Webb, Wm. S., 1939, pl. 27), and in the Tchefuncte horizon in southern Louisiana (Ford and Quimby, 1945, fig. 9, e).

Stemmed Drill, Type 2b (pl. 44, g, h); 3 specimens.

Stem: Short, contracting.

Shaft: Relatively long, flattish in cross section; contracts from flaring shoulders.

Average dimensions: Length, over-all, 32 mm. (1.28 inches); shaft, 20 mm. (0.78 inch); width, over-all, 19 mm. (0.75 inch); shaft (midpoint), 5 mm. (0.20 inch); thickness, 3 mm. (0.12 inch).

Provenience: See table 6.

Remarks: These drills are apparently modified from projectile points. Drills of similar design, but of different projectile point types, are widespread in the Southeast. They are found at Stalling's Island (Clafin, 1931, pl. 65), Indian Knoll (Webb, Wm. S., 1946, fig. 33), Western Tennessee Archaic (Lewis and Kneberg, 1947, pl. 5), sites Ct° 17 and Ma° 46 in the Wheeler Basin (Webb, Wm. S., 1939, pls. 27 and 115, b), and sites Lu° 59 and Ct° 27 in the Pickwick Basin (Webb, Wm. S. and DeJarnette, 1942, pls. 159, 2; 294, 1).

Double-Ended Drill, Type 3 (pl. 44, i); 1 specimen (broken).

Shaft: Nearly cylindrical in cross section, tapering slightly to either end.

Dimensions: Length, indeterminate; width, 11 mm. (0.43 inch); thickness, 8 mm. (0.31 inch).

Provenience: See table 6.

Remarks: This type of drill is found in Missouri (Wedel, 1943, pl. 14, f), sites Lu° 59 and Lu° 67 in the Pickwick Basin (Webb, Wm. S. and DeJarnette, 1942, pls. 159, 2; 227), in northern Louisiana (Webb, C. H., 1948, fig. 44, 10), and in the Crooks site, a Marksville period site in central Louisiana (Ford and Willey, 1940, fig. 47, k).

MISCELLANEOUS CHIPPED STONE

Gravers (pl. 44, k-o) ; 13 specimens.

For the most part, these are random flakes with one or more short graving points at the extremities or along the lateral edges. One piece is a fragmentary blade with the tip reworked. The graving points vary from 1 mm. to 3 mm. (0.039 inch to 0.12 inch) in length.

Provenience: See table 6.

Remarks: Gravers occur elsewhere in the Southeast, in western Tennessee (Lewis and Kneberg, 1947, pl. 5), Indian Knoll (Webb, Wm. S., 1946, fig. 33), and in the prepottery cultures of northern Louisiana (Webb, C. H., 1948, fig. 44, 12).

Eccentric Flint (pl. 44, p) ; 1 specimen.

Proportions: Narrow.

Blade: Pointed at both ends with deep, regular, squarish serrations completely around the perimeter.

Dimensions: Length, 37 mm. (1.46 inches) ; width, 14 mm. (0.56 inch) ; thickness, 3 mm. (0.12 inch) ; serrations average 1.5 mm. (0.06 inch) deep, 2 mm. (0.08 inch) wide.

Provenience: See table 6.

Remarks: While eccentric chipped stone artifacts occur infrequently in the Southeast, none are of a similar pattern.

GROUND STONE

Atlatl weights (banner stones) (pl. 45, a) ; 2 specimens, broken.

One piece, made from medium-grained, well-polished, reddish sandstone, is of the winged form. It is broken across the tubularly drilled perforation and wing so that the exact shape cannot be determined. The second specimen is represented by two fragments which fit together to form part of a wing. The material is a fine-grained, dark-gray sandstone. *Provenience:* See table 6.

Remarks: Banner stones, or atlatl weights, as they seem to be in many, if not all, cases, are of wide distribution in the eastern United States. In the Southeast they are found in a wide variety of shapes, such as the prismoidal types of Indian Knoll (Webb, Wm. S., 1946, p. 227 et seq.) and others elsewhere. Weights of the same or similar shapes as the Addicks Basin specimens occur in site Lu^o 25, unit 1, in the Pickwick Basin (Webb, Wm. S. and DeJarnette, 1942, pl. 94, 2), Stallings's Island (Clafin, 1931, pl. 45, f), and in northeast Texas (Jackson, 1935, p. 27, pl. 5, No. 18).

Sandstone abraders and saws (pl. 45, b-e) ; 41 specimens.

These are made of fine-grained, poorly cemented sandstone. A few are unshaped, but the majority show wear or abrasion facets, and five have been ground or worn to sharp edges which could easily have been used as saws for bone, shell, or wood.

Dimensions: Length ranges from 24 mm. (0.93 inch) to 81 mm. (3.18 inches) ; width, 14 mm. (0.56 inch) to 65 mm. (2.56 inches) ; thickness, 12 mm. (0.46 inch) to 35 mm. (1.37 inches).

Provenience: See table 6.

Remarks: Similar sandstone saws occur in the Tchefuncte sites of the Lower Mississippi Valley (Ford and Quimby, 1945, fig. 11).

Milling Stone (pl. 45, g); 1 specimen (broken).

This piece is a fragment of a thin sandstone slab milling stone with a basin-shaped depression on either face. Neither shape nor size characteristics can be determined accurately.

Provenience: See table 6.

Remarks: Milling stones and the accompanying handstones do not seem to have been widely used in the Addicks Dam Basin sites.

Handstone (pl. 45, f); 1 specimen (broken).

A piece of sandstone, irregular in outline, has a grinding surface on one face. This surface slopes to either edge from a transverse dorsal ridge. While it probably was used as a handstone for the grinding of seeds or grain, it may have been a specialized abrader. *Provenience:* See table 6.

Hammerstones (not illustrated).

Hammerstones were not numerous in any of the sites but occurred sporadically throughout the deposits. None show any deliberate shaping but are characterized by roughening and abrasion marks resulting from percussion on the striking surface. Usually made from a small river cobble.

MISCELLANEOUS MINERALS

Paint Pigments (pl. 46); 18 specimens.

Eleven pieces are red, six yellow, and one black. The red pigments are both nodular and tabular in form, and with one exception are composed of water-laid sandstone cemented by hematite plus minor elements of limonite (pl. 46). The single exception is of fine-grained, earthy hematite (pl. 46, *a*). This specimen has been reduced to a thick, roughly tabular form by abrasion, the facets and striations of which are still clearly visible. Dimensions of this specimen are: Length, 57 mm. (2.25 inches); width, 53 mm. (2.09 inches); thickness, 27 mm. (1.06 inches).

Five nodular specimens are of sandstone cemented with limonite which imparts a yellow pigmentation. One tabular piece of earthy limonite contains a few jasper particles (pl. 46, *c*).

A lump of black micaceous schist has been abraded into a somewhat cupped shape, perhaps to obtain a low-grade black pigment (pl. 46, *d*). It has a specular appearance imparted by the mineral, muscovite. *Provenience:* See table 6.

STRATIGRAPHY AND DISCUSSION OF MISCELLANEOUS LITHIC ARTIFACTS

Those miscellaneous artifacts of the lithic complex that may be considered indigenous to the Addicks Dam Basin sites present little evidence of chronological import. A glance at table 6 will show why this is true. For the most part, artifacts whose vertical distribution appears to be limited to upper or to lower levels are represented by so few specimens as to render difficult any precise chronological interpretation. Further, those types of artifacts which are numerically adequate for satisfactory conclusions appear to have a vertical range generally comparable to the total distribution of all artifacts in the site, the maximum number of the particular type falling close to the level from which the majority of all other artifacts are derived. Only types whose chronological position has been secured in other areas seem potentially useful for establishing relative dating.

Of the artifacts classed as knives, only types 2 and 3 were recovered in quantity. Both types have a continuous vertical distribution, are relatively scarce in both upper and lower levels, and are most numerous in the middle levels. None of the type 1 variations (the stemmed knives) or types 4 and 5 are numerous enough to be established as upper or middle and lower level determinants. Only the types 6a and 6b have strong chronological implications. As discussed above, these cannot have been introduced much before 1450 A. D. Since both occurred in the top level of the Kobs site, they may be considered as a tentative time marker for that level.

Flake scrapers are the most numerous variety in this category, and, as in the case of knife types 2 and 3, are continuously distributed vertically with the greatest concentration at about the level from which the majority of all other artifacts in the site were found. None of the other scraper forms were found in significant quantities.

On the basis of stratigraphic concentration, choppers, as a class, seem to be most representative of the middle level. However, this data needs to be augmented, inasmuch as the total number of choppers recovered is inadequate.

The single flaked celt recovered from the stream bed at the Doering site is unplaced stratigraphically.

None of the drill types were recovered in sufficient numbers to be stratigraphically significant. Gravers have a scanty but continuous vertical distribution; and while the single eccentric flint found was recovered from the middle level of the Doering midden, it should not be considered as a chronological diagnostic on the basis of a single find.

Ground stone artifacts are represented by atlatl weights, or banner stones; sandstone saws and abraders; and a single milling stone and a handstone, both fragmentary. Of these, neither of the atlatl weight fragments was found in situ, and hence at present cannot be related to a definite horizon. Sandstone saws and abraders appear stratigraphically late at both the Kobs and the Doering sites. The milling stone and the handstone from the Addicks "Mound" were found in a late context by Black.

Hammerstones occur throughout the middens and do not appear to have chronological significance.

From the standpoint of distribution, the miscellaneous lithic artifacts are of interest chiefly in that they affirm the essentially South-eastern character of the Addicks Basin sites. This picture is not, however, so clear-cut as in the case of ceramic materials or of the projectile points. In certain of the artifact groups structural requirements tend to obviate strong regional variations in pattern. Nevertheless, there are types which seem to be limited to, and characteristic of, the Texas cultures on the one hand, and the Southeast on the other. It is these

few traits, together with their chronological implications, that confirm the time and direction of cultural flow.

Small stemmed knives (type 1b) and end scrapers that appear to have been made from broken projectile points, but which may have been manufactured for the purpose, are a common trait in the eastern United States. In the Southeast they range from the Archaic horizon to protohistoric time, but the form seems never to have spread west to the Texas cultural provinces.

On the late time level the intrusion of the beveled knives (types 6a and 6b) correlates with the first appearance of the small arrow points. These are probably trade specimens from the protohistoric and early historic Austin Focus where both forms are typical (Krieger, 1946, p. 142). These re-emphasize the late cultural influences moving eastward out of central and north-central Texas.

The various categories of drills recovered from the Addicks Basin sites represent types which, while all occurring in the Southeast, are by no means limited to that area. The same may be said of graters, which, ubiquitous in time and space, seem to occur among most groups that placed dependence upon hunting as a primary means of subsistence.

Atlatl weights, or banner stones, occur generally in the Eastern Archaic and appear largely confined to that cultural plane. While the trait itself is widespread, there is a considerable variety of forms, each having its own more or less limited distribution. Winged forms, such as the Doering site specimens, are found at Stalling's Island (Clafin, 1931, pl. 45, *f*), in the Pickwick Basin (Webb, Wm. S. and DeJarnette, 1942, pl. 94, 2), and in northeast Texas (Jackson, 1935, p. 27; pl. 5, No. 18). The Addicks Basin specimens, recovered out of context, cannot be placed in the relative stratigraphy; nevertheless, they point to Southeastern influence at an early time level.

Milling stones and handstones are material traits in cultures both east and west of the Addicks Basin. Because of the fragmentary condition of the specimens recovered from the Addicks "Mound," no inferences can be drawn concerning their possible provenience. They are interesting chiefly because they are the only hint that agriculture may have been practiced in protohistoric times.

BONE, ANTLER, AND SHELL COMPLEX

Artifacts of bone, antler, and shell:

Bone:

Cut bone awls.....	6
Ulna spatula.....	1
Worked bone fragment.....	1
Stained bone fragments.....	4

Total 12

Artifacts of bone, antler, and shell—Continued

Antler:

Projectile points (socketed)-----	5
Bead or handle-----	1
Polished tines-----	4
Worked antler fragment-----	1
	—
Total -----	11

Shell:

Pendants -----	2
	—
Total artifacts-----	25

BONE

Cut Bone Awls (pl. 47, b-e); 6 specimens (fragmentary).

These were cut from long bones and were abraded into shape. Some are polished, either during the process of manufacture or by usage.

Average dimensions: Length, indeterminate; width, 9 mm. (0.36 inch); thickness, 5 mm. (0.20 inch).

Provenience: See table 7.

Ulna Spatula (pl. 47, a); 1 specimen.

A deer ulna has the distal end ground down to a roundish spatulate end.

Dimensions: Length, 71 mm. (2.79 inches); width, blade, 12 mm. (0.46 inch); thickness, blade, 4 mm. (0.15 inch).

Provenience: See table 7.

Remarks: These have a wide distribution in the Southeast, in time as well as space. They occur at Stalling's Island (Clafin, 1931, pl. 40, d), site No. 19 in the Norris Basin (Webb, Wm. S., 1938, pl. 119, b), in the Archaic of western Tennessee (Lewis and Kneberg, 1947, pl. 10), the Dallas Focus at Hiwassie Island (Lewis and Kneberg, 1946, pl. 79, c), Indian Knoll (Webb, Wm. S., 1946, fig. 45, c), sites Lu^o 67 and Ct^o 27 in the Pickwick Basin (Webb, Wm. S. and DeJarnette, 1942, pls. 225, 1; 288, 1), and in the Tchefuncte horizon (Ford and Quimby, 1945, fig. 13, h, i).

Cut Bone (not illustrated); 1 specimen.

The cannon bone of a deer has been deeply grooved along the longitudinal axis of both sides as if for splitting the bone into halves.

Provenience: See table 7.

Stained Bone (not illustrated); 4 specimens.

Three fragments of turtle carapace and a small piece of long bone are stained a turquoise color. It is impossible to determine whether this staining was intentional, but it seems unlikely. Since all four pieces were close together in the midden, it is assumed that the same process resulted in the accidental coloration of the bones. Spectrographic analysis shows the following metallic constituents:

Primary element (bone former): Calcium.

Minor elements in appreciable concentrations: Manganese, strontium.

Trace elements: Copper, aluminum, magnesium, silicon, iron.

Whether the trace of copper is sufficient to have caused the staining is not clear. In any event, since none of the other elements present normally give

rise to stains of turquoise hue, and since no metallic copper was recovered from the site, the question remains an open one.

Provenience: See table 7.

TABLE 7.—*Provenience of bone, antler, and shell artifacts*¹

Type of artifact	Site	Level									Total
		0-15	15-30	30-45	45-60	60-75	75-90	90-105	105-120	Unlocated	
Bone:											
Cut bone awls.....	D	1								1	2
	K				1	1					2
	A		1								1
	4					1					1
Ulna spatula.....	D					1				1	
Cut bone.....	D					1				1	
Stained bone.....	K				4					4	
Antler:											
Projectile points.....	D					2		2	1	5	
Bead (?).....	K			1						1	
Worked antler tines.....	D		1			1				2	
	K				1	1				2	
	D				1	1				1	
Shell pendants.....	K			2						2	

¹ Symbols: D=Doering; K=Kobs; A=Addicks "Mound"; 4=42/66A6-4.

ANTLER

Projectile Points (pl. 47, h, i); 5 specimens.

These are socketed for hafting, presumably for use as projectile points. Two are pointed, one intentionally blunted, perhaps for a bird bunt, and the remaining two are broken.

Average dimensions: Length, 50 mm. (1.96 inches); diameter, 13 mm. (0.51 inch); diameter of sockets, 5 mm. (0.20 inch).

Provenience: See table 7.

Remarks: Antler projectile points are widely distributed throughout the Southeast, both geographically and temporally. They occur at Stalling's Island, Ga. (Claffin, 1931, pl. 41, d, e; Fairbanks, 1942, fig. 23, a), Peachtree Mound (Setzler and Jennings, 1941, pl. 13), in the Archaic horizon of western Tennessee (Lewis and Kneberg, 1947, pl. 13), Indian Knoll (Webb, Wm. S., 1946, fig. 47, d), Missouri (Wedel, 1943, pl. 9), Hiwassie Island in both the Hiwassie Island and Dallas components (Lewis and Kneberg, 1946, pls. 76, d, and 79, a), site Ct^v 17 in the Wheeler Basin (Webb, Wm. S., 1939, pl. 29), and sites Lu^o 25, units 1 and 2, Lu^o 59, Lu^o 67, and Lu^o 72 in the Pickwick Basin (Webb, Wm. S. and DeJarnette, 1942, pls. 97; 120, 2; 147, 1; 226, 1; and 236, 1), and in the Tchefuncte sites of southern Louisiana (Ford and Quimby, 1945, fig. 12).

Bead (?) (pl. 47, j); 1 specimen (broken).

This is a section of antler perforated longitudinally so that it may have been strung as a bead, or it may have served as a haft. One end is broken so that the exact nature of the artifact cannot be determined.

Dimensions: Length (present), 34 mm. (1.34 inches); diameter, 20 mm. (0.78 inch); diameter of perforation, 6 mm. (0.23 inch).

Provenience: See table 7.

Worked Antler Tines (pl. 47, f, g); 4 specimens.

These sections have been blunted and are polished from use, perhaps as drifts.

Provenience: See table 7.

Cut Antler (not illustrated); 1 specimen.

This antler basal section shows several marks as a result of cutting, but no definite shaping for use.

Provenience: See table 7.

SHELL

Pendants (?) (pl. 47, k, l); 2 specimens.

Two small bivalve shells have been ground to an ovate shape. A part of the hinge spire has been left, perhaps to form a means of attachment. From adjacent squares in the Kobs midden, they probably constitute a set of matched pendants or possibly ear ornaments.

Dimensions: Length, 25 mm. (0.96 inch); width, 13 mm. (0.51 inch).

Provenience: See table 7.

STRATIGRAPHY AND DISCUSSION OF BONE, ANTLER, AND SHELL ARTIFACTS

The yield of bone, antler, and shell artifacts from the Addicks Basin sites was small. Cut bone awls, although rare, appear in both the lowest and the uppermost levels of the Doering site, in the Kobs midden, site 42/66A6-4, and the Addicks "Mound." The ulna spatula, from level 60-75 of the Doering midden, appears as a middle level artifact, but because of its single occurrence it does not have particular chronologic significance. Cut bone, as such, has neither typological nor temporal value; and since the stained bones from the Kobs site seem to be the result of accidental coloration, their occurrence does not constitute a recognizable trait.

Of the antler artifacts, only the projectile points obtrude themselves as time markers, and these are confined to the middle and lower levels of the Doering site.

Shell work, appearing only in level 30-45 of the Kobs site, was limited to two artifacts which apparently form a set.

If the bone, antler, and shell artifacts of the Addicks Basin are not of marked chronological significance, two forms are of interest distributionally. Both ulna spatulae and antler projectile points were used over a span of time beginning in the Eastern Archaic (Lewis and Kneberg, 1947, p. 27) and continuing into the historic period (Lewis and Kneberg, 1946, pp. 125-126). Their diagnostic value lies in the fact that they are confined, as material culture traits, to the eastern United States generally, and are conspicuous in the Southeast. Since both are localized in the Middle and Lower levels of the Doering site, they are indicative of the generalized Southeastern cultural tradition of the earlier occupation of the Addick Basin sites.

None of the other traits of bone or antler are stylistically distinctive and so do not lend themselves to distributional analysis. The single form of shell artifact appears to be a type unique to the Kobs site. Whether it proves later to be a consistent trait, it does not contribute, at present, to an understanding of extra-areal influences upon the peoples of the Addicks Dam Basin.

SUBSISTENCE

The subsistence of the Addicks Basin peoples was predicated upon hunting, gathering, fishing, and the collecting of shellfish, probably in the order given. The evidence for these activities is of different orders. The interpolation of gathering as a significant part of the economy is based primarily upon ethnohistorical evidence, and secondarily upon the assumption that any group of people having at their disposal wild vegetal foods would rely on them to some extent, regardless of primary dependence upon hunting or fishing. The ethnohistorical evidence for gathering, if we are justified in projecting backward in time the scanty data of De Vaca, De Bellisle, and the later Spaniards, points to the usage of such plants as "wild potatoes," and almost certainly others were collected to supplement the diet of flesh attested to by archeological evidence. There is, however, little empirical evidence from the sites themselves. Black's record of a concentration of what may have been seeds, or alternatively, wooden beads, with Burial 1, at the Addicks "Mound" constitutes the only possible evidence of vegetal food as such. Likewise, his recovery of fragmentary milling utensils from the late levels of the same site may be interpreted as inferential evidence of gathering. On the other hand, these may have been used for the grinding of corn; but since agriculture was not mentioned for the area until 1745 (Bolton, 1915, p. 330), and De Bellisle (Folmer, 1940, pp. 216-217), in 1721, was explicit in his statements that the Akokisa had no fields, it seems most likely that they were used for seed grinding.

The evidence for hunting and fishing rests on both ethnohistorical and archeological bases. Deer, bear, and bison were hunted, and shellfish were gathered by the historical occupants of the area. Prehistorically, deer, bison, tortoise, and in the early period, antelope, were hunted. Some fishing was done, but the gathering of shellfish seems to have been a rather localized subsistence item.

Table 8 shows the distribution of the various species of mammals, amphibians, fish, and shellfish as they were recovered by site and level. While this probably does not complete the inventory of animals actually taken, it is likely that it reflects the kinds available, and perhaps the preferred forms, as well.

TABLE 8.—Distribution by level of animal species in the Doering (D) and Kobs (K) sites and site 42/66A6-4 (4)

Animal species	Site		
	D	K	4
LEVEL 0-15			
Bison (<i>Bison</i>).....	1	3	1
Deer (<i>Odocoileus</i>).....	2	2	1
Opossum (<i>Didelphis</i>).....		1	
Tortoise (<i>Terrapene</i>).....			1
LEVEL 15-30			
Bison (<i>Bison</i>).....		1	
Deer (<i>Odocoileus</i>).....	2	3	1
Tortoise (<i>Terrapene</i>).....	1	1	
Rabbit (cf. <i>Lepus</i>).....		1	
Bird (unidentifiable).....	1		
LEVEL 30-45			
Bison (<i>Bison</i>).....	1		
Deer (<i>Odocoileus</i>).....	5	3	1
Tortoise (<i>Terrapene</i>).....	4	2	1
Large animal (<i>Bison?</i>).....	1		
Canid.....	1		
Raccoon (<i>Procyon</i>).....	1		
Badger (<i>Taxidea</i>).....		1	
Bird (unidentifiable).....		1	
LEVEL 45-60			
Bison or <i>Bos</i>	1		
Deer (<i>Odocoileus</i>).....	8	6	1
Tortoise (<i>Terrapene</i>).....	3	1	1
Dog (<i>Canis</i>).....	1		
Badger (<i>Taxidea</i>).....	1		
Opossum (<i>Didelphis</i>).....	1		
Rabbit (<i>Sylvalagus</i>).....		x	
Horse (<i>Equus</i> cf. <i>complicatus</i>) ²	1		
Bird (unidentifiable).....	1		
Gar (<i>Lepidosteus</i>).....	1		
Snail (<i>Viviparus intertextus</i> (Say)).....			1
Snail (<i>Heliosonia trivolvis</i> (Say)).....			1
Clam (<i>Quadrula speciosa</i> (Lea)).....			1
Clam (<i>Glebulula rotundata</i> (Lamarck)).....			1
Clam (<i>Carunculina texasensis</i> (Say)).....			1
LEVEL 60-75			
Bison or <i>Bos</i>	1		
Deer (<i>Odocoileus</i>).....	9	2	1
Tortoise (<i>Terrapene</i>).....	5	2	1
Badger (<i>Taxidea</i>).....	1		
Antelope (<i>Antilocapra</i>).....	1		
Alligator.....		1	
Mink (<i>Mustela</i>).....			1
Snail (<i>Viviparus intertextus</i> (Say)).....			1
Clam (<i>Carunculina texasensis</i> (Lea)).....			1
Clam (<i>Unionmerus tetralasmus</i> (Say)).....			1
LEVEL 75-90			
Deer (<i>Odocoileus</i>).....	7	1	1
Raccoon (<i>Procyon</i>).....	1		
Tortoise (<i>Terrapene</i>).....	11		1
Antelope (<i>Antilocapra</i>).....	1		
Badger (<i>Taxidea</i>).....	1		
Clam (<i>Quadrula speciosa</i> (Say)).....			1

TABLE 8.—Distribution by level of animal species in the Doering (D) and Kobs (K) sites and site 42/66A6-4 (4)—Continued

Animal species	Site		
	D	K	4
LEVEL 90-105			
Deer (<i>Odocoileus</i>).....	6	1	-----
Tortoise (<i>Terrapene</i>).....	14	-----	-----
Antelope (<i>Antilocapra</i>).....	1	-----	-----
Badger (<i>Taxidea</i>).....	1	-----	-----
Small canid or raccoon.....	1	-----	-----
Fossil bone (unidentifiable).....	1	-----	-----
Bison (<i>Bison</i>).....	-----	1	-----
LEVEL 105-120			
Deer (<i>Odocoileus</i>).....	1	-----	-----
Antelope (<i>Antilocapra</i>).....	1	-----	-----
Tortoise (<i>Terrapene</i>).....	5	-----	-----

¹ The letter "x" indicates the presence of the form when the number of individuals is not known.

² The preservation of this specimen is different from that of the other material. It was probably found by the Indians and brought into camp.

ANIMAL BONE REFUSE

Animal bone refuse was plentiful in the Doering midden. There were comparatively few bones in level 0-15, and only a small number more in level 15-30. From level 30-45, where there was a notable increase in quantity, the volume of bone refuse per cubic meter increased by level until the maximum concentration was obtained at levels 75-90 and 90-105. Below this there was a decrease in volume, in part explained by the fact that part of the level falls into the sterile clay.

There was less bone refuse in the Kobs site than in the Doering site, and most of it was concentrated in the midden zone from level 15-30 through level 60-75. Although there was some bone in the sand knoll, there was much less volume than in the overlying midden.

Site 42/66A6-4 yielded some animal bone, and also showed some consistent use of shellfish which abounded in the creek below. The evidence was limited by the smallness of the sample from only one test pit.

At none of the other sites was sufficient evidence gathered for analysis of animal-bone content, but it is interesting to note that Black reported a considerable quantity of shell from the Addicks "Mound."

Throughout the occupation of the Addicks Basin sites the deer was the most consistently used food animal, at least 64 individuals being represented. Since all bones of the skeleton are represented, it may be assumed that the bodies were carried intact, or nearly so, to the camp. The relative scarcity of artifacts made from bone or antler shows the essentially food character of utilization, a factor which applies to all other animals as well.

Among the larger mammals, the bison follows the deer in frequency of representation. There were 10 individuals and occurrence was confined to the middle and upper levels. Whether this fact is of ecological significance cannot be answered at present. In any event, the taking of bison seems to have been on the increase toward the end of occupancy of the Kobs site. The acquisition of the horse, noted by De Bellisle in 1719, could have been a factor conducive to greater dependence upon this prime supplier of the plains.

Antelope, represented by four individuals and confined to the lower, or perhaps the lower and early middle levels, raise again the question of possible ecological shifts from the early to the later periods. Because it is impossible to answer this problem at present, the investigation of this and related problems must be one of the goals of future work in the area.

Of the smaller animals, the tortoise was most important, no fewer than 54 individuals having been collected in the various sites. They occurred in the greatest abundance in the lower level, and decreasingly through the middle and upper levels. It is not known whether this decrease was the result of gradual depletion of the local supply, or due, perhaps, to accidents of preservation, or to greater reliance on other fauna.

Animals of less frequent occurrence are the badger (5), raccoon (2, or perhaps 3), opossum (2), and rabbit (2). Mink and alligator are represented by a single individual each. Birds were little used; three occurrences, none of which are identifiable as to species, comprise the total number in this order.

Only a single occurrence of fish may be noted, a gar having been recovered from the middle level of the Doering site. Shellfish also had a restricted distribution. The only site tested or excavated by the survey to show any consistent usage of this item was site 42/66A6-4. As mentioned above, Black reported a considerable quantity of shell from the Addicks "Mound."

The occupants of the Doering site had the dog at least by middle level times. One canid specimen came from the lower levels of the Doering site, and two others of uncertain identity probably represent this species.

The general scarcity of fish and rodent material in the collection is notable, although this may be accounted for by accidents of preservation. However, the preservation of many small splinters of other animal bones makes this unlikely.

Fragmentary human bones scattered throughout the midden raise the question of whether cannibalism was practiced. Their relative scarcity, together with the possibility that they may have come from disturbed burials must, however, be considered as negative evidence.

On the whole, cannibalism cannot have been economically important, and probably was not practiced.

SUMMARY AND CONCLUSIONS

The survey of the Addicks Dam Basin, together with its outlet channel and related works, resulted in the discovery and recording of eight previously unknown sites. Further information about a ninth, the Addicks "Mound," which was destroyed several years ago, was abstracted from the field notes of Marshall Black, of Houston. While there undoubtedly remain some additional sites within the basin, and many more along other stream courses in the general area, the basic culture patterns of the prehistoric inhabitants may be inferred from the results of work done by the survey.

Of the nine sites noted, four have yielded most of the data. Two of the nine sites had been destroyed by construction work; one by the channel rectification of Buffalo Bayou, from which we have Black's data; and the second by erection of the Addicks Dam embankment. Two others proved to be scattered, sparse accumulation of habitation debris; and the remaining five were midden deposits of varying extent and thickness. While the survey was refused permission to test one of the middens, stratigraphic tests were made in site 42/66A6-4 and in the Grisbee site. The main corpus of information, however, derives from the more extensive excavations carried out in the Doering and Kobs sites.

Before passing on to the conclusions, we may briefly review some of the more significant data.

All of the sites, none of which is very extensive, are situated atop sand or clay knolls that originally formed segments of discontinuous natural levees bordering the stream channels of the area. Most of them are midden deposits.

No structural features were found in any of the deposits. If houses had been present, they were of such perishable materials as to have left no traces in the middens. They could, of course, have been built away from the midden itself, but if so, there remain no surface indications of them. Furthermore, there were no definite fireplaces or pits encountered, and a single bed of charcoal was the only objective evidence that fires were built on the middens, although it is probable that much of the discoloration of the deposits was due to carbonized vegetal materials.

Seven burials were recovered, one of which can be tentatively correlated with the middle or lower level of occupation. This much-disturbed burial was semiflexed on the right side, oriented to the east, and there was no burial furniture. The remaining six burials belong

to the late or upper level. Five of these were flexed and one semi-flexed. Three were lying on the back, two on the left side, the other on the right side. There was no apparent preferred orientation, and while oval burial pits were probably used in all inhumations, they could be defined in only three. As in the lower or middle level burial, there was no definite association of grave goods.

The indigenous pottery of the Addicks Basin consists of a highly variable ware, termed Goose Creek Plain, and its cognate decorated form, Goose Creek Incised. The pottery of this area is primarily sand-tempered, but sherd and calcium phosphate aplastics appear late in the stratigraphic sequence. Both may be intrusive. Color ranges from bright orange through browns to gray. Fire clouding is common, and interiors are sometimes intentionally blackened. Application of a red film appears to be a minor trait. Four vessel shapes may be noted, falling into two main groups. These are basically elongate jars with conoidal or truncated conoidal bases, and deep, wide-mouth bowls of simple contour. Decoration, when present, consists of lip notching, incised lines parallel to the rim of the vessel, pendant triangles, ladderlike elements, hatching, and occasionally punctuation used either singly or in combination with the above elements. Tchefuncte Stamped ware, intrusive into the middle level occupation, is of considerable chronological import, while a second intrusive ware of the upper level cannot be identified with any known source. The probability that pottery is absent from the lower level of occupation is likewise important chronologically.

Because of the homogeneity of the local pottery wares, the stratigraphy of projectile points on a percentage basis is the best criterion of relative chronology. Three main groups have been distinguished. The first of these is a composite group of parallel-sided or expanding-stemmed dart points which dominate in the lower level. These are replaced by the second group, comprised of a single variable type with considerable range in size and finish, and termed Gary Stemmed points. These form the bulk of the projectiles recovered from the middle level. The upper level is characterized by small arrow points of several types which rapidly and almost completely supplant the Gary Stemmed points of the middle level. It is important to note that the lower and middle level points seem to be primarily of Southeastern derivation while those of the upper level were introduced from the west and northwest in relatively recent times.

A considerable variety of miscellaneous artifacts was found, and while many of them are so widely spread in space and time as to be of little chronologic or distributional value, certain forms are of some significance in these respects. Small stemmed knives, apparently reclaimed from broken projectile points, and similarly produced

scrapers are Southeastern traits, while two forms of beveled knives from the upper level occupation confirm late influence or trade from the west. None of the remaining knife or scraper forms appear to have more than minor value in terms of dating or extra-areal influence.

Drills, choppers, and gravers occurred in all levels and hence cannot be considered as time markers for any one of them. While of little temporal import, the drills, particularly, tend to confirm the general Southeastern pattern of the lithic complex of the Addicks Basin sites.

None of the ground stone artifacts are chronologically secure. Two fragmentary atlatl weights, or banner stones, recovered out of context, nevertheless infer early Southeastern influence. The milling stone and the handstone, both from the Addicks "Mound," are late indicators of gathering or perhaps of agriculture; but these cannot be placed in a distributional framework.

Antler projectile points and an ulna spatula again point to the Southeast as the probable original source of the Addicks Basin culture pattern.

Hunting was the primary subsistence activity of these peoples, but while the evidence is scanty, gathering must have played a considerable part. Collecting of shellfish was localized in the Addicks "Mound" and site 42/66A6-4, even though clams abound in the streams today. Whether use or nonuse of shellfish has cultural or chronologic significance cannot be determined until one of the sites where they formed an important subsistence element is excavated. The question of an ecological shift is obtruded by the occurrence of the antelope, limited to the lower level occupation of the Doering site.

Turning now to the conclusions to be drawn from the foregoing report, it may be noted that description has been in terms of three levels or periods of occupation. There are, besides these, certain suggestions of earlier occupancy. These are by no means clear or definite. The evidence is limited to the occurrence of projectile points usually considered to represent the Paleo-Indian hunters of the high Plains. A single fragmentary Clovis Fluted (?) point and a Scottsbluff (?) (Provisional Type 15) point were found in level 90-105 of the Doering site. A Plainview point was salvaged from the stream bed without context, and two points very similar to the Nebo Hill (Provisional Type 16) points came from the sand knoll beneath the Kobs site. There is nothing inherent in the nature of the finds to indicate any considerable antiquity. Therefore, it cannot be stated whether these should be considered as fossil points picked up and re-used by the later inhabitants, or if they actually are a minor component of the early Southeastern cultures. Future excavations will probably solve this intriguing problem, but little import may be assumed at the present time for the occurrence of these points.

The division of the midden deposits of the Addicks Dam Basin into three occupation levels or periods is admittedly an arbitrary device, designed to facilitate the formulation of a relative chronology for the various sites of the region. Each of the levels evolved from the immediately preceding one, for there is an essential homogeneity in the culture pattern, marked by a continuity in the sequence of artifact types and in the structure of the middens themselves. The division into levels rests upon the introduction of new elements into the continuum, elements which once absorbed became strongly characteristic of the level into which they were introduced and of the succeeding levels. Thus, the addition of pottery marks the boundary between middle and lower level, and the acquisition of small arrow points of new types delimits the upper from the middle level. Moreover, these novel elements represent influence and contacts from differing directions, for the pottery is Southeastern in character, while the upper level projectile points and correlated artifacts found their way into the Addicks Basin from the west and northwest.

We may now define the general nature of each of these levels. The lower level occupation was confined to the Doering site, levels 75-90 to 105-120. It is the least secure of the three periods, and is characterized chiefly by the lack of pottery. Projectile points of Provisional Types 14, 17, and 20 are limited to this horizon, as are, probably, Provisional Types 27 and 28. Intrusive points of this level are the Clovis Fluted (?); Pedernales Indented Base, which had a long time span in central Texas; Provisional Type 15 (Scottsbluff (?)); and probably the Plainview Point. The atlatl weight, or banner stone, probably belongs to this period, since it is primarily characteristic of the nonpottery horizons of the eastern United States, but it cannot be definitely placed. Nothing can be said of the burial customs, inasmuch as no skeletal material was recovered from this horizon.

With the inception of pottery-making comes the transition from lower to middle level. To this period belong levels 60-75 to 30-45 in the Doering site; the sand knoll, levels 60-75 to 105-120 in the Kobs site; and perhaps the lower levels of the Grisbee site and site 42/66A6-4. The most striking feature of the projectile point complex of the middle horizon is the almost complete dominance of the Gary Stemmed points which, however, was shared with both lower and upper levels. Provisional Types 16 (Nebo Hill (?)), 24, and probably 29, appear confined to this period, and the single Copena point, found without context, was probably intrusive during the phase. The single ulna spatula and the unique eccentric flint occurred in this level but do not constitute strong traits. Antler projectile points are shared by middle and lower levels, as are Provisional Types 12,

18, 19, 21, and perhaps 25, 26, 30, 31, 32, and the Baird Beveled points, although the latter group was found without context and therefore may not be accurately placed. Knife Type 1d was probably also shared. The only burial recovered from this period was the much-disturbed Burial 1 of the Doering site. It was semiflexed on the right side and was oriented to the east. It does not, however, constitute a strong trait.

The upper level of occupation is the most secure of the three cultural periods and was found at all sites in the Basin. It begins with the introduction of the arrow points Perdiz Pointed Stem, Scallhorn and Eddy Stemmed, Alba Barbed, and Kobs Triangular, as well as Provisional Types 1, 2, 3, and 4. Knife Types 6a and 6b belong to this horizon and offer strong chronological implications. Large end scrapers and Drill Types 1a, 1b, and 1c were here confined to this period. Sandstone saws and abraders from the Kobs and Doering sites, and the milling and handstones from the Addicks "Mound" are, on the basis of our evidence, upper level traits. The unique examples of shellwork are likewise confined to the late period. The ceramic complex, begun in the middle period, continues with little change through the upper level. The only notable difference is found in the tempering. Sherd (?) and calcium phosphate temper appear, but whether they represent indigenous or intrusive wares is not clear. In any event, they are but a minor element in the complex. Figurines may also be characteristic of the phase. The burial complex of the upper horizon is represented by six inhumations; one semiflexed, the other five flexed. There seems to have been no preferred placement or orientation, since burials on the right and left sides and on the back occur, with heads oriented in all directions. No burial furniture was definitely associated with any of the burials, and so may be tentatively considered a negative trait.

The upper level shares a number of traits with the middle level. These are the ceramic complex, Knife Type 5, small end and large side scrapers, the use of hematite and limonite pigments, and perhaps the projectile points of Provisional Types 5, 10, and 13, and Wells Contracting Stem. In the burial complex, inhumation in ovoid pits dug into the sand knoll or midden debris was probably shared, although the information on this point is obscure because of the homogeneous nature of the midden deposit.

The essential continuum of the various phases is further brought out by a number of traits shared by all three levels. The basic consideration of choice of living sites, as well as the midden nature of the sites, are common factors. Certain projectile types occur, or probably occur, in all levels. These are the Gary Stemmed point which, although particularly characteristic of the middle level, none-

theless occurs throughout. Provisional Type 22 likewise has a complete vertical range, and it is probable that Provisional Types 6, 7, 8, 9, 11, and 23 have a similar range. Knives of the types 2, 3, and 4; flake and small side scrapers; both forms of choppers; gravers; hammerstones; and drill forms 2a, 2b, and perhaps 3, all appear to have continuous vertical distribution in the Addicks Basin. Of bone artifacts, only the awl seems to have been shared by upper, middle, and lower levels, but the general paucity of bone artifacts may have a distorting influence on this picture.

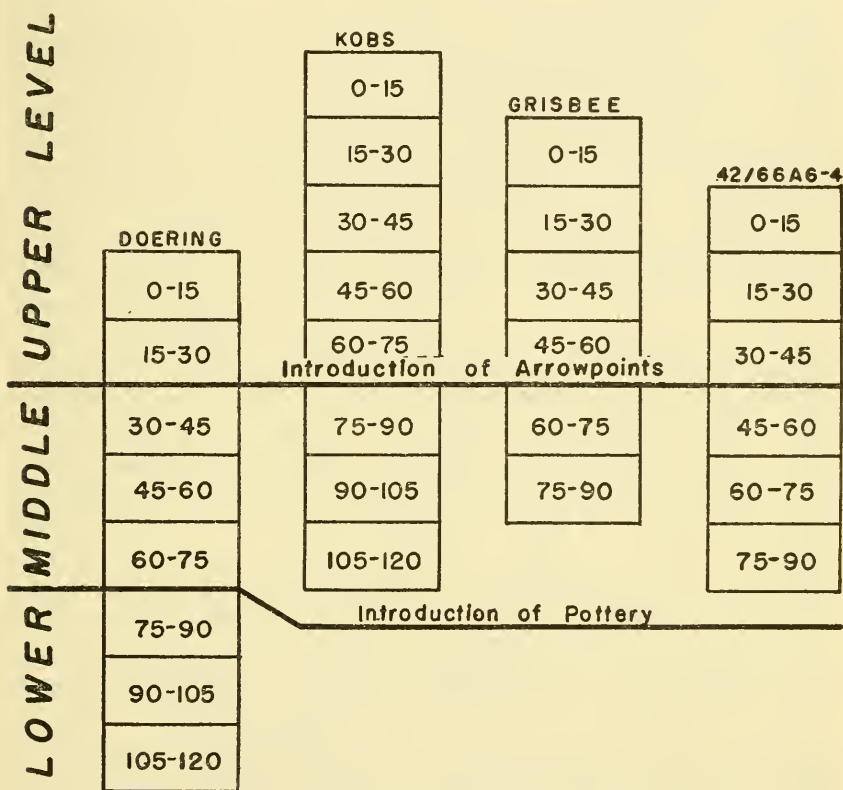


FIGURE 23.—Relative chronology of the Addicks Basin sites.

By utilizing the diagnostics established above for the delineation of the three periods, it is possible to correlate tentatively the various sites of the Addicks Dam Basin (fig. 23). Thus, it may be seen that the Doering site alone has a component of the lower period, comprising levels 75-90 to the base of the midden. Although it cannot be included here because of the lack of precise stratigraphic data, it is probable that the Addicks "Mound" also contained the lower level. The middle phase is present at all sites, but this period must

have been brief at the Grisbee site and somewhat less so at site 42/66A6-4, judging from the thickness of the strata containing the middle-level material. The upper-level period, like the middle level of occupation, is present at all sites. Level 15-30 of the Doering site would equate with level 60-75 of the Kobs site, 45-60 of the Grisbee site, and 30-45 of site 42/66A6-4. It would seem, on the basis of projectile point percentages, that only the early part of the upper horizon is present at the Doering site and that all the other sites continued to be occupied after its abandonment.

Having set up a relative chronology, we may now attempt to determine its temporal placement in relation to neighboring cultures. There are two factors occurring in the Addicks Basin sites which have potential chronological significance. These are, first, the intrusive Tchefuncte Stamped ware in the middle-level period, and second, the time horizon of the introduction of the small arrow points and the beveled knives. If the date of A. D. 500 to 900, suggested for Tchefuncte (Martin, Quimby, and Collier, 1947, p. 401), be accepted as essentially accurate, then the middle period of the Addicks Basin would fall somewhere in this time span.¹⁹ Since pottery was already an important part of the culture at the time of the Tchefuncte intrusion, it seems likely that the beginning of the middle period would date near the earlier terminus, perhaps A. D. 600 to 700. This would allow some time for the peripheral lag in the introduction of new traits. The earliest date for the upper level would depend upon the dating accorded the Alba Barbed, Perdiz Pointed Stem, and related points. These types have been dated at circa A. D. 1450-1500 (Krieger, 1946, p. 211; Kelley, 1947 a, p. 127), and we may tentatively accept this general time horizon as the beginning of the upper level occupation. The final date for the abandonment of the Kobs site may well be about A. D. 1600. This date would depend on the placement of the beveled knives. As previously explained, these are components of the protohistoric and historic Austin Focus (Krieger, 1946, pp. 165-168). Furthermore, nearly all the beveled knives from eastern and northeastern Texas, where the circumstances are known, are post-contact (Krieger, 1946, p. 142). Since none of the sites in the Addicks Basin showed European contact, it may be assumed that they were abandoned prior to any strong influence from the Spanish or French, if they are not, indeed, entirely prehistoric. Because there was considerable traffic by the Spanish and French in the area during the latter half of the seventeenth century, it seems most logical to place the terminus of the Kobs site occupation at somewhere near A. D. 1600.

¹⁹ Compare radiocarbon dates published by Arnold and Libby, 1951.

As for the date of the lower-level occupation, little may be said beyond the probability that it antedated the middle period by perhaps a century or so. The problem of ecological changes would have a direct bearing on this date, and it may well offer a new approach to the dating in the future.

It is difficult to comprehend the small size of the sites when confronted by the probable time span involved. This is particularly true of the Doering site, where only 1.20 m. of refuse seems to encompass a thousand years of human history. Nevertheless, it is difficult to escape the conclusion that it does, and one is forced to look for an explanation. It is, of course, entirely possible that the dating of the Tchefuncte horizon is too low and that of the Austin Focus too high. It is equally possible that the Tchefuncte ware recovered from the Kobs midden had been kept in the nature of an heirloom, finally to be left long after the date of its manufacture. Perhaps the most plausible explanation is that the site was occupied by a small group of people more or less continuously, or seasonally, over the entire span of time. Certainly the site is too small to have served a large community for more than a short period.

None of the other sites covered so long a span of time. The Kobs site seems to have been inhabited intermittently during the aggradation of the sand knoll forming the base of the later midden. This occupation dates to middle-level times. Whether the site was left unoccupied for a period of time and then reoccupied by upper-level peoples, or whether the aggradation of the sand knoll was slow enough to span the time from circa A. D. 900 to about A. D. 1500, cannot be answered by physical stratigraphy; but with the beginning of the definite midden deposit, the occupation was by upper-level peoples, as attested to by the lithic complex. Both the Grisbee site and site 42/66A6-4 appear to have been occupied chiefly during upper-level time, but little may be said of them because their excavation was limited to testing operations.

A comparison may now be made between the prehistoric occupants of the Addicks Basin sites and the historic inhabitants to determine the nature and extent of their relationship. Swanton (1928, pp. 712-713) characterizes the Attakapa as a loosely organized group of low culture who practiced cannibalism and who were definitely marginal to the Southeast proper. This would presumably hold, also, for the Akokisa, the westernmost group of the Attakapa. The Akokisa followed a simple annual economic cycle, passing the winter in permanent or semipermanent camps, and the summer in wandering to the seacoast and elsewhere. They followed a hunting and gathering

subsistence pattern, including the collecting of shellfish. They had pottery, but whether they made it or received it in trade is not clear. Swanton (1946, p. 737) states that they received most of it from the Karankawa, the Avoyel, and probably the Caddo. Trade was also carried on with the peoples of the interior.

In general, the pattern described for the Akokisa might fit the prehistoric pattern as well. However, there are certain discrepancies which may be examined briefly. There is obviously no means of judging whether social or tribal organization was loose, and the determination of a low or high culture is a relative one. That cannibalism was widely practiced by the prehistoric inhabitants may be questioned so far as the evidence in the excavated sites is concerned. Furthermore, the pottery of the prehistoric sites is much too uniform to have been imported from a variety of sources. It does not conform to the pottery known from the Karankawa nor from the Caddo. On the other hand, it seems likely that the economic cycle described for the historic peoples of the area was much the same as that of the prehistoric. Whatever form of shelter was made and used by the precontact inhabitants must have been perishable, and this may be generally equated with the house types of the historic peoples. Further, there is archeological evidence to support the story of trade with the peoples of the interior. But the majority of the cultural factors which agree are factors which might be attributed to an environmental basis. Therefore, it is impossible at present to derive a satisfactory answer. One solution to the problem lies in the excavation of known Akokisa sites such as the site of the Mission Nuestra Señora de la Luz.

It is likewise impossible to fit the Addicks Basin sites into the Attakpan Phase of Sayles (Sayles, 1935, p. 41), inasmuch as there are insufficient details given for a comparison. While the pottery appears basically of the same pattern, the statement that the sites usually show signs of European contact removes them from direct association with the sites covered by the River Basin Surveys. It is probable that these sites represent, as Sayles points out, the early historic occupants—the Attakapans.

The sites of the Addicks Basin, then, represent a people Southeastern in origin and basic affiliations, who, marginal to the main stream of cultural achievement, seem to have developed slowly and in relative isolation. This is attested to by the essentially homogeneous but static culture complex. In late prehistoric times they came into the sphere of influence of the peoples to the west and northwest. During this time the bow and arrow was probably introduced, and certainly new and distinctive forms of projectile points and knives. Nevertheless, the culture pattern remained Southeastern in character until the final abandonment, perhaps around the year A. D. 1600.

APPENDIX

TABLE 9.—*Trait list for Addicks Basin sites* ¹

Trait list	Levels		
	Upper	Middle	Lower
General traits :			
Sites alongside stream on natural knoll.....	x	x	x
Midden deposit.....	x	x	x
Burial complex:			
Flexed.....	5		
Semiflexed.....	1	1	
On back.....	3		
On left side.....	2		
On right side.....	1	1	
Orientation east.....	1	1	
Orientation west.....	1		
Orientation southeast.....	1		
Orientation southwest.....	2		
Orientation north-northeast.....	1		
Oval pit.....	x	?	
With burial furniture.....	?	?	
Material culture :			
Pottery complex :			
Goose Creek Plain.....	x	x	
Goose Creek Incised.....	x	x	
Elongate jar, wide mouth.....	x	x	
Wide mouth bowl, simple contour.....	x	x	
Calcium phosphate temper.....	x		
Sherd temper.....	?		
Sand temper.....	x	x	
Direct rim.....	x	x	
Sharp lip.....	x	x	
Rounded lip.....	x	x	
Flat tened lip.....	x	x	
Figurines.....	?		
Worked sherds.....	?	?	
Lithic complex :			
Projectile points :			
Perdiz Pointed Stem.....	x		
Scalhorn Stemmed.....	x		
Eddy Stemmed.....	x		
Alba Barbed.....	x		
Kobs Triangular.....	x		
Provisional Type 1.....	x		
Provisional Type 2.....	x		
Provisional Type 3.....	x		
Provisional Type 4.....	x		
Gary Stemmed.....	x	(2)	x
Wells Contracting Stem.....	?	?	
Provisional Type 5.....	?	?	
Provisional Type 6.....	?	x	x
Provisional Type 7.....	?	x	x
Provisional Type 8.....	?	x	x
Provisional Type 9.....	x	x	?
Provisional Type 10.....	?	x	
Provisional Type 11.....	?	x	x
Provisional Type 12.....		x	x
Provisional Type 13.....	?	?	
Provisional Type 14.....			x
Provisional Type 15.....			x
Provisional Type 16.....		x	
Provisional Type 17.....			x
Provisional Type 18.....		x	x
Provisional Type 19.....		x	x
Provisional Type 20.....			x
Pedernales Indented Base.....			x
Provisional Type 21.....		x	x
Provisional Type 22.....		x	x
Provisional Type 23.....	x	x	x
Provisional Type 24.....	?	x	x
Clovis Fluted.....			x
Provisional Type 25.....		?	?
Provisional Type 26.....		?	?
Provisional Type 27.....			?
Provisional Type 28.....			?
Provisional Type 29.....		?	
Provisional Type 30.....		?	?
Provisional Type 31.....		?	?
Provisional Type 32.....		?	?
Copena Point.....		?	
Plainview Point.....			?
Baird Beveled Point.....		?	?

See footnotes at end of table.

TABLE 9.—*Trait list for Addicks Basin sites*¹—Continued

Trait list	Levels		
	Upper	Middle	Lower
Material culture—Continued			
Lithic complex—Continued			
Miscellaneous lithic artifacts:			
Knives:			
Type 1a.....		?	?
Type 1b.....	x		
Type 1c.....	x		
Type 1d.....		x	?
Type 2.....	x	x	x
Type 3.....	x	x	x
Type 4.....	x	x	x
Type 5.....	x	x	
Type 6a.....	x		
Type 6b.....	x		
Scrapers :			
Stemmed end.....	?	x	x
Large end.....	x		
Small end.....	x	x	
Large side.....	x	x	
Small side.....	x	x	x
Flake.....	x	x	x
Choppers :			
One end modified.....	x	x	x
All sides modified.....	x	x	x
Flaked celt.....		?	?
Drills :			
Type 1a.....	x		
Type 1b.....	x		
Type 1c.....	x		
Type 2a.....	x	?	x
Type 2b.....	x	x	x
Type 3.....	?	?	?
Gravers.....	x	x	x
Eccentric flint.....		x	
Ground stone :			
Atlatl Weights (banner stones).....			?
Sandstone saws and abraders.....	x		
Milling stone.....	x		
Handstone.....	x		
Hammerstones.....	x	x	x
Paint pigments.....	x	x	
Bone :			
Cut bone awls.....	x	?	x
Ulma spatula.....		x	
Antler :			
Projectile points.....		x	x
Bead.....	x		
Worked tines.....	x	x	
Shell :			
Pendants.....	x		

¹ Symbols: x=known presence of trait; ?=probable presence of trait; numeral indicates the number of occurrences where that data is relevant.

² Prevalent.

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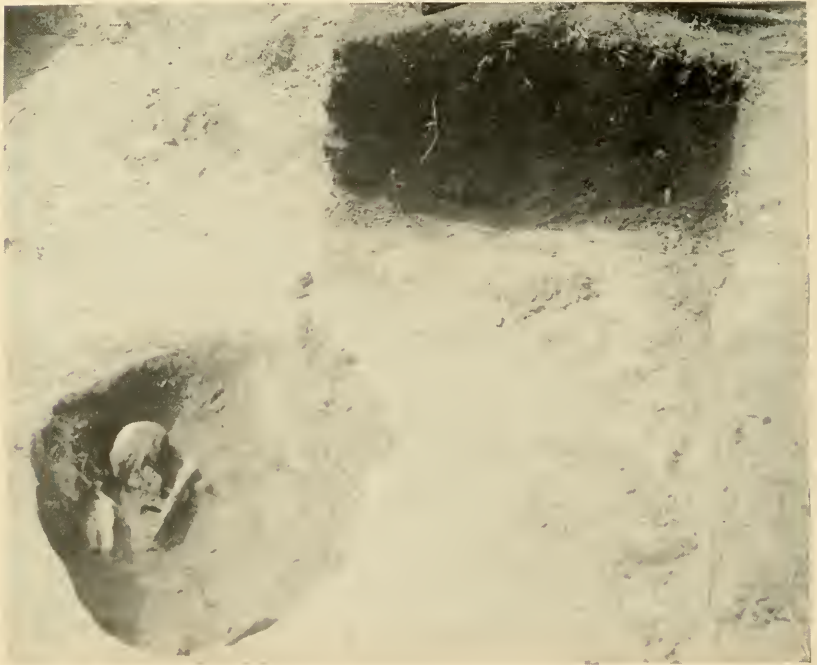
ZON, RAPHAEL. See SHANTZ, H. L., and ZON, RAPHAEL.

*a**b*

Doering site and profile. *a*, View from the west bank of South Mayde Creek. *b*, Profile at 1 East.

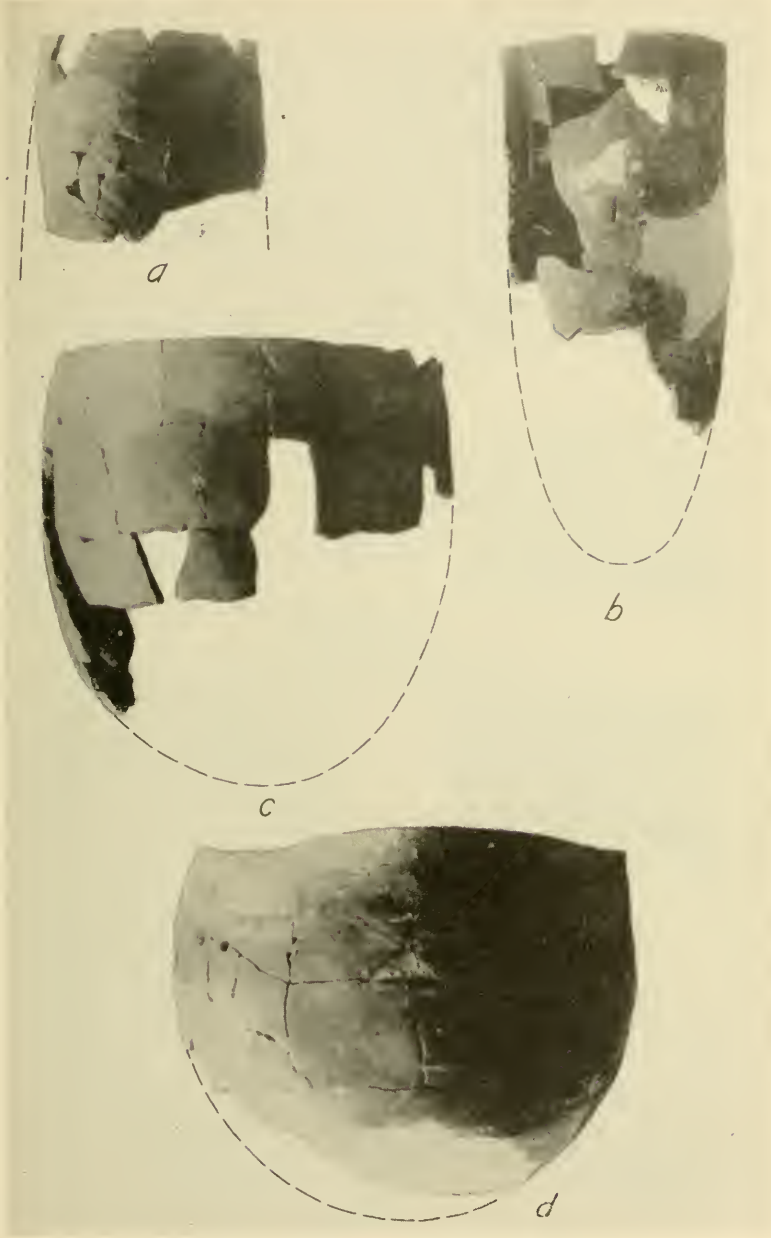


a

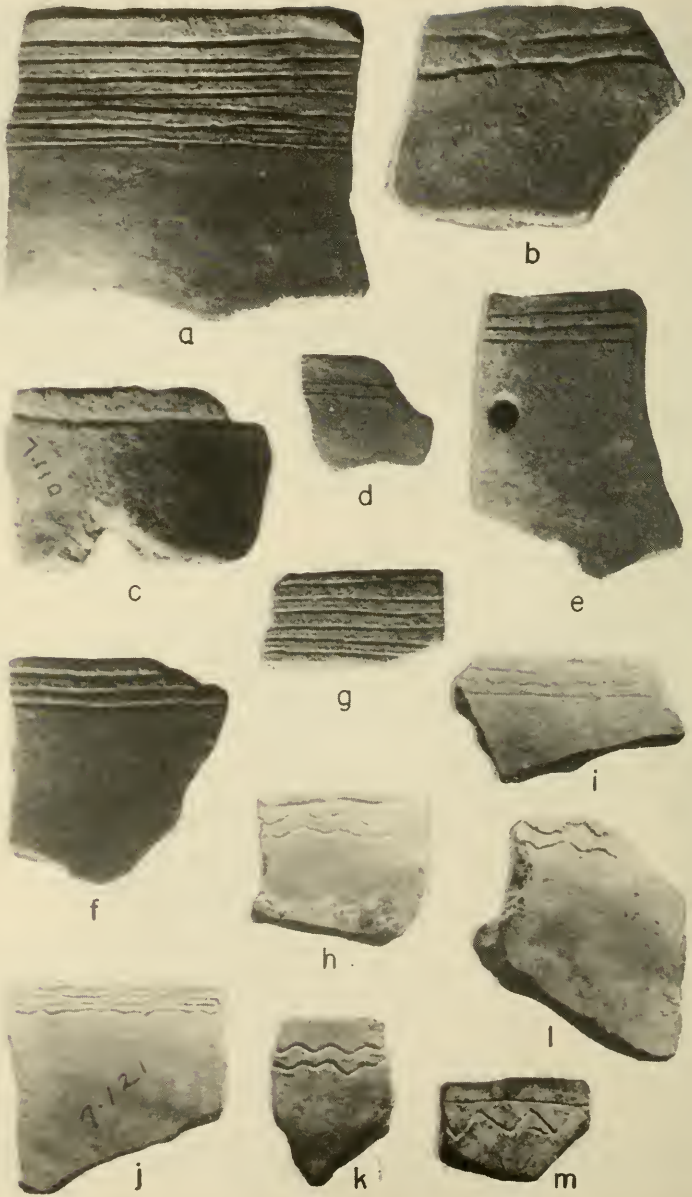


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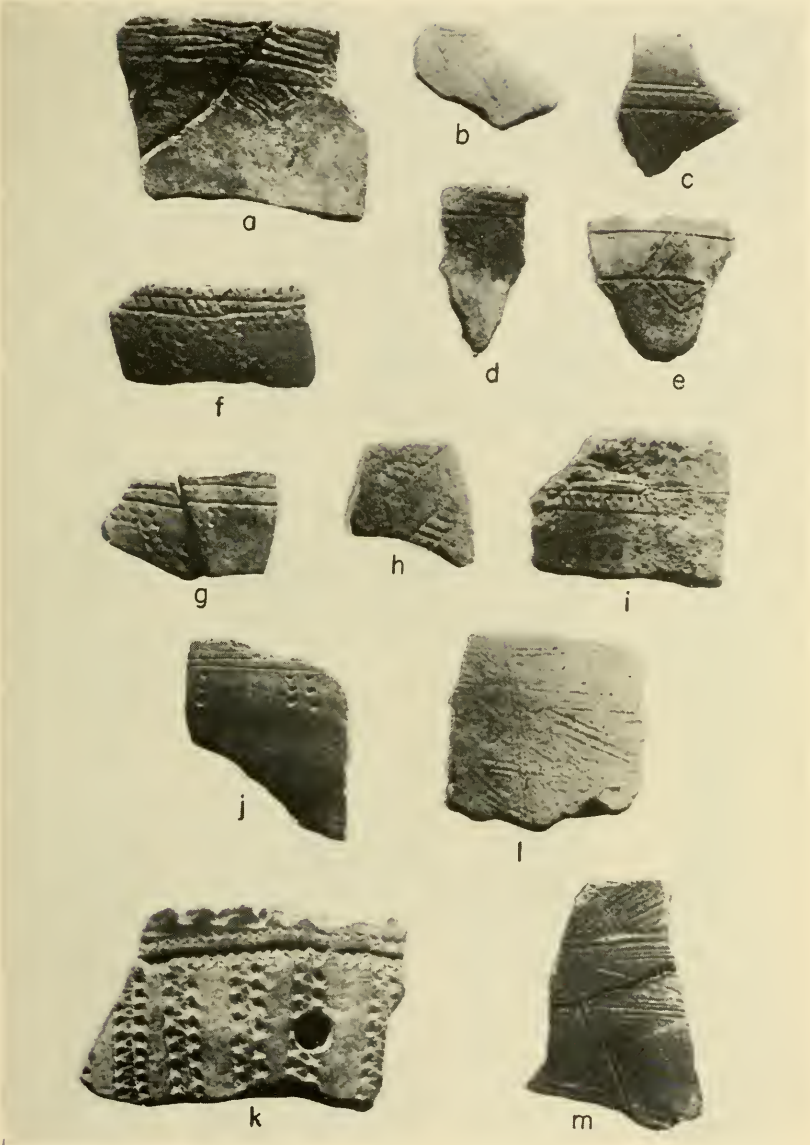
Kobs site. *a*, View before excavation. *b*, View of excavation showing Burial 6 in foreground.



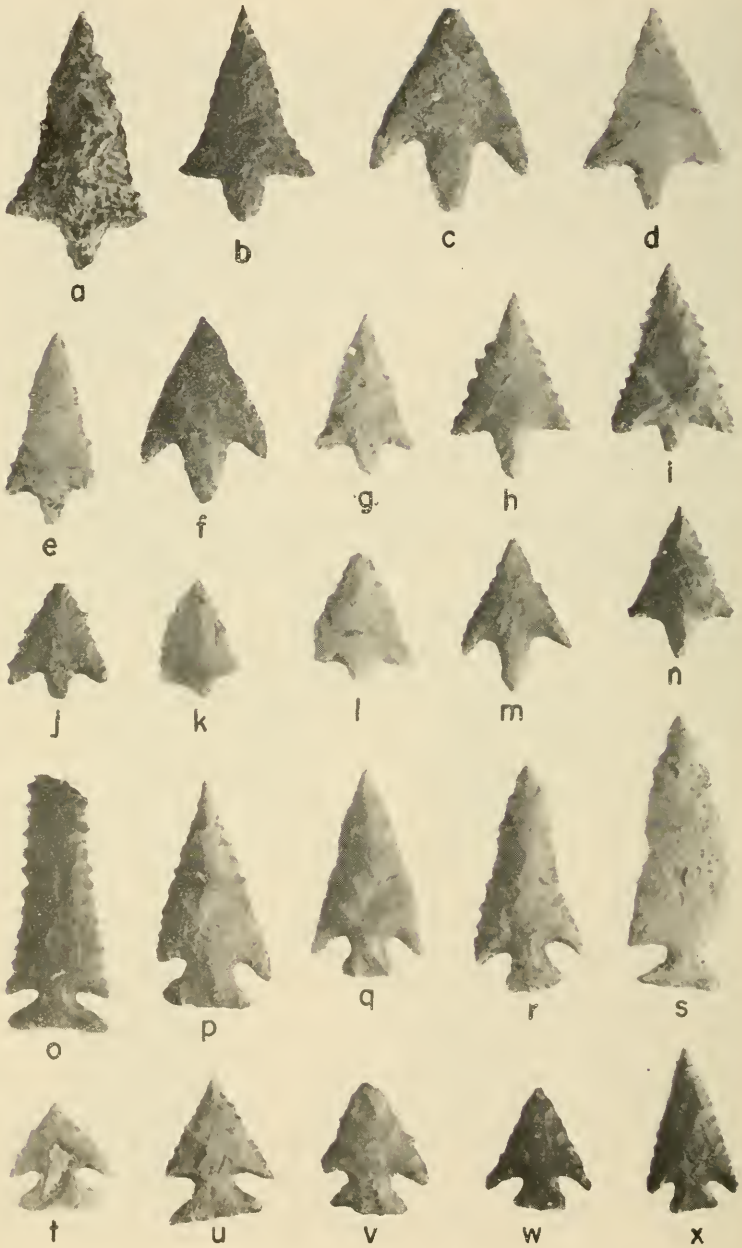
Pottery: Restored vessels, Goose Creek ware.



Pottery: Decorated sherds, Goose Creek Incised.



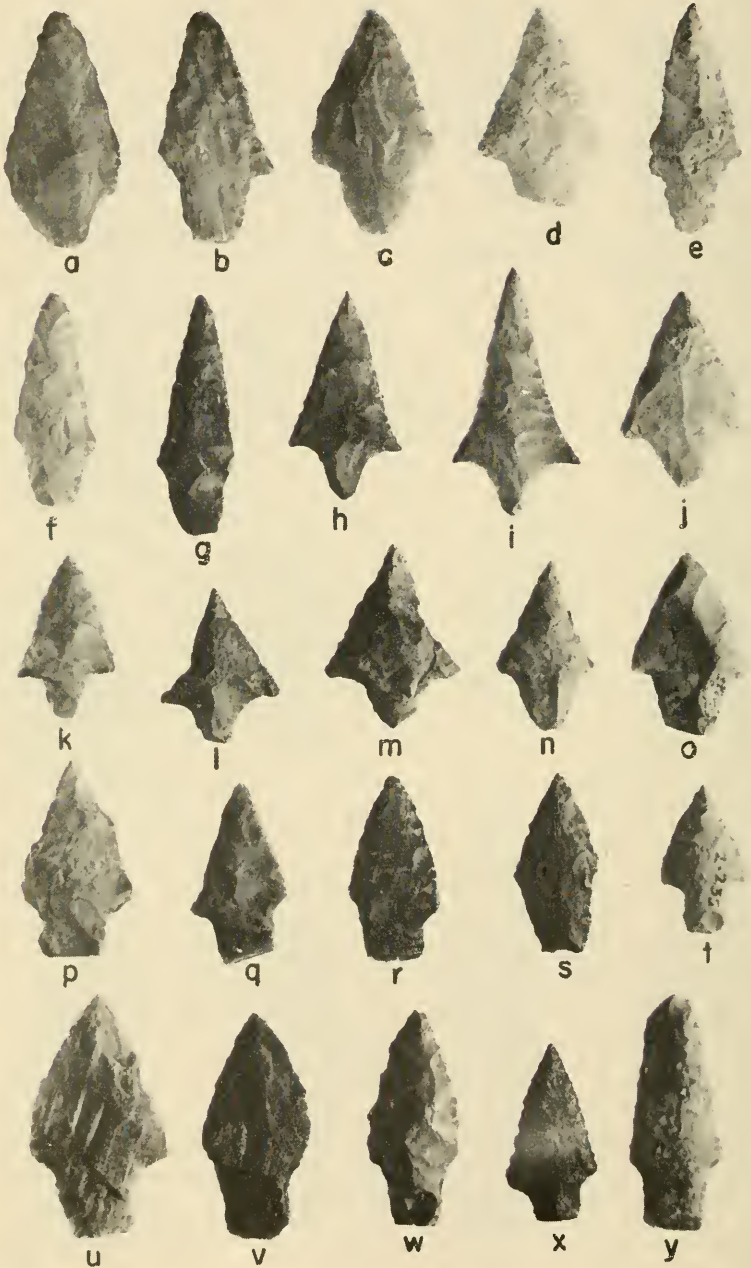
Pottery: Decorated sherds. *a-j*, Goose Creek Incised. *k*, Tchefuncte Stamped. *l, m*, Unidentified ware.



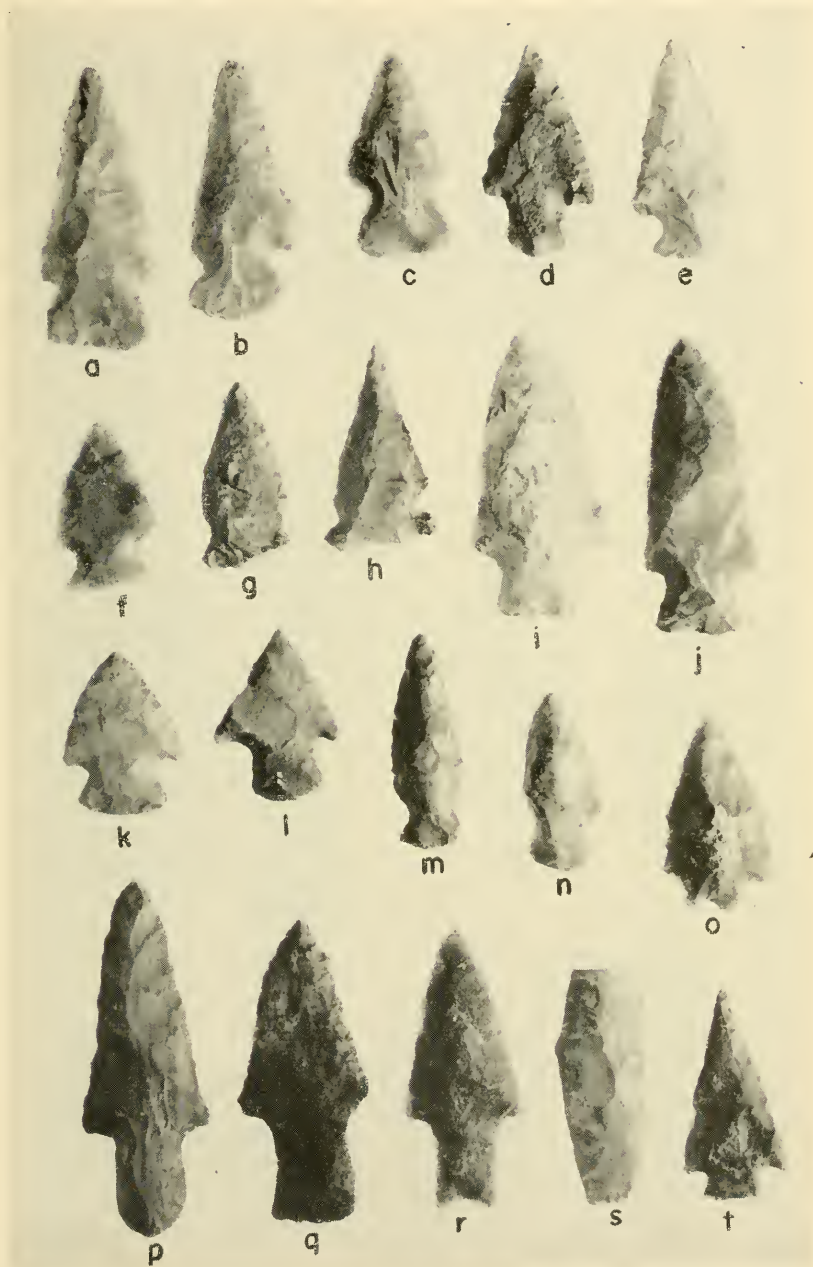
Projectile points. *a-n*, Perdiz Pointed Stem. *o-s*, Scallhorn Stemmed. *t-x*, Eddy Stemmed. *s*, Length, 45 mm. (1.78 in.).



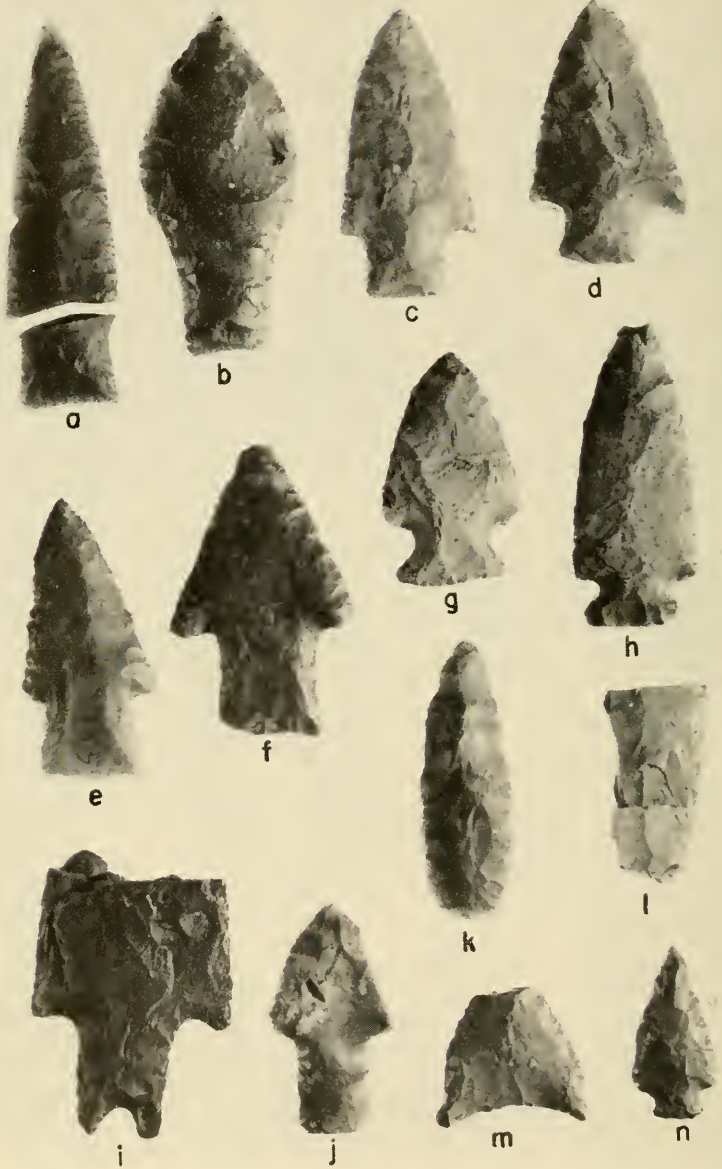
Projectile points. *a-h*, Alba Barbed. *i, j*, Kobs Triangular. *l, p*, Provisional types.
m-o, 2. *k*, 3. *l*, 4. Length of *n*, 70 mm. (2.76 in.).



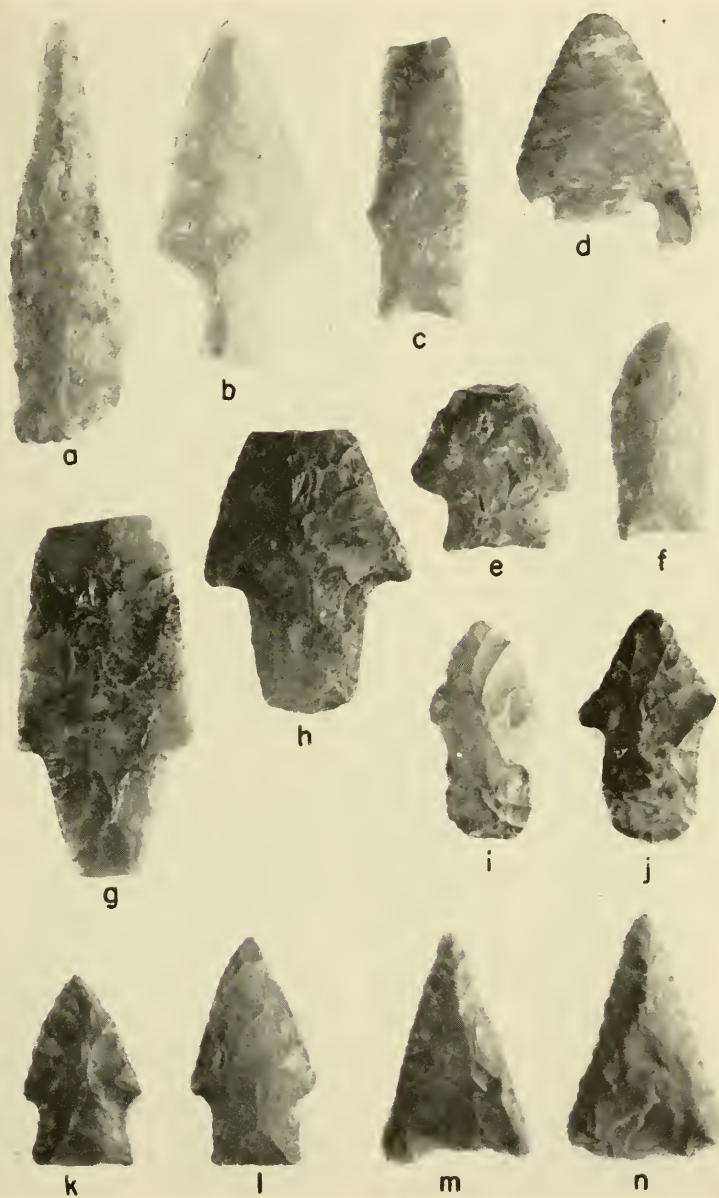
Projectile points: Gary Stemmed type. Length of *i*, 56 mm. (2.20 in.).



Projectile points: Provisional Types. *o*, 5. *d, e*, 6. *f-h*, 7. *i, j*, 8. *k, l*, 9. *m, n*, 10. *a-c*, 11. *p, q*, 12. *r*, 13. *t*, 14. *s*, Wells Contracting Stem. Length of *p*, 72 mm. (2.83 in.).



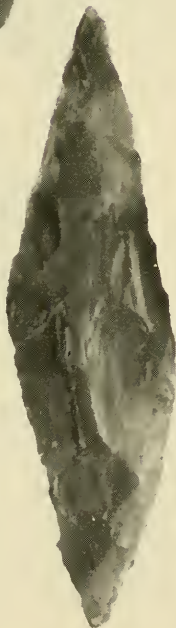
Projectile points: Provisional Types. *a*, 15. *b*, 16. *c*, 17. *d*, 18. *e*, *f*, 19. *g*, *h*, 20. *j*, 21. *n*, 22. *k*, 23. *m*, 24. *i*, Pedernales Indented Base. *l*, Clovis Fluted (?). Length of *b*, 67 mm. (2.64 in.).



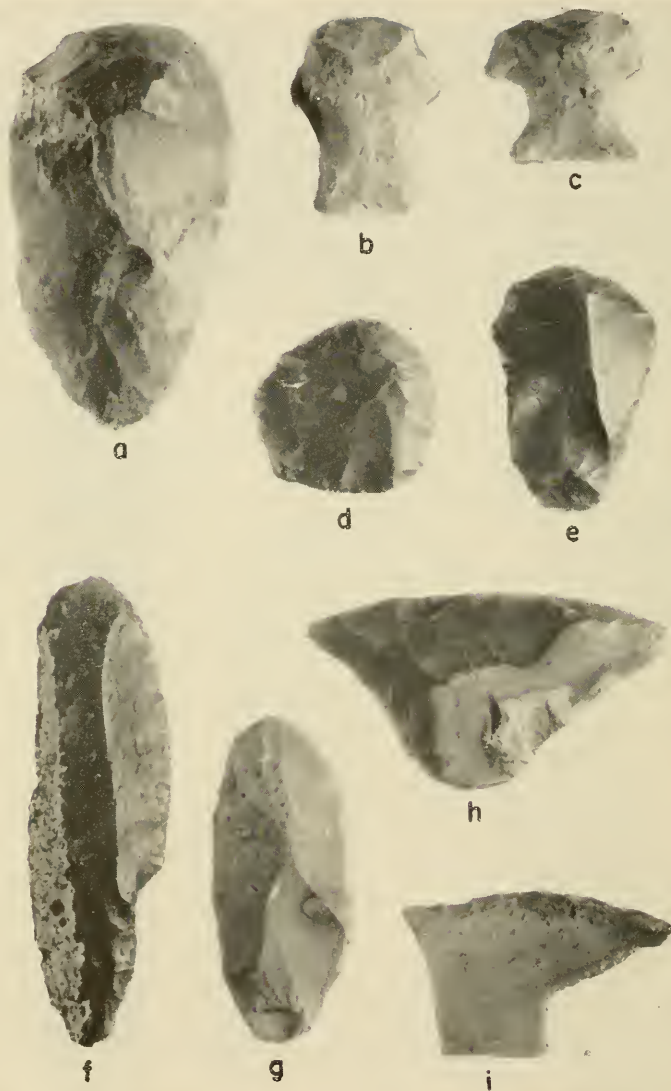
Projectile points, unplaced chronologically: *a*, Copena. *f*, Plainview. *m*, *n*, Baird Beveled. Provisional Types: *b*, 25. *c*, 26. *d*, 31. *e*, 32. *h*, 27. *g*, 28. *i*, *j*, 29. *k*, *l*, 30. Length of *a*, 76 mm. (3.01 in.).



Knives. *a*, Type 1a. *b*, Type 1b. *c*, Type 1c. *d*, *e*, Type 1d. *f*, *g*, Type 2. *h*, *i*, Type 3. Length of *a*, 109 mm. (4.25 in.).

**a****b****c****d****e**

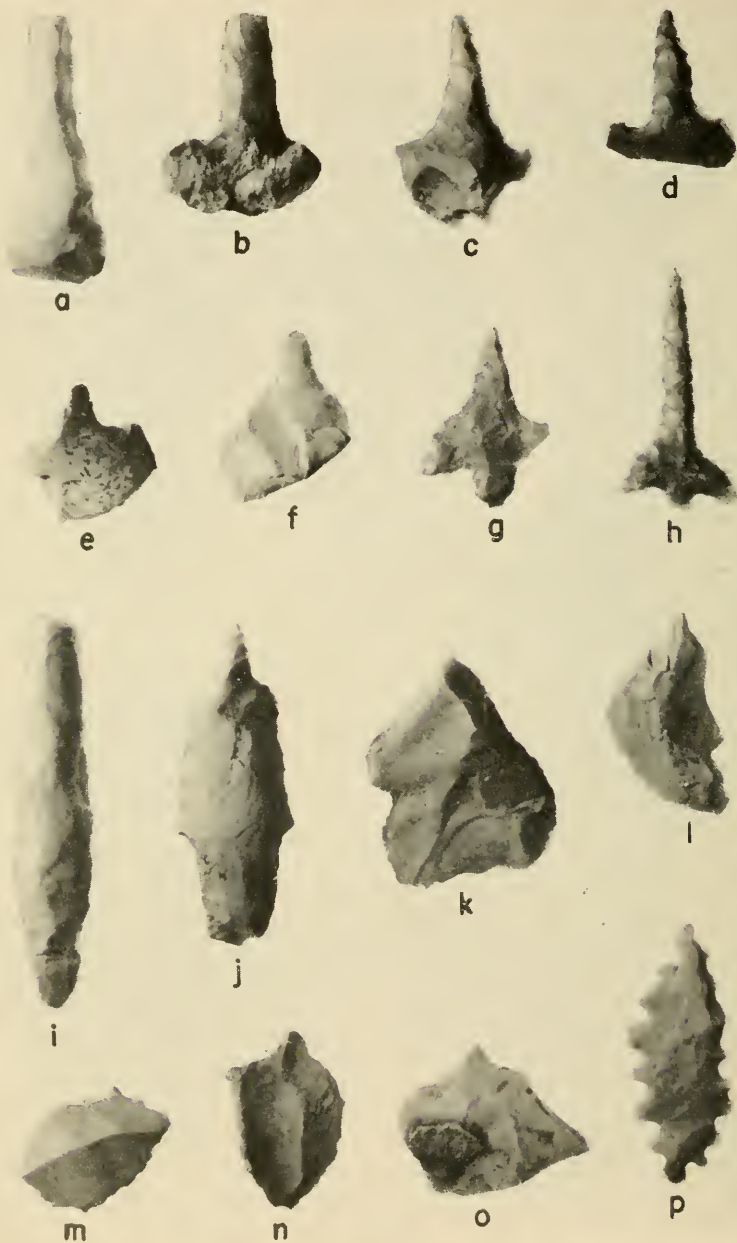
Knives. *a*, *b*, Type 4. *c*, Type 6a. *d*, Type 6b. *e*, Type 5. Length of *e*, 108 mm. (4.22 in.).



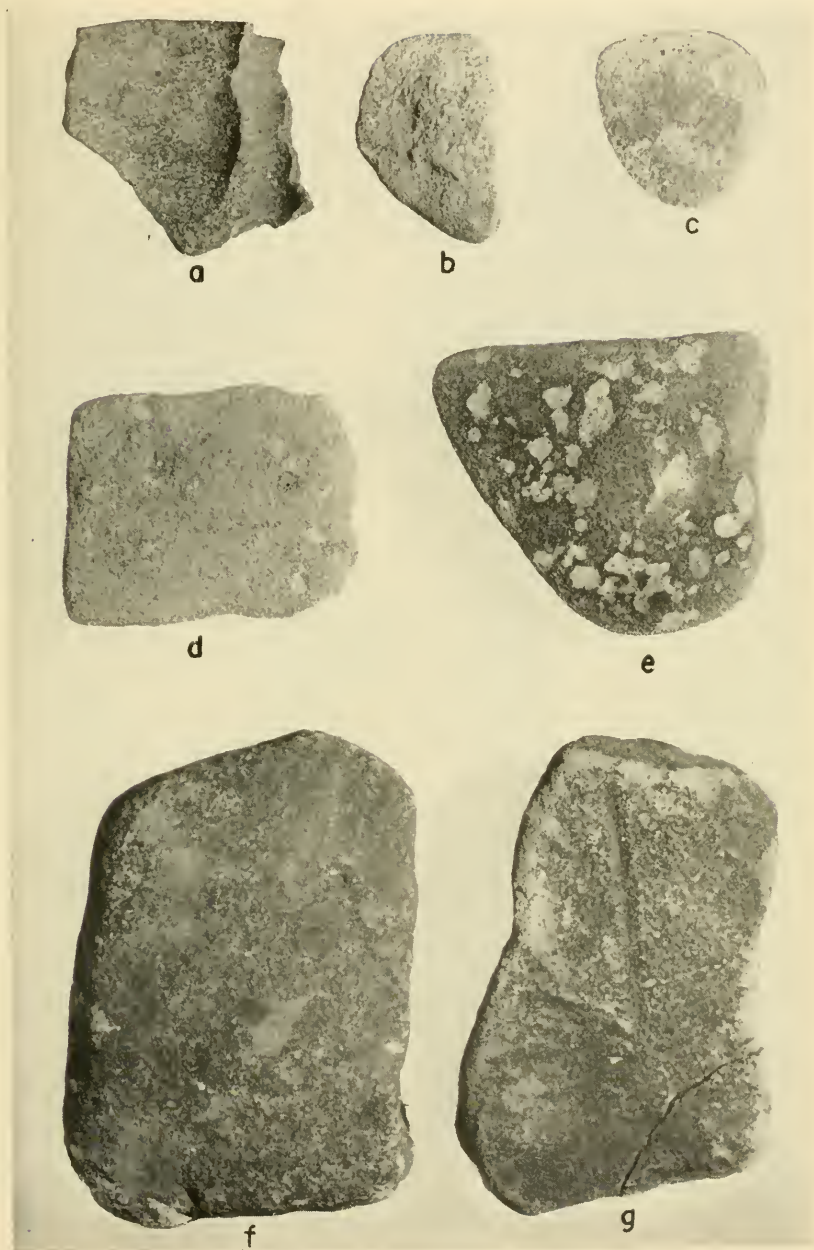
Scrapers. *a*, End scrapers, large. *b, c*, End scrapers, stemmed. *d, e*, End scrapers, small. *f-i*, Side scrapers, small. Length of *f*, 76 mm. (3.01 in.).



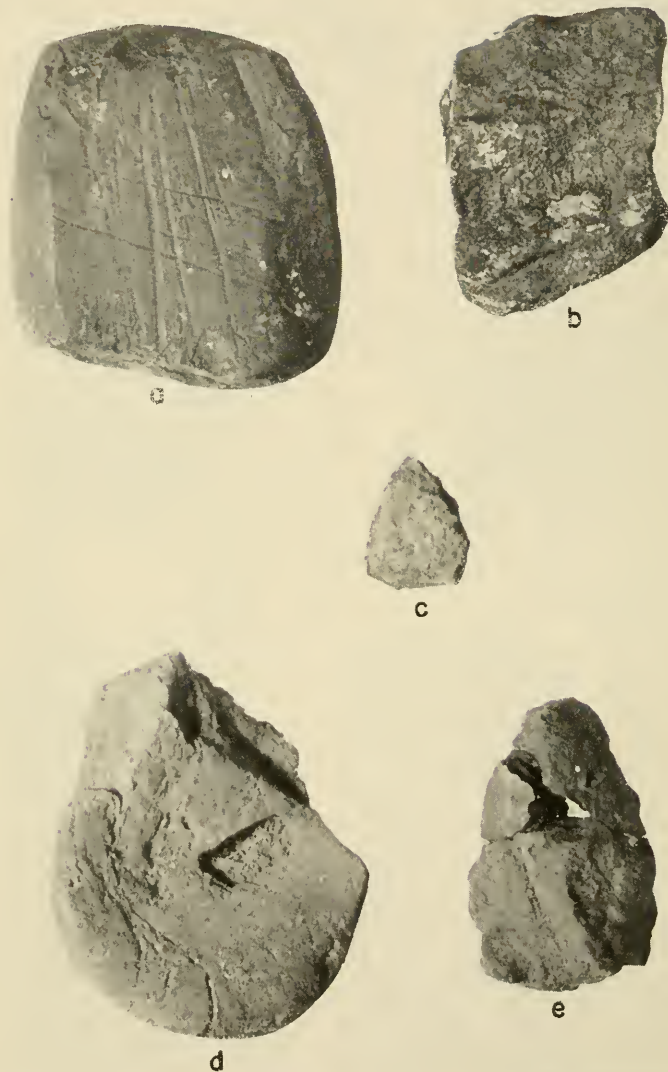
Choppers. *a, b*, One end unmodified. *c, e*, Both ends modified. *d*, Celt. Length of *d*, 137 mm. (5.37 in.).



Drills, graters, and eccentric flint. Drill types: *a, b, 1a. c, d, 1b. e, f, 1c. g, h, 2b. i, 3. j, 2a. k-o, Graters. p, Eccentric flint. Length of *i*, 57 mm. (2.26 in.).*



Ground stone. *a*, Atlatl weight. *b-e*, Sandstone abraders and saws. *f*, Handstone. *g*, Milling stone. Greatest diameter of *f*, 106 mm. (4.18 in.).



Miscellaneous minerals and paint pigments. Length of *d*, 63 mm. (2.48 in.).



Artifacts of bone, antler, and shell. *a*, Ulna spatula. *b-e*, cut bone awls. *f, g*, Worked antler tines. *h, i*, Antler projectile points. *j*, Bead (?). *k, l*, Shell pendants. Length of *a*, 71 mm. (2.79 in.).