

THE ARCHAEOLOGY OF A PRE-18th CENTURY HOUSE
SITE IN ST. AUGUSTINE

By

Theresa A. Singleton

A THESIS PRESENTED TO THE GRADUATE COUNCIL OF
THE UNIVERSITY OF FLORIDA
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
DEGREE OF MASTER OF ARTS

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Abstract of Thesis Presented to the Graduate Council of
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Chairman: Dr. Charles H. Fairbanks
Major Department: Anthropology

During the Spring and Summer of 1976, excavation of the Lorenzo Joseph de Leon house site took place in St. Augustine, Florida. Several 16th and 17th century refuse pits were uncovered. These represented the earliest historical component uncovered thus far from a problem-oriented excavation of a house site in St. Augustine.

In contrast with the 18th century, the socio-cultural milieu present in pre-18th century St. Augustine is poorly known. Through an examination of archaeological, ethno-historical, and zooarchaeological evidence, an interpretation of pre-1700 living conditions is offered. The application of Stanley South's Mean Ceramic Date Formula to 16th and 17th century majolica is discussed, and earlier dates are proposed for marking the presence of San Marcos Ceramics in St. Augustine. Finally, the cultural significance for changes in the material culture during the First Spanish Period between 1572 and 1763 is suggested.

CHAPTER 1
THE FIRST SPANISH PERIOD IN FLORIDA

Introduction

"Backyard Archaeology," the excavation of refuse disposal pits and outbuildings was first utilized as a research strategy in the excavation of domestic sites in St. Augustine in 1972 (Fairbanks 1976:165-4). Since that time several domestic sites in St. Augustine have been excavated employing this strategy including: The Avero House (Deagan 1976); The Maria de la Cruz Houses (Deagan 1974; MacMurray 1975); The Geronimo Jose de Hita y Salazar House (Shephard 1975); the Ximanez-Fatio House (Beidleman 1976). Archaeological evidence from all of these sites has provided suggestions for 18th century First Spanish Period lifestyles.

The purpose of the following work is to offer a description of archaeologically revealed evidence for pre-18th century household activities in Spanish Colonial St. Augustine. The first chapter is a very brief synthesis of our anthropological and historical understanding for the first period of Spanish colonial occupation in Florida. In the second chapter, a description of the research methodology and archaeological contexts is given. Description and analysis of the material culture is contained in the third chapter, while the fourth chapter discusses pre-18th century lifestyle on the basis of archaeological, ethnological, ethnohistorical,

zooarchaeological evidence from the de Leon site. Major trends in the pre-18th century material culture, recovered from de Leon, are compared and contrasted with those of 18th century domestic sites, and the cultural causes for these similarities and differences are examined in the fifth chapter.

Spanish Conquest in Florida

Spain had taken the lead in the exploration and colonization in the New World approximately one hundred years before any other European nation (Bourne 1962:193). The vast Iberian empire extended from the Atlantic coast to the Pacific coast and it included large portions of both north and south America, and most of the Caribbean. With the passage of time, however, threats to the Spanish empire gradually weakened Iberian claims to the New World (Gold 1969:5).

French encroachment in Florida provided the impetus for the establishment of the garrison at St. Augustine and the colonization of Florida. Prior to this threat to Spanish lands, the King of Spain, Phillip II, proclaimed in 1561 that no attempts would be made to colonize Florida since earlier attempts had been disastrous (Chatelain 1941:6). Four years later, an enterprising seaman, Pedro Menendez de Aviles signed a contract with Philip II to settle Florida at his own expense (Lyon 1973:371). This contract was inspired by rumors of French designs on the region. Shortly after his agreement news of actual French occupation in Florida reached the Crown. Philip then sent troops and supplies to aid Menendez's efforts (Lyon 1973:371).

Meanwhile in the New World, France had been trying to establish a foothold on the Atlantic coast so that Spanish treasure vessels returning from the New World could be captured (Lorant 1946:11). Between 1562 and 1565, France attempted to hold a small area in Florida. In 1562, the French settlement of Port Royal on the South Carolina coast was founded and a garrison, Charlesfort, was built. Due to the lack of food and supplies, Port Royal was abandoned and Charlesfort was later burned by Spanish envoys (Lorant 1946:11). Two years later, another French settlement was established. This was Fort Caroline located on the St. John's River east of the present city of Jacksonville (Sauer 1971:214).

King Philip II, aware of the danger French occupation of Florida posed to Spanish shipping, ordered Menendez to destroy the French and to reclaim the land for Spain. Menendez was successful in carrying out this venture and he was then sworn in as the Adelantado, Captain General, and Governor of Florida (Lyon 1973:205).

After his victory over the French, Menendez began his campaign to colonize Florida. As Adelantado, he was obligated to the Spanish Crown to set up municipal institutions in St. Augustine and to spread the state religion (Chatelain 1941:9). He also intended to introduce livestock, grain, and plants to Florida in the hope that the colony would become economically successful like New Spain. Accomplishment of these objectives would bring Menendez both economic rewards and a higher title (Lyon 1973:374). Although a flourishing

economy was never to be realized for Spanish Florida, the colony was to survive for nearly two hundred years, despite its dubious and often chaotic existence.

The Economic System

Not long after the founding of St. Augustine, the economic plight of the colony had become evident. Sixteenth century attempts at farming and reliance upon Indians for subsistence through rescate (tribute) were apparently unsuccessful (Arnade 1965:5). As a result, the Crown instituted the situado or annual subsidy to insure the financial stability of the colony (Chatelain 1941:21). Reports of the situado being delayed or never arriving are frequently found within Spanish documents, thus rendering the impression of a severely impoverished colony. However, it has been pointed out that the extent to which the situado failed to arrive or the presence of abject poverty is certainly an issue for internal criticism of the documents (Bushnell nd).

Although Spanish Florida never became fully self-sufficient, by the 17th century some type of food production is evident. Mid-17th century documentary references to the adoption of European agricultural methods (Cumbaa 1975:193) and cattle raising (Arnade 1965) clearly indicate more successful efforts toward local food production. In addition, missions were largely producing their own food (Matter 1972), while local St. Augustinians, especially garrison soldiers, often hunted and fished to supplement their salaries (Bushnell, personal communication; 1976, University of Florida).

Eighteenth Century house lots also suggest individual strides towards food production for these included space with gardens, orchards, arbors, and yards for small domestic animals (Cumbaa 1975:193).

Near the end of the 17th century local agricultural pursuits were supplemented by illegal trade transactions for obtaining consumer goods. The earliest known documented reference to illegal trade in St. Augustine was in 1683 (Arana 1970). However, the period of a thriving clandestine trade with New World European colonies, notably the English colonies, was during the mid-18th century between 1732 and 1763 (Harmon 1969:80).

Despite food producing endeavors and illegal trading, Florida was not thriving economically, but the depiction of abject poverty is indeed questionable.

Spanish and Indian Interaction

Menendez realized that in order for Florida to become a successful colony the establishment of friendly relations with the Indians was necessary (Lyon 1973:208). Early attempts toward this goal included the establishment of tribute and martial alliances. By far the primary mechanism which sought to maintain peaceful relations between the Indians and the Spaniards was the missionary system. Pacification of the Indians was only one reason for the establishment of missions, the patronato real was another. This was a pact between the papacy and the crown which required the crown to spread the Catholic religion in the New World

(Geiger 1937:12-13). In Florida, besides spreading Catholicism among the aborigines, the missions also influenced the growth, economic policy, and the eventual destruction of the Florida colony (Chatelain 1941:24).

The first missionaries to come to Florida were the Jesuits in 1566, but they withdrew in 1572. Reasons for their withdrawal are unclear. Michael Gannon has suggested that Indian resistance to Christianity and Indians' migratory settlement pattern may have been the causative factors for Jesuit withdrawal (1965:33).

Following the Jesuits, the Franciscan friars came to Florida in 1577. Franciscan mission activity began on the Atlantic coast, it later expanded into northcentral Florida, and by 1650 it included portions of northwestern Florida. Mission activity continued until British attacks of the early 18th century.

Missionization was the primary process contributing toward Spanish-Indian acculturation in the 16th and 17th centuries, while the mestizaje has been suggested to characterize Spanish-Indian acculturation in the 18th century (Deagan 1974). Archaeological evidence at mission sites, although scant, indicates little change in the material culture of the Indians which implies the Spanish adoption of aboriginal methods for food and shelter (Deagan 1974:9-13). On the other hand, the friars introduced changes to the social and religious aspects of aboriginal culture. Besides these, the friars improved aboriginal economic pursuits including the introduction of

farming implements and cultigens such as wheat, oranges, peaches, grapes, and other fruit (Matter 1972:143). Although the food produced on the missions added nothing to lay colonists' tables, except on occasion, the food produced at the missions was the primary source of food for the friars and Indians. In general, the missionaries ate better than most Spaniards in Florida (Matter 1972:315).

Despite the fact that the friars were the primary agent for Indian acculturation, the extent to which the missionaries were successful in converting the Indians is doubtful. Periodic rebellions and the presence of infidel Indians within many villages and tribes proved to be a constant threat to the conversion process (Fairbanks 1974:17).

Destruction of the missions proceeded directly from British invasion. Robert Matter, however, has pointed out three areas of internal conflict existing between the missionaries and the colonial officials which served to weaken both the mission system and Florida, in general; thus rendering Florida vulnerable to British attack. Briefly these three areas of conflict were:

first, conflicting priorities for military security and the religious effort. Governors often felt that the missionaries should not have been included in the manpower allotment, since they were unable to prevent or defeat periodic Indians revolts (1972:313).

second, Jurisdictional conflicts. The governor had the authority for locating and establishing missions throughout the colony, as a result a conflict developed between secular and religious jurisdiction.

third, Indian welfare. Both sides criticized their opponents for mistreating the natives while rationalizing their own behavior. The Friars often objected to secular abuse and exploitation of the Florida Indians, but they too were guilty of mistreating the natives (1972:311).

Together these conflicts served to weaken Spain's hold upon Florida and encouraged British encroachment.

From the preceeding discussion, it has been pointed out that the Florida missions were not only devices for implementing direct change to the aboriginals' lifestyles, but they also had a profound impact upon the colony's growth, economy, and destruction.

The Demography and Settlement of St. Augustine

Actual population figures for St. Augustine are, for the most part, scattered or unknown (MacMurray 1975:4). The expeditionary force of Menendez in 1565 included approximately 2,000 persons including men, women, and children. More than half were military personnel and there were approximately 100 craftsmen, farmers, and priests (Dunkle 1958:3). Many of these people deserted and during the remainder of the 16th century the population fluctuated and estimates are unclear (Dunkle 1958:4).

In 1600 a population estimate was given at approximately 625 persons, including Spaniards, Indians, and Negroes. Of these, 225 were soldiers (Arnade 1959:8). An estimated population figure of approximately 600 persons continued until 1685 when 1400 people were reported to have found shelter from an English attack (Dunkle 1958:6). At the close of the

First Spanish Period, the population was estimated at around 3,000 persons (Dunkle 1958:7).

Accompanying changes in the population were parallel to developments in the physical appearance and size of the settlement.

The earliest site of St. Augustine was in the Timucuan village of Selay. The Spaniards resided there for eight months while awaiting construction of the fort (Manucy 1962:14). Selay's village is believed to have lain approximately three-fourths of a mile north of the existing Castillo de San Marcos in the present location of the Fountain of Youth Park (Deagan et al. nd:5). In the summer of 1976, a Timucuan village, believed to have been Selay's village, was located and partially excavated, during which time Timucuan or St. John's ceramics and Spanish majolica and olive jar were uncovered (Merritt 1977).

When the eight months expired, the settlement was relocated to an island near the harbor. At this location the second and third forts were built (Chatelain 1941:43). In 1572, however, the settlement and fort were relocated to their approximate present location, because of the erosion of land and a need for a stronger defense position (Deagan et al. nd:5).

For the remainder of the 16th century a series of disasters appeared to have befallen the city. Beginning with Indians raids in 1577, the town was "all destroyed and houses torn down" (Manucy 1962:15). Later the settlement was rebuilt only to be raided by Francis Drake in 1586. The Boazio

engraving (Figure 1) shows the blocks laid out ("the oldest nine") to the south of the fort as Drake's fleet approached St. Augustine. The exact location of this area is believed to have been from present day Bridge Street and extending three blocks to the north (Hoffman, personal communication; 1976, Louisiana State University). Within this area, the Lorenzo Joseph de Leon house site (SA 26-1) is located.

Following Drake's raid, the city was rebuilt only to be partially devastated by fire in 1599 and later inundated by a storm (Gold 1969:5).

In 1600, the governor reported 120 houses that were made of vertical boards and thatched roofs (Manucy 1962:15). These flimsy structures were highly vulnerable to attack but they continued to be the predominant house form until 18th century ordinances required that houses be made of masonry (Manucy 1962:17-23).

The misfortunes of the 16th century culminated in a plea for abandonment in 1602 (Arnade 1959). Around 1650, conditions appeared to have been improving with the westward expansion and the establishment of cattle ranchos and plantations (Arnade 1960:272). To the author's knowledge, very little is known of the living conditions existing in St. Augustine between 1602 and 1700. Evidence from the pre-18th century occupation of the de Leon site strongly suggests a time span of 1572 to 1700, (Discussion of this date is forthcoming). Although ethnohistorical evidence has been lacking, this time period has been assumed to have been a bleak one in the history of St. Augustine (Harmon 1969:2; Arnade 1960). It

is hoped that the description and interpretation of the material culture from the de Leon site will provide some suggestions for living conditions existing between 1572 to 1700 in St. Augustine.

CHAPTER 2 EXCAVATION AT THE DE LEON HOUSE SITE

The Lorenzo Joseph de Leon House Site

Partial excavation of the Lorenzo Joseph de Leon house site took place during the spring and summer of 1976, under the direction of Dr. Kathleen A. Deagan, as one of the projects for the Florida State University spring and summer field school sessions.

Archaeological investigation of the de Leon site proceeded from two research interests. The first of these was the recovery of archaeological evidence for a pre-18th century domestic site in St. Augustine. Although the earliest documented reference to an occupant of the site was Lorenzo Joseph de Leon in 1764 (Puente Map 1764), the de Leon site is believed to have had an earlier Spanish Colonial occupation. As mentioned previously, the de Leon site is located in the area of St. Augustine thought to have been the oldest nine blocks of the city (See Figure 2 for the location of the de Leon site within the city environs). Paul Hoffman has suggested an opening date of 1580 for this area because of the illustration of the 1586 settlement depicted in the Boazio Engraving (personal communication; 1976, Louisiana State University) (Figure 1). Spanish Colonial settlement in this area may have been as early as 1572, the date for the relocation of St. Augustine to this general area. For this reason, a date of 1572 will be designated as the earliest possible date for historical

occupation of the de Leon site. It was hoped that backyard excavations of house sites in the "oldest nine" blocks as was the case with the de Leon site, would uncover 16th and 17th century occupational debris (Hoffman 1976). The description and synthesis of such an occupation is the subject of this work.

The second research interest was the investigation of the First Spanish Period 18th century occupation. Lorenzo Joseph de Leon was from a very prominent criollo family and he held one of the highest posts in the military as captain of the mounted dragoons (Ganong, personal communication; 1976, St. Augustine). Because of de Leon's affluent socio-economic status, it was hoped that the material culture could be compared with other criollo occupations, in order to provide suggestions for the patterning of social cultural status. Leslie Perry (nd) attempted to carry out this investigation through a comparison of the de Leon occupation with that of Geronimo de Hita y Salazar occupation. Perry hypothesized that unequal economic status between the two criollo sites would be evident in differences in the material culture. From this hypothesis four test implications were derived. They were as follows:

- 1) There will be a greater variety and higher concentration of artifacts in general.
- 2) There will be a greater proportion of majolica and Spanish earthenwares and a corresponding lower proportions of non-Hispanic and aboriginal types.
- 3) There will be a higher proportion and greater variety of glassware.

- 4) There will be a higher proportion of porcelain (nd:1-2).

Unfortunately, very little archaeological evidence for the de Leon occupation, that is the First Spanish Period, 18th century occupation, was uncovered, thus preventing the derivation of substantive conclusions from the test implications (Perry nd:10-11). Insufficient archaeological evidence for the de Leon occupation may have been the result of two factors: first, the uncertainty of actual occupation by de Leon at this residence and second, the small area of the site excavated.

With regards to the first factor, both the Puente Map (1764) and the Puente Sale of Houses (1764) indicate that de Leon owned two houses at the end of the First Spanish Period. The other house, St. Augustine Block 35, Lot 1, was considerably larger than the de Leon site and may very well have been his residence. The area of the site excavated, the second factor, did not uncover the major backyard area for the 18th century structure. At the time of excavation, this backyard area was covered by a cement pavement and was not excavated. Further excavations at de Leon may provide more evidence for the testing of the second research problem.

At the time of excavation the de Leon site was an empty lot bounded on the north by Bravo lane, on the west by Charlotte street, to the east by Marine Street, and to the south by the Aviles house. Together the de Leon site and the Aviles house form St. Augustine Block 26, Lot 1. The empty lot coincides with the house lot designated by the

Puente Map (see Figure 3). Dimensions given for the lot on the Puente map were 17 by 37 varas, and the present dimensions of the empty lot are 17.32 meters north to south and 36.22 meters east to west.

The de Leon site has been occupied many times and has passed through several hands. Documented references to the presence of a house on the site have been from 1764 to 1824. Apparently, sometime after 1824, the de Leon site was combined with the adjacent lot to the south.

As stated earlier, the first documentary reference to the ownership of the site was the Puente Map of 1764, which listed Lorenzo Joseph de Leon as owner to the lot. In the same year, the lot was listed as one of the houses sold to Jesse Fish, and on the Moncrief Map of 1765, the owner was listed as Jesse Fish. Sometime between 1765 and 1782 the house became the possession of the British Crown. In 1782, the British Crown granted this house to John Heley (Spanish Census 1785). Bernado Sequi purchased the house from Heley in 1785, later in 1787 Sequi sold the house to Joseph Bousquet. At the time the house was listed as a two story house of stone (Escrituras, 1787). The Bousquets inhabited the house until the end of the Second Spanish Period, and in 1824, John Drysdale purchased the house (St. Johns County Records, 1824). Lois Drysdale, John Drysdale's wife, sold the house to Trinity Church of St. Augustine in 1858. The house and lot were given at the dimensions assigned to the present lot of SA 26-1 in the sale record (St. Johns County Records 1858). Trinity

Church retained this property until 1905 and, during the remainder of the 20th century the lot had several owners. The present owners are George White and Hattie Lee.

Excavation Procedures

Horizontal control for the site was maintained by the establishment of a modified Chicago grid, at intervals of 3 meters, in which points were measured north and east from Key Stake, 100N100E (see figure 4). Excavation units were 3-meter square units designated by the number of the southwest corner stake. The exception to this was the 1.5 by 1.5 meter stratigraphic control pit located in the southwest corner of the site and designated as Test Pit A. The Key Stake was tied into a benchmark established at the southwest corner of the Marion Motor Lodge North Building, at an angle of North 42° East and at a distance of 26 meters.

Vertical control was maintained by the use of a transit. The transit was located in the southwest corner of the site, west of the test pit. Location of the transit station from the Key Stake was at an angle of North 62° East and at a distance of 7.99 meters. A permanent datum plane was established at 3.87 meters above Mean Sea Level and all proveniences were measured down from this datum.

Test Pit A and the first excavated 3-meter unit, 106N106E, were excavated in 15 cm levels in order to determine the general stratigraphy of the site. The stratigraphy was composed of five strata: A. Modern Humus; B. Coquina and Brick Rubble, associated with late 19th and 20th century material;

C. Grey-Brown soil often shell flecked, both 18th century and pre-18th century proveniences were found in this stratum; D. Leached zone, contained very little cultural material, with the exception of a few pre-18th century proveniences; E. Sterile, no cultural material (see Figure 5).

Excavation proceeded with the removal of soil with blades, shovels, trowels, and followed by water screening, using 1/4 inch mesh. Cultural and faunal materials were bagged separately and given a field specimen (FS) number according to provenience. After bagging, the material was washed and dried. The faunal material was sent to the zooarchaeological lab of the University of Florida for analysis and for permanent storage. The cultural material was catalogued, counted, weighed, and analyzed. Location maps and stratigraphic records were kept for each excavation unit. All artifacts, field notes, photographs, maps, and other records are filed at the Historic St. Augustine Preservation Board, St. Augustine, Florida.

Archaeological Contexts

Thirty-five 16th and 17th century features were excavated. These included a well and the well construction pit, and the remainder were refuse pits. Determination of pre-18th century contexts was primarily based upon the terminus post quem, the occurrence after which the item must have been deposited and stratigraphic position within strata C and D, generally 2.10 meters below datum. Most of the termini post quem were based upon majolica dates derived by Goggin (1968) and Shawn Bonath (1976). Stratigraphic position was not

always a good indicator of pre-18th century proveniences, for 18th century British and Second Spanish contexts were frequently found at the same depths as the 16th and 17th century proveniences. Despite this problem with the site, a pre-18th century component at SA 26-1 is evident.

Another suggestion of pre-1700 status for contexts was the superposition of 18th century structural features upon pre-18th century midden (Figures 5-8). This occurrence has suggested that the backyard of the pre-18th century occupation was located at the eastern area of the site thereby placing the house structure at the western end, possibly under the cement pavement since no indication of a pre-18th century house structure was uncovered in this area during the 1976 excavation. As previously discussed, the 18th century occupation would have had the revered position, with the house toward the east and the backyard to the west under the cement. Location of the pre-18th century structure at the western end of the site has been recently confirmed (Braley, 1977).

The Well

The well construction pit (Feature 8) was first sighted in the southeast corner of square 102N103E and the southwest corner of square 106N106E at 2.51 meters below datum. Feature 8 appeared to have been deposited in two depositions: the upper layer was mottled yellow/tan/brown soil designated as zone I of the well pit, and the lower layer which was made up of white washed sand and contained no cultural material. In excavating the well pit, the water level was reached

at 3.11 meters below datum and it bottomed out at 3.22 meters below datum.

Feature 21, the well, was defined as a circular area of dark grey compact soil occurring at 2.26 meters below datum. The well fill was excavated in 10 cm levels until sterile soil was reached within the barrel curbing, at 4.40 meters below datum. When the water level was reached in the excavation of both the well and well pit, well points were sunk to dry the area of further excavation.

The well construction conforms to Manucy early type well that is "cased with wood (barrels or hollow cypress holes, perhaps)" (1962:125).

Larry Kruger (nd) has offered a reconstruction for the method of construction of the well at the de Leon site. He suggested that after digging the well construction pit, first the curbing (the barrel) was set in the center and then four hewn square post (Figure 9) were sunk in a square pattern surrounding the curbing (Figure 10). To the outside of the posts single plank boards were nailed or bolted on each side. This outside planking may have served as cribbing, a method of protecting the curbing from collapse (nd:9-10). Around the periphery of the well opening were concentrations of oyster shells and mortar, which served as a water filter (Fairbanks, personal communication), and as a foundation or casing for the well. Finally, filling of the construction pit may have been either a single action or a gradual process (nd:10).

The ceramics in the well and well construction pit suggest pre-1700 dates for the construction and filling of the well. On the basis of the terminus post quem, a date of post-1630 can be assigned to the construction of the well, and this date is based upon one sherd of San Luis Blue on White majolica. A date for the well of post-1650 can be based upon the terminus post quem derived from one sherd of Abo Polychrome majolica. It should be noted that dates for actual construction and filling of the well may have been earlier (see discussion of the mean ceramic date formula to the application of majolica). The derivation of these dates on the basis of one sherd may have skewed the actual dates. On the other hand, these dates may be feasible, for the time lapse between the construction and abandonment with subsequent filling of the well may have been within a few years. Shallow wells are believed to have had a very short life span, followed, perhaps, by filling in a single deposition (Fairbanks, personal communication; 1977, University of Florida). In this case, the minimum time span suggested from the terminus post quem's was likely, that is between 25-30 years. Regardless of the actual date for construction and filling, the ceramics certainly support a pre-1700 date for the opening and termination of the well.

Other Features

A general description of the remaining 33 features is presented in Appendix 1 and their location and distribution are shown in Figures 7 and 8. Besides these features, several

zonal occupational levels were also uncovered. Together the features and the occupational levels made up 64 proveniences (see Appendix 2). Analysis and description of the material culture from these pre-18th century closed contexts is the subject of the third chapter.

CHAPTER 3 THE MATERIAL CULTURE

A variety of materials characterized the artifactual evidence from the de Leon site including: ceramics, faunal and floral food remains, metal, glass, stone and bone objects. In this chapter, the material remains are briefly described and some discussion of material patterning is presented. Artifact counts and functional attributes are given only for materials found in the closed contexts, and dating before 1700. Formal attributes are sometimes extended to include artifacts found in mixed contexts where these serve to expand the understanding of the type. By far the most numerous artifacts were ceramics; a total of 5,546 sherds having been uncovered. The two major cultural categories were aboriginal and European. Together these represented over twenty types with a number of varieties. The frequency and weight of each ceramic type is provided in Appendix 3.

Aboriginal Ceramics

Aboriginal ceramics consisted of 2,487 sherds, which represented 44.84% of the total ceramics. Both local and foreign wares were recovered.

St. Johns Series

St. Johns chalky ware pottery, the ceramics of the Eastern Timucua Indians (Goggin 1952), was the most abundant aboriginal ceramic type and the second most abundant ceramic

uncovered at the de Leon site. This series accounted for 1,362 sherds, 24.55% of the total ceramics.

Formal description of this ceramic complex and the associated cultural tradition was defined by John Goggin (1952). The chalky paste is the most distinctive attribute of this ware (Goggin 1952:99). In a recent investigation, Thanz and Shaak observed that the chalky nature of St. John's ceramics is due to the high percentage of sponge spicules in the clay together with low firing temperatures (1977). They also suggested that the spicules functioned with the clay as a natural temper thus facilitating the working of the clay (1977).

A variety of surface decorations characterize the St. Johns series, although check stamp and plain predominate in the later St. Johns period known as St. Johns II (Goggin:70). In accordance with this, the St. Johns ware at the de Leon site was exclusively plain and check stamped. Plain sherds accounted for 685 of the total, and 677 were check stamped. The surface of many of the plain sherds were poorly smoothed, while others were well smoothed. Along these same lines, check sizes varied from very thin neat checks (Figure 11a) to large, crude checks (Figure 11b).

The most common vessel forms for both plain and check stamp varieties are large bowls, with outflaring sides (Goggin 1952:101 and 104). No whole vessels were recovered or reconstructed from the de Leon site. The only information concerning vessel forms were from rims. Of a total of

89 rims, 11 were flaring, 8 were rounded everted, and 71 were straight and often straight-fold. Two of the rounded, everted rims have an upflaring, cone shaped, hollow protrusion which may be an effigy tail (Figure 12a) (Fairbanks, personal communication; 1977, University of Florida).

The presence of this large quantity of St. Johns at a domestic site in St. Augustine strongly supports a pre-18th century occupation, for St. Johns ceramics have been virtually absent at 18th century sites. Explanation for this 18th century absence can be attributed to the declining Timucua population by the end of the 17th century (Swanton 1946:144). This factor would have resulted in a loss of ethnic cohesiveness needed to maintain a ceramic tradition in the 18th century (Bostwick nd:6).

John Bostwick has suggested that the high frequency of St. Johns ware at the de Leon site implies that St. Johns ware had a function in the 16th and 17th centuries parallel to that of San Marcos in the 18th century (nd:6). This function was that San Marcos was the major utilitarian cooking vessel for Spanish households (Otto and Lewis 1974). Charred interiors and exteriors of St. Johns sherds support the usage for cooking, while uncharred sherds may indicate usage as storage containers.

Two tentative conclusions that can be drawn from the high frequency of St. Johns at the de Leon site are: first, St. Johns ceramics were used in Spanish households for cooking and storage during the 16th and 17th centuries; secondly, a

sizable, effective, Timucuan population was present in St. Augustine during the pre-18th century occupation of the de Leon site.

San Marcos Series

San Marcos pottery was first defined by Hale Smith (1948) and further descriptions and cultural interpretations have been made by MacMurray (1973) and Otto and Lewis (1974). Formal attributes of San Marcos resemble Late Lamar pottery of the Georgia coast and it is believed to have been introduced into Florida by the Guale Indians or a related group (Otto and Lewis 1974:97). San Marcos is a thick ware with coarse sand, limestone, and/or shell tempering (Otto and Lewis 1974:95). The colors of the core range from black to grey to buff and the exterior varies from salmon, orange, red, grey, black (Smith 1948:95). Stamped designs (simple, cross simple, and complicated) are the most frequently occurring surface decorations (Otto and Lewis 1974:95). Less frequent occurrences have been reported for plain, red filmed (Otto and Lewis 1974:95), incised (Kelso 1968:20; MacMurray 1973:50), and a combination of incised and stamped (Kelso 1968:20).

Vessel forms are varied and include: globular pots, elongated vessels, cazuelas (Smith 1948:315), plate forms with footrings (Goggin 1952:61); loop and strap handles from serving vessels such as pitchers, mugs, and cups (Otto and Lewis 1974:96).

At the de Leon site, 1,044 sherds of San Marcos were recovered; this was approximately 18.82% of the total ceramics.

One rounded base and 65 rims were the only vessel forms represented. Rim forms included flaring, inflaring, straight, and straight-folded variations. The most common form was the slightly flaring, rim often with a row of punctations below the lip (Figure 13e).

All varieties of San Marcos surface decorations were represented with the addition of one painted sherd. Table 1 gives the frequency of each.

Table 1

San Marcos Series at the de Leon Site

Variety	Number of Sherds	Frequency
Stamped	597	57.18%
Plain	348	33.33%
Plain Red Filmed	14	1.34%
Incised	84	8.05%
Painted	1	0.10%
Total	1,044	100.00%

Incised sherds were 8.05% of the total. At the mission sites of San Juan del Puerto (MacMurray 1973:50) and Tolamato (Kelso 1968:20) incised San Marcos sherds were also present. At 18th century sites in St. Augustine, no incised San Marcos was reported (see Otto and Lewis 1974; Shephard 1975). This absence at 18th century sites may suggest that incised sherds were more common to 17th century assemblages than to 18th century.

None of these sites have reported painted San Marcos, but a painted San Marcos bowl is known to exist at the Fort King George Museum, Darien, Georgia.

The occurrence of San Marcos in the 16th and 17th centuries proveniences presented both an archaeological and ethnohistorical problem. Prior to its occurrence here, the presence of San Marcos in St. Augustine was associated with the Guale Indian exodus from the Georgia coast in the latter half of the 17th century (Goggin 1952:61). Archaeological studies of 18th century domestic sites have indicated that San Marcos ceramics made up 65 to 75% of the total ceramic assemblages (see MacMurray 1975; Shephard 1975). Because no pre-18th century domestic sites had been excavated, it had been assumed that the presence of San Marcos could be attributed to the 1680's exodus of the Guale. In addition, 1686, the date for the construction of the Castillo de San Marcos moat, was used to provide a terminus post quem for the San Marcos recovered when the moat was cleared in 1949 (Otto and Lewis, 1974:97). The recent suggestion of a post-1673 date for the terminus post quem of San Marcos (Bostwick nd) still does not account for its presence in 16th and early 17th century proveniences. Documentary references indicate that Guale Indians were often sent to St. Augustine as laborers in the early 1600's (Bushnell, personal communication; 1976, University of Florida; Deagan 1974:15). Women among the Guale conscript laborers may have been a possible source for the manufacture of these ceramics. Documents, however, suggest that Indian

women rarely accompanied male laborers to St. Augustine (Bushnell, personal communication; 1977, University of Florida). To suggest that potters were among these forced laborers would be pure conjecture, and more documentary evidence would be needed to support this contention. At present the author is unable to explain the presence of San Marcos before 1650. Instead the frequency for its occurrence in 16th and 17th century proveniences from the de Leon site is demonstrated below in Table II. The proveniences were seriated on the basis of termini post quem derived from majolica dates.

Table 2

The Frequency of San Marcos in Closed Contexts
from the de Leon Site

Date of Context	Number of San Marcos Sherds	% of San Marcos	Total Ceramics in Contexts	% San Marcos of Total Ceramics in Contexts
Post-1650	239	22.89	1,083	22.06
circa 1630	589	56.23	2,864	20.49
circa 1615	97	9.29	1,107	8.76
16th Century (circa 1572)	121	11.59	492	24.59
Total	1,044	100.00	5,546	

As early as the 17th century San Marcos was approximately 25% of the total ceramics. For the 1615 contexts, the comparatively low percentage may have been the consequence of a cultural event or simply due to a sampling error. At the same time, it should be understood that these dates are only

estimates. These contexts may be earlier or later. Although considerably less than the percentages of 18th century occupations, the evidence presented here does indicate the usage of San Marcos ceramics to some extent in early Spanish colonial households. Further archaeological evidence and historic documentation are needed to support this conclusion. It can, however, be tentatively concluded that the presence of San Marcos alone can no longer be used as an indicator of a post-1650 or later occupation in St. Augustine.

Leon Jefferson Wares

The Leon-Jefferson Period was defined by Smith (1948), and the pottery complex includes: Mission Red Film, Miller Plain, Aucilla Incised, Ft. Walton Incised, Lamar-like Bold Incised, Leon Check Stamped, Jefferson Ware, Gritty Plain, and Alachua Cob-marked. This period has been tentatively dated from 1650-1725, based upon the occurrence of these types at mission sites in the Tallahassee area (Smith 1948:316). At the de Leon site, the Leon-Jefferson wares consisted of 23 sherds, 0.41% of the total ceramics. Because so few sherds of each type were uncovered, vessel forms and functional attributes were not apparent. These types are briefly described below.

Jefferson Ware

Jefferson Ware has a well mixed, fairly compact paste, tempered with grit and sand, with complicated stamped surface decoration (Boyd et al. 1951:167). Three sherds of Type A and one sherd of Type C complicated stamp were

recovered. Type A is a pattern of three to five concentric rectilinear impressions, often with a raised circle in the center diamond (Figure 14a) (Boyd et al. 1951:167). A pattern of triangles and circles is characteristic of Type C (Figure 14b) (Boyd et al. 1951:168). Three flaring rims, Jefferson rim type 5 (Figure 14c) were also found.

Leon Check Stamp

In a mixed context, one sherd of Leon Check Stamp was recovered. This ware has a well-mixed, coarse-grained compacted paste which breaks irregularly (Boyd et al. 1951:170). The checks were very indistinct but they appeared to have been a bold check stamp (Figure 14d).

Miller Plain

Seven body fragments and 1 straight rim of this ware were classified as Miller Plain on the basis of paste attributes and surface finishing. Miller Plain is described as having a well-mixed, compact paste, with very little amounts of fine sand and grit temper and a black core. The interior surface is well smoothed but the exterior surface is rougher. Colors of both surfaces range from dark grey to black (Boyd et al. 1951:166).

Aucilla Incised

Aucilla Incised has a paste similar to Jefferson ware and seven incised motifs have been distinguished (Boyd et al. 1951:172). Seven sherds were recovered and 3 variations of incised designs were represented: Type 1, a design of parallel wavy lines; Type 3, a chevron design in 2 or 3 parallel lines;

and Type 4, 3 lines deeply incised forming a slanted, interlocking L (See Boyd et al. 1951, plate 12 for figures).

Ft. Walton Series

Ft. Walton ceramics are characterized by a well mixed and compact, black core paste, with moderate amounts of sand temper (Boyd et al. 1951:173). Incisions often with punctates characterize the surface decorations (Boyd et al. 1951:1973). One zone punctated sherd was found in closed contexts. Several sherds of this series were in mixed contexts (Figure 14f). The presence of Leon-Jefferson period wares strongly suggests trade and contact with regions in northwestern Florida during the Mission Period.

Other Aboriginal

Under this category several minor types which are indigenous to Florida are considered.

Prairie Cord Marked

Two sherds of Prairie Cord Marked (Figure 14g) (Milanich 1971) were recovered. The presence of this type would suggest interaction with Western Timucuan groups of north-central Florida through trade or some other contact.

Fiber Tempered Ceramics

Five Fiber Tempered sherds were recovered. Since this series is associated with the late Archaic, these sherds are most likely residual and have no association with the Spanish colonial occupation.

Deptford Check Stamped

Two check-stamped sherds, one with a suggestion of a tetrapod, were found in closed contexts. Like the Fiber Tempered sherds, it is doubtful that these were associated with the Spanish occupation.

Meso American Wares

Six aboriginally made, Meso-American wares were recovered from the de Leon site (Figure 15). These types have been identified by Joseph Ball of San Diego State University. Detailed formal description of these are provided in Appendix 4. Included in this complex of Meso-American wares were Bolon Brown (Smith 1971), Fine Orange (Smith 1971), Yucatan Colonial (Ball, personal communication; 1977, San Diego State University), Yunku Plain (Ball, personal communication; 1977; San Diego State University), and 2 unnamed types which are suggestive of Yucatan origins. Together these wares made up 45 sherds, 0.81% of the total ceramics.

With the exception of Fine Orange, these types are known only from the Yucatan Peninsula, and they occur there during the Spanish Colonial Period, generally between the 16th and late 18th centuries (Ball 1977) (See Appendix 4 for the time range of each). This is the first time that these types are known to occur in St. Augustine, and their presence suggest trade with the Yucatan area, most likely trade through the situado.

These wares occurred in 16th century, 17th century and mixed proveniences. The absence of these wares at 18th

century domestic sites, however, does suggest that this complex is associated with the pre-1700 occupation at de Leon. If the occurrence of this complex is used as an indicator for the arrival of the situado, their occurrence in pre-18th century contexts could support the contention that the situado arrived more frequently before 1700 than after that date. More discussion of this point is treated in Chapter 4.

European Ceramics

The greatest number of European ceramics were of Spanish manufacture. Both Spanish utilitarian wares and tablewares were recovered. The remaining European wares accounted for less than 1% of the total ceramics.

Utilitarian wares are defined here as those used primarily for food preparation, shipping, and storage. Included among the European utilitarian wares are olive jar, Spanish storage jar, Tuscan Oil Jar, El Morro, North Devon Gravel Tempered, and a new type.

Tablewares comprised 490 sherds, 8.83% of the total ceramics. In this category are types that were used primarily for serving foods and/or for display purposes, but were not used for cooking or other food preparation activities. Analysis of the tablewares included majolica, Micaceous ware, Feldspar Inlaid, Mexican Red Filmed, Tonalá Polychrome, oriental porcelain, and faience.

Utilitarian Wares

Spanish Olive Jar and Storage Jar

Spanish Olive Jar (Goggin 1960) was the most abundant ceramic type. A total of 2,452 sherds were excavated and this was 44.21% of the total ceramics.

Olive jars were used primarily for transport of goods and secondarily reused for the storage, mostly of food stuffs. There also has been some indication of its use in building construction (Fairbanks 1973:144). Goggin recognized 3 styles of olive jar: Early Style (1500-1580) is characterized by small spherical vessels with strap handles and a slightly flaring mouth. Middle Style (1580-1780) has an elongated body with the mouth resting on a short thickened neck. Late Style (1780-present) shapes are about the same as Middle Style; the major distinction between the two is a finer paste in the Late Style (Fairbanks 1973:147).

Middle Style Olive Jar was the predominant type found at the de Leon site. There was some suggestion of Early Style sherds, but neither handles nor mouths were recovered to confirm its presence. Due to the early time span for pre-18th century contexts at SA 26-1, no evidence of Late Style Olive Jar was recovered.

Vessel forms included 34 neck ring sherds of which 6 were whole neck rings, and 7 rounded bases. Several types of interior surface treatment were recognized: 2,147 unglazed, 284 green glazed, 3 yellow glazed, 13 red slipped, and 2 red and black striped slipped. These latter two variations were

not described by Goggin and they most likely represent new varieties of interior surface finishing, perhaps reflecting a functional attribute of olive jar which is presently unknown. Besides olive jar, Spanish storage jar was represented by 25 sherds. These vessels were similar to olive jar but were larger and had flat bottoms.

The differences in the percentages of olive jar between the de Leon site and 18th century sites is surprising. The olive jar type is less than 5% of the total ceramics at the de Hita (Shephard 1975) and de la Cruz (MacMurray 1975) sites. It has been demonstrated that San Marcos ceramics replace Spanish utilitarian wares in the 18th century (Otto and Lewis 1974). At de Leon the occurrence of aboriginal wares (St. Johns and San Marcos) suggest that these were used as utilitarian earthenwares. Since the olive jar was primarily used for shipping, the abundance of olive jars in addition to aboriginal utilitarian wares, may simply reflect this primary function and not the secondary usage as storage containers. The usage of the olive jar exclusively as a shipping container implies a greater amount of trade with Spain and other Spanish colonies in the New World during the 16th and 17th centuries than in the 18th century.

Tuscan Oil Jar

Formally called Iberian Storage Jar (Noël Hume 1970), Tuscan Oil Jar is related to Spanish olive jar and storage jar vessel forms. These thick-walled, lead glazed interior vessels often measured up to 3 feet in height (Noël Hume 1970:

143-144). Ashdown (1972) has suggested that these vessels were made in Tuscany Italy and were used to transport olive oil. Five sherds were recovered from de Leon, one was a basal fragment.

El Morro Ware

El Morro Ware was first described by Smith (1962:68-9) and has since been redefined by Deagan (1976:92-5). It has been described as poorly smoothed and wheel-thrown, with a uniform paste, but moderately compact, tempered with large amounts of sand. Deagan recognized large red clay inclusions in the paste in El Morro sherds from the de Hita site. Willis observed that no such inclusions were present in the El Morro sherds at Nueva Cadiz (Willis 1976:128). Some of the El Morro sherds recovered from de Leon do have large inclusions, but these appeared to be large white clay lumps. A thin glaze is generally applied over the paste, through which tempering is apparent and this glaze is typically applied to the interior surface only (Deagan 1972:92). Sherds at de Leon often had both surfaces glazed. Color ranges for the glaze are yellow-orange, dark brown, and olive green. All three of these were represented but the yellow-orange occurred most frequently at de Leon. Specific vessel form attributes represented included 3 shallow, flat bases, 3 flaring rims, and 1 straight folded rim.

Peasant Ware

One lead glazed sherd found in a mixed context resembles European Peasant Ware (Smith 1962:69). Peasant Ware is a

variation of Rey Ware. Rey Ware is very much like El Morro but the protruding temper is absent and the glaze is thicker and more carefully applied than on El Morro (Deagan 1976:96) (Figure 16b). Although Rey Ware is associated with 18th century materials, this variation has never been reported in St. Augustine (Deagan 1976:96), and for this reason it has been noted.

North Devon Gravel Temper

One diagnostic rim sherd of North Devon Gravel Tempered Ware (Watkins 1960) was found in an early 17th century closed context. This British manufactured ware has been defined as a wheel-thrown, lead-glazed, utilitarian earthenware, tempered with very coarse waterworn quartz and feldspathic gravel (Watkins 1960:48). The surface finish is very carelessly applied with evidence of dripping and running. A variety of vessel forms exist including an assortment of pans, cooking pots, bowls, pipkins, and storage jars (Watkins 1960:48-50). The rim uncovered at de Leon (Figure 16a) resembles the rim form for a Pipkin or for a food storage jar (Watkins 1960:45).

North Devon ceramics have been recorded to have occurred in America as early as 1635 (Watkins 1960:24). Its arrival at St. Augustine that early is dubious. Because the sample size is so small and it was the only British-made ceramic found in either 16th or 17th century contexts, no cultural implications are offered.

Other Utilitarian Wares

A curious ware in this category, referred to here as "Limestone Ware" is a very thick (between 2 cm and 3cm) coarse ware apparently made from a limestone based clay (Figure 17). The surface finish is composed of a plain, burnished, white chalky substance, possibly resulting from firing the limestone clay (Rice, personal communication; 1977, University of Florida). To the author's knowledge nothing resembling it has ever been described. Two sherds of this unidentified type were found in closed contexts, one in a 16th century provenience. A carved object made from limestone or calcareous clay found in closed contexts appeared to be related to these sherds (Figure 17). The function for this limestone clay ceramic is unknown, but it has been suggested that perhaps it was used as a braizer for heating water (Lyon, personal communication; 1976, St. Augustine), however, these sherds were not charred.

Majolica

The most abundant ceramic type of the tablewares was majolica, a total of 375 sherds of this tin-enameled earthenware were recovered. Formal description of majolica types and varieties have been taken from Goggin (1968). Frequency of each type found in closed contexts is provided in Table 3. Standley South's Mean Ceramic Date Formula is applied to majolica taken from closed contexts, followed by a discussion of the application of these dates to the time span for the pre-1700 occupation at the de Leon site. Discussion of

majolica types is presented in terms of the complexes defined by Goggin (1968:203-11). With the exception of Complex B, complexes A through H were represented.

Formal Attributes of Majolica

Complex A

Complex A or the medieval tradition includes Columbia Plain, Isabella Polychrome, Yayal Blue on White, La Vega Blue on White, and Santo Domingo Blue on White. The time span for the occurrence of this complex was from the late 15th century to the mid-17th century (Goggin 1968:204). The major characteristic of this group is the distinctive Columbia Plain paste, a chalky-textured paste which ranges from cream to pink in color, and the surface is covered by a very thin enamel (Goggin 1968:204). All of the types of this complex were found in closed contexts at de Leon.

Columbia Plain. - Columbia Plain (Goggin 1968:117-126) is decorated with a plain white enamel and occasionally some vessels have broad green bands. The time span for Columbia Plain is 1492-1650. Goggin noted that 16th century Columbia Plain vessels include simple plates, shallow bowls, and flat based escudillas (1968:120).. By the 17th century ring feet had evolved on the escudillas and other vessel forms include plates, deep bowls and straight-sided flat bottom jars. In addition, Goggin noted that 16th century Columbia Plain was found in association with other Complex A types, while 17th century Columbia Plain was associated with complexes C and D (1968:123).

Of the 96 sherds of Columbia Plain recovered from the de Leon site, vessel forms included 4 escudillas, 3 ring feet bases, 9 flat bases, 3 plates, 12 everted rims, and 3 straight rims. The only recognizable early majolica form (pre-1575) was a plate form with the characteristic hump (see Goggin 1968, plate 3a). No fragments with green glaze or painted green bands were found.

Isabella Polychrome. - Isabella Polychrome (Goggin 1968: 126-128) has a number of concentric lines or bands in blue and manganese purple on the plate or cup interior. In the rim area, between one or more bands may be found a zone of alafias, debased Moorish Script (Goggin 1968:127). The chronological position of Isabella Polychrome is between 1490 and 1560, and it is found in association with Columbia Plain and Yayal Blue on White (Goggin 1968:127).

Only one sherd of Isabella Polychrome was found in closed contexts, and 2 rim sherds (Figure 18a) were found in mixed contexts. LoRusso-Bruckart suggested that because of shape and design placement, these sherds are probably pieces of large plates (nd:10).

Yayal Blue on White. - Yayal Blue on White (Goggin 1968: 128-130) has painted dull blue lines on the vessel interior rim and bottom on a white enamel ground. Plates and early type escudillas are the predominant vessel forms. Chronological position is between 1550 and the early 1600's, and is found in association with other Complex A types. One straight

rim and 3 plate basal fragments were recovered from closed contexts at de Leon.

La Vega Blue on White. - The surface decoration of La Vega Blue on White (Goggin 1968:130-131) consists of a crude blue floral decoration on a white enamel ground. Simple plates and escudilla fragments are the known vessel forms. The time range is given at 1525 to 1575, and it was found associated most frequently with Columbia Plain. Five sherds were recovered from de Leon but no indication of vessel form was apparent.

Santo Domingo Blue on White. - Santo Domingo Blue on White (Goggin 1968:131-134) consists of an overall blue design on the vessel interior. A medallion enclosing a central motif surrounded by floral designs is found on the vessel bottom. Vessels include medium and large bowls and pitchers. On bowls, the medallion is on the interior, while the medallion is found around the middle of the vessel exterior on pitchers (Figure 18c). The chronological position for Santo Domingo Blue on White is between 1550 and 1630, and it is found in association most often with Columbia Plain and Ichtucknee Blue on Blue. Twenty-one sherds were recovered including 4 pitcher handle fragments, 1 flat base, and 5 pitcher body fragments. In a mixed context a slightly flaring rim with an exterior medallion design was recovered (Figure 18c, rim sherd).

Complex C

Complex C or the Italian-Talavera Tradition includes the two types of Ichtucknee Blue on Blue and Ichtucknee Blue on White. The tradition is believed to have originated as a result of Italian influence in the last half of the 16th century (Goggin 1968:209). The characteristic vessel forms are thin-walled and have narrow brimmed plates with ring feet. Design layouts are also similar, a central medallion on the interior of the vessel bottom and a decorative band on the rim, often Chinese inspired. The time range is between 1550 and 1650 (Goggin 1968:204).

Ichtucknee Blue on Blue. - Ichtucknee Blue on Blue (Goggin 1968:135-141) has an extremely chalky paste which is always cream in color (Goggin 1968:136). Surface decoration is a dark blue design painted on a lighter blue ground. Chronological position is from 1550 to 1650, and it is associated with Complex A in the 16th century, while in the early 17th century, it is found associated with Ichtucknee Blue on White, Fig Springs Polychrome, and a number of early 17th century types. Specific attributes of the 76 sherds recovered from the de Leon include 3 ring feet, 4 everted rims and 8 brimmed plate marleys. In a mixed context one plate rim was found with a typical pink paste, and the rim profile and motif suggest a medium size plate (LoRusso-Bruchart nd:6).

Ichtucknee Blue on White. - Ichtucknee Blue on White (Goggin 1968:148-151) has a compact paste which is cream-colored. The design consists of painted blue on a white enamel ground. Shades of blue vary from very light to dark,

sometimes several shades are combined on the same vessel (Goggin 1968:149). A Chinese-motif characterizes the overall impression of the designs, and this type has a strong "Delft-like feeling," especially on the rolled rims which often have "blue-dash decoration" (Goggin 1968:149) (Figure 19a).

Chronological position is from 1615 to 1650, and it is most closely associated with Fig Springs Polychrome and often with Ichtucknee Blue on Blue and Columbia Plain. Thirty-six sherds were recovered from de Leon. Vessel forms included 3 ring feet, 1 marley of a brimmed plate, 2 small bowl fragments, 5 upflaring tapered rims, and 1 rolled rim.

Complex D

Fig Springs Polychrome. - The only type in Complex D is Fig Springs Polychrome, and it was one of the earliest types manufactured in Mexico (Goggin 1968:151-154). The paste is red with fine white inclusions. A painted blue, yellow, and/or orange floral design on the bottom of the vessel is the characteristic surface decoration. Deep brimmed plates are the most typical vessel. Occurring less frequently are small deep bowls, pitchers, and jars (Goggin 1968:153). Chronological position is from 1615 to 1650 and it is usually found with Columbia Plain, Ichtucknee Blue on Blue, and Ichtucknee Blue on White in the early 1600's. Near the end of its time span, it is found associated with San Luis Blue on White, Aucilla Polychrome, and others (Goggin 1968:15). Eleven sherds were recovered, and the vessel forms included 1 partially reconstructed brimmed plate, 2 rims, and 2 ring feet.

Complex E

Complex E includes San Luis Blue on White, Tallahassee Blue on White, and San Luis Polychrome. On the basis of design layout, these types have been grouped together. A circular medallion on the vessel bottom and a decorative band on the brim characterize the design for plates (Goggin 1968:205). Another attribute these have in common is similar thickness of vessel walls which contrasts with some of the other complexes (Goggin 1968:205).

San Luis Blue on White. - San Luis Blue on White has a cream to red color paste. A dull blue design is painted on an off-white background. The blue paint tends to be thick and designs are often raised (Goggin 1968:155). Designs are generally floral, and deep brimmed plates with foot rings are the most common vessel form. Chronological position is from 1630 to 1690, and no particular association has been noted (Goggin 1968:156-7). Specific attributes of the 20 sherds from de Leon include 3 ring feet and 2 brimmed rims.

Tallahassee Blue on White. - No Tallahassee Blue on White sherds were recovered from closed contexts; a suggestion of three plate rim fragments were found in mixed contexts (LoRusso-Bruchart nd:21-2). Tallahassee Blue on White has a paste similar to San Luis Blue on White. The design is unzoned, and consists of a floral motif and the surface finish is extremely glossy and heavily crazed (Goggin 1968:158). Chronological position is from 1653 to 1700, and it is found in association with most of the 17th century types sporadically (Goggin 1968:159).

San Luis Polychrome. - San Luis Polychrome (Goggin 1968: 166-167) has a compact paste which is either cream or terracotta. The surface decoration is a green and brown sometimes orange on a cream ground enamel (Goggin 1968:165). Designs are generally bold, crude, geometric and/or conventionalized floral impressions found on the interior vessel. Deep-brimmed plates with ring feet are the most common vessel forms. Goggin's chronological position is given at 1660 to 1720, Bonath has adjusted this time span to 1600 to 1745 based on its occurrence in St. Augustine (1976:75), and it is found associated with Pueblo Polychrome most frequently. Only 1 fragment with no apparent indication of vessel form was recovered from de Leon.

Complex F

Neither of the two types of Complex F occurred in closed contexts. Aucilla Polychrome was found in mixed contexts, while no Mt. Royal Polychrome sherds were reported. Design layout is the distinctive feature that these two have in common (Goggin 1968:205).

Aucilla Polychrome. - Aucilla Polychrome (Goggin 1968: 161-163) has a compact red paste. Surface decoration consists of a black, yellow or orange, and green design on a cream background. Small deep-brimmed plates and bowls are the most common vessel form (Goggin 1968:161-162). Chronological position is from 1650-1685 and it is generally associated with mid-17th century types (Goggin 1968:162). A deep brimmed plate (Figure 19b) was recovered from de Leon.

Complex G

Abo Polychrome. - Only Abo Polychrome (Goggin 1968:169-173) is classified under Complex G. This type is characterized by its thinness of vessel walls and the use of 5 colors; yellow, blue, orange, green, and brown; in the surface decorations. Paste color is generally cream, rarely red. Vessel forms include small brimmed plates, cups and bowls, all with ring feet. Chronological position is given by Goggin to be from 1650 to 1700 (1968:72), and Bonath has extended the terminal date to 1745 for St. Augustine (1976:75). It is generally associated with Pueblo Polychrome and San Luis Polychrome. One everted cup rim sherd was recovered. The colors of this sherd were reminiscent of Abo Polychrome, but not the design which is a very busy polychrome design (Figure 19d).

Complex H

Puebla Polychrome. - Puebla Polychrome (Goggin 1968:172) is the only type of Complex H. It has been placed by itself primarily because of the uniqueness of the surface design. The paste of Puebla Polychrome is compact with a chalky feel and the color ranges from cream to light buff, like Abo Polychrome, very rarely is the paste red. The surface is painted in blue and black and sometimes other colors on a white enameled ground. The basic design consists of bold scrollwork on the sides and brims of plates and basins in a thick blue glaze. The intervening areas are filled with fine, black reticulated designs which often resemble lace (Goggin 1968:174). As in the case with a number of majolica types

previously described, the most common vessel form is the brimmed plated with a ring foot. In addition, small vessels suggestive of oriental cups and massive basins, lebrillos, are also known (Goggin 1968:178). Chronological position is given at 1600 to 1700 (Goggin 1968:180) and 1650 to 1745 for St. Augustine (Bonath 1976:76). It is generally found in association with San Luis Blue on White, San Luis Polychrome, and Abo Polychrome. Two small sherds with no apparent indication of vessel form were recovered.

Blue-Green Basin

This type was first described by Goggin (1968:201) as a miscellaneous majolica and has since been redefined by Deagan (1976:99-103). There are two kinds of paste types, a fine sandy reddish tempered paste and an untempered variety. The surface of the vessel is a dull navy blue and dark blue-green color on a greyish-white ground (Deagan 1976:101). Most frequently occurring vessels are large-flat bottomed vessels and wide mouth jars.

Two fragments of the untempered variety occurred at de Leon in closed contexts. Blue-Green Basin has been primarily considered as an 18th century and early 19th century type. Its occurrence, however, in the Castillo de San Marcos moat has suggested a 1672 date for its terminus post quem (Deagan 1976:102). Its occurrence in early 17th century closed contexts at de Leon may suggest an even earlier date.

Unidentified Majolica

Four unidentified varieties of majolica, which have not been described by Goggin were recovered. Three of these types were present in closed contexts.

Variety 1 has a thick, red paste. A thin watery blue design is painted on an opaque white enamel ground. The blue design is a central medallion located on the interior of the vessel. A plate with a ring foot was the vessel form recovered (Figure 20a). One sherd, part of the ring foot was recovered from a 16th century context. This type may be of Portuguese manufacture (Fairbanks, personal communication; 1977, University of Florida).

Variety 2 also has a red paste. The surface decoration consists of a zoned, polychrome design of powder blue and aquamarine on a white ground. Sherds are too small to describe the overall design. One sherd was found in an early 17th century closed context.

Variety 3 has a red paste. A watery blue design is painted on a white ground. The design consists of 2 concentric circles around the rim, below the lowest circle are designs reminiscent of the moorish alafias. Three rim sherds of this type were found in mixed contexts. This variety may be the same as Variety 1 (Figure 20c).

Variety 4 has a red paste. The surface design consists of greenish-blue design with a yellow-stripped overglaze painted on a white ground. One small fragment was found in a 17th century context. A slightly falring rim sherd (Figure 20d) was found in a mixed context.

Mean Ceramic Date Formula

Majolica was chosen for use in the Mean Ceramic Date Formula because of all of the ceramics recovered from de Leon, majolica appears to have the most reliable dates. In Table 4 the formula is applied to all of the dateable majolica found in closed contexts, while Tables 5 and 6 are applied to majolica occurring in the well construction pit (Table 5) and well fill (Table 6). Only the first 12 types listed in Table 3 are used in the formula, because not enough is known about the date ranges for the remaining types to include them. Median dates followed by an asterisk are those that have been adjusted by Bonath (1976). The South Index refers to the dates assigned by Stanley South to six 16th century and one 17th century majolica types as a correction factor (See South 1973:13).

The mean dates derived from the formula suggest a late 16th century date for the mean occupation of the pre-1700 component of the site. It is difficult to determine whether the mean dates from Table 4 are true mean occupation dates for the pre-18th century occupation of SA 26-1, because the historic range for the occupation is unknown. Besides the absence of a documented date, two additional factors may affect the validity of these majolica formula dates. The first of these is inherent in the formula, and Willis (1976: 116-120) demonstrated at Nueva Cadiz that the mean date derived from the formula, when compared to the known historic dates of the site, indicated the period of greatest deposition at

the site and not the mean occupation. The reason for the discrepancy, Willis concluded, resulted from the failure of the formula to take into consideration "varying rates of population increase and decrease along with corresponding ratios of material deposition as affected by cultural and economic factors at a site which are involved during the occupation span" (1976:119). Since the cultural and economic factors affecting material deposition during the 16th and 17th centuries in St. Augustine are not known, caution is urged regarding the application of the majolica formula dates to the pre-1700 component at SA 26-1.

The other major problem however, may be that the chronological positions proposed by Goggin (1968) for the 16th and early 17th century majolica may not be accurate for the occurrence of these types in St. Augustine. Recent refinements of Goggin dates for the mid-17th century and 18th century types have been suggested by Bonath (1976) for St. Augustine and for the southwest by the Listers (1976). After proposing new median and mean majolica dates for St. Augustine, Bonath concluded:

"The mean Majolica dates proposed by the author were found to be consistently more accurate than any other dating tool on well documented sites.... with a difference of only 2.69 years from the suggested mean historic occupation dates, this suggests that the mean majolica formula is the most accurate dating device for Spanish Colonial sites lacking adequate documentations." (1976:46).

Although further archaeological evidence is needed to support the need for a refinement of 16th and 17th century majolica, evidence from de Leon has already suggested the

refinement for one type, Isabella Polychrome. Goggin gives a terminal date of 1560 for this type and its occurrence at de Leon suggests at least a post-1572 date.

A tentative conclusion to be drawn from the above discussion is that adjustment of Goggin's dates for the 16th and early 17th century majolica may be needed before we can use the mean majolica formula reliably for dating pre-18th century sites in St. Augustine.

The application of the Mean Ceramic Formula to majolica in the well pit and well fill was conducted as an additional means of dating these features (see Chapter 2). The dates derived from the formula, however, were earlier than either of the termini post quem which were 1630 for the well pit and 1650 for the well fill. Several reasons may account for this discrepancy; small size along with the problems discussed above are likely causes.

To summarize the application of the mean ceramic formula to majolica found in pre-1700 contexts yielded late 16th century mean occupation dates. It is difficult to determine the validity of these dates due to the absence of an historic, documented date, problems with the formula, and the uncertainty of the time ranges for 16th and 17th century majolica in St. Augustine. It is suggested that before the formula can be used to date reliably pre-18th century sites in St. Augustine, refinements for the time ranges for 16th and 17th century majolica along with archaeological and documentary research suggesting the cultural and economic factors affecting the material deposition is needed.

Table 3
Frequency of Majolica from Closed Contexts

Number	Type	# of Sherds	Frequency
1	Columbia Plain	96	25.06%
2	Isabella Polychrome	1	0.26%
3	Yayal B/W	4	1.06%
4	La Vega B/W	5	1.33%
5	Santo Domingo B/W	21	5.60%
6	Ichucknee B/B	76	20.26%
7	Ichucknee B/W	36	9.60%
8	Fig Springs Polychrome	11	2.93%
9	San Luis B/W	20	5.33%
10	San Luis Polychrome	1	0.26%
11	Abo Polychrome	1	0.26%
12	Puebla Polychrome	2	0.53%
13	Blue/Green Basin	2	0.53%
14	Plain White, red paste	35	9.33%
15	Plain White, cream* paste	41	11.00%
16	Unidentified B/W	20	5.33%
17	Unidentified Polychromes	3	0.80%
Total		375	100.01%

Table 4

Application of Mean Ceramic Formula to Majolica in Closed Contexts

$$\text{Mean Ceramic Date} = \frac{\sum (xi \cdot fi)}{\sum fi}$$

Type	Median (xi)	South Index	Sherd No. (fi)	Median Product (xi·fi)	Index Product (xi·fi)
1	1572	1535	96	150912	147360
2	1525	1445	1	1525	1445
3	1575	1532	4	6300	6128
4	1550	1547	5	7750	7735
5	1590	1675	21	33090	35175
6	1600	.	76	121600	121600
7	1633		36	58788	58788
8	1635		11	17985	17985
9	1660		20	32200	32200
10	1672.5*		1	1672.5	1672.5
11	1672.5*		2	3345	3345
12	1697.5*		1	1697.5	1697.5
Total			274	436865.0	435131.0

*Bonath median dates

Using Median Dates = 1594.39

Using Index = 1588.06

Table 5

Application of Mean Ceramic Formula to Majolica in the Well Pit

$$\text{Mean Ceramic Date} = \frac{\sum (xi \cdot fi)}{\sum fi}$$

Type	Median (xi)	South Index	Sherd No. (fi)	Median Product (xi·fi)	Index Product (xi·fi)
1	1572	1535	42	66024	64470
3	1575	1532	2	3150	3064
5	1590	1547	13	20670	20111
6	1600	1675	37	59200	61975
7	1633		15	24495	24495
8	1635		2	3275	3270
9	1660		1	1660	1660
10	1672.5*		1	1672.5	1672.5
Total			113		

*Bonath median dates

Using Median Dates = 1594.20

Using Index = 1599.27

Table 6

Application of Mean Ceramic Formula to Majolica in Well Fill

$$\text{Mean Ceramic Date} = \frac{\sum (xi \cdot fi)}{\sum fi}$$

Type	Median (xi)	South Index	Sherd No. (fi)	Median Product (xi · fi)	Index Product (xi · fi)
1	1572	1535	1	17292	16885
5	1590	1547	3	4770	4641
6	1600	1675	14	2440	23450
7	1633		10	16330	16330
9	1660		8	13280	13280
11	1697.5*		1	1697.5	1697.5
Total			37	75769.5	76283.5

*Bonath median dates

Using Median Dates = 1612.12

Using Index = 1623.05

Other Tablewares

Micaceous Ware

Orange Micaceous Ware (Council 1973:131-133) has a compact, pale orange paste with flecks of mica temper. Vessel walls tend to be thin and the forms appear to be small bowls and saucers. Accurate chronological placement is unknown but the suggested range is between 1600 and 1700 (Council 1975).

Specific attributes of the 44 sherds recovered from de Leon include the recognition of three variations of micaceous ware: First, orange paste variety (described above) (Figure 21a, b, and c) of which 39 sherds were recovered, 3 with an incised decoration. Second, a red slipped variation (Council 1973:130) of which 4 sherds were painted with a thick red core. Third, buff micaceous ware has a buff to beige paste with obvious mica inclusions. One rim sherd of this type was found in a mid-17th century context, and two were found in mixed contexts (Figure 21e). Occurrence of this buff micaceous ware has warranted the replacement of the term orange micaceous ware to simply micaceous ware for this poorly known ceramic type. Vessel forms of micaceous ware include 1 cup (Figure 21a), 3 shallow bowls or saucers, 2 pedestal bases, and 6 straight rims.

Feldspar Inlaid

Feldspar Inlaid (Fairbanks, 1966) is a red, hard earthenware with a series of designs formed by inlaid fragments of feldspar. This type occurs as early as the 16th century and

continues up to the 20th century. Vessel forms include water bottles, small handled pitchers, urns, and plates (Fairbanks 1966). Twelve sherds were recovered from de Leon. Vessel forms were not apparent with the exception of a lion's head (Figure 22a) which may have served as some kind of handle.

Mexican Red Filmed

Mexican Red Filmed (Smith 1949) is a thin red-filmed, wheel thrown ceramic, believed to be of Mexican origin (Figure 22b). Of the 36 sherds recovered from de Leon, the only apparent vessel form was a slightly everted rim. Occurring in mixed contexts were two unidentified red filmed types; these may be variations of Mexican Red Filmed. The first of these is thicker and heavier than Mexican Red Filmed. Sherd size along with strap handle forms (Figure 22c) suggest that the forms are large utilitarian vessels. The second variation is somewhat thinner than the first, and it is characterized by an incised and applique floral design. The design consists of 2 concentric, incised circles which is a medallion enclosing an applique floral design (Figure 22d). No indication of vessel forms was apparent.

Tonala Polychrome

Tonala Polychrome formally called Aztec IV (Smith 1949) is hand painted and burnish polychrome made in Mexico. This ware became popular in Spain because Spanish ladies used the odoriferous water stored in these vessels as a cosmetic (Fairbanks 1973:170). Four small fragments of the early slipped variety of this ware, with no apparent indication of

of vessel form, were recovered from the de Leon site at St. Augustine.

Oriental Porcelain

Nine sherds of Oriental Blue on White Porcelain were recovered from closed contexts. These fragments were very small and no apparent indication of vessel form could be determined. The surface decoration appears to be a floral motif. In a mixed context, 1 plate fragment of an unidentified porcelain was found. It is a hand painted blue on white floral design (Figure 23). It has been suggested that this type is an early Ming variety (Harper, personal communication; 1976, St. Augustine).

Faience

A few sherds of Faience, a French manufactured, tin-enameled earthenware were uncovered. Specific attributes occurring at de Leon included 4 varieties: plain white, Aquamarine, Blue on White, and a brown and yellow polychrome. Ten sherds were initially catalogued; however, in the final analysis 2 blue on white sherds were missing.

Other Ceramic Artifacts

Two artifact types have been placed within this category which are ceramic but whose functional attributes are different from those previously described. These two types are gaming discs and white clay pipes. White clay pipe remains have not been included in the total ceramic count and have been assigned to a separate artifact class on the basis of its obvious function. Gaming discs, on the other hand, have

been included in the ceramic count because of the manufacture of these objects indicates the reuse of household utilitarian or tableware ceramics.

Gaming Discs

Gaming discs are rounded ceramic sherds presumably used as playing pieces in some type of game. These have been found at both prehistoric and historic sites and have been made from aboriginal and European ceramics (Smith 1962:72). Two gaming discs were identified from the de Leon site. One was made from a San Marcos Stamped sherd (Figure 24d) and the other was a olive jar sherd.

White Clay Pipes

Two white clay or kaolin, as they are frequently called, pipestems and one bowl fragment were recovered from closed contexts. The hole diameter of both stem fragments measured 5/64 of an inch, which suggests a general time range between 1680 and 1750 (Noël Hume 1970:298). Because the sample size is so small, neither the time span nor the use of the pipestem formulas (Binford 1962 or Deagan and Heighton 1972) can be applied to date the site reliably. The bowl fragment has an incised decoration but no identification of shape or chronological position could be made.

In general, evidence of pipe tobacco smoking has occurred less frequently at Spanish Colonial sites than at British sites (Deagan 1976:62). Evidence of pipe smoking was considerably less in contexts dating before 1700 at SA 26-1 than at 18th century domestic sites in St. Augustine. This suggests

that pipes were used less often before 1700 than after that date. More frequent usage of pipes in the 18th century may very well be the result of greater availability of these primarily British manufactured goods through the contraband trade.

Non-ceramic Artifacts

Non-ceramic artifacts will be described according to the types of materials of which the artifact is made, with the exception of beads and buttons which are treated as separate artifact classes. Beads and buttons are classed separately because they cross material boundaries and are important functional categories. Occurrence of non-ceramic artifacts are provided in Appendix 5.

Glass

A total of 67 fragments of glass were recovered from closed contexts, and these were in general, too small to determine either formal or functional attributes. There were two exceptions: first, a basal fragment of a dark green glass bottle, but it was too incomplete to assign a chronological position; secondly a base of a clear drinking vessel. In a mixed context, an amber colored glass handle resembling the strap handles of various hispanic ceramic vessels was recovered. Two fragments of opaque brick red glass like that recovered from Nueva Cadiz in early 16th century contexts were found in a 16th century and an early 17th century context, and several sherds were recovered from mixed contexts. No apparent indication of vessel forms was discernable.

Metal Artifacts

Artifacts of iron, brass, copper, lead, and pewter were recovered from the de Leon site.

Iron

Nails were the most frequently occurring iron object which is usually the case at most historic sites. A total of 402 nails and spike fragments were found in closed contexts. For the most part, these were very poorly preserved and classification was often impossible. Classifiable nails along with the occurrence in closed contexts suggests that all of the nails were handwrought since this was the only type available until 1790, when the first cut nails were produced (Noel Hume, 1970:262).

Besides nails several miscellaneous often amorphous-shaped iron fragments were present. The only recognizable iron artifact within this group was a dagger blade which measured 11.5 cm by 2 cm. This blade was very fragile, and during the final analysis, it was broken.

Brass

Brass, an alloy of copper and zinc, was distinguished from copper on the basis of color. Copper artifacts were red, while brass objects were greenish-yellow. Second to iron, the most frequently encountered metal was brass. The brass artifacts were very well preserved and included a book latch, buttons, clock parts, pins, tacks, lacing tips, and several miscellaneous fragments.

A book latch (Figure 25e) possibly for a missal (Fairbanks, personal communication; 1977, University of Florida) was

present in a post-1650 context. It is 2 cm long and 0.5 cm wide and has carved decorations inside and outside the latch hole.

Two curious artifacts were probably parts of a time piece. The first of these is a star-shaped object with a hole in the center (Figure 25c), and it resembles an inner mechanism of a clock. The other is an oval-shaped pendant which has a floral carved and appliqued design on it (Figure 25d). This artifact may have been part of a clock key (Fairbanks, personal communication; 1977, University of Florida).

Nine straight pins with rounded heads (Figure 25a) were recovered and the lengths of these ranged from 2 cm to 3 cm. Of the 3 tacks recovered, one had a 6-faceted hand wrought head. This head resembles an upholstery tack, but it appears to be too large to have been used for that purpose. At present, the function of this tack is unknown.

Brass lacing tips (Figure 25b) similar to the copper lacing tips from Nueva Cadiz (Willis 1976:100) were recovered from 16th century and mid-17th century contexts. The length of these ranged from 2.5 cm to 3 cm and 2 cm in diameter. These lacing tips were most likely used to finish clothing laces. Two of these tips had rounded tips and may have served as shoelace tips (Chafin nd).

Several brass fragments were recovered, in particular a rim and shoulder fragment from an unknown vessel form.

Copper

Few copper artifacts were found. A copper coin, a maravedis, most likely of Iberian origin was recovered (Figure 26). It is approximately 2 cm in diameter. The sides are notched, and due to corrosion it was difficult to read. One side (Figure 26a) has the "crowned Columns of Hercules (Lazarus 1965) and the other side (Figure 26b) has a crowned monogram with the letter F to one side of the monogram and an I to the other. These letters evidently represent Ferdinand and Isabella (Chafin nd).

In addition to the coin, 22 small copper fragments of varying lengths and about the thickness of straight pins came from the same 16th century refuse pit. These appear to be too small to have been lacing tips, and may be the remains of a whole copper strip, which was used to chain small objects such as beads.

Lead

Lead artifacts from closed contexts included 4 1/2 musketballs, 1 buckshot, and one non-descript fragment of melted lead sprue. In a mixed context, a lead seal was found. Very little is known about lead seals (Noël Hume 1970:269-271) but they were for the most part used to secure bags or bales. Two categories of British lead seals are known, merchant seals and those attached for excise duties. The stamp of the seal recovered from the de Leon site is not very clear, but appears to have a royal figure on it which implies that it was an excise seal. The occurrence of this seal is most likely

associated with one of the 18th century occupations of the site, for its presence suggests British trade or interaction, a rare event before 1700 in St. Augustine. A merchant lead seal was recovered from the Avero House (Deagan 1976:64).

Pewter

A pewter button was recovered and it is described in the section under buttons.

Bone

A bone die and a worked piece of bone (Figures 24b and 24c) were the two bone artifacts recovered from mid-17th century contexts. The worked bone appears to have been used as an engraving device. Occurrence of the die is archaeological evidence for the documentary reference that gambling with dice was a favorite leisure time activity of the Spaniards (Hoffman and Lyon, 1977).

Stone

Mano

Three fragments of volcanic basalt were recovered. Basalt is not native to St. Augustine and one polished fragment suggests that it was part of a mano. Manos are food preparation tools generally of Mexican or Central American origin used for grinding. Mano fragments, more discernable than the ones from de Leon, have appeared at 18th century St. Augustine sites (Deagan 1974:81; MacMurray 1975; Shepard 1975:77-8) and at Santa Rosa Pensacola (Smith 1965:106). The presence of manos presumably indicates trade with New Spain. This would be expected as the situado came from there and evidently food

and food preparation equipment were supplied to St. Augustine from there also.

Flint

Two gun flint fragments of honey colored flint were found in closed contexts. A curious artifact that was made from grey-white flint and appears to have been a portion of an aboriginal projectile (Figure 24a) was present in a 16th century provenience. This object may have functioned as some kind of scraper or strike-a-light. Honey colored gun flints are believed to be of French provenience, but occur in varied colonial situation.

Beads

Four beads occurred in early 17th century contexts: 2 jet rosary beads (Deagan 1974:108), one amber colored bead, and one brown seed bead. The jet and seed beads are illustrated in Figure 24e.

Although these jet beads have been tentatively classed as rosary beads, recent evidence suggests that jet beads were often strung as necklaces or simply strings of beads as well as rosaries (Kelly 1977:26). Possession of jet amulets were highly valued by Spaniards, for it was believed to provide protection from evil spirits and bestowed special benefits to the wearer such as vigor, luck in war, elegance of speech (Kelly 1977:24). During the last decade of the 16th century, jet was shipped to the New World in considerable quantities (Kelly 1977).

The wire wound, amber-colored bead was partially broken, and measured 3 mm in diameter, and designated as type W1b6 of the Kidd system (Kidd and Kidd 1970). The seed bead was rounded and was brown-orange in color.

No tube or cane beads were recovered, in particular Cornaline d'Allepo beads which were found at all the 18th century sites were completely absent from contexts dating before 1700. In general, an increase in the number and variety of beads characterized 18th century domestic site assemblages. Explanation for the occurrence of fewer beads from the de Leon site is unclear. Fewer beads at the de Leon site may simply reflect individual preference, indicative of social economic status, or simply sampling error. Before any substantive statement can be made concerning the occurrence of beads, more archaeological testing is needed.

Buttons

Two whole buttons and one fragment were recovered from mid-17th century contexts. One was made from pewter, the others, of brass. They were all plain and the disc and shank are of one piece with the disc. The diameter of the pewter button is 22 mm while the whole brass one is only 14 mm. More than likely, the smaller was a sleeve button, and the larger pewter button was either a coat or knee button. These buttons resemble Type 31 of South's analysis (South 1964) and Type A of Olsen's analysis (Olsen 1963), with the exception that these buttons are flat and Olsen's button is convex. Buttons similar to these also occurred at the Maria de la Cruz

site (MacMurray 1975:75) in contexts dating from 1700 to 1760. The presence of this button form in contexts associated with mid-17th century material may be indicative of an earlier date for this button type at Spanish Colonial sites.

At the de Leon site fewer buttons were recovered from closed contexts than from 18th century sites. This suggests that other kinds of fasteners such as lacing tips were used more often to fasten clothing.

Food Resources

Faunal Remains

Faunal analyses were conducted by Katherine Johnson, Jill Loucks, and Robin Smith of the Zooarchaeological Laboratory of the Florida State Museum. The proveniences used in these analyses were all closed contexts dating before 1700, which included the well construction pit, well fill, and 12 other proveniences (see Appendix 1 for other proveniences included). Interpretations of the faunal remains offered here are preliminary, for further identification and analyses of the faunal materials from the de Leon site is presently in process.

Table 7 gives the distribution of the number of fragments identified, the minimum number of individuals (MNI), and the percentage of the total number of individuals (% of MNI) each species represents of the total species recovered from the well pit, the well fill, and other proveniences. A total of 46 animals were identified to the family or lower classification, and a total of 35 individuals were calculated for the

Table 7

Faunal Remains from the de Leon Site

Species	Well Pit			Well			Other Proveniences		
	Fragments	MNI*	%MNI	Fragments	MNI	%MNI	Fragments	MNI	%MNI
Carcharhinidae Requiem Shark	6			6	1	0.84	2	2	1.1
Carcharhinus leucus Bull Shark							4	3	1.6
Carcharhinus milberti Sandbar Shark							7	6	3.2
Galeocerdo cavieri Tiger Shark							1	1	0.5
Sphyrna zygaena Smooth Hammerhead	1	1	2.86	2	2	1.68	2	2	1.1
Sphyrna morkorran Great Hammerhead				1	1	0.84	1	1	0.5
Pristis Sawfish				1	1	0.84			
Unidentified Chondrichthyes							2	2	1.1
Ictaluridae Fresh Water Catfish							14	5	2.7
Continued									

Table 7 (Continued)

Species	Well Pit			Well			Other Proveniences		
	Fragments	MNI*	%MNI	Fragments	MNI	%MNI	Fragments	MNI	%MNI
Ariidae Sea Catfish	46			66			11		
Arius felis Sea Catfish	12	3	8.57	97	12	10.08	154	27	14.5
Bagre marinus Gafftopsail Catfish	2	1	2.86	6	3	2.52	19	4	2.1
Centropomus sp Snook							3	1	0.5
Micropterus sp Bass				1	1	0.84			
Carangidae Jack				1	1	0.84	2	1	0.5
Archosargus sp Sheepshead	1			2					
Archosargus probatocephalus Sheepshead	10	2	5.71	12	5	4.20	110	12	6.4
Sciaenidae Drum	25			108			478		
Cynoscion sp Drum	1			14	2	2.20	5	4	3.2
Continued									

Table 7 (Continued)

Species	Well Pit			Well			Other Proveniences		
	Fragments	MNI*	%MNI	Fragments	MNI	%MNI	Fragments	MNI	%MNI
Cynoscion nebalosus Spotted Sea Trout	14	2	5.71	24	5	3.64			
Menticirrhus sp Croaker							1	1	0.5
Micropogon undulates cf Atlantic Croaker	1	1	2.86	6	3	2.52	17	6	3.2
Pogonias cromis Black Drum	1	1	2.86	13	4	3.36	30	8	4.3
Sciaenops ocellata Red Drum	1	1	2.86	30	10	8.40	40	10	5.4
Mugil Mullet	62	11	31.43	138	41	34.45	251	36	19.4
Paralichthys sp Flounder	9	2	5.71	14	5	4.20	4	1	0.5
Unidentified Osteichthyes							625		
Bufo Toad							11	4	2.2
Rana Frog	4	1	2.86				1	1	0.5
Continued									

Table 7 (Continued)

Species	Well Pit			Well			Other Proveniences		
	Fragments	MNI*	%MNI	Fragments	MNI	%MNI	Fragments	MNI	%MNI
Emydidae Water Turtle				1					
Chrysemys scripta Pond Slider				1	1	0.84			
Malaclemmys terrapin Diamond Back Terrapin	1	1	2.86	3	1	0.84	3	2	1.1
Gopherus polyphemus Gopher Tortoise	9	2	5.71	49	6	2.52	126	7	3.8
Chelonia sp Green Turtle							22	3	2.2
Natrix sp Water Snake							2	1	0.5
Agkistrodon piscivorus Cottonmouth Snake							1	1	0.5
Gallus Gallus Domestic Chicken	20	2	5.71	29	2	1.68	89	9	4.8
Meleagris gallopavo Turkey							4	1	0.5
Fulica americana Coot				1	1	0.84			
Continued									

Table 7 (Continued)

Species	Well Pit			Well			Other Proveniences		
	Fragments	MNI*	%MNI	Fragments	MNI	%MNI	Fragments	MNI	%MNI
Passerine Song Bird				1	1	0.84			
Unidentified Aves							101	1	1.1
Sylvilagus sp Rabbit	2	2	5.71	2	1	0.84	34	6	3.2
Rodentia Rodent							1	1	0.5
Sigmodon hispidus Hispid Cottonrat				1	1	0.84			
Procyon lotor Northern Raccoon	1	1	2.86	1	1	0.84			
Artiodactyl							6	3	1.6
Odocoileus virginianus White-tailed Deer				8	3	2.52	25	3	1.6
Canis familiaris Domestic Dog				2	1	0.84			
Continued									

Table 7 (Continued)

Species	Well Pit			Well			Other Proveniences		
	Fragments	MNI*	%MNI	Fragments	MNI	%MNI	Fragments	MNI	%MNI
Felis catus Domestic Cat							1	1	0.5
Sus Scrofa Domestic Hog	2	1	2.86	15	4	3.36	46	5	2.7
Unidentified mamalia							336	3	1.6
Total	231	35		660	119		2,624	186	
*MNI = Minimum Number of Individuals									

well pit, 119 for the well fill, and 186 for the other proveniences.

Fish, both cartilaginous fish (Chondrichthyes) and bony fish (Osteichthyes) contributed the greatest numbers to the faunal inventory and made up a major portion of the diet. Seven species of cartilaginous fish were identified; because none of these fish were very large, it has been suggested that these could have been taken by spearing, hook and line (Johnson nd) or in nets (Smith nd). Small size may also be an indicator of the impoundment of these naturally occurring coastal fishes in tidal lagoons (Smith nd). Bony fish comprised the largest number of individuals, in three contexts. Of the 18 species identified mullet (*Mugil*) occurred most frequently. Sea catfish (*Arius felius*) was the second most frequently caught fish. At 18th century domestic sites, mullet and sea catfish occurred most often and are the most commonly caught fish in St. Augustine today (Deagan 1974). Several species of drum (*Sciaenidae*) were identified, including spotted seatrout (*Cynoscion nebulosus*), croaker (*Menticirrhus* sp), Atlantic croaker (*Micropogonias undulatus*), black drum (*Pogonias cromis*), red drum (*Sciaenops ocellata*). In terms of the number of fishes represented, this family ranked third. All of the fish represented could have been caught by hook and line with the exception of mullet, which must be netted or trapped to secure large numbers (Smith nd).

Mammalian species were another major contributor to the diet of the pre-18th century occupants of the de Leon site.

Four wild and 3 domestic species were identified. "Garden Hunting" (Linares 1976) may be suggested as the means for the procurement of wild mammalian species notably rabbit (*Sylvilagus* sp) and deer (*Odocoileus virginianus*). While feeding on cultivated crops, the animals may have been hunted in house gardens and cultivated fields.

Of the domestic mammalian species, domestic hog (*Sus scrofa*) occurred most often. Domestic hog was introduced by the Spaniards (Cumbaa 1975:10) and they were most likely penned in the backyard (Cumbaa 1975:10). Unlike 18th century domestic sites, no cattle remains were identified. This absence of cattle remains may indicate the scarcity of cattle before the emergence of the intensive cattle raising period in the mid-17th century (Arnade 1965:6).

Domestic cat (*Felis catus*) and dog (*Canis familiaris*) can not be eliminated as a potential food source for the documentary evidence suggests that fresh meat was a scarce item (Hoffman and Lyon 1977) and oftentimes St. Augustinians resorted to eating dogs, cats, rats, and horses (Cumbaa 1975:29).

Domestic chicken (*Gallus gallus*) contributed more to the diet than any other identified bird species. Like pig, chicken was probably raised in the backyard.

Food preparation as indicated from food bone remains was primarily heavy boiling (Loucks nd). This was largely inferred from the fragmentary nature of the bone. Only a very minor incidence of roasting was suggested from burnt bone (Johnson nd: Loucks nd).

The faunal evidence from the de Leon site suggests the exploitation of a variety of local and introduced species. Compared with 18th century domestic sites, there appears to be no major differences in the types of species exploited. Only cattle, an important mammalian food source in the 18th century, were absent from the sample presented here. In general, the evidence suggests that the occupants made a fairly regular use of local wild food sources.

Floral Remains

Floral remains from closed contexts included 8 peach pits, 5 squash seeds, 2 corn cob fragments, and one unidentified seed. These remains are consistent with documentary references as to plant food sources utilized in pre-18th century St. Augustine (Arnade 1959). The corn and squash remains were most likely aboriginal domesticates, while the peach pits are particularly significant, for its presence in the southeastern United States has been recently confirmed to have been of Spanish introduction (Sheldon 1976).

* * * *

Deagan's suggestion that the food resources of the 18th century First Spanish Period conforms to a pattern closely resembling prehistoric aboriginal adaptation with the occasional use of introduced food sources (1974:92) appears to be true for the pre-18th century as well. Based upon the evidence from the de Leon site, both floral and faunal remains suggest a continuity of food resources utilized throughout the First Spanish Period in St. Augustine.

CHAPTER 4
A SYNTHETIC DESCRIPTION OF LIVING CONDITIONS
IN PRE-18th CENTURY ST. AUGUSTINE

Archaeological data recovered from the de Leon site and recent documentary research (Hoffman and Lyon 1977) have greatly expanded our understanding of living conditions in 16th and 17th century St. Augustine. At the same time, however, these data have raised several questions. An attempt is made to answer some of these questions in this work. In this chapter household activities, cultural influences upon Spanish lifestyles, and economic conditions are discussed, and in the 5th chapter, cultural changes from the 16th to the 18th century are examined. It should be remembered that these interpretations have been derived from the evidence from one site and are, therefore, preliminary and tentative. Before a complete statement of the socio-cultural milieu existing during the 16th and 17th century St. Augustine can be determined, more archaeological and documentary research is needed.

Domestic Conditions

Descriptions of household activities and conditions of Spanish Colonial St. Augustine are rarely found within Spanish documents. Documentary accounts that do exist are often questionable. The advantage of archaeological data are that it can either support or refute these accounts. In the

case of the de Leon site, the archaeological evidence for the most part supported the documents, but many new insights were gained.

House forms in St. Augustine were simple constructions of wood and thatch before 1700 (Manucy 1962:8). A pattern of postholes recovered during the 1977 season at SA 26-1 indicated that a very simple wooden structure is associated with the pre-1700 occupation (Braley 1977). Recent documentary research indicates that during the 16th century, everyone lived in dwellings of wood and thatch, despite differences in socio-economic status (Hoffman and Lyon 1977). Archaeological recovery of the early structure at SA 26-1, along with the additional documentary research largely confirms that wood and thatch was a common house form before 1700 in St. Augustine.

Food was prepared over open fires in earthenware pots (Hoffman and Lyon 1977): and stewing and boiling were the most common food preparation techniques as was indicated from the faunal analyses. The earthenware ceramics were primarily aboriginal St. Johns and San Marcos ceramics, but Spanish utilitarian ceramics were also used for cooking and storage. Most of the tablewares were of Spanish manufacture, majolica being the predominant type, with only a minor use of oriental procelain and either French or Italian faience. British ceramics were virtually absent.

Animal food resources utilized were for the most part local, wild foods, particularly fish. Domestic animals,

however, did supply a portion of animal food to the diet, and hogs, goats, and chicken were raised in the backyard (Cumbaa 1975; Lyon and Hoffman 1977). Floral remains suggest that corn, squash, peaches, and probably other fruits and vegetables were consumed. Corn, an important food source in the 16th century, was brought in from outlying areas of St. Augustine, where it was grown (Hoffman and Lyon 1977), and perhaps from Mexico (Contaduria 1618).

An array of activities could have occupied the leisure time activities of early St. Augustinians. Both archaeological and documentary evidence suggests that card playing or gambling games with dice were part of these activities.

Examination of 16th century probate records from St. Augustine revealed that personal clothing and adornments were a very valuable commodity and an indicator of socio-economic status (Hoffman and Lyon 1977). Due to the archaeological recovery of few items of personal clothing or adornments, little could be suggested concerning either the usage or importance of these items. Buttons, however, were used less often than other fasteners. Instead fasteners such as laces, as indicated by the brass tips, were used more often than buttons. The occurrence of lacing tips at Nueva Cadiz suggests that these were fashionable during the 16th century. Although the documentary evidence for the social status of the pre-1700 occupants of SA 26-1 is unknown, the occurrence of few personal items may be an indicator of low socio-economic status. Unfortunately, the archaeological

record suggesting status differences of the pre-18th century residents of St. Augustine has not been investigated, therefore the social status for the early occupants of SA 26-1 cannot be ascertained. Only through more archaeological testing of 16th and 17th century domestic sites can a definitive statement regarding the social status of the pre-1700 occupants of the de Leon site be made.

Several artifact patterns at SA 26-1 suggests several parallels with the Caribbean sites of Nueva Cadiz (Willis 1975) and the Convento de San Francisco (Council 1975). Included among these patterns are the occurrences of ceramics such as Feldspar Inlaid and micaceous ware; and the occurrences of certain non-ceramic items such as opaque brick red glass and lacing tips. This patterning suggests that, despite local adaptations and socio-economic settings, some Iberian-derived traditions were shared by these three sites.

Multi-Cultural Influences

Sixteenth century St. Augustine has been described recently as a cosmopolitan city because of the variety of ethnic groups present in the 1580's (Hoffman and Lyon 1977). New population statistics offered by Lyon and Hoffman indicate that the population of St. Augustine during the 16th century, in addition to Spaniards, included several aboriginal groups, blacks, 10 Frenchmen, and 1 German.

Archaeological evidence from SA 26-1 suggests that the Spanish residents of early St. Augustine had contact with

four Floridian aboriginal groups, Spanish colonies in the New World such as New Spain and the Caribbean islands, and through New Spain ideas of indigenous Meso-American peoples made their way to St. Augustine.

The aboriginal peoples of Florida with whom the Spaniards interacted most often during the 16th and 17th centuries were the Eastern Timucua and the Guale, with some minor contact with the Apalachee and Western Timucua. Frequencies of St. Johns and San Marcos ceramics suggest that the Timucua and the Guale had a significant impact upon Spanish lifestyles. The nature of this Spaniard and Indian contact has been discussed by a number of anthropologists (Deagan nd; Deagan 1974; Milanich nd; Sturtevant 1962) and will not be treated here.

Proportions of Spanish ceramics and non-ceramic items suggest that all trade was with Spain's New World colonies in New Spain and the Caribbean. Most likely, many of these items made their way to St. Augustine through the situado. Yucatan ceramics and mano fragments further support the arrival of the situado from New Spain. Occurrence of aboriginal Yucatan ceramics represents an additional cultural element which may have affected Spanish Colonial household conditions.

To summarize, archaeological and documentary evidence indicates that early St. Augustine was a "melting pot" of varied ethnic influences. Archaeological investigation is needed before the effects of this multi-cultural contact

upon Spanish St. Augustine can be evaluated. Regarding this multi-cultural contact, Fairbanks has suggested that future processual studies of St. Augustine examine Timucuan, Gulean, and West Floridian Indian acculturation, and Mexican and Caribbean diffusion (Personal communication; 1977, Gainesville).

Economic Conditions

The traditional view of St. Augustine, especially the early settlement, is that it was severely impoverished and constantly plagued with Indian and British raids, natural disasters, and internal conflicts (Bushnell nd). All of these characterizations are true to some extent, but the archaeological evidence from SA 26-1 suggests that economic conditions were not nearly as severe as the documents would indicate. Comparison of the de Leon site with 18th century sites in St. Augustine have provided some insights concerning the economy of the early town. Indications that St. Augustine was supplied more often before 1700 than after that date, does have some credence on the basis of archaeological evidence from de Leon. Frequencies of Spanish ceramics, especially olive jars which were used primarily for shipping, and the occurrence of Yucatan ceramics, strongly supports trade with New Spain, most likely through the situado. Despite 18th century indications of differential access to the situado on the basis of socio-economic status (Shephard 1975; Beidleman 1976), all of the 18th century sites in St. Augustine have had considerably lower

frequencies of shipping vessels such as olive jars than SA 26-1; and Yucatan ceramics have been completely absent. This supports the view that the situado did arrive more frequently before the 18th century than after that time. Although archaeological determination of economic conditions in early St. Augustine needs to be tested, economic support from the situado is suggested from the material culture at SA 26-1.

CHAPTER 5 CHANGING TRENDS DURING THE FIRST SPANISH PERIOD

Of the four disciplines of anthropology, archaeology has been traditionally the one most concerned with the investigation and explanation of cultural change. Excavation of closed contexts from the 16th and 17th centuries at SA 26-1 has facilitated a preliminary examination of cultural change within the First Spanish Period, from 1572 to 1763, in St. Augustine. Discussion of cultural evolution from the 16th to the 18th century will be based primarily upon the occurrence of some general trends in the material culture, and the associated, documented cultural events, which are parallel to the archaeological appearances of the artifacts.

Aboriginal ceramics underwent a significant change. St. Johns ware was the predominant utilitarian ceramic used until San Marcos supplanted St. Johns ware during the late 17th and early 18th centuries. The cultural causes for this process is well documented. By the mid-17th century, the Eastern Timucua were becoming decimated, due largely to disease. In the 1680's, Guale Indians from the Georgia Coast sought protection in St. Augustine from the British raiders. A cultural explanation for the early occurrence of San Marcos at SA 26-1 is unknown, but it may indicate trade with the

Georgia Coast or an early presence of a few Guale residents, perhaps personal servants in St. Augustine.

Most European artifacts, especially ceramics, in the 16th and early 17th centuries were of Iberian manufacture. Iberian derivation for much of this material culture had been suggested by the occurrence of these types at Nueva Cadiz (Willis 1976). By 1650, ceramics made in Spanish American sites began to appear and later became dominant Hispanic ceramic forms. During the 18th century Spanish ceramics were often replaced by British ceramics, especially in lower socio-economic households (Deagan 1974; MacMurray 1975). British and other European types have occurred to some degree at all 18th century domestic sites. Explanation for this pattern of European artifacts is also well documented. The Iberian Peninsula was most likely the source for most Spanish ceramics in the New World during the 16th and early 17th centuries (Goggin 1968). By the middle of the 17th century Spanish American kilns were producing some ceramics in the Hispanic tradition. Archaeological data about Spanish kilns are lacking. Therefore, no statement of sources and distribution of Spanish ceramics can be offered. The presence of British goods at 18th century sites were largely due to the flourishing contraband trade of the mid-18th century (Harmon 1969). The fragment of North Devon Gravel Tempered Ceramic and white clay pipe fragments in 17th century closed contexts at SA 26-1, may be evidence of an early illegal transaction, similar to the one occurring in 1683 (Arnade 1970).

Glass underwent a similar evolution as did European ceramics from Iberian derivation, possibly first to Spanish American manufacture, then to British sources. Since so little is known of Spanish glass manufacture in the New World, changes in the formal attributes and frequencies of glass from Iberian to New World manufacture are obscure. From the evidence at SA 26-1, it appears that glass occurred less frequently before the 18th century than after that date in St. Augustine. Because so much of this glass occurring in the 18th century appears to have been of British manufacture, the explanation offered is that increased dependence upon the contraband trade accounts for the increase in glass.

Council observed a similar pattern for European material culture at the site of Convento de San Francisco in San Domingo. He concluded that "perhaps compelled largely by economic necessity, Spanish material culture became less Iberian and more European in content" (1975:127). This assessment appears to hold for colonial Florida as well, where a declining economy, resulting from decreasing political control of Florida, is evident in the material culture.

Personal adornments such as buttons and beads occurred more often in the 18th century than before that date. It is difficult to suggest a cultural cause for this occurrence. Buttons replaced lacing tips, which were evidently a pre-18th century style. The presence of fewer beads before 1700 than after that date is uncertain, and no explanation can be offered at this time.

Food resources and food preparation techniques indicate a great deal of continuity. Cattle were the only domestic animals absent at SA 26-1 and present at 18th century sites. This lack may be an indication that cattle did not thrive (Lyon and Hoffman 1977) as well as they did during the intensive establishment of inland cattle ranchos in the mid-18th century.

House forms indicate a marked change. Manucy (1962) has described this evolution in detail. Almost all houses before 1700 were of wood with thatch roofs. As a result of the British raid on St. Augustine in 1702, ordinances required the use of masonry in house construction. Thus a single event changed patterns of architecture.

In summary, the pre-1700 occupation at SA 26-1 strongly indicated a number of changes in the material culture as well as some continuities, from the 16th century to the 18th century. Needless to say, more archaeological research is needed before a complete statement of cultural change during the First Spanish Period can be produced. It has been possible, however, to demonstrate that these cultural changes can be observed in archaeological contexts.

CHAPTER 6 SUMMARY AND CONCLUSIONS

Excavations at SA 26-1 has provided for the first time archaeological evidence for living conditions, notably domestic activities, during the early period of St. Augustine's history. Early St. Augustine has been often depicted as one of the worst periods for the Spaniards during their occupation of Florida. Although the material remains neither supported nor refuted the presence of abject poverty, the synthesis offered here has provided some implications of early Spanish colonial lifestyles in St. Augustine. These have been discussed in the preceding chapters.

A total of 64 pre-18th century proveniences were recovered. These contexts were chosen on the basis of their termini post quem derived from majolica dates. The artifacts from these included ceramics, glass, metal, stone, and bone. Olive jar was the most frequently occurring ceramic encountered, which was primarily used for shipping food items. The frequency of this ceramic at SA 26-1 along with the presence of Yucatan wares has been suggested in this work to indicate the arrival of the situado from New Spain.

St. Johns ware and the San Marcos series were the second and third most frequently occurring ceramic types.

The presence of San Marcos in 16th and early 17th century proveniences has indicated that new dates for its occurrence in St. Augustine must be considered.

Most artifacts were of Spanish manufacture, and the non-Spanish, European artifacts identified had only very minor occurrences.

An interpretation of domestic conditions, multi-cultural influences upon colonial St. Augustine, and economic situation of early St. Augustine, has been offered. The cultural causes for this material patterning were compared and contrasted with 18th century sites, thus facilitating a very preliminary examination of cultural change during the First Spanish Period. Parallels in artifact patterning between SA 26-1 and the Caribbean have been discussed.

Despite these interpretations, the non-representativeness of the pre-18th century component at SA 26-1 cannot be stressed enough. It is important to realize that these interpretations are very tentative and more archaeological testing of pre-18th century sites is needed before a complete statement of the socio-cultural milieu can be produced.

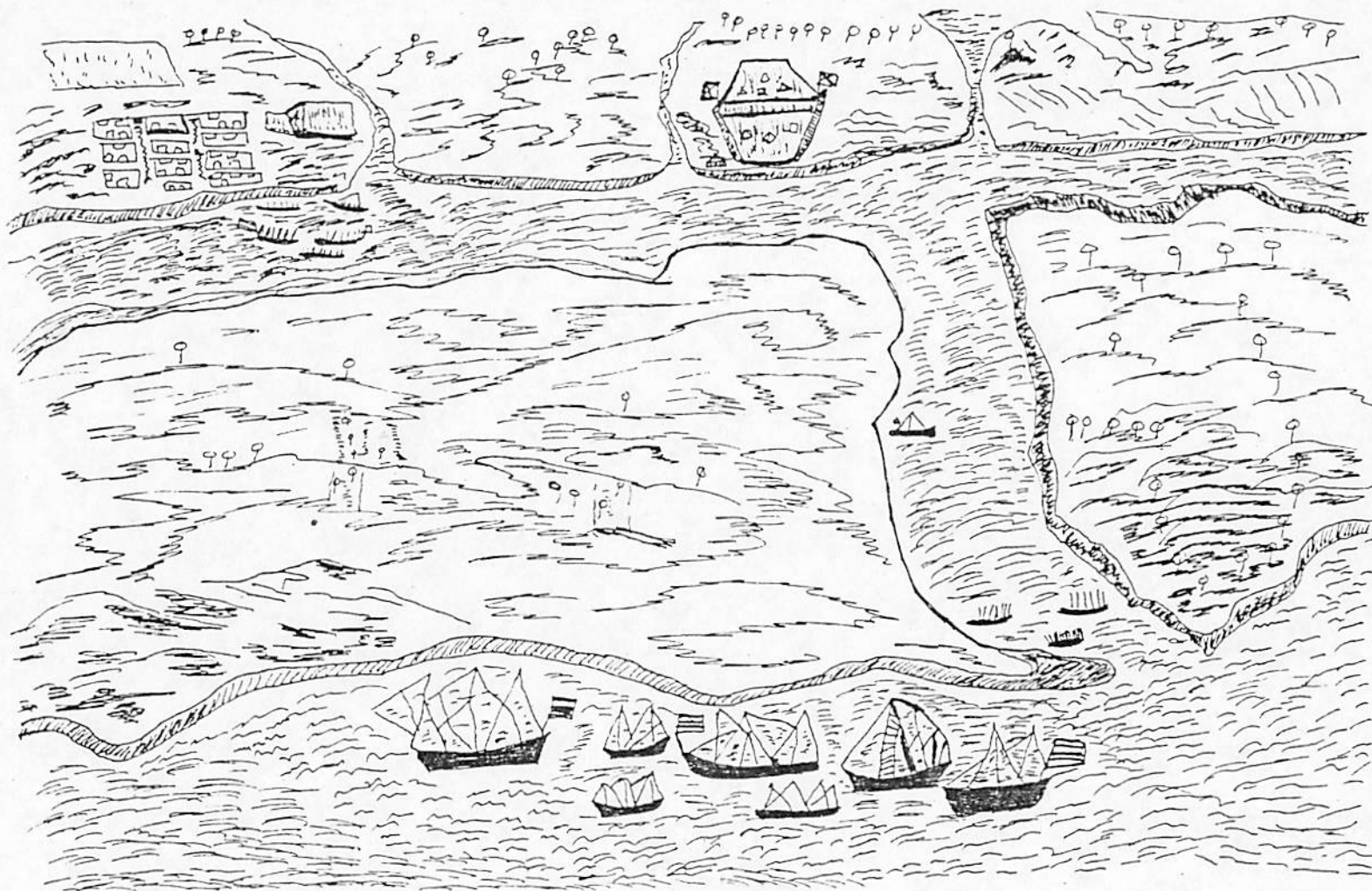


Figure 1: Sketch Taken from the Boazio Engraving Depicting
Drake's Raid on St. Augustine in 1586

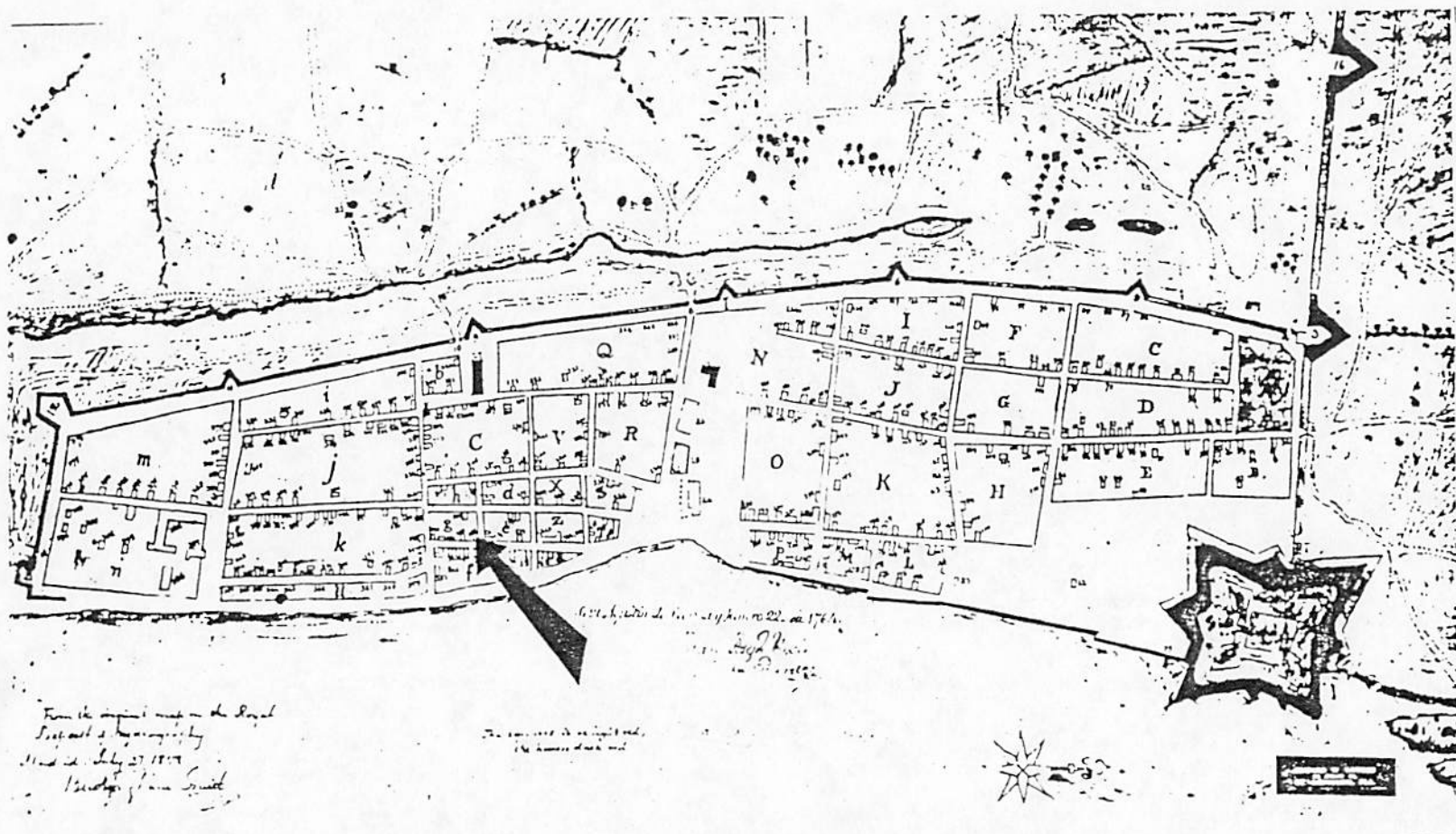


Figure 2: Location of the de Leon Site with the City Environs of St. Augustine, Puente Map 1764

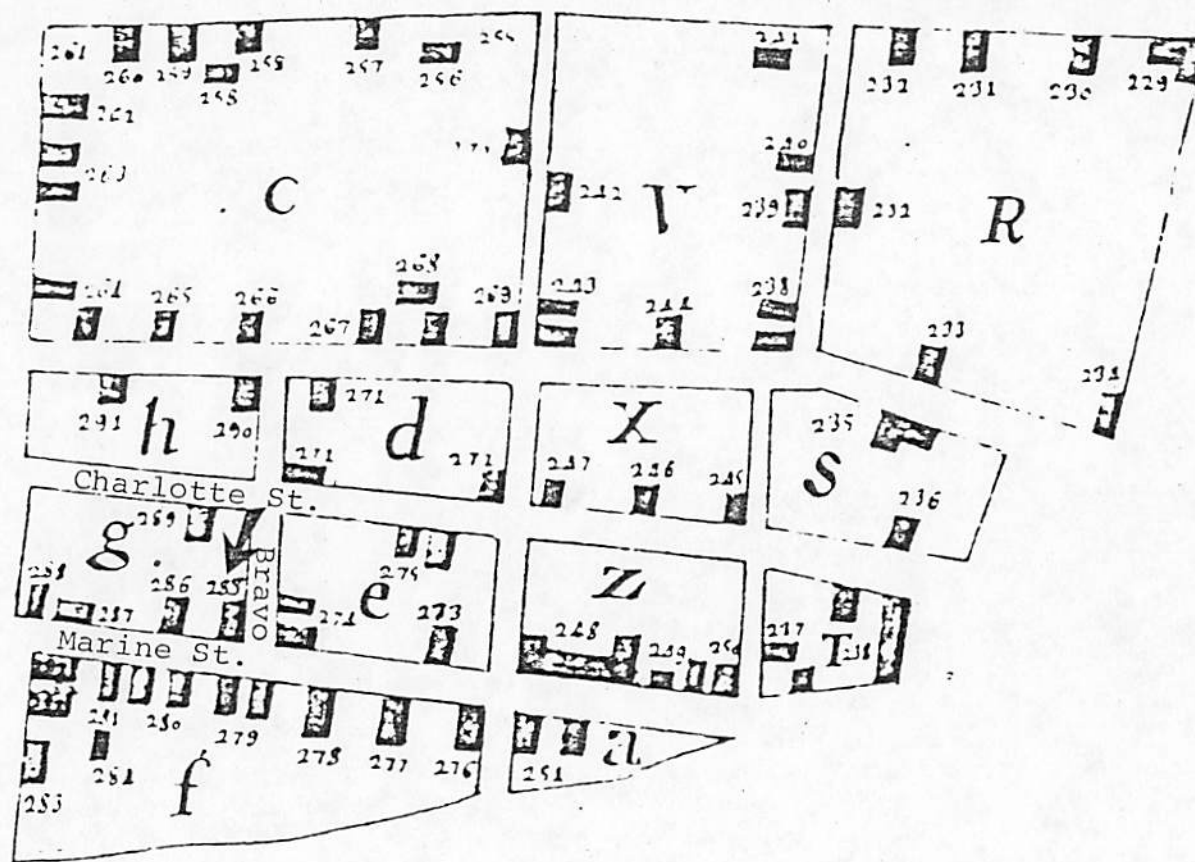


Figure 3: Location of the de Leon House Site Within the Boundaries of Present Day Streets, Taken from the Puente Map 1764

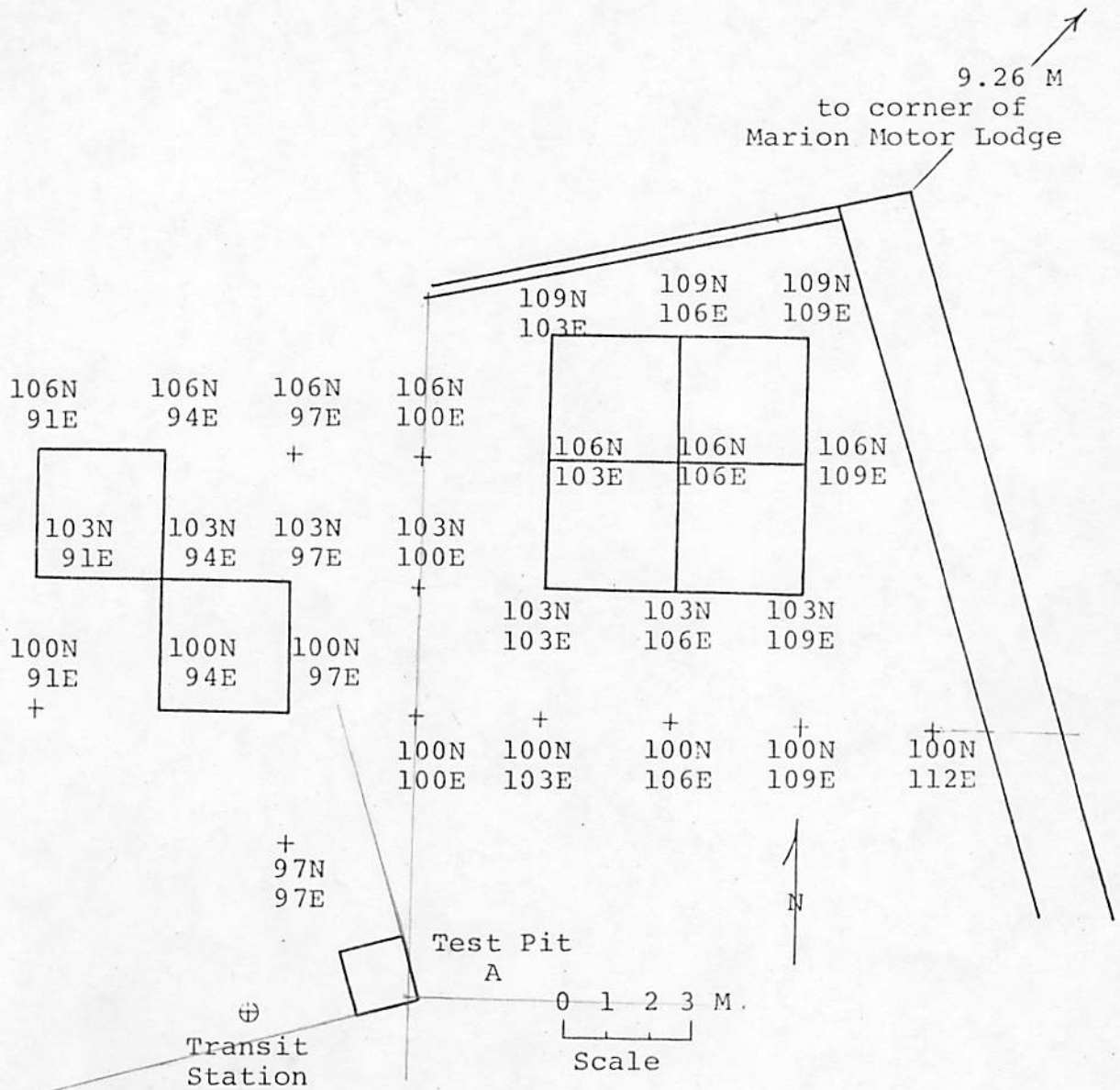
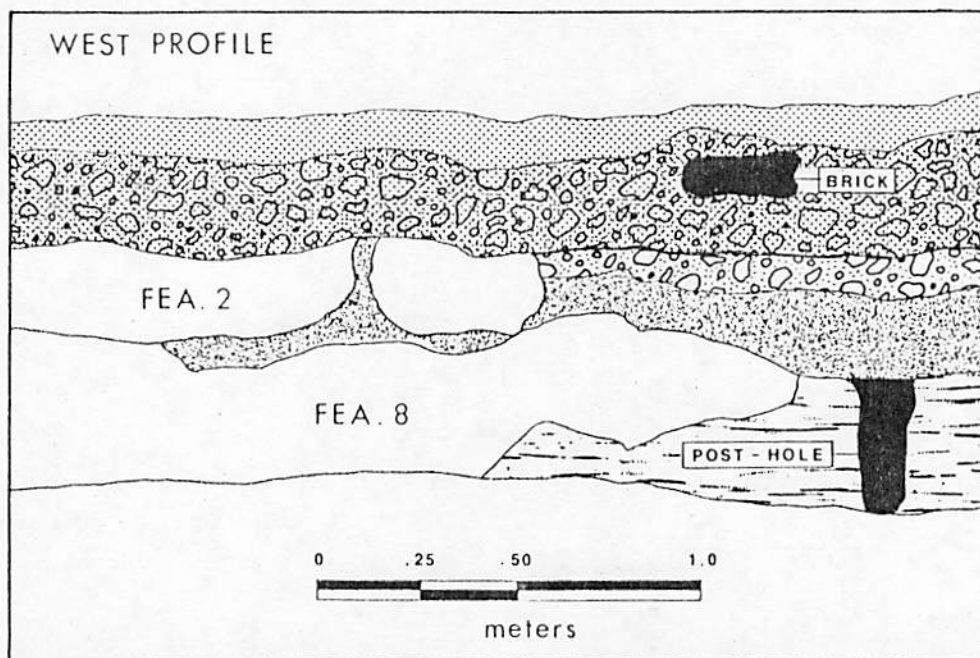
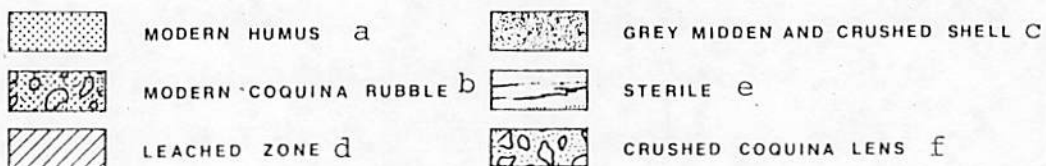
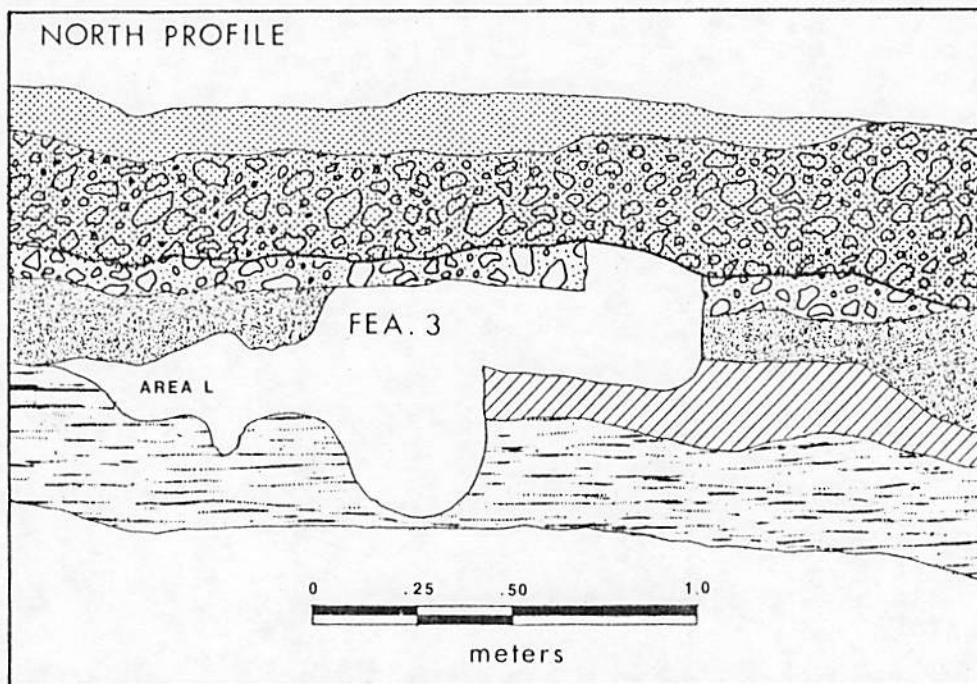


Figure 4: SA 26-1 - de Leon Site
Overall Site Map 1976
Excavations

Figure 5: Stratigraphic Profile of SA 26-1
(Profile of 106N 106E)



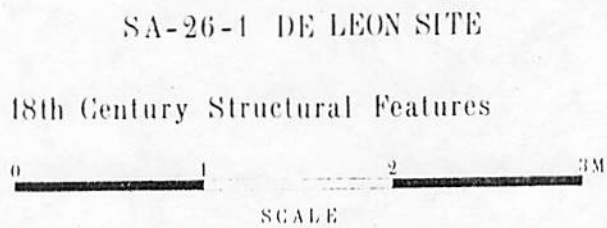
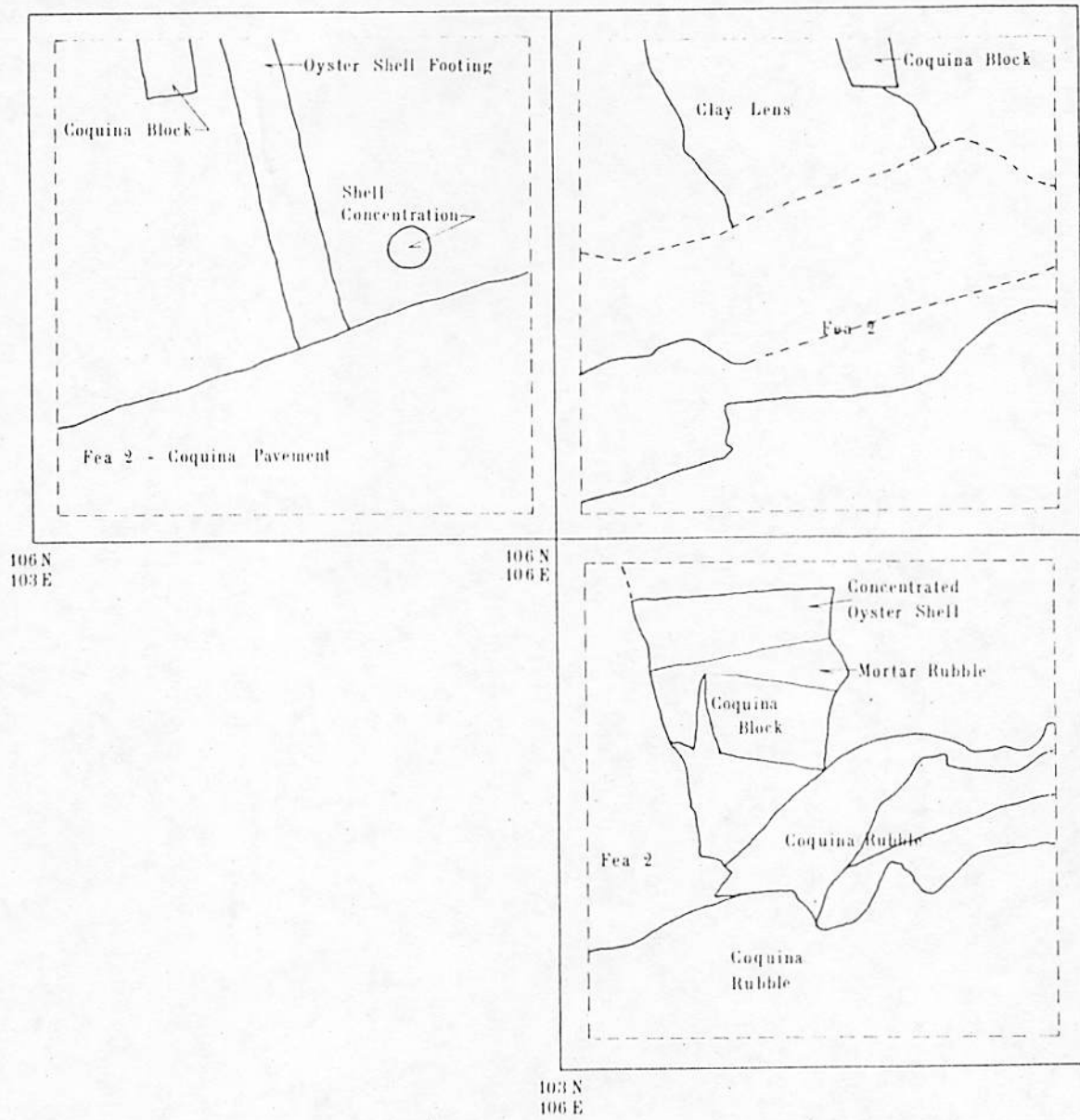


Figure 6: 18th Century Structural Features

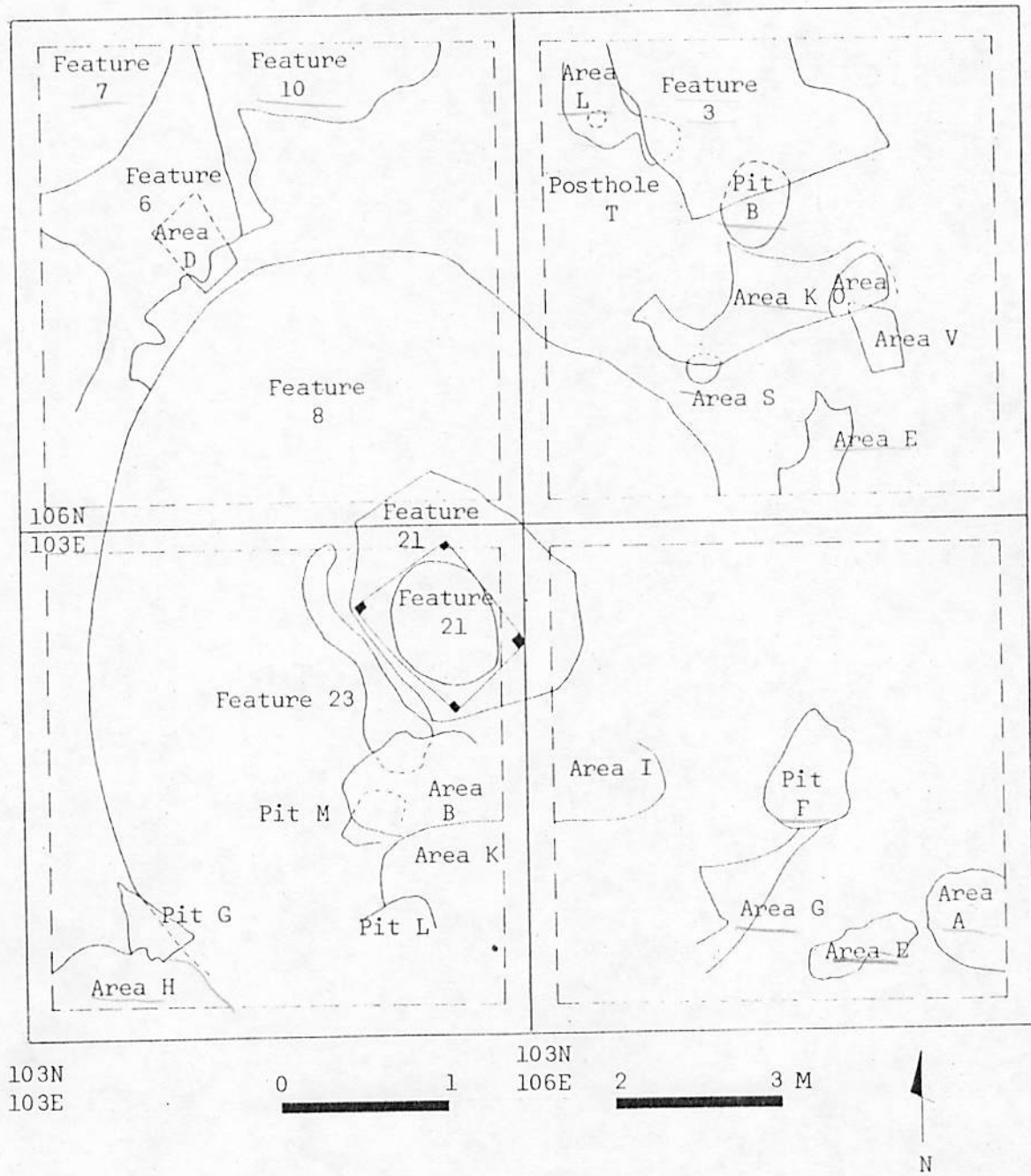


Figure 7: Map of 16th and 17th Century Features

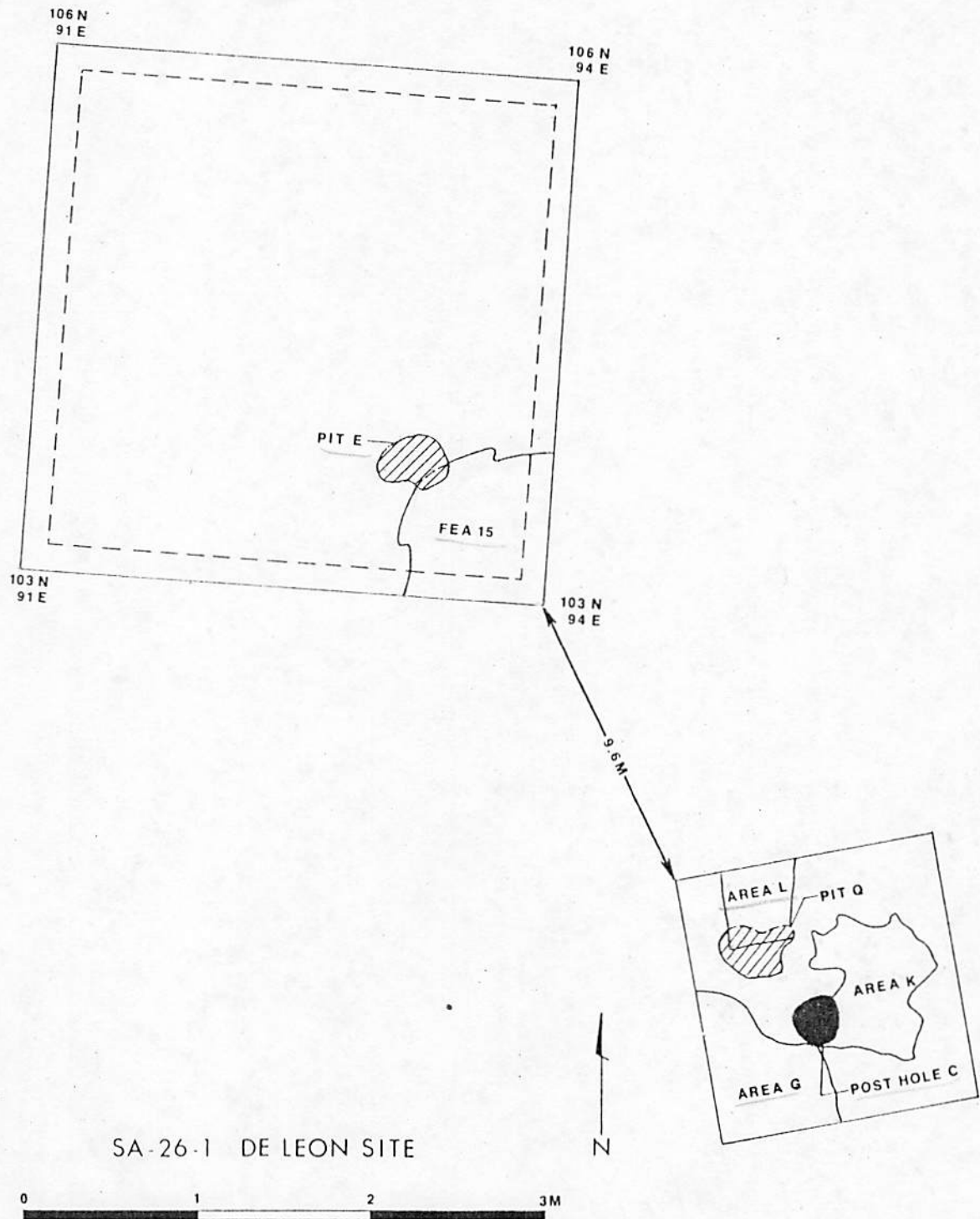


Figure 8: Map of 16th and 17th Century Proveniences

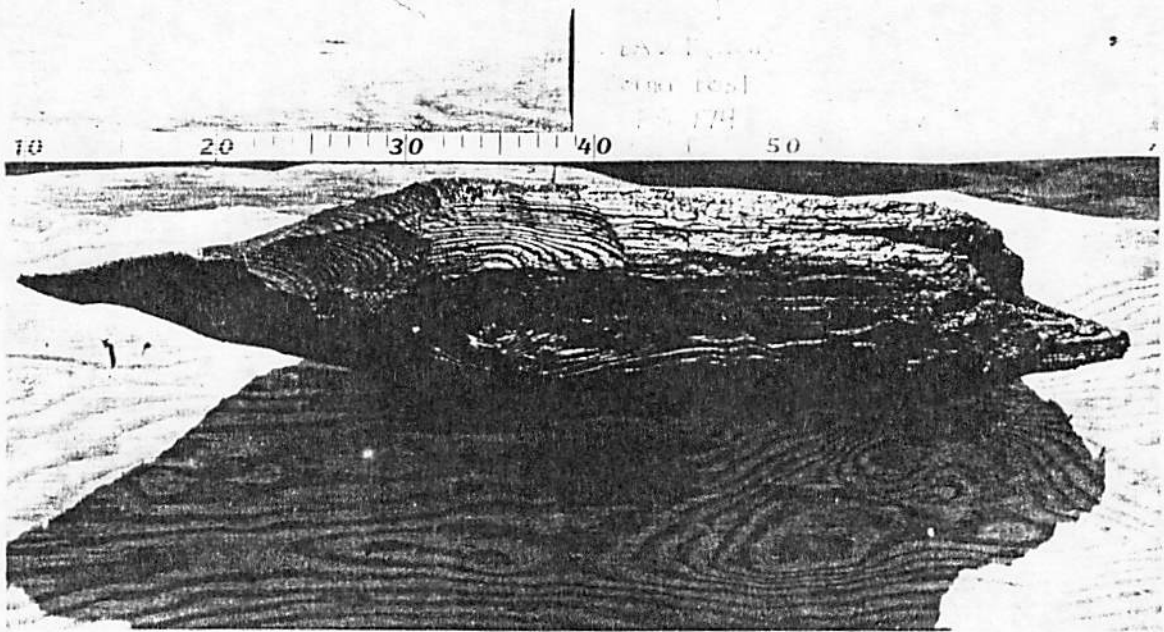


Figure 9: A Corner Post from the Well



Figure 10: Barrel Well (Feature 21) Within Square Casing

Figure 11: Body Sherds of St. Johns Ware

A and B: Variations of Checked
Stamped Sherds

C: Plain Sherds



Figure 12: Rim Sherds of St. Johns Ware

- A: Plain Rims with Cone-Shaped Protrusions
- B: Check Stamped Rim with an Incised Letter "W"
- C: Check Stamped, Straight Rim
- D: Slightly Flaring, Plain Rim
- E: Check Stamped sherd with a Mend Hole

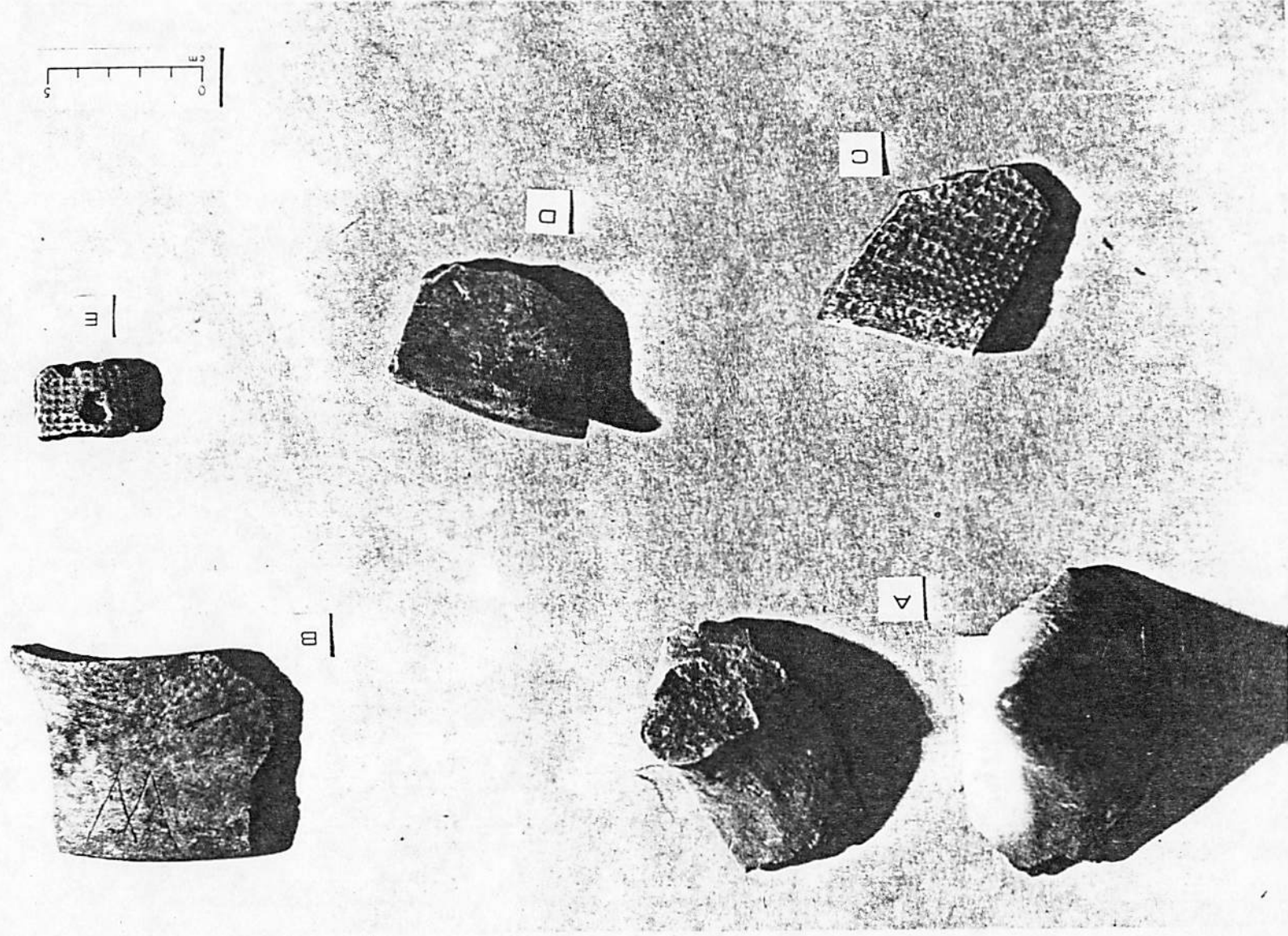


Figure 13: San Marcos Ceramics

- A: Rim Sherd, with Larimar-like Features
- B: Incised Sherds
- C: A Ring Foot
- D: Stamped, Rounded Base
- E: Slightly Everted Rim with a Row of Punctations under the Lip

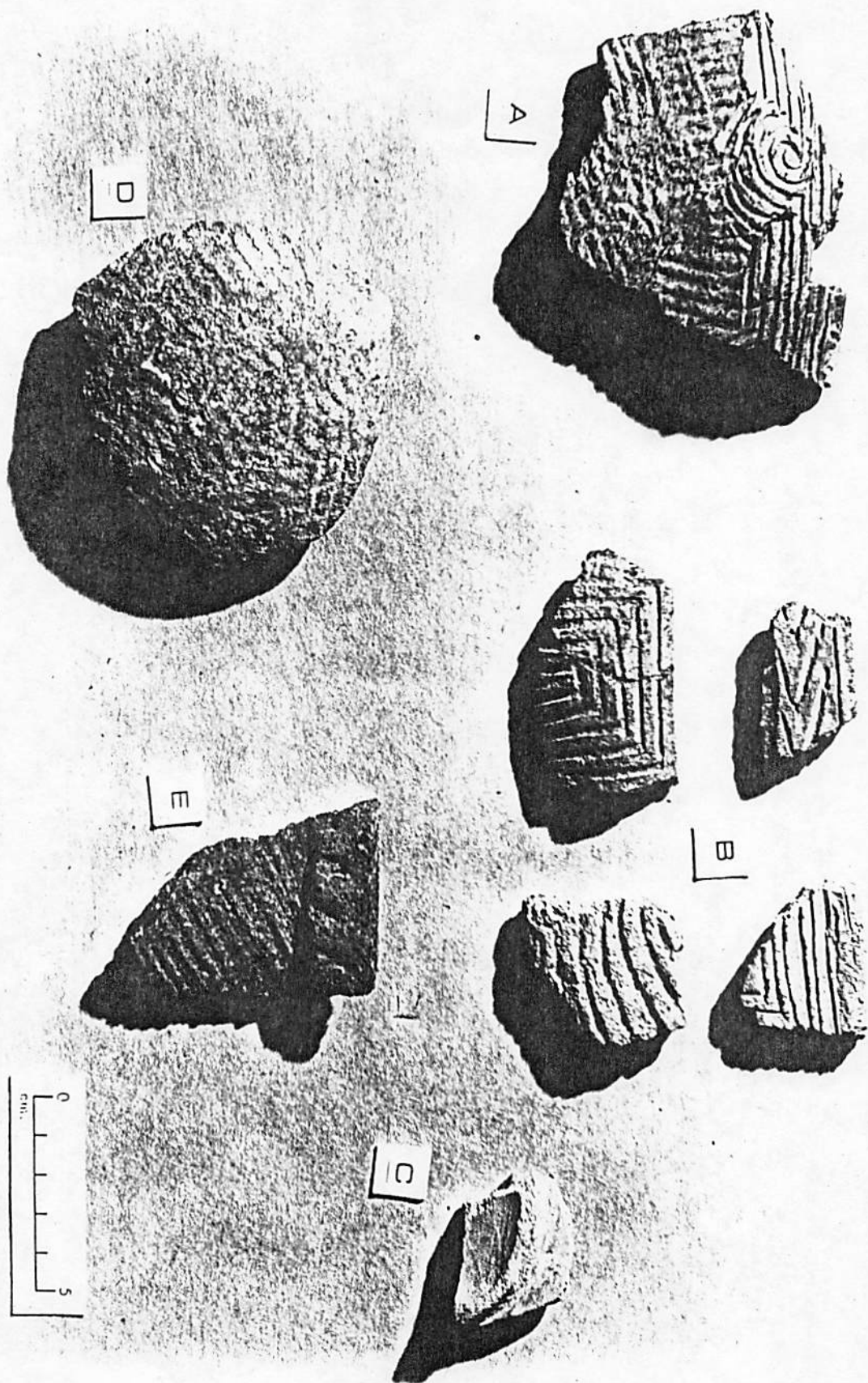


Figure 14: Leon-Jefferson Ceramics

- A: Jefferson Complicated Stamp, Type A
- B: Jefferson Complicated Stamp, Type C
- C: Jefferson Rims, Type 5
- D: Leon-Check Stamp
- E: Miller Plain
- F: Ft. Walton Series
- G: Prairie Cord-Marked

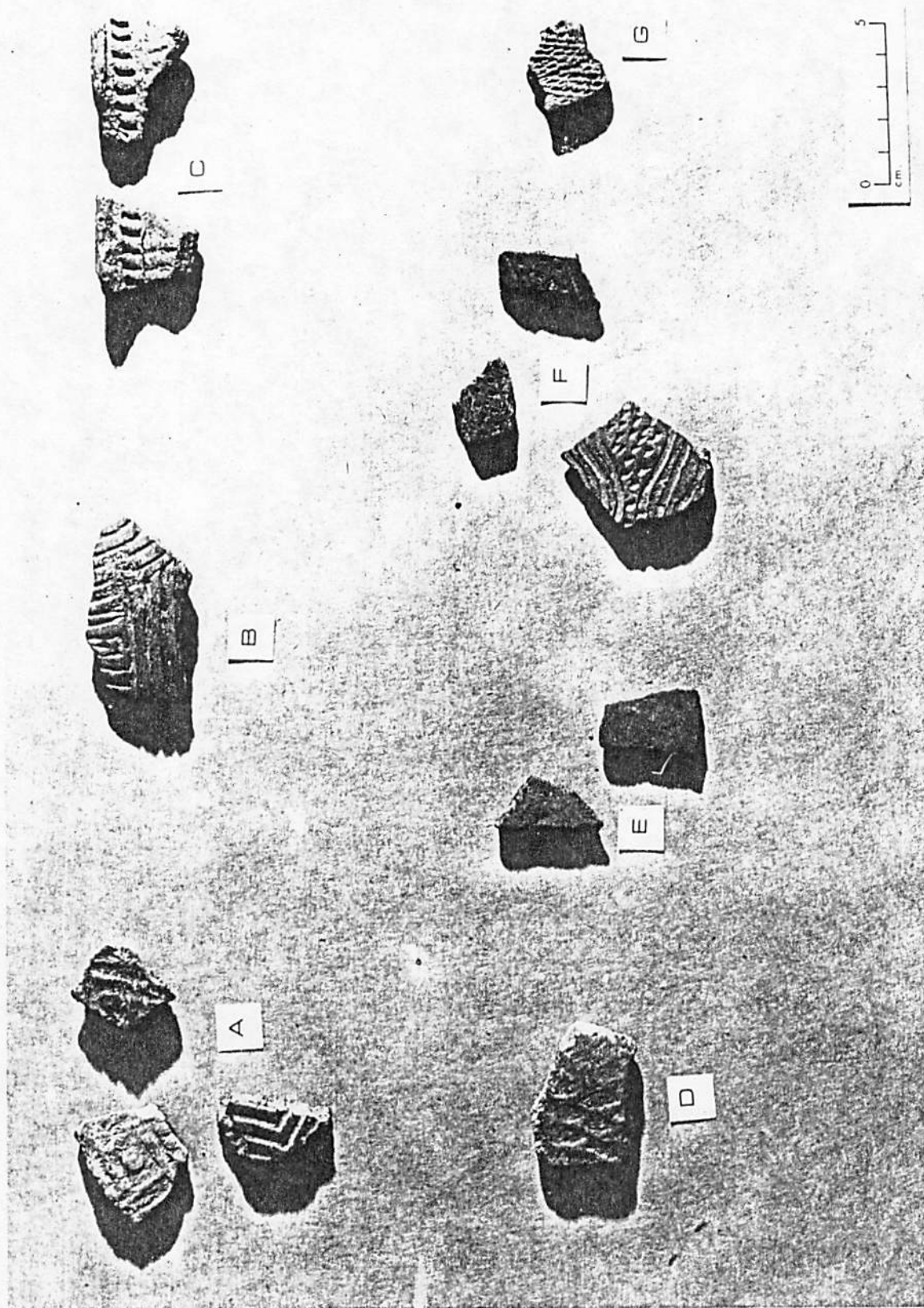


Figure 15: Meso-American Ceramics

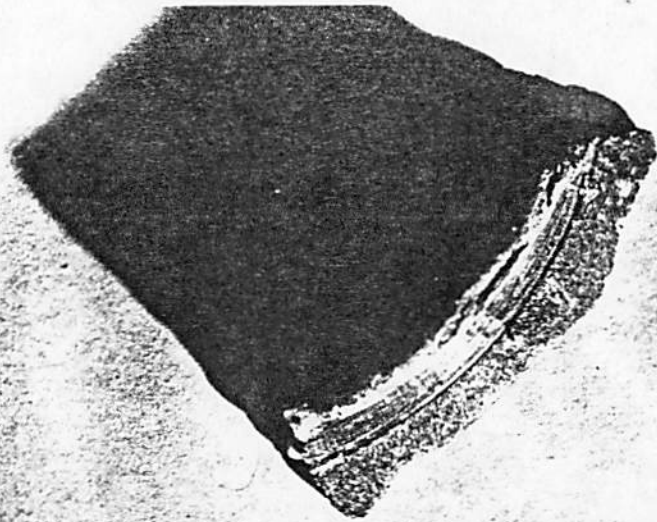
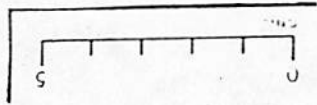
- A: Yucatan Colonial
- B: Unslipped Plain
- C: Bolon Borwn
- D: Yunku Plain
- E: Fine Orange
- F: Unidentified Red Slipped



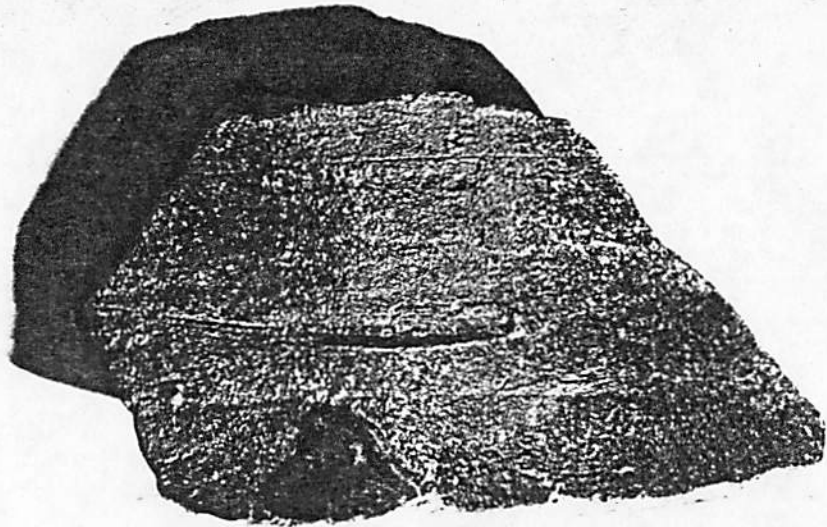
Figure 16: Lead-Glazed Earthenwares

A: North Devon Gravel Tempered

B: Peasant Ware



△



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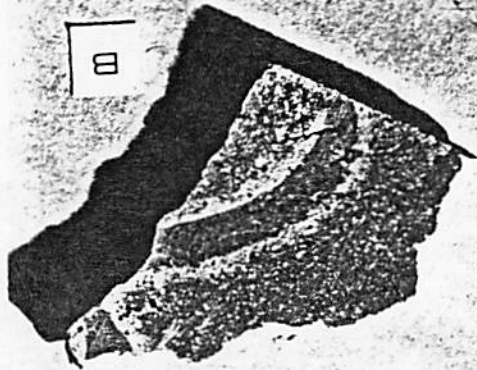


Figure 17: "Limestone Ware"

Note: Carved Limestone Object
at Upper Right

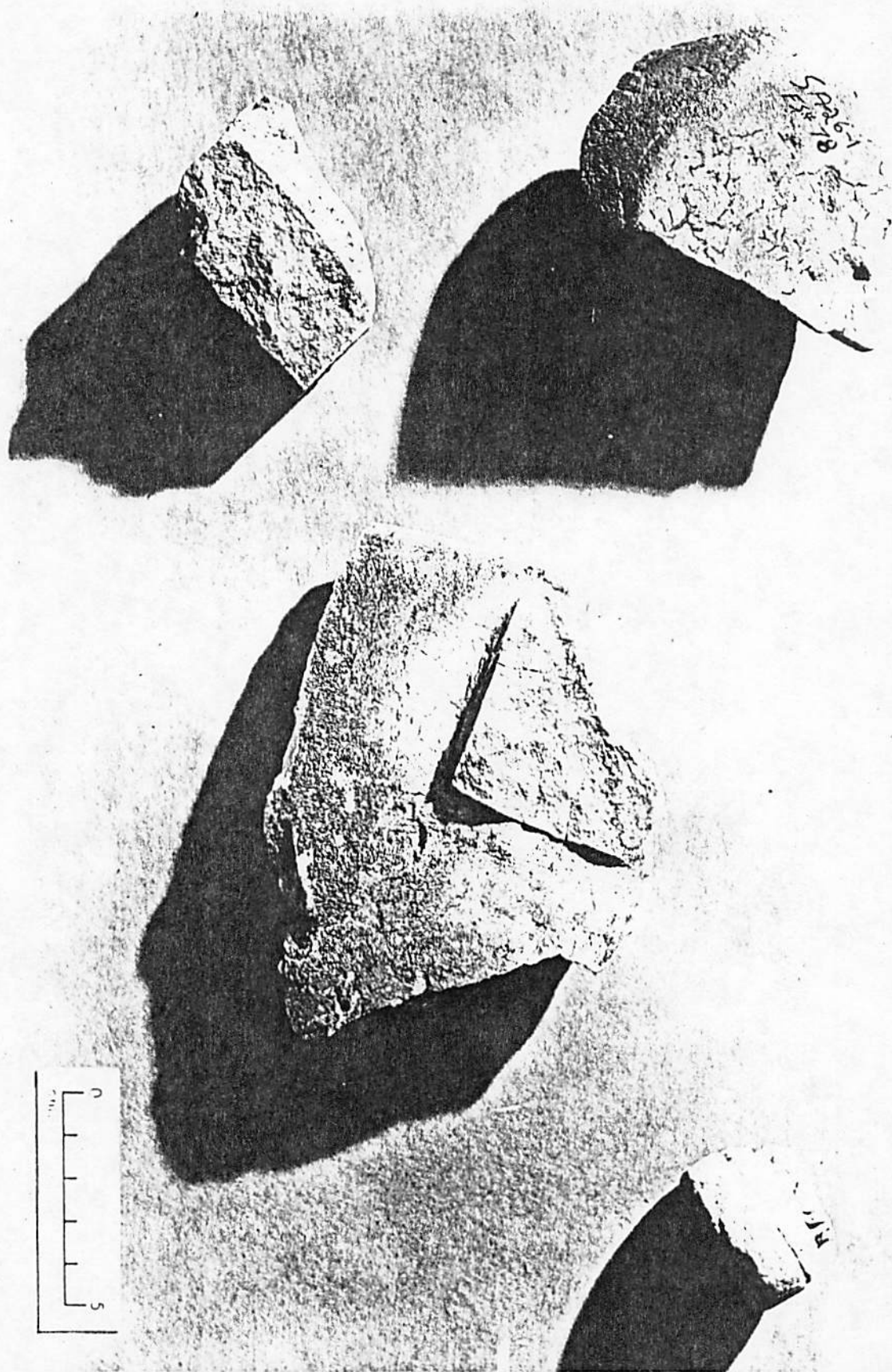


Figure 18: 16th Century Majolica

- A: Isabella Polychrome
- B: Ichtucknee Blue on Blue
- C: Santo Domingo Blue on White

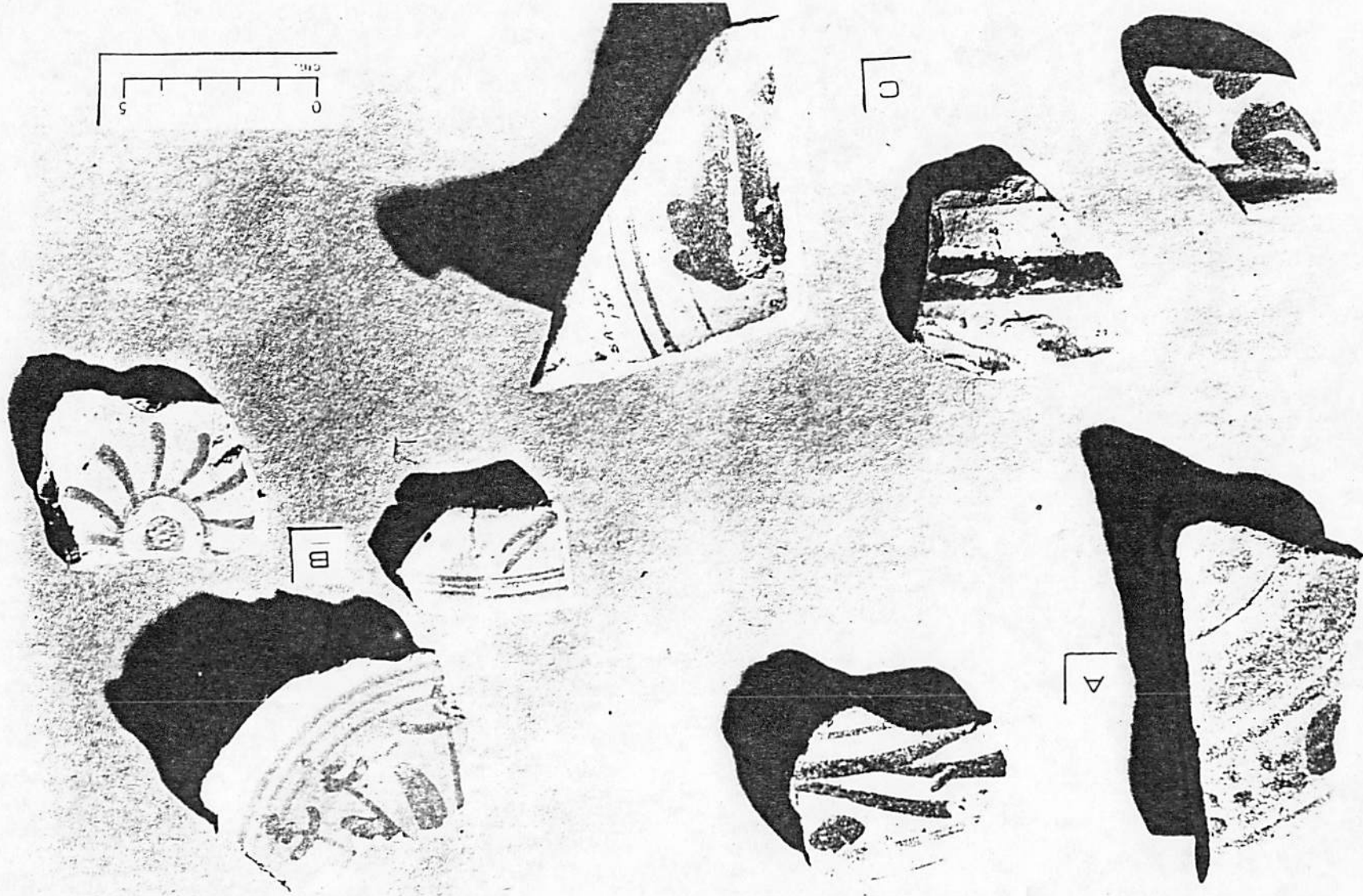
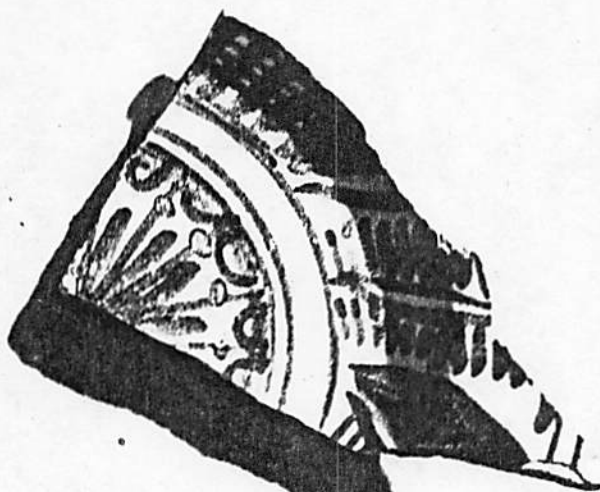


Figure 19: 17th Century Majolica

- A: Ichtucknee Blue on White
- B: Aucilla Polychrome
- C: Fig Springs Polychrome
- D: Abo Polychrome

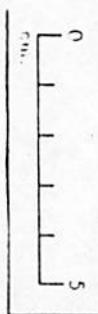
6



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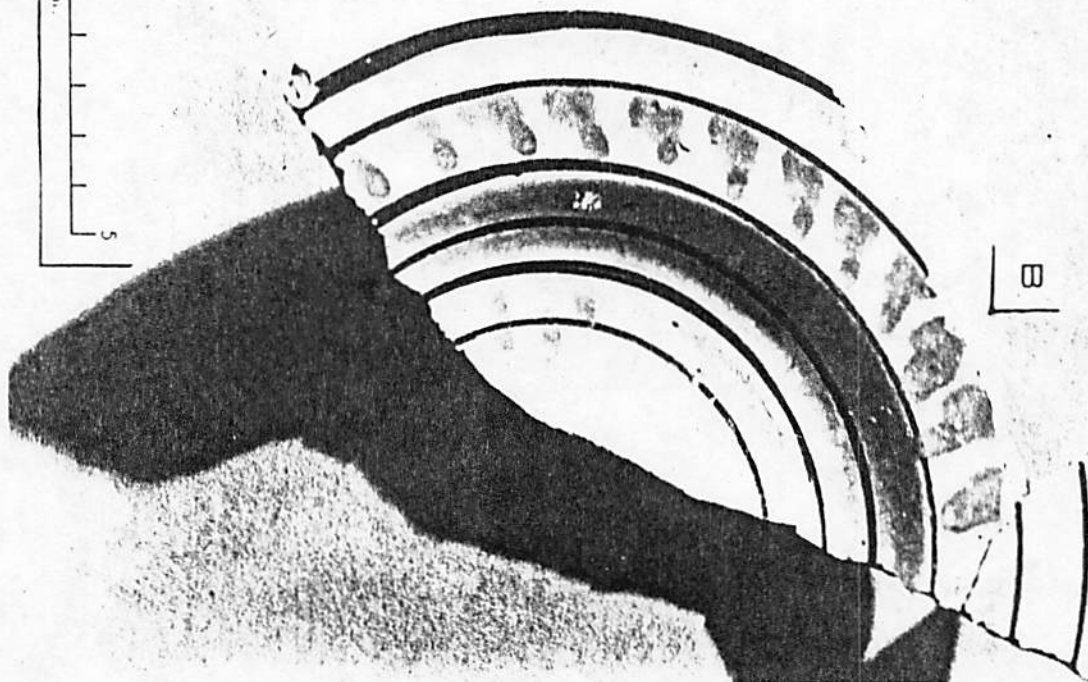


Figure 20: Unidentified Majolica

- A: Variety 1, Blue on White, possibly of Portuguese manufacture
- B: Variety 2, Zoned polychrome motif of powder blue and aquamarine on a white ground
- C: Variety 3, Design of blue Moorish alafias on a white ground
- D: Variety 4, Greenish-blue design with a yellow-stripped overglaze painted on a white ground

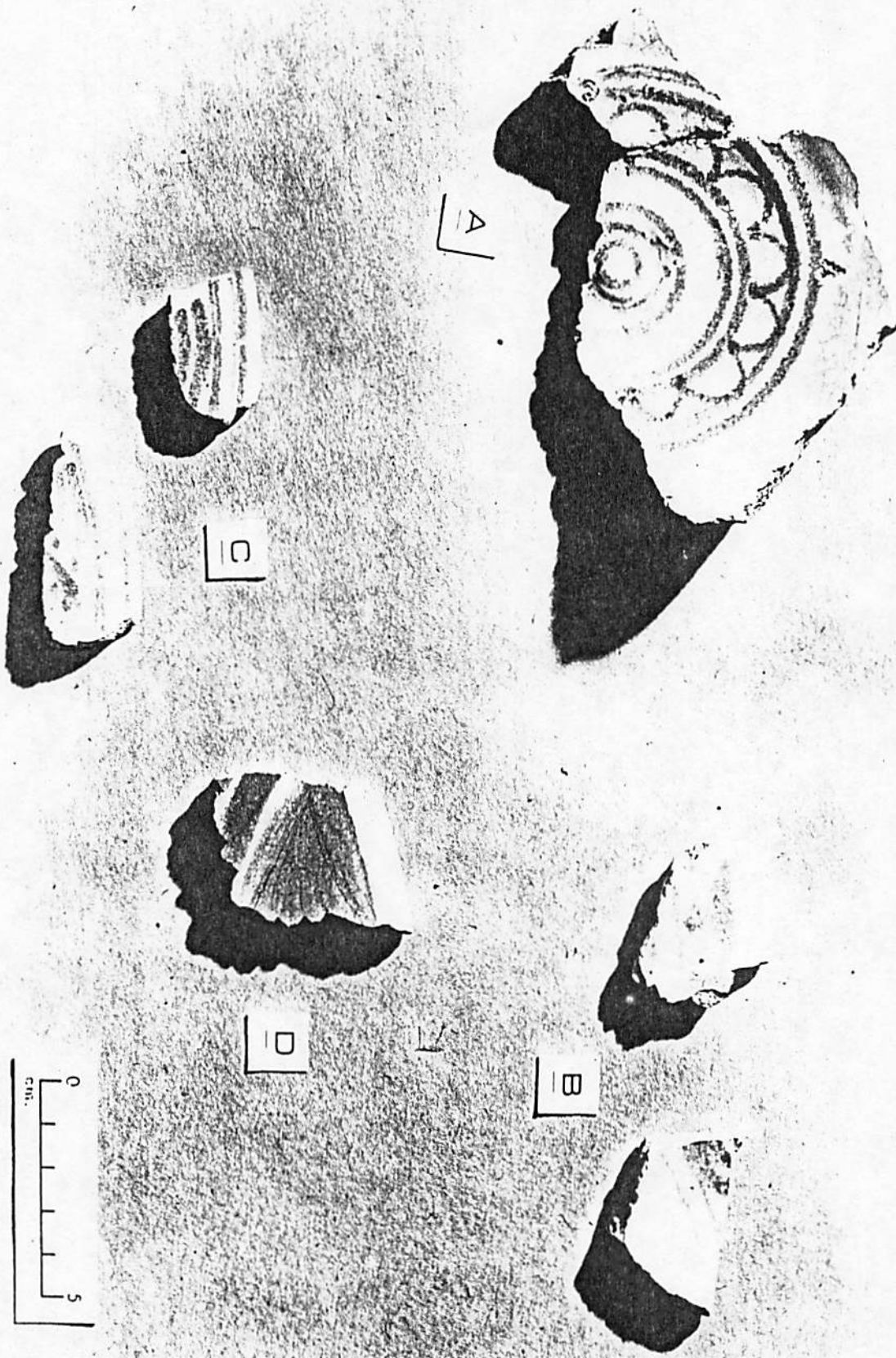


Figure 21: Micaceous Ware

A-C: Orange Variety
D: Red Slipped Variety
E: Buff Variety

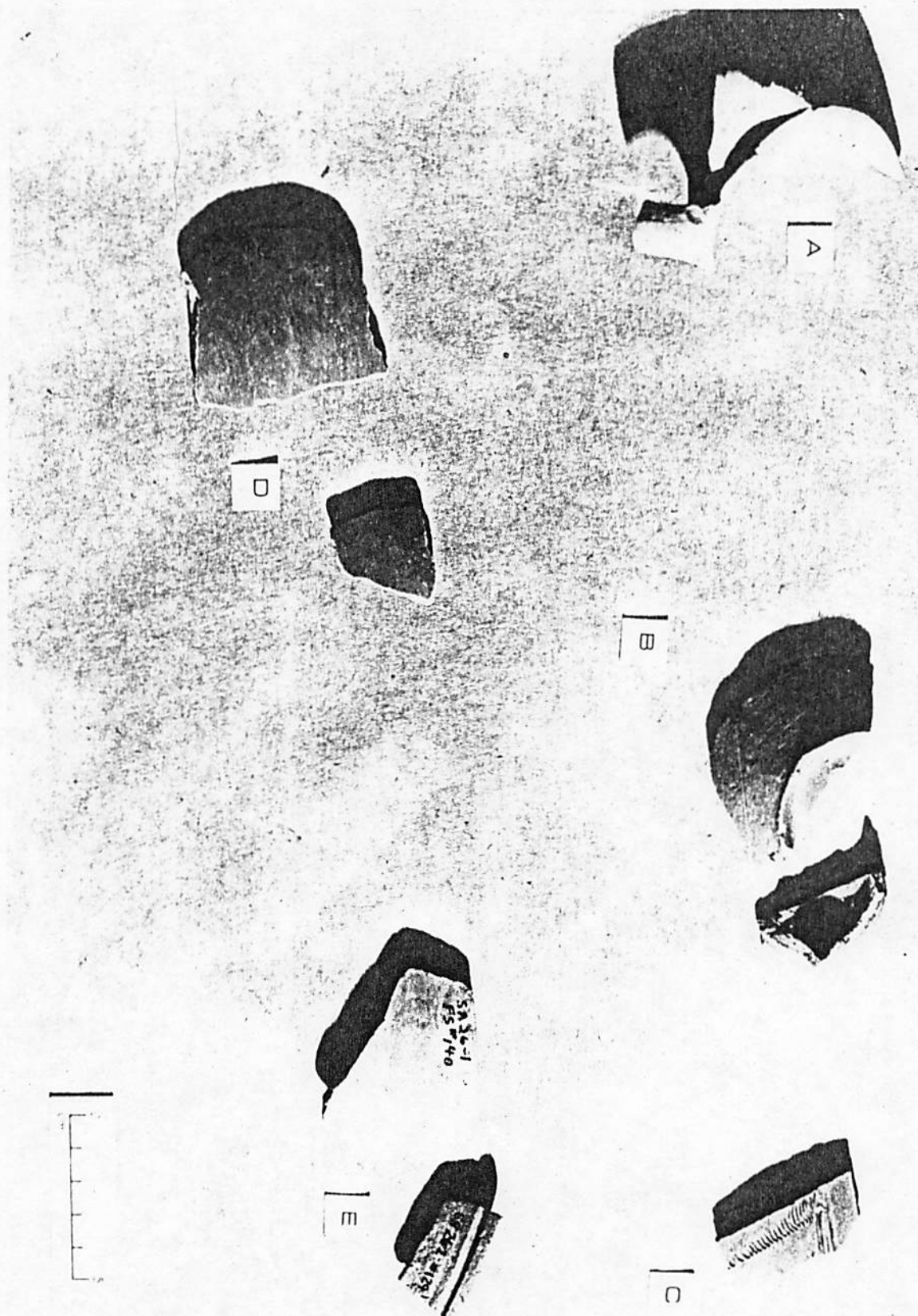


Figure 22: Red Spanish Ceramics

- A: Feldspar Inlaid
- B: Mexican Red Film
- C: Utilitarian Red Film Sherds
- D: Red Film Sherds with Incised
and Appliqued Designs

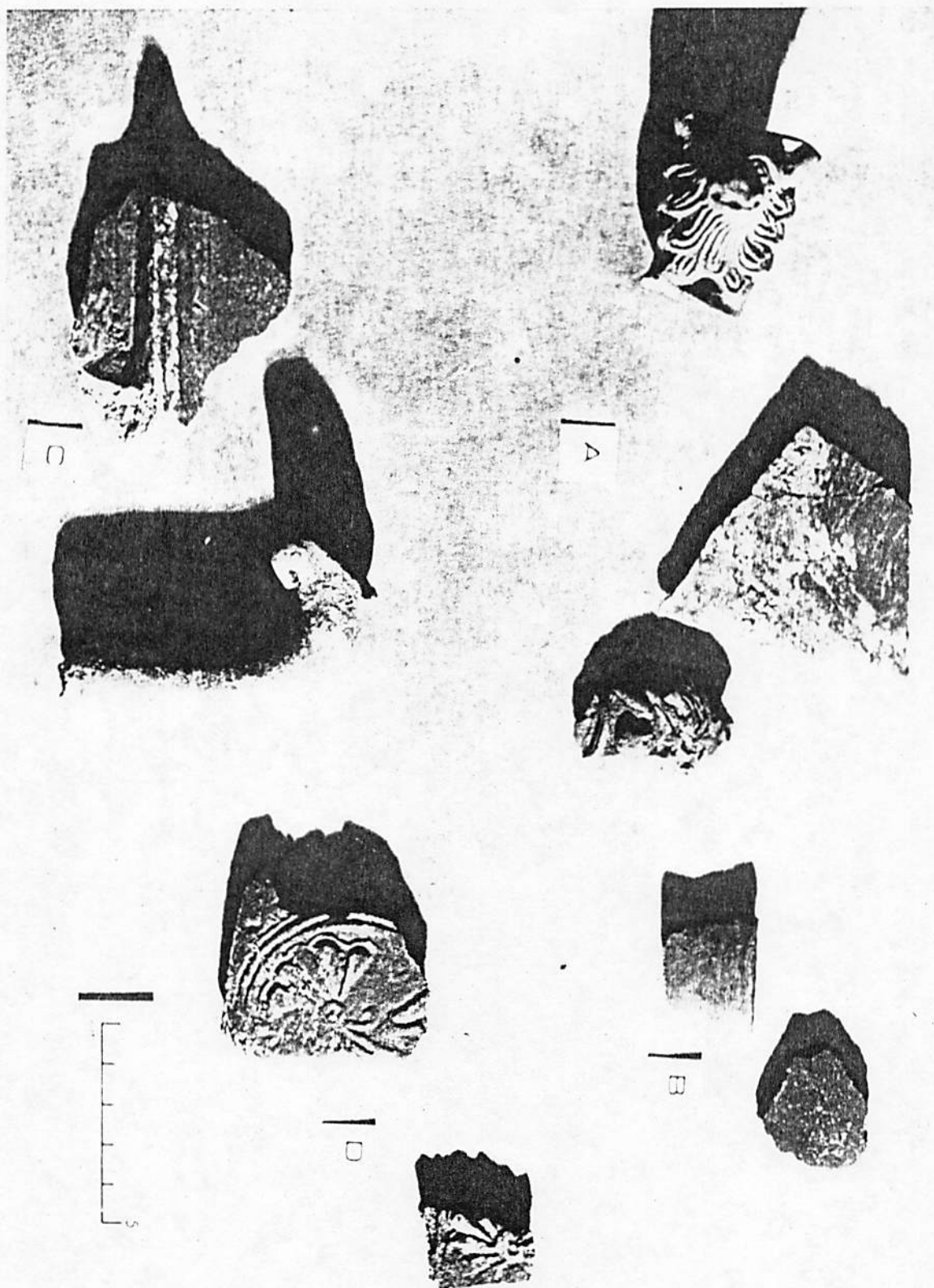


Figure 23: Unidentified Porcelain Blue on White Sherd

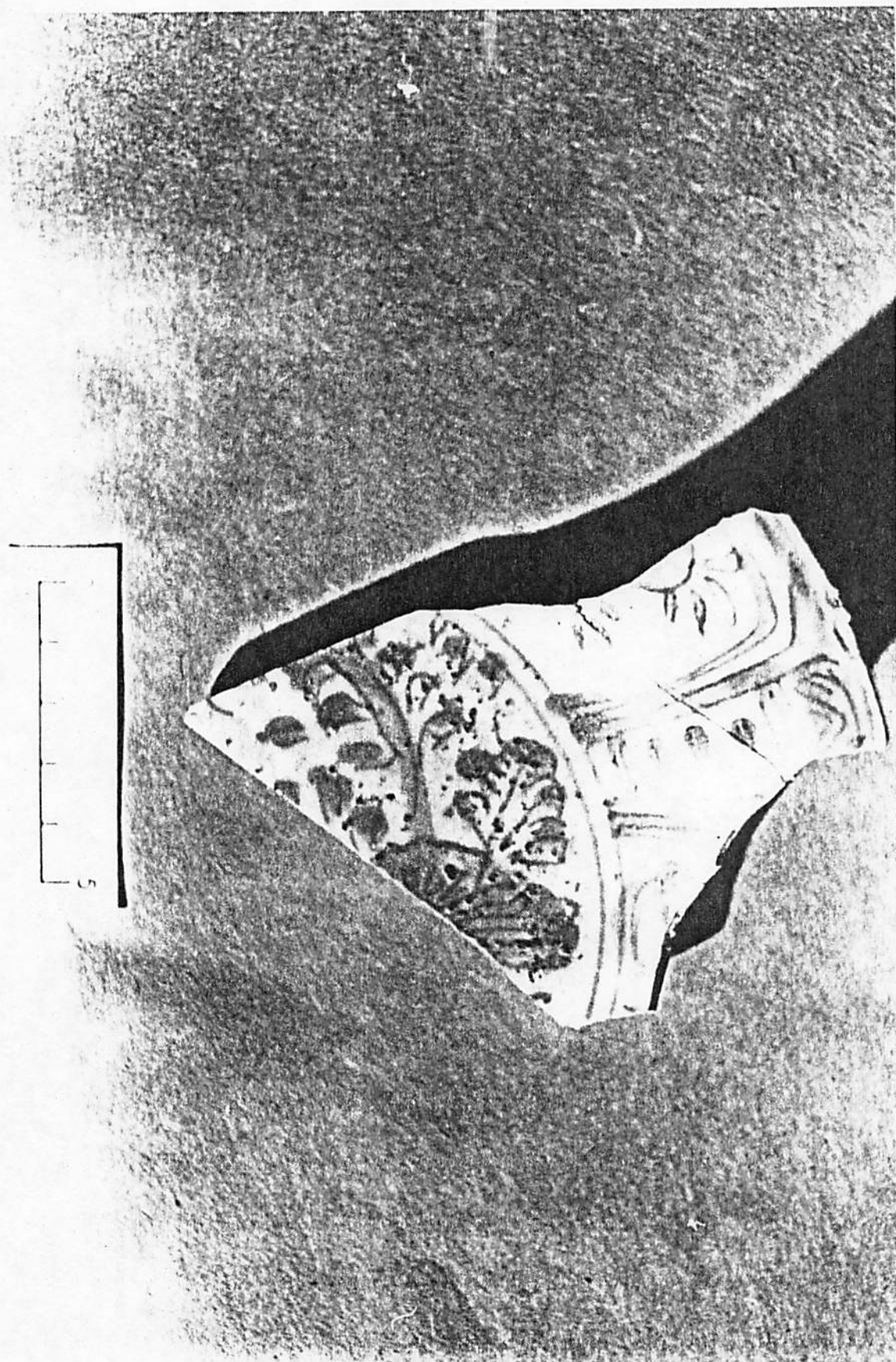


Figure 24: Miscellaneous Artifacts

- A: Strike-a-light
- B: Bone Die
- C: Worked Bone
- D: Gaming Disc Made from a San
Marcos Check Stamped Sherd
- E: Beads (left, jet bead,
right, seed bead)

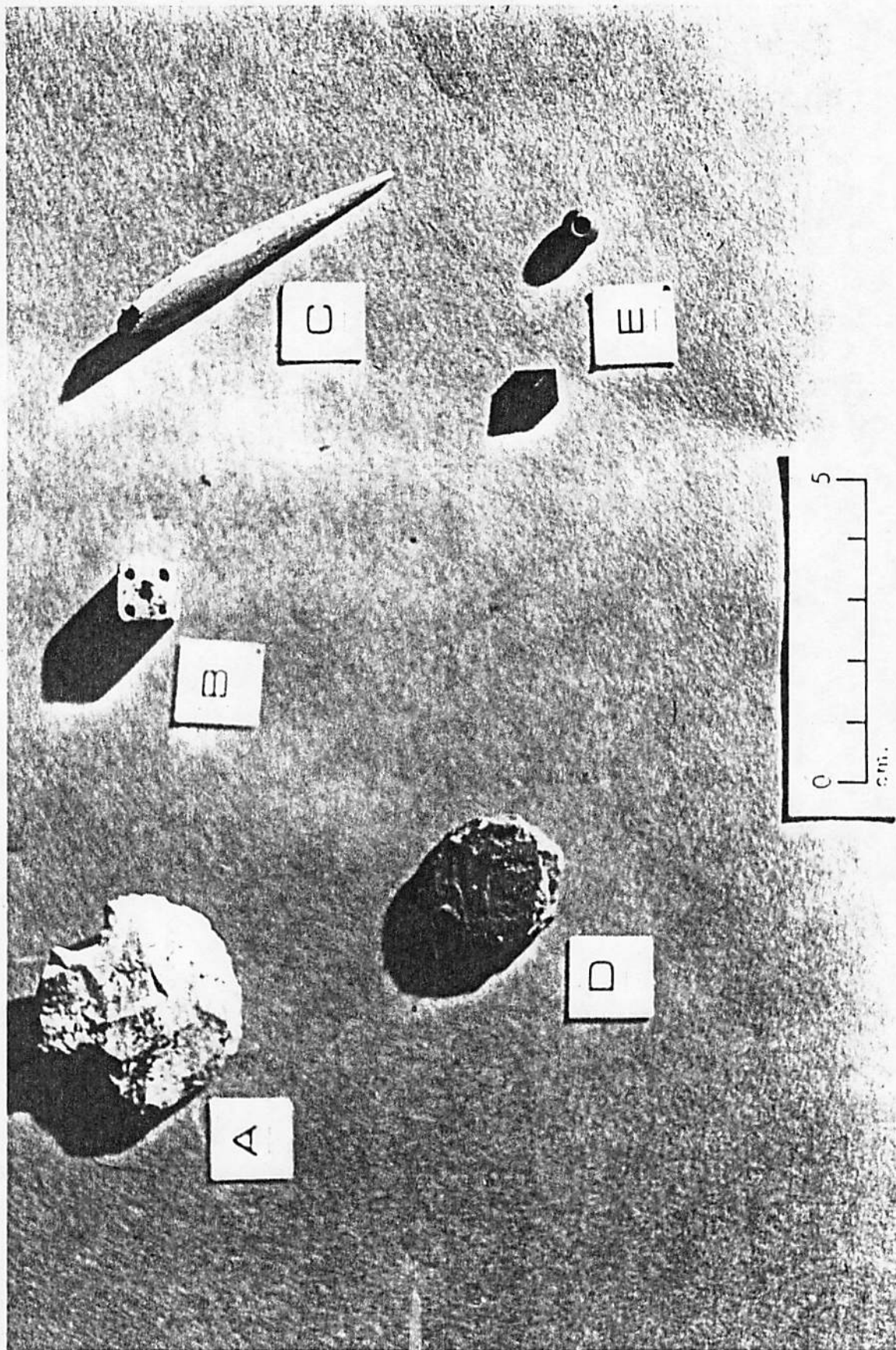


Figure 25: Brass Artifacts

- A: Straight Pins
- B: Lacing Tips (to right, tips
with rounded heads)
- C and D: Clock Mechanisms
- E: Book Latch

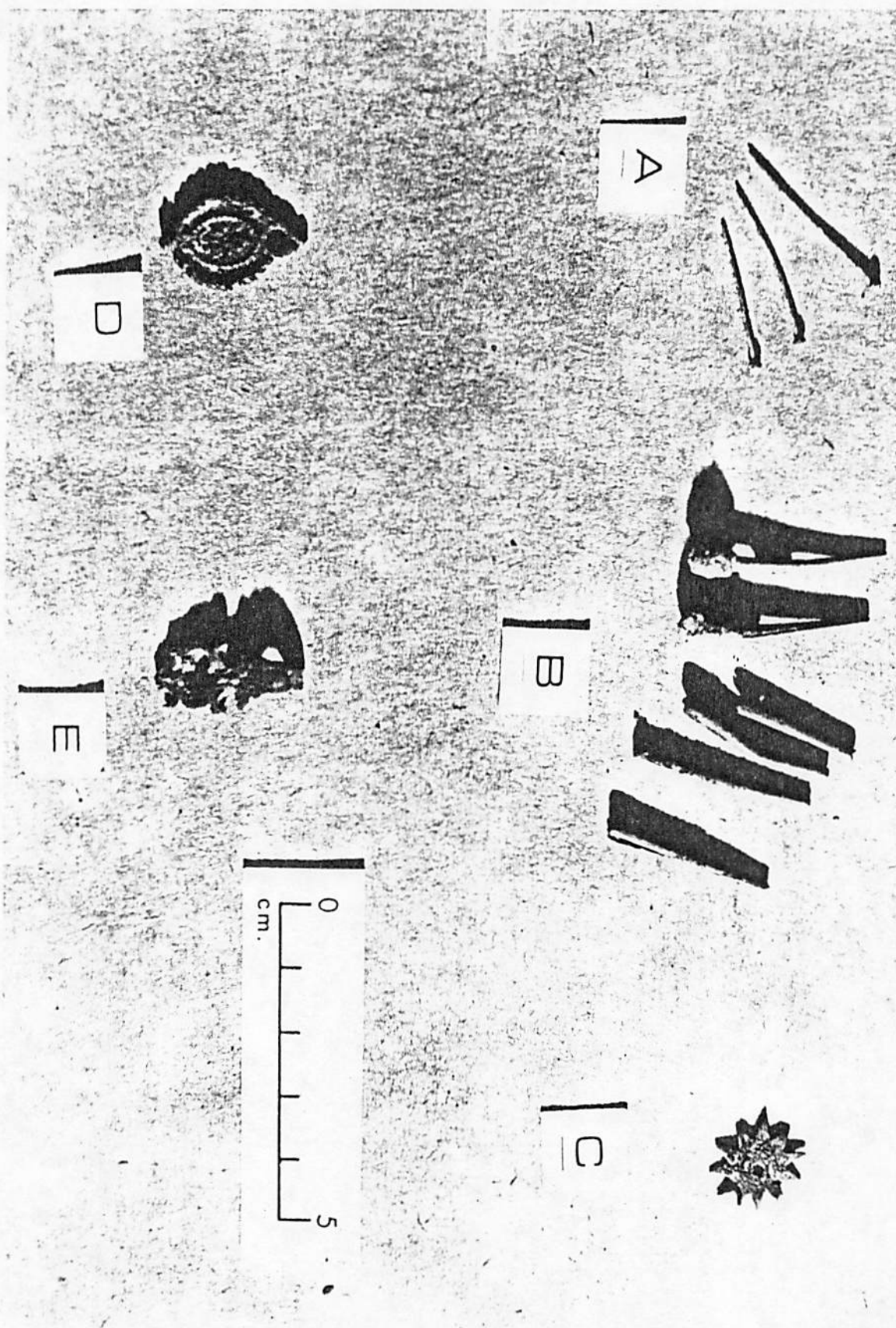
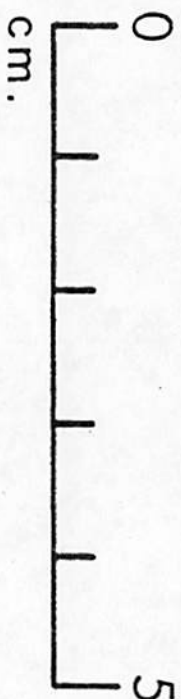


Figure 26: Copper Maravedis



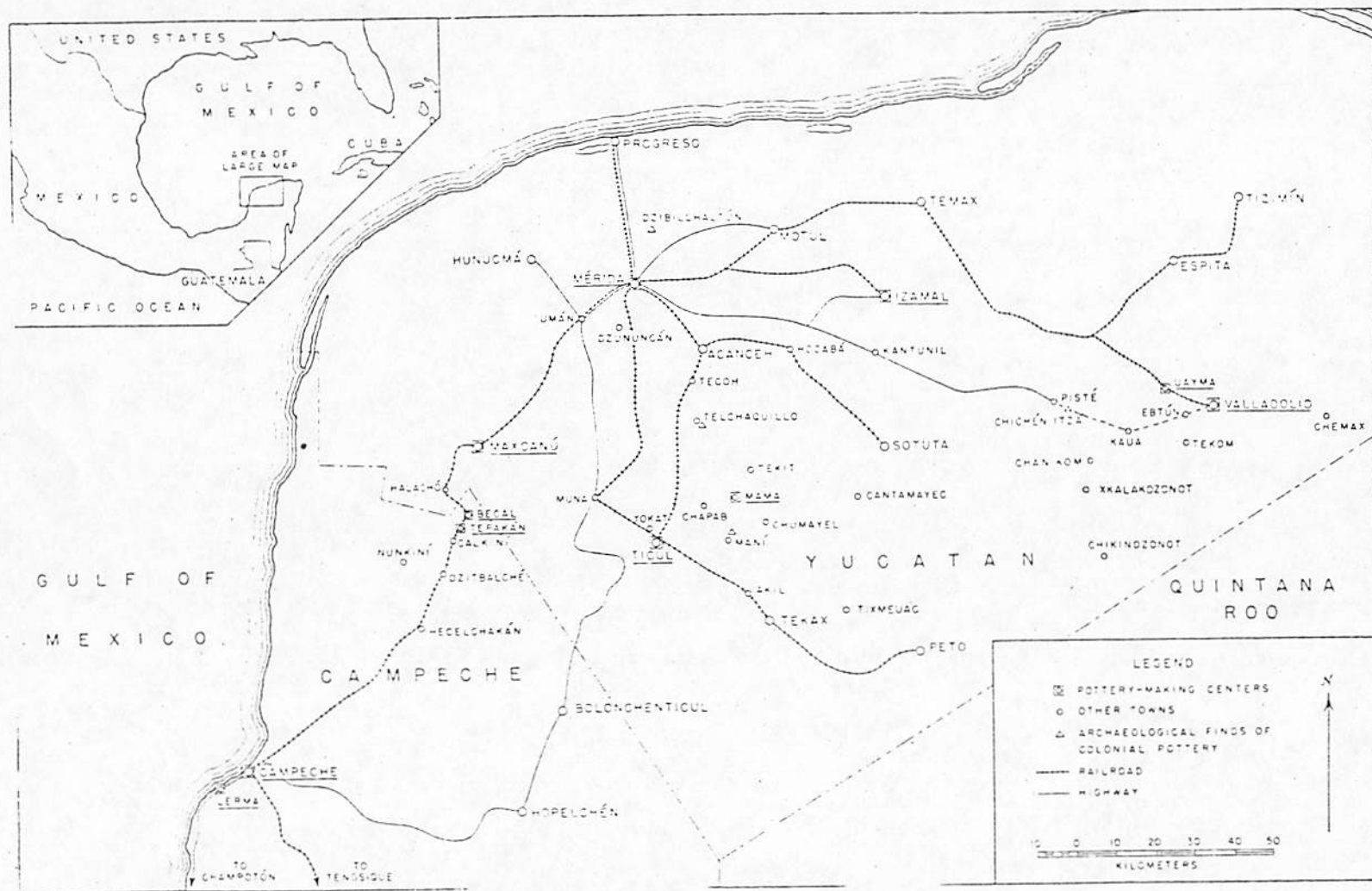


Figure 27: Map of Yucatan Peninsula (taken from Thompson 1958)
Showing Modern Pottery Making Centers

APPENDIX 1
DESCRIPTION OF FEATURES

The features, other than the well and well construction pit, suggest that these were evidently refuse areas. The term, fire-trash pit, refers to disposal areas of trash and cooking ash combined, but these are not in situ fire pits. A general description of each feature is given below:

Possible Posthole C FS # 10 in Test Pit A

A circular area of grey, heavily shell-flecked soil located in the southwest quadrant of the square, 12 cm deep. The material associated included: glass, olive jar, aboriginal ceramics.

Area G FS # 15 in Test Pit A

An irregular shaped area of dark grey shell flecked sandy soil located in the southwest quadrant of the square, 33 cm deep, with a diameter of 24 cm. Materials included bone, aboriginal and Spanish ceramics.

Feature 3 FS # 16 in square 106N 106E

A heavy concentration of whole oyster shell, bone, and ceramics with a thin layer of light grey clay overlying it, 52 cm deep.

Pit B FS # 18 in square 106N 106E

A shallow area of dark brown sandy soil with a heavy concentration of whole oyster shell in the northwest quadrant

of the square. This feature was 7 cm deep and it was associated with aboriginal ceramics and bone.

Area L FS # 21 in Test Pit A

A squared-shaped area adjacent to the north wall and located in the northwest quadrant of the square. An area of light brown and grey mottled sand possibly wash. This feature was 24 cm deep and it contained bone, aboriginal ceramics, olive jar, and a coin.

Area E FS # 25 in square 106N 106E

A heavy concentration of oyster shell and bone in dark grey sand located in the southeast quadrant of the square. The feature was 9 cm deep and contained bone, aboriginal ceramics, olive jar, and iron.

Area K FS # 26 in Test Pit A

An amorphous shaped area of light brown, shell-flecked sandy soil, 17 cm deep. Materials associated included: bone, aboriginal ceramics, oriental porcelain, and Spanish ceramics.

Area L FS # 31 in square 106N 106E

An area of dark grey, shell and charcoal-flecked soil located in the northwest quadrant of the square, adjacent to the western limit of Feature 3. A possible fire-trash pit, it included charred wood and ceramics, but the bone was not charred. This feature was 24 cm deep.

Area O FS # 33 in square 106N 106E

An area of orange and grey, shell flecked soil located in the northwest quadrant of the square, and 16 cm deep. The feature contained bone and Spanish ceramics.

Pit Q FS # 36 in Test Pit A

A circular area of dark grey, shell flecked soil located in the northwest quadrant of the square, and 16 cm deep. The feature contained bone and Spanish Ceramics.

Feature 7 FS # 53 in square 106N 103E

An area of brown soil with a heavy concentration of whole shell. This feature was 73 cm deep and it contained bone, glass, aboriginal and Spanish ceramics, and metal.

Area K FS # 55 in square 106N 106E

A rectangular-shaped area with dark grey sandy soil, heavily shell-flecked, and 58 cm deep. Materials included glass, bone, metal, a corn cob fragment, and aboriginal and Spanish ceramics.

Possible Posthole T FS # 56 in square 106N 106E

A circular area approximately 7 cm in diameter and 11 cm deep. The only associated material was aboriginal ceramics.

Area D FS # 58 in square 106N 103E

An area of dark grey crush shell-flecked soil underlying Feature 6 and 20 cm deep. Associated materials included metal, bone, aboriginal and Spanish ceramics.

Feature 6 FS # 60 in square 106N 103E

A dark grey sandy soil with a heavy concentration of shell and bone, and 17 cm deep. Materials included glass, bone, and aboriginal and Spanish ceramics.

Area S FS # 62 in square 106N 106E

A circular concentration of whole shell, 22 cm deep. Material included aboriginal ceramics, Spanish ceramics, and bone.

Area V FS # 68 in square 106N 106E

A rectangular-shaped area of dark grey sand. Artifacts included bone and aboriginal ceramics.

Feature 10 FS # 76 in square 106N 103E

An area of grey-brown shell-flecked soil extending along the northern wall located in a leached zone matrix. The feature was 34 cm deep and associated with glass, aboriginal ceramics, Spanish ceramics, bone, and iron.

Area A FS # 96 in square 103N 106E

An area of black soil with mottled yellow sand, and 56 cm deep. Associated materials included glass, iron, aboriginal ceramics, and bone.

Area G FS # 98 in square 103N 106E

A possible fire-trash pit on the southeast edge of Feature 8 (well construction pit) wash. An area of mottled brown/yellow/white soil with charcoal flecks. Materials included charred aboriginal ceramics, burnt wood, Spanish ceramics, and bone. The feature was 9 cm deep.

Pit F FS # 100 in square 103N 106E

An area of grey and dark brown soil, 37 cm deep. Materials include glass, bone, metal, aboriginal and Spanish ceramics.

Area E FS # 102 in square 103N 106E

An area of dark shell-flecked soil with whole oyster shells adjacent to the center of the south wall, and 13 cm deep. Associated materials include bone, glass, iron, and aboriginal ceramics.

Pit E FS # 103 in square 103N 91E

An area of dark grey and brown mottled soil, 22 cm deep. Associated materials included aboriginal ceramics, bone, and olive jar sherds.

Feature 15 FS # 105 in square 103N 91E

A possible trash-fire pit with dark grey soil with charcoal flecks. This feature was 19 cm deep and it contained glass, bone, charred wood and aboriginal ceramics, Spanish ceramics, and oriental porcelain.

Area B FS # 108 in square 103N 103E

An area of yellow mottled sand with shell flecks 8 cm deep. Associated materials included glass, iron, aboriginal ceramics, and bone.

Area A FS # 109 in square 103N 103E

A rectangular area of brown sand and oyster shell located in the southwest quadrant of the square, and 21 cm deep. The feature contained glass, aboriginal ceramics, bone, and Spanish ceramics. (Not on map)

Pit G FS # 115 in square 103N 103E

An irregular shaped area of yellow mottled sand in the southwest area of the square, 34 cm deep. Associated material included glass, iron, and aboriginal and Spanish ceramics.

Area H FS # 126 in square 103N 103E

An irregular lens of dark brown soil in the southern half of the western wall and 48 cm deep. Contents included aboriginal ceramics, bone, and olive jar.

Area I FS # 127 in square 103N 106E

An irregular shaped area of dark brown soil with whole oyster shells near the center of the west wall of the square. The feature was 53 cm deep and contained glass, iron, Spanish ceramics, and bone.

Area K FS # 129 in square 103N 103E

An area of brown, shell-flecked soil located in the southeastern corner of the square. The feature was 19 cm deep and the associated material included bone, metal, and aboriginal and Spanish ceramics.

Pit L FS # 134 in square 103N 103E

A very shallow area of dark brown soil with a heavy concentration of cultural material adjacent to Area K. The depth was only 3 cm and contained bone, aboriginal ceramics, Spanish ceramics, and burnt wood.

Pit M FS # 141 in square 103N 103E

A grey-brown, shell-flecked soil area adjacent to the northwestern side of Area K. The feature was 5 cm deep and associated with iron, bone, and aboriginal and Spanish ceramics.

Feature 23 FS # 142 in square 103N 103E

An area of light brown whole shell-flecked soil located in the northeast quadrant of the square. The depth was 14 cm and associated materials included glass, iron, bone, and aboriginal and Spanish ceramics.

APPENDIX 2
PRE-18th CENTURY CLOSED CONTEXTS FROM SA 26-1

FS#	Unit	Designation	terminus post quem
10	Test Pit A	Possible Posthole C	16th Century
15	Test Pit A	Area G	16th Century
16	106N 106E	Feature 3	Early 17th Century *
18	106N 106E	Pit B	16th Century
21	Test Pit A	Area L	16th Century
25	106N 106E	Area E	16th Century*
26	Test Pit A	Area K	Mid-17th Century
31	106N 106E	Area L	16th Century
33	106N 106E	Area O	16th Century*
36	Test Pit A	Pit Q	16th Century*
46	106N 106E	Level 5	Early 17th Century
53	106N 106E	Feature 7	16th Century*
55	106N 106E	Area K	16th Century
56	106N 106E	Possible Posthole T	16th Century
57	106N 106E	Zone 2 Material under 18th Century Structure	16th Century

Continued

Appendix 2 (Continued)

FS#	Unit	Designation	terminus post quem
58	106N 103E	Area D	Early 17th Century*
60	106N 103E	Feature 6	Post 1650*
62	106N 106E	Area S	16th Century
68	106N 106E	Area V	16th Century
75	106N 103E	Zone 2, Level 2	Mid-17th Century
76	106N 103E	Feature 10	16th Century*
77	106N 103E	Zone 2, Level 3	16th Century
84	106N 103E	Zone 2, Level 2 (Beneath Feature 2)	Early 17th Century
93	106N 103E	Zone 2, Level 2 West 1/4	Mid-17th Century
96	103N 106E	Area A	Early 17th Century
98	103N 106E	Area G	16th Century
100	103N 106E	Pit F	16th Century
102	103N 106E	Area E	16th Century*
103	103N 91E	Pit E	16th Century*
105	103N 91E	Feature 15	16th Century

Continued

Appendix 2 (Continued)

FS#	Unit	Designation	terminus post quem
108	103N 103E	Area B	Post 1650
109	103N 103E	Area A	Mid-17th Century
115	103N 103E	Area G	Early 17th Century
126	103N 103E	Area H	16th Century
127	103N 106E	Area I	Early 17th Century
129	103N 103E	Area K	Mid 17th Century
132	103N 103E	Zone 2, Level 2	Mid-17th Century*
134	103N 103E	Pit L	Early 17th Century
141	103N 103E	Pit M	Early 17th Century
142	103N 103E	Feature 23	Mid-17th Century*
87, 128, 131, 137, 138, 160	103N 103E (6x5M)	Feature 8 (Well Pit)	Mid-17th Century*
121, 123, 125, 157, 158, 159, 161, 162, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174	103N 103E (6x6M)	Feature 21 (Well	Post-1650 *

*Contexts included in faunal analysis.

APPENDIX 3
FREQUENCY AND WEIGHT OF CERAMICS FROM
PRE-18th CENTURY CLOSED CONTEXTS FROM SA 26-1

Type	Number of Sherds	Frequency (%)	Weight (in grams)
St. Johns	1,362	24.55	4,304.6
San Marcos	1,044	18.82	5,939
Jefferson Complicated Stamped	7	0.13	20
Aucilla Incised	7	0.13	26
Ft. Walton Incised	1	0.02	20
Miller Plain	8	0.14	29
Yucatan Colonial	9	0.16	116.5
Yunku Plain	29	0.52	118.5
Fine Orange	1	0.02	7
Unslipped Plain	1	0.02	53
Red Slipped	5	0.09	52
Praire Cord-Marked	2	0.04	4
Deptford Check Stamped	2	0.04	94
Fiber Tempered	5	0.09	78
Unidentified Aboriginal	4	0.07	37
Olive Jar	2,452	44.21	30,325
Spanish Storage Jar	25	0.45	938
Tuscan Oil Jar	5	0.09	343.8
El Morro	82	1.48	66
North Devon Gravel Tempered	1	0.02	46
"Limestone Ware"	2	0.04	152
Unidentified Earthen- wares	2	0.04	30
Majolica	375	6.76	1,700
Continued			

Appendix 3 (Continued)

Type	Number of Sherds	Frequency	Weight (in grams)
Micaceous Ware	44	0.79	136
Feldspar Inlaid	12	0.22	83
Mexican Red Filmed	4	0.65	41.8
Tonala Polychrome	4	0.07	14
Oriental Porcelain	9	0.16	7.9
Faience	10	0.18	20.5
Total	5,546	100.00	40,854.5

APPENDIX 4
FORMAL ATTRIBUTES OF MESO-AMERICAN CERAMICS FROM SA 26-1

The purpose of this appendix is to provide a preliminary description of the colonial Yucatan ceramics recovered from SA 26-1. Although these sherds have been identified as Yucatan types, very little descriptive data on these is available. It is felt that this appendix is necessary for archaeologists not familiar with these wares. A map of the Yucatan peninsula is shown in Figure 27.

Yucatan Colonial

Illustration: Figure 15A

Paste

Method of Manufacture: Could not be determined from sherds.

Tempering: Calcite temper, usually of a cryptocrystalline, chalky white limestone or gray limestone called sascab (Smith 1971:21-23; Thompson 1958:668).

Texture: Coarse. Paste is porous but moderately compact with a chalky feel.

Color: Cream to buff.

Surface Finish

Treatment: Interior surface not well smoothed, but exterior surface is well smoothed.

Filming: A very thin orange to red colored slip is applied to the exterior surface only.

Decoration: None noted.

Form

Vessels: Big jars with strap handles (Ball, personal communication; 1977, San Diego).

Thickness: 4mm to 6mm.

Distribution

Place of Manufacture: Unknown for colonial times, but similar ceramics are made in Tepakan today (Ball, personal communication; 1977, San Diego).

Associated Materials: In the Yucatan, Yunku Plain. At SA 26-1 evenly distributed within 16th, 17th and mixed proveniences.

Chronological Position: Most frequently found during the 17th and 18th centuries.

Geographical range: From Mani to Merida (see Figure 27).

Comments

No type names for this ware.

Unslipped Plain

Illustration: Figure 15B

Paste

Method of Manufacture: Could not be determined from the sherd.

Tempering: Same as Yucatan Colonial

Texture: Coarse. Paste is more compact than Yucatan Colonial

Color: Cream.

Surface Finish

Treatment: Fairly evenly smoothed on both exterior and interior surfaces.

Decoration: None.

Form

Vessels: From the one sherd recovered, the form appears to have been a comal, that is a nearly flat plate.

Thickness: 7mm.

Distribution

Place of Manufacture: Unknown

Associated Materials: Unknown for the Yucatan. Recovered from an early 17th century provenience at SA 26-1.

Chronological Position: Unknown.

Geographic Range: Unknown

Comments

Resembles Mayapan unslipped (Smith 1971:23).

Bolon Brown

Illustration: Figure 15C

Paste

Method of Manufacture: Could not be determined from sherds.

Tempering: Same as Yucatan Colonial.

Texture: Coarse and very compact.

Color: Light brown to buff (Smith 1971:15).

Surface Finish

Treatment: Evenly smoothed on both interior and exterior surfaces.

Filming: A brown to reddish-brown slip is applied to the exterior and interior surfaces of the vessel. Slip is lightly rubbed, leaving a matte or burnish finish (Smith 1971:15).

Decoration: None noted.

Form

Vessels: Comals, griddles, and globular cooking pots.

Rims: Inflaring or straight rims. The slightly everted rim of a wide mouth vessel recovered from SA 26-1 (see Figure) is unusual for this type (Ball, personal communication; 1977, San Diego).

Thickness: 4mm to 6mm.

Distribution

Place of Manufacture: Unknown

Associated Material: In the Yucatan, it is associated with other colonial wares. At SA 26-1, it is found only in the 18th century contexts.

Chronological Position: Last 25 years of the 16th century from 1570 to 1600 (Ball, personal communication; 1977, San Diego).

Geographic Range: Most common in the Northwest plains and Campeche.

Yunku Plain

Illustration: Figure 15D

Paste

Method of Manufacture: Wheel thrown; throw marks apparent on most sherds.

Tempering: Sand, temper in addition to calcite inclusions with occasional red clay temper.

Texture: Coarse. Paste is very porous and sandy.

Color: Dark brown to red.

Surface Finish

Treatment: Moderately smoothed. Throw marks and tempering fragments are visible on finish product. Exterior surface fire-clouded.

Filming: Unslipped.

Decoration: None noted.

Forms

Vessels: Low necks, wide mouth jars (Smith 1971:247).

Thickness: 8mm to 12mm.

Rims: Two forms noted from SA 26-1: one slightly flaring and the other is straight-folded.

Bases: One basal fragment recovered and this is a flat base form.

Distribution

Place of Manufacture: Unknown.

Associated Materials: Yucatan colonial. At SA 26-1 found primarily in 16th and early 17th century contexts.

Chronological Position: Restricted to the Northwest Plains area, mostly in Campeche, but found as far east as Mani.

Fine Orange

Illustration: Figure 15E

Paste

Method of Manufacture: Could not be determined from sherds.

Tempering: Usually has no temper, but may include mineral inclusions (Smith 1971:18).

Texture: Very fine and compact.

Color: Orange

Surface Finish

Treatment: Well smoothed.

Filming: Usually an orange slip is applied and occasionally a white or black slip on the interior, exterior or both is apparent (Smith 1971:18).

Decoration: None noted.

Form

Vessels: Large jars with thick sides (Smith 1971:246).

Thickness: 6 mm.

Rims: Molded rim, with an impressed design.

Distribution

Place of Manufacture: Unknown.

Associated Materials: In the Yucatan, this is the only ware of this colonial complex. At SA 26-1, one sherd found in a 16th century context and another was in an 18th century complex.

Chronological Position: In Meso-America, Fine Orange has a long time span from about 450 to 1550 A.D. This colonial complex is approximately from 1450-1550.

Geographical Range: It is found throughout Mexico and Central America.

Comment

Fine Orange is a well known Meso-American ware. By Spanish contact this ware becomes a minority type and was rapidly replaced by Colonial wares. The Colonial Fine Orange Complex of the Yucatan to which these sherds belong is poorly defined (Smith 1971:246).

Red Slipped

Illustration: Figure 15F

Paste

Method of Manufacture: Could not be determined from sherds.

Tempering: Calcite and red clay inclusions.

Texture: Coarse and moderately compact.

Color: Dark brown to red.

Surface Finish

Treatment: Moderately well smoothed.

Filming: A thick red slip is applied to exterior.

Decoration: None noted.

Form

Vessels: Sherds are too small to determine vessel forms.

Thickness: 9mm to 12mm.

Distribution

Place of Manufacture: Unknown

Associated Materials: Unknown for the Yucatan, for SA 26-1, 16th and early 17th century contexts.

Chronological Position: Unknown, but on the basis of surface treatment the 16th to middle 17th centuries have been suggested (Ball, personal communication; 1977, San Diego).

Comment

These sherds could not be identified. On the basis of surface treatment, Yucatan origins have been suggested (Ball, personal communication; 1977, San Diego).

APPENDIX 5
OCCURRENCE OF NON-CERAMIC ARTIFACTS FROM
PRE-18th CENTURY CONTEXTS OF SA 26-1

Type	Number
Glass	67 Fragments
Clear	23
Green	21
Amber	1
Opaque Brick Red	2
Iron	611 Fragments
Nails and Spikes	402
Iron fragments	209
Brass	41 Fragments
Lacing tips	14
Clock Mechanisms	2
Booklatch	1
Pins	9
Tacks	5
Fragments	10
Copper	23 Fragments
Coin	1
Strips	22
Lead	6 1/2 Fragments
Musket balls	4 1/2
Lead fragment	1
Bone	2 Fragments
Die	1
Worked fragment	1
Stone	6 Fragments
Basalt	3
Gunflint fragments	2
Strike-a-light	1
Beads	4 Fragments
Jet	2
Amber-colored	1
Seed bead	1
Buttons	2 1/2

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