specimen (Fig. 7,l) does not resemble any of the finished biface groups. Material types are all gray to brown chert except for one gray "sugar" quartzite specimen and one white chert specimen. In general, this group of artifacts represents manufacturing failures that could be expected given the relatively poor quality and small cobble size of the available lithic resources. No metric data are presented.

(FB2) Miscellaneous Proximal Fragments (N=6; Fig. 7,m-o)

Group FB2 contains six proximal biface fragments (Fig. 7,m-o) that have little in common with each other or the other biface groups. They appear to have been broken before completion. Material types are fine grain chert (2), coarse grain chert (1), white chert (2), and silicified wood (1). No metric data are provided.

(FB3) Miscellaneous Biface Fragments (N=154)

Group FB3 is a catch-all category, including distal, lateral, and medial biface fragments as well as many bifacial failure fragments. The term "bifacial failure fragments" is used to describe the flakes, chips, flake fragments, and chunks that evidence bifacial flaking but were obviously never portions of finished tools. Material types are fine grain chert (119), white chert (20), coarse grain chert (5), burned chert (3), quartzite (2), chalcedony (1), yellow jasper (1), and silicified wood (1).

Unifacial Artifacts

The unifacial tool category is comprised of flakes or flake fragments of siliceous stone that have been worked or trimmed on one face to form a purposeful shape. Almost all the 41 JW 8 specimens are trimmed on the dorsal face to form a semicircular tool edge. For a discussion and illustration of the morphological terminology used to describe unifacial tools see Black and McGraw (1985). The trimming is usually located on the distal end of the flake, hence the rubric term "end scraper." Traditionally, most unifacial stone tools are given the functional designation "scraper." These tools are characterized by comparatively steep edge angles, semicircular working edges, and comparatively little elaboration. Wear pattern studies have usually borne out the accuracy of the term "scraper" (Wilmsen 1970; Wylie 1975).

The Hinojosa site unifacial tool sample is remarkably uniform in morphology. Group U1 comprises over 95% of the unifacial tools. Group U2 contains a small percentage of atypical unifacial tools. It should be emphasized that the unifacial tools at 41 JW 8 are little more than trimmed flakes. Only the patterned trimming and shaping set them apart from the many MD1 specimens. Functionally, a great deal of overlap may exist between the unifacial tool and the modified debitage categories.

only observed on the most heavily worn specimens on the most heavily worn sections of the tool where large, smooth, highly reflective areas were present. The striations were only clear under higher magnification (>30X) and by using low angle oblique lighting. Hence, it seems likely that less obvious striations were present but not observed due to the difficulty of coordinating low angle lighting on small, rounded areas under higher magnification. An added factor that hampered examination of the many small, polished projections is that many tools are made of highly reflective, fine grain chert, hence it is difficult to isolate the reflected polish.

In summary, the wear patterns on the 41 JW 8 end scrapers are highly patterned and consistent with the hypothesis that Late Prehistoric end scrapers were in fact used to process animal hides. These artifacts were often resharpened when the used worn edge no longer functioned efficiently. The presence of additional wear on about a third of these tools suggests that end scrapers were also used to perform spontaneous secondary functions. The absence of the nonscraper wear on the scraper-worn end may suggest that these secondary functions were contemporary with the primary function. The Hinojosa site end scrapers may have been employed as short-term flake knives when necessary by using the side of the tool.

(U2) Miscellaneous Scrapers (N=3; Fig. 8,o-q)

Three unifaces were recovered from 41 JW 8 which are not end scrapers. All three have unifacially worked edges along one lateral edge and lack the semicircular end trimming of group U1. These unifaces could be termed "side scrapers." Due to the small number of artifacts in this category, they are briefly described on an individual basis.

The unifacial artifact from Lot 159 (Fig. 8,o) is a secondary flake which has trimming on one side; the opposite side and distal end are covered by cortex. Other than the absence of end trimming, this specimen is similar to the U1 group in terms of size, morphology, and edge angle. No noticeable wear was observed microscopically. It is 37.6 mm in length, 26.5 mm in width, 8.0 mm in thickness, and weighs 7.7 g.

The uniface from Lot 327 (Fig. 8,p) is made on a thick tertiary flake of a poor quality, whitish chert that has numerous tiny voids partially filled by crystals. One side is crudely flaked (many hinge fractures) to form a very thick, convex working edge. Microscopic examination reveals that the artifact had been resharpened prior to discard. Small remnants of the previous edge show extreme rounding and edge polish. The polish is rather general rather than faceted and very high, and is confined to within 1.3 mm of the edge. A few apparent striations were observed on the ventral surface of the edge and perpendicular to the edge. The wear and futile attempt at edge rejuvenation are consistent with scraper wear. It is 41.8 mm in length, 26.1 mm in width, 15.3 mm in thickness, and weighs 15.8 g.

The unifacial artifact, found in Feature 9 (Lot 472-15; Fig. 8,q), is a thick decorticate chip that is yellow to white in color and has numerous bedding plane flaws. It is similar in size, shape, and appearance to the Lot 327 U2 specimen. The proximal section of the flake has been snapped off, however,

the break occurs along a flawed area which may have taken place prior to the manufacture of the tool. One edge (distal edge of original flake) has a thick, convex bit that was formed by flaking and numerous hinge fractures. The edge is severely battered and has a few bifacial flake removals. Microscopic examination suggests that the artifact was discarded after a futile attempt at edge rejuvenation which apparently removed all traces of wear. It is 42.0 mm in width and 18.6 mm in thickness.

NONCHIPPED MODIFIED STONE

Stone artifacts modified by battering, grinding, or grooving were uncommon at 41 JW 8 in contrast to the many chipped stone implements. Most of the nonchipped modified stone artifacts are fragments of complete tools. The visible wear patterns and tool morphologies suggest that the following functional artifact types are present: hammerstones, grinding slabs, manos, abrading stones, and a pipe bowl. Sandstone, quartzite, chert, calcium carbonate, and volcanic rock types are all represented in the collection. Of these, calcium carbonate is the only material available in the site vicinity. The absence of complete nonchipped modified stone artifacts and the fact that most of the raw materials are nonlocal strongly suggest these were valued artifact types that were only discarded when nonfunctional. Complete examples of most of these artifact types are illustrated in Hester (1980a), Hall, Black, and Graves (1982), or Turner and Hester (1985).

All nonchipped modified stone artifacts are given a single artifact code (MS) due to the comparatively small number of these artifacts. For provenience of the specific types, a lot number list is provided in each artifact group description.

(MS1) Ground Stone (N=25)

The ground stone artifact category consists of all tool fragments with one or more artificially smoothed faces or facets. Most ground stone artifacts from 41 JW 8 are fragments of small, thin grinding slabs with flat or concave smoothed surfaces. Five specimens are fragments of rounded cobbles with convex, smoothed surfaces. These represent manos or hand-held milling stones used in conjunction with grinding slabs to pulverize organic materials, presumably, plant remains. Two of the manos are made of quartzite and have some indications of battering along the tool edge; these may have also functioned as hammerstones. One atypical ground stone artifact (Lot 342) is a small, blunt-pointed calcium carbonate fragment, 1.4 cm in length, worn smooth, and slightly polished. Material types represented by the ground stone tools are sandstone (18), calcium carbonate (4), and quartzite (2). Slab fragment lot numbers are 62 (2), 63, 71, 131 (2), 134, 144, 147, 157, 186, 187, 226, 253, 301, 334, 340, 342, and 351. Mano fragment lot numbers are 56, 62, 70 (2), 513.

(MS2) Hammerstones (N=7; Fig. 9,a,b)

Seven hammerstones (two complete and five fragmentary) were recovered from 41 JW 8. A hammerstone is a rounded stone cobble used as a percussor to chip siliceous stone. Hammerstones typically exhibit battering wear on protruding edges or ends. One specimen (Fig. 9,a) made of silicified wood is an exhausted core that was recycled and used as a hammerstone. Material types are chert (1), silicified wood (1), volcanic rock (2), and quartzite (3). Lot numbers are 56 (2), 62, 66, 126, 131, and 522-1.

(MS3) Abraders (N=6)

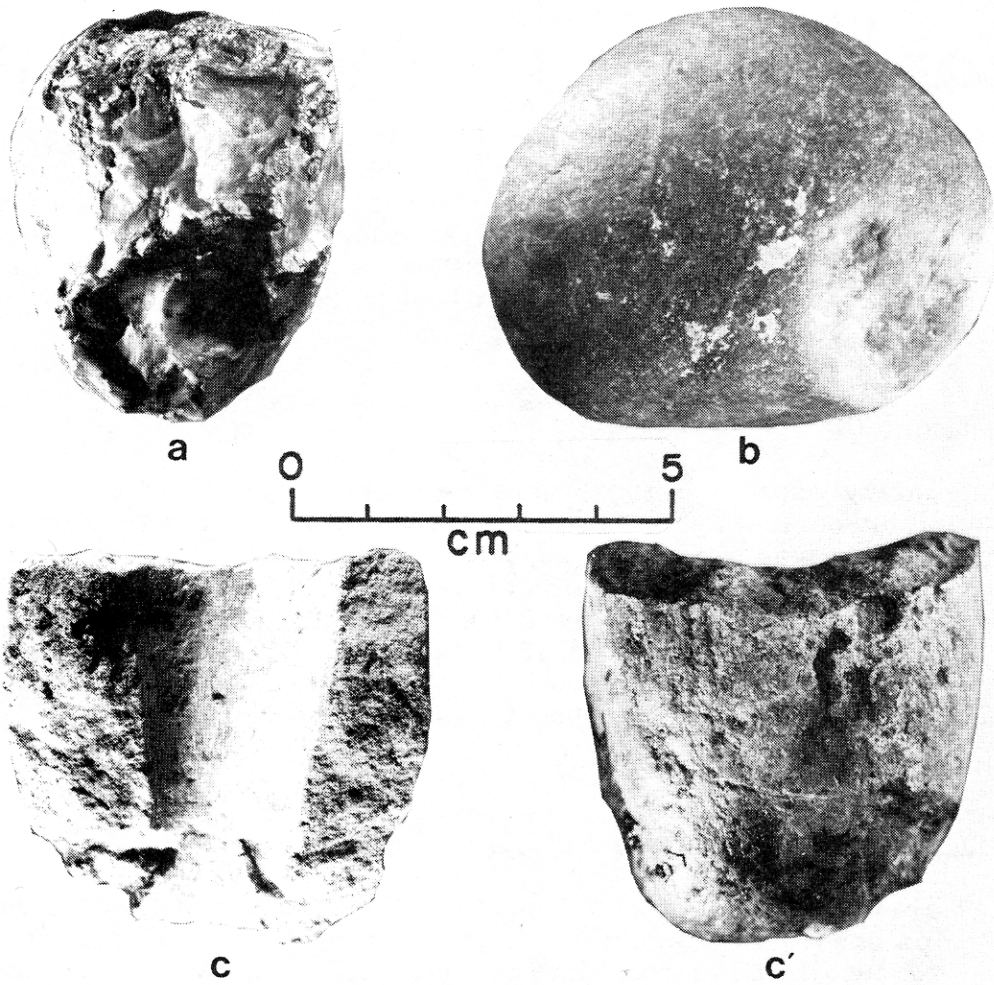
Five fragmentary abrading stones were recovered from 41 JW 8. An abrading stone or an abrader is a stone cobble or slab that has one or more man-made grooves. The grooves typically appear V- or U-shaped in cross section and are 2-5 cm in length. The grooves are believed to be the result of biface edge abrading, the grinding or smoothing of the edge of a bifacial chipped stone tool. This is a basic step of flintknapping. The abraders may have also been used to shape bone or shell artifacts. All six specimens are made of a relatively hard calcium carbonate. Lot numbers are 56, 63(2), 104, 131, and 459-2.

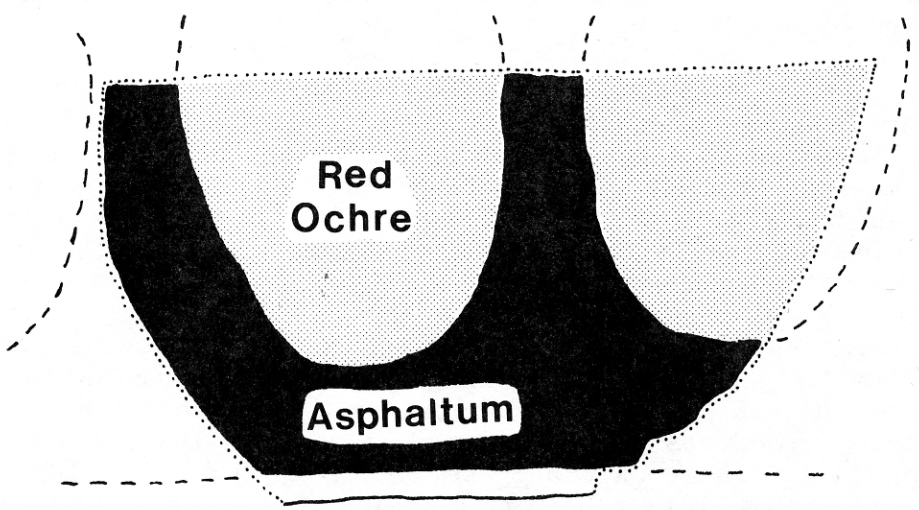
(MS4) Sandstone Pipe Bowl (N=1; Fig. 9,c,c′,d)

One usual artifact found at the Hinojosa site is a fragment of a decorated tubular pipe bowl. This artifact is made of buff-colored sandstone. The material has pebble-sized rock inclusions, occasional voids, and medium to coarse sand grains rather poorly cemented by calcium carbonate. The exterior and interior surfaces are ground smooth but remain uneven due to the poor quality of the material.

The interior surface is slightly smoother than the exterior. The interior of the bowl (Fig. 9,c) is constricted to a diameter of approximately 20 mm some 2 cm above the base. The interior diameter at the base is approximately 30 mm. The maximum interior diameter based on the preserved portion of the artifact is about 35 mm. The maximum exterior bowl diameter is approximately 58 mm. The pipe bowl walls range from 18 to 21 mm except at the base, where the walls taper to a rounded edge.

The exterior surface of the pipe bowl (Fig. 9,c′) has been decorated with thick asphaltum designs and fugitive red film. Close examination reveals that the asphaltum was applied in a molten state, and that the fugitive red film (iron oxide paint) was added afterward to fill in the areas of the pipe without asphaltum. Based on the preserved portion of the pipe bowl, the decorative motif seems to be a geometric design (Fig. 9,d) consisting of four red ovals (fugitive red film) evenly spaced and outlined by wide black (asphaltum) dividers. Asphaltum and fugitive red film were also used to decorate ceramic vessels at 41 JW 8 and other Late Prehistoric sites in southern Texas.





Design Reconstruction

d

Figure 9. **Nonchipped Modified Stone Artifacts.** a,b, hammerstones (MS2); c,c',d sandstone pipe bowl (MS4). Lot numbers: a, 62; b, 522-1; c,d, 56.

Stone pipe bowls, although rare in most areas of Texas, occur most frequently along the coastal margin of south Texas (Jackson 1940; Hester 1969). Tubular stone pipe bowls have been documented from Cameron, Kleberg, Nueces, San Patricio, and Aransas Counties along the Coastal Bend and southern Texas coast. Inland examples have been recovered from Atascosa, Goliad, Live Oak, Webb, Zapata, and Zavala Counties. Most of these occurrences, like the Hinojosa site example, are from surface contexts and, thus, lack good chronological control. There are indications that tubular stone pipes date to both the Archaic and the Late Prehistoric in southern Texas.

The 41 JW 8 artifact, while found on the surface, is almost certainly a Late Prehistoric artifact. Several of the coastal examples were found in apparent association with ceramics and arrow points (Jackson 1940). Sayles (1935) assigned tubular stone pipes to his Rockport phase. Tubular stone pipe fragments made of soapstone and white sandstone have been found in Zavala County in association with Late Prehistoric ceramics (Hill 1978). In addition, fragments of a reddish sandstone pipe were found at the Berclair site, a Late Prehistoric site in Goliad County (Hester and Parker 1970).

Campbell (1947, 1958:162) cited several examples of Archaic associations and assigned tubular stone pipes to the Aransas complex. More recently, nine tubular stone pipes were found at the Loma Sandia site, 41 LK 28, an Archaic cemetery site in Live Oak County (H. W. Wooldridge, personal communication). One of the 41 LK 28 tubular stone pipes with a bone mouth piece still in place is illustrated by Hester (1980a:116). Jackson (1940) and Campbell (1958) cite other examples of tubular stone pipes with bone mouth pieces from burial and midden contexts.

Decorated tubular stone pipes are very uncommon in Texas. A pipe found in northwestern Zapata County that had asphaltum on one side of the exterior surface was reported by Jackson (1940:104). He also cites examples from central and west Texas with incised decorations. One tubular stone pipe from Bowie County in east Texas had "the remains of red pigment on the exterior" (Jackson 1940:114).

PREHISTORIC CERAMICS

A total of 711 prehistoric ceramics was recovered from 41 JW 8 during the 1981-1982 field season. This total ranks as one of the larger samples of prehistoric ceramics recovered from a single site in southern Texas. Unfortunately, the sample is characterized by tiny, eroded sherds which are often less than 2 cm in diameter. Larger, better-preserved sherds are by far the exception. Given the large sample size and poor condition of most sherds, the ceramic analysis is limited to a select sample of the better-preserved sherds. The prehistoric ceramics from 41 JW 8 can be strongly identified with the bone-tempered ceramic tradition in southern Texas (Hester and Hill 1971; Hall, Black, and Graves 1982; Hall, Hester, and Black 1986). Decorative techniques suggest contact with coastal groups who are known for **Rockport** ware ceramics (Campbell 1962).