Test Excavations at Artificial Leg, Site 12 (LA 35493) Near Bernalillo, New Mexico: A Partial Report

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ABSTRACT

Test excavations undertaken at a small Pueblo III site across the river from Bernalillo, New Mexico explored the trash deposit and revealed the presence of several extramural features. There is sufficient evidence to show that structures are present at the site but that more work will be necessary to locate and expose them as well as to discover more about the content and organization of the site as a whole.

The purpose of this report is to provide the background of the project, a description of the excavations, the results of the analysis of the formal artifacts, and recommendations for future research at the site. Analysis of the painted pottery has already appeared (Sundt 1984), and that of the fauna is forthcoming (Akin in press). Analyses of the utility pottery and the lithics are in progress but will not be completed anytime soon.

Copies of this report are available from the author. Interested persons should write: Regge N. Wiseman, Museum of New Mexico, P.O. Box 2087, Santa Fe, NM, 87504-2087. The pre-paid charge of $5.00 includes postage and handling.

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INTRODUCTION

Long ago, before the golden era of contract archaeology and before research designs and models, an undergraduate at the University of New Mexico undertook test excavations at a small Pueblo III site for the express purpose of gaining more field experience. Now, after nearly 20 years, some of the results of that project are becoming available. The purpose of this "installment" is to present details of the excavations as a backdrop for the already published study of the locally made painted ceramics (Sundt 1984) and the forthcoming study on the faunal remains by Nancy Akin (in press). Analyses remaining to be completed and published include the utility ceramics and the chipped lithic manufacturing debris, both of which are currently in progress.

Several people have been generous with their time and talent for this project. I would like to thank Mr. William Sundt for his study of the painted pottery (Sundt 1984), Ms. Nancy Akin for hers of the faunal materials (Akin in press), Ms. Sara Ann Noble for hers of the physical anthropological materials, and Ms. Nancy Hunter Warren for her artifact photographs. Mr. James Colgrove of AMREP Corporation kindly consented to the excavations all those years ago.

The Site

The site, named Artificial Leg Site 12 (or AL-12) and LA 35493, is located on the right or west bank of the Rio Grande immediately west of the town of Bernalillo, Sandoval County,, New Mexico (Fig. 1)(Wiseman 1971). It is situated on a small remnant of the first terrace which is being actively eroded by the river only a few meters to the east. Twenty or so meters to the west, the slope of the second terrace rises abruptly to the level at which the rest of the Artificial Leg site group is to be found (Frisbie 1967). Most of these sites date to the Basketmaker III and Pueblo I periods, though virtually all of the rest of the ceramic periods, including the early historic, are also represented. The well-known early historic pueblo of Bandelier's Puaray or Santiago Pueblo (Snow 1976), is located roughly one kilometer to the north.

AL-12, even after the testing, remains enigmatic in several respects. The tests, described below, revealed a refuse area, two extramural pits, and a use/floor surface. The presence of the refuse deposit and numerous pieces of adobe, some with wood impressions, clearly indicate that some form of architecture is

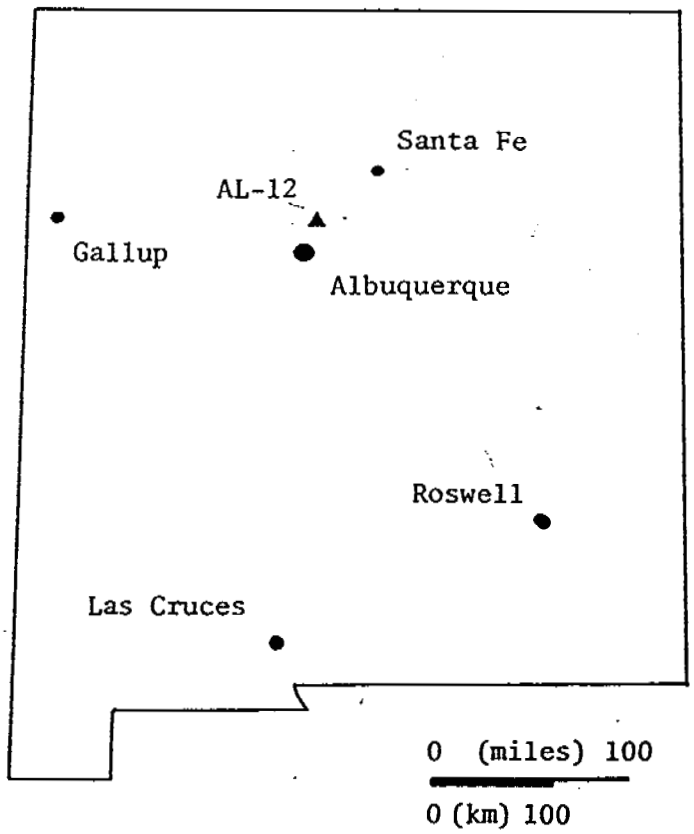


Figure 1: Project Location Map

present, but more intensive testing will be required to locate the remains.

The main obstacle to finding the structures was the rather thick mantel of sand which covers the bench; the deepest accumulation is to the west on the slope of the second terrace, and it progressively thins towards the east where it is finally truncated by the river cut. The site was initially discovered, and remains discernable today, chiefly through the exposure of the darkened soil and cultural debris of the refuse midden through aeolian deflation of the sand. No mounding or depressions can be seen which might indicate the locations of the structures or other cultural features.

The Natural Environment

The geology of the locality includes Quaternary "pediment, terrace and other deposits of gravel, sand, and caliche" and the "upper part of the Santa Fe Group [Quaternary], in part including Puye Conglomerate, Ancha Formation, Tuerto Gravel of Stearns (1953) and Tesuque Formation" (Dane & Bachman 1965).

The soils of the Rio Grande valley belong to the Gila-Vinton-Glendale Association (Maker et al 1971: 8-9). They are, of course, good soils for agriculture and have been very importantin the prehistoric and historic past. The soils of the elevated terrain west of the river are classified as Sheppard-Rough Broken Land (Maker et al 1971: 12-13). The major soils of this association are "somewhat excessively drained and rapidly permeable" (Maker et al 1971: 12), making them poorly suited for many agricultural purposes, except, perhaps, during wet years.

The elevation of the site is 1540 meters a.m.s.l. (5052 ft). Brown & Lowe (1983) classify the local vegetation as belonging to the Plains and Great Basin Grassland Association of the Grassland Formation. Kuchler, in his reconstruction of the probable pre-modern vegetation distributions (1964), classifies the locale as being within the Grama-Galleta Steppe with dominants of Bouteloua gracilis and Hilaria jamesii. An interesting feature of the on-site vegetation is the cluster of four-wing saltbushes (Atriplex canescens) and a single, stunted, one-seed juniper (Juniperus monosperma), probably as a result of the Indian occupation. The river valley immediately east of the site supports a riparian association with cottonwood (Populus sp.) and the historically-introduced tamarix (Tamarix pentandra) as dominants.

Climatologically speaking, the area experiences mild winters and warm summers. The average annual temperature is 12.5 degrees

C. with an average January low of 1.0 and an average July high of 23.4 degrees C. (Gabin & Lesperance 1977: 318). Average annual precipitation is just over 200 mm (Gabin & Lesperance 1977: 318) with a little over half of that falling during the growing season (U.S. Department of Commerce, Weather Bureau 1967). The average frost-free season is about 180 days (Tuan et al 1973: Fig. 38).

The Cultural Environment

The Albuquerque District witnessed prehistoric occupation from Paleoindian times up to the first Spanish entrada of A.D. 1540. Since Cordell (1979: 41-46) presents an overview of these developments, only the period of interest here, the Pueblo III or Coalition, dating A.D. 1200-1300 or 1325, will be discussed.

A number of Coalition Period sites have been recorded in the Albuquerque District, but only a handful have been excavated. Of these, Tijeras (Cordell 1980), Coconito (Wiseman 1980), and Dinosaur Rock (Oakes 1979) are situated in Tijeras Canyon within the Sandia Mountains. Along the Rio Grande some 16 km to the west, only the Tunnard Site has been reported (Hammack 1966), though at least one other Pueblo III site in the vicinity has been excavated (cf. Hammack 1966: 5). The report on a third Coalition site, the Coors Road Site, is currently in preparation by R. Sullivan of the Laboratory of Anthropology, Museum of New Mexico.

Pueblo III or Coalition Period habitation sites in the Albuquerque District are characterized by at least two major architectural forms, small pueblos and small, squarish pithouses, which may or may not be present on the same site. In some cases, these pueblos occur alone and in others they occur in groups as at Tijeras. Evidently, some of the sites were inhabited year round, but in others they clearly were seasonally occupied, though not necessarily every year (Wiseman 1980). The hallmark ceramic type of the period is a locally-made variety of Santa Fe Black-on-white. Subsistence was some combination of corn agriculture, gathered wild plants, and hunted animals; the definition of just what those combinations were, how they varied over time and space (mountain versus riverine environmental settings, for instance), and why they varied are subjects of intense interest and debate among scholars today. The answers to these and related questions are critical to understanding the dynamics of both the Coalition Period and all subsequent adaptations in the region.

In general, all of the reported excavations involved small sites or represented limited efforts at large sites. We are only

just beginning to learn about the Coalition Period in the Albuquerque District, the stage during which the cultural foundations were laid for the later, larger Classic Period pueblos discovered by the Spanish. Greater knowledge of the Coalition Period, then, is necessary for understanding the economic and social underpinnings which allowed the aggregation of large numbers of people into those fewer but larger settlements which represented the culmination of prehistoric Indian culture in the Rio Grande. Learning the causes, mechanisms, and ramifications of the increasing social complexity and technological changes which frequently accompanied (preceded were the consequence of?) major demographic shifts and changes in subsistence emphases are important to our understanding of the human experience.

THE EXCAVATIONS

The test excavations, conducted during 18 days spread mainly over an 18 month period, involved a trench, six test pits, a test square, and the uncovering of an expanse of use/floor surface (Fig. 2). Since the excavation units were laid out in feet and inches, this measurement system is retained here for convenience. Fill loosening and removal was mainly by shovel with detail work and squaring of the excavations being accomplished by troweling. Arbitrary 6 and 12 inch levels were used as deemed appropriate. About 90% of the fill was screened through one-quarter inch mesh.

Description of Excavation Units

Test Trench

The north-south trench cross-cut the refuse midden (Feature 1) in an effort to define its diameter, depth, nature, and spatial relationship to any structures which might be encountered to the north of it. It was excavated in seven five-feet and one ten-feet long sections for a total length of 45 feet. The width was three feet, and the depths of the sections varied with the findings of either sterile or cultural features (e.g., the use/floor surface, Feature 3). The deepest excavation was carried through level 9 or a total depth of 4.5 feet.

Test Pit #1

The excavation of the trench began with the digging of this 3 by 3 feet pit into the trash deposit. Section 1 of the trench

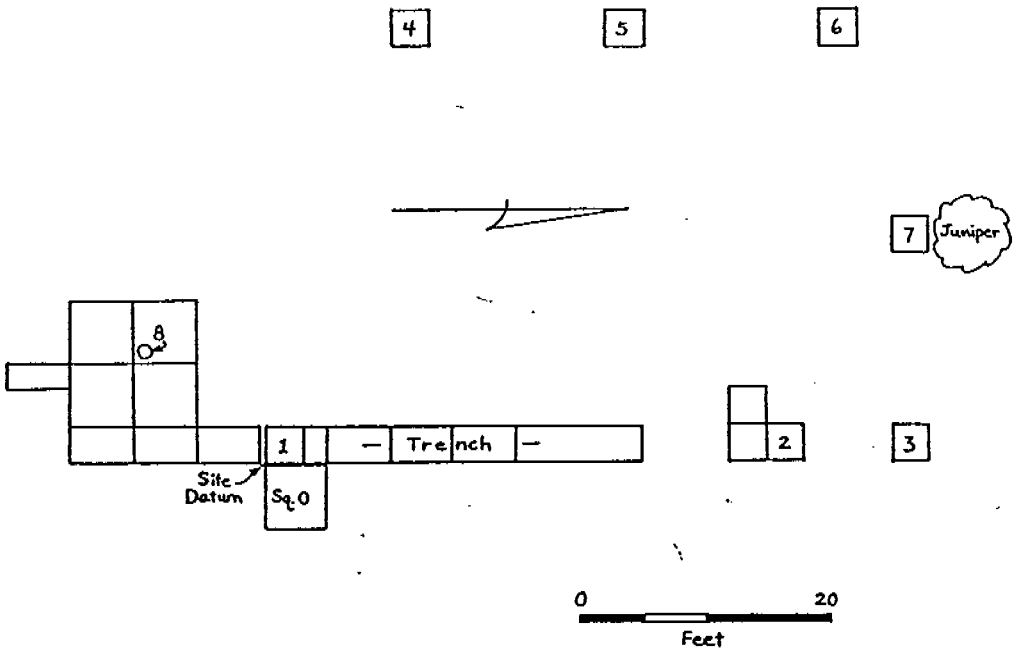


Figure 2: Map of Excavation Units
(Test pits are numbered)

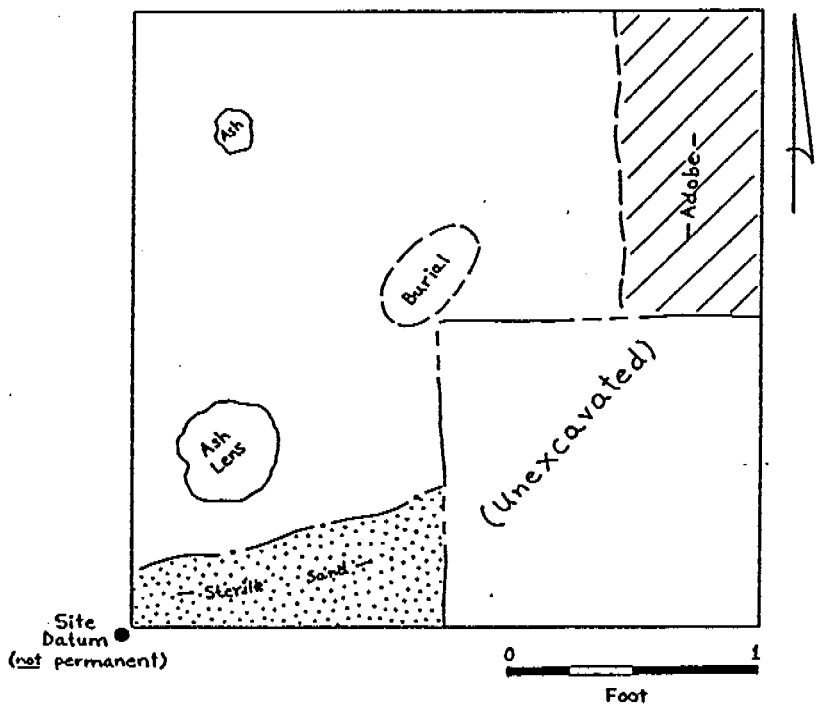


Figure 3: Details of Square 0

then started with (and included) this pit.

Test Pit #2

This 3 by 3 feet test north of the trench intersected a presumed extramural pit (Feature 2). Two adjacent 3 by 3 feet squares were excavated to the south and southwest in order to expose more of this cultural feature, but this endeaver was not completed before excavations ceased at the site. The fill above the Indian pit contained very few cultural items (sherds and lithics) in a matrix of sand and sparse small gravels. No cultural staining was noted, and only a few small charcoal flecks were seen. Caliche was encountered at a depth of 27 inches.

Test Pit #3

This 3 by 3 feet test, located north of Test Pit #2, encountered caliche at a depth of 33 inches. The fill of sand and small gravels contained only a few sherds and lithics within the uppermost 6 inches. Charcoal flecks and staining were absent.

Test Pit #4

Another 3 by 3 feet test was placed 30 feet west of the trench. Cultural materials (sherds and lithics) were few in number, and all came from within 10 inches of the surface. What appeared to be adobe chunks came from within 10 inches of the surface and within 10 inches of the caliche. The otherwise homogeneous sand fill contained no staining or charcoal flecks of any consequence. Sterile caliche was encountered at depths varying from 25 to 29 inches. A possible cultural pit, designated Feature 4, was uncovered in this test and is described below.

Test Pit #5

This 3 by 3 feet test was dug 14 feet north of Test Pit #4. Again, the fill was mostly an homogeneous sand, but a few small river cobbles and chunks of what may have been sandy adobe were found, especially in the northwest quadrant and on or just above the caliche. What appeared to be a rodent hole penetrated the caliche in the northwest corner of the test. The caliche lay at a depth of 29 inches, and the few sherds and lithics recovered all came from within 10 inches of the surface.

Test Pit #6

Located 14 feet north of Test Pit #5, this 3 by 3 feet test reached sterile caliche at a depth of 32 inches. Aside from two 6 inch diameter charcoal stains located just under the surface and the few sherds and lithics which came from within 12 inches of the surface, the sandy fill contained no evidence of occupation.

Test Pit #7

The last regular-sized test pit was placed half way between the trench and the line of test pits (#'s 4, 5, and 6), due west of Test Pit #3, and at the base on the south side of the stunted juniper. As might have been expected, rodent disturbance was quite evident. Although more sherds and lithics were recovered from this test than in any of the previous three, all of the sherds are quite small, and all of the items came from within 12 inches of the surface. The sand fill contained only one very small, possible charcoal stain. Sterile caliche was located at a depth of 27 inches.

Test Pit #8

The last test pit measured only 1 by 1 foot and was excavated through the possible use/floor surface (Feature 3) to a depth of 20 inches (total of 23 inches below the surface). No cultural materials were recovered from the compacted sand fill.

Square O

A 5 by 5 feet square was started immediately east of the trench in the area shown by the trench results to have the densest and deepest cultural debris. Only part of one day was spent in this excavation, and by the end of the day, only the southwest, northwest, and northeast quadrants were carried to the variable depth of 12 to 16 inches. The fill consisted of moderately but unevenly charcoal-stained sand containing a number of sherds, lithics, animal bones, small pieces of adobe, fire-broken rock, and a few river cobbles. Two small concentrations of charcoal, one 10 inches in diameter and one inch thick and the other 5 inches in diameter and less than an inch thick, and an infant burial were found (Fig. 3). Evidence of rodent disturbance was common throughout the deposit.

The bottom of the level was determined by the presence of an uneven layer of concentrated, burned adobe. Time did not permit exploration into this layer, but it is likely that it was

generally the same as the remains encountered in the adjacent sections of the trench as described below for Feature 1.

Two phenomena of potential importance were a sterile sand layer encountered in the southern part of the southwest quadrant and an adobe-like layer encountered in the eastern half of the northeastern quadrant. While the limited investigation of these phenomena yielded inconclusive results, it is possible that one or both related to the kiva or pithouse exposed at a later date by the actions of a pothunter.

Description of Cultural Features

Four cultural features were located during the test excavations at the site (Fig. 4). These include the refuse deposit (Feature 1), two extramural pits (Features 2 and 4), and a use/floor surface (Feature 3). A fifth feature, either a kiva or a pithouse, has been deduced from a variety of evidence, including an exposure in the sides of a pothole dug after the excavations reported here ceased.

The following descriptions, though appropriately qualified, may still give the erroneous impression that the cultural features were relatively easy to define. Nothing could be farther from the truth, especially regarding the probable use/floor surface (Feature 3), the probable extramural pit (Feature 4), and the general excavation conditions encountered throughout the site. It should be noted that ambiguous conditions and situations were constantly encountered, rendering the project one of the more difficult experienced by the writer. Thus, if more work is done at this site, the archaeologists are given fair warning of the problems to be expected. In spite of this, the site clearly is more important than anticipated back in the late 1960's, and further work is strongly encouraged.

Refuse Midden (Feature 1)

Where intersected by the trench, this feature has a diameter of 23 feet and a thickness of 34 to 36 inches (Fig. 5). The entire deposit is denoted by charcoal stain of varying intensity, but the culture items, exclusive of adobe chunks, are concentrated mainly in the uppermost 24 inches of the southern two-thirds of the exposed portion. Cultural content included sherds, lithics, animal bone, sandy adobe chunks (some with construction wood impressions), fire-broken river cobbles, small pieces and flecks of charcoal, occasional unmodified river cobbles, and a few fragments of formal artifacts. As a general rule, the larger items tended to concentrate in the middle to

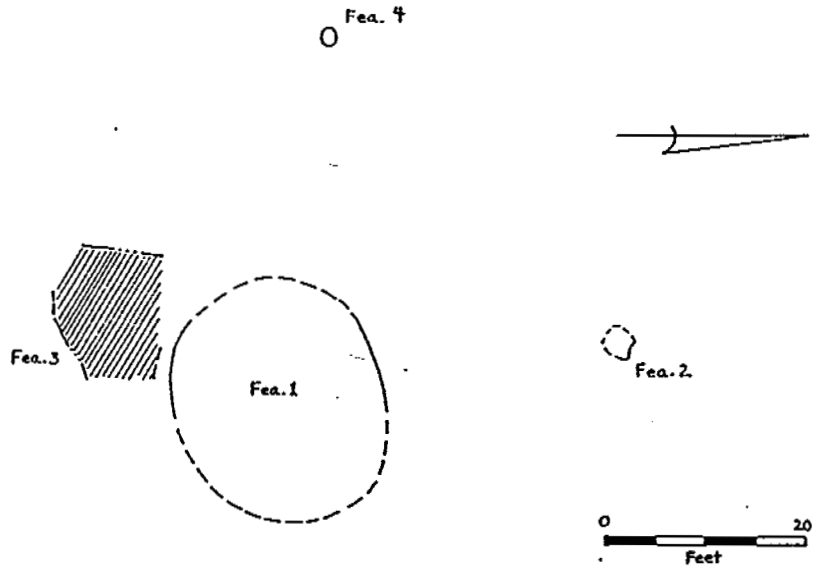


Figure 4: Map of Known Cultural Features

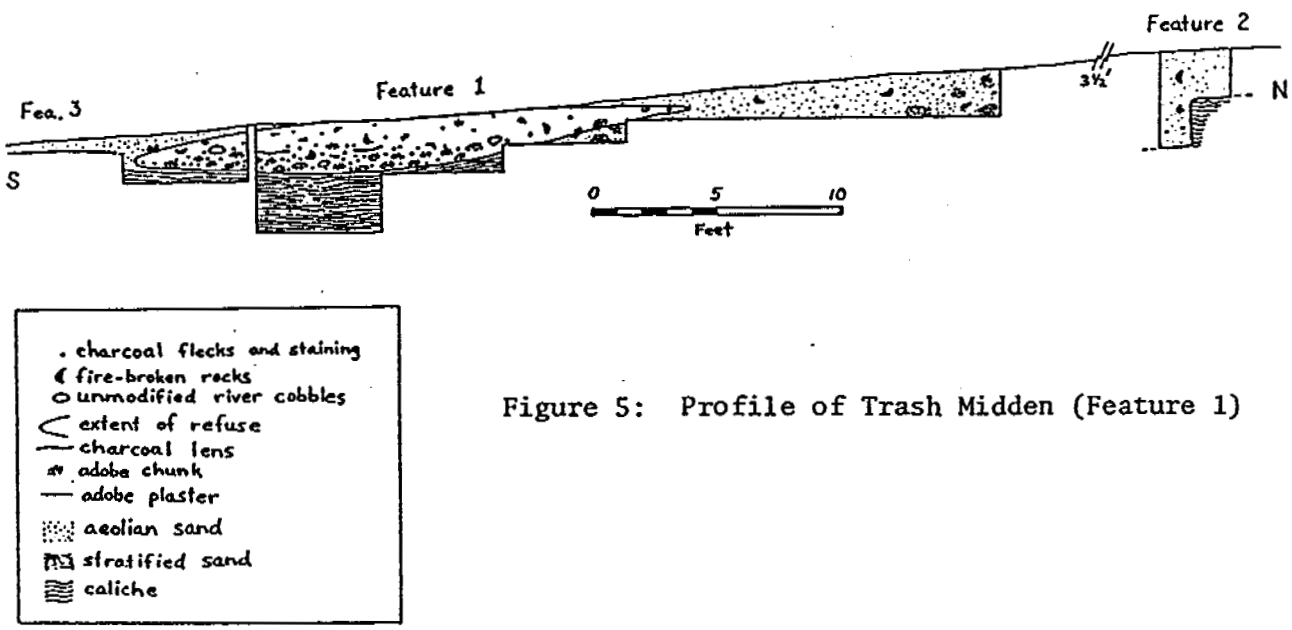


Figure 5: Profile of Trash Midden (Feature 1)

lower portions of the midden. Rodent activity was noted throughout the deposit. Because of this and other evidence for the homogenization of the fill (cf. Sundt 1984: 19), the initial segregation of the materials by section and level is not retained in the analyses. That is, the refuse, on the basis of sherd matching studies, appears to have been the result of a single occupation resulting in no discernable stratigraphy; post-occupational rodent burrowing subsequently mixed the deposits.

Extramural Pit (Feature 2)

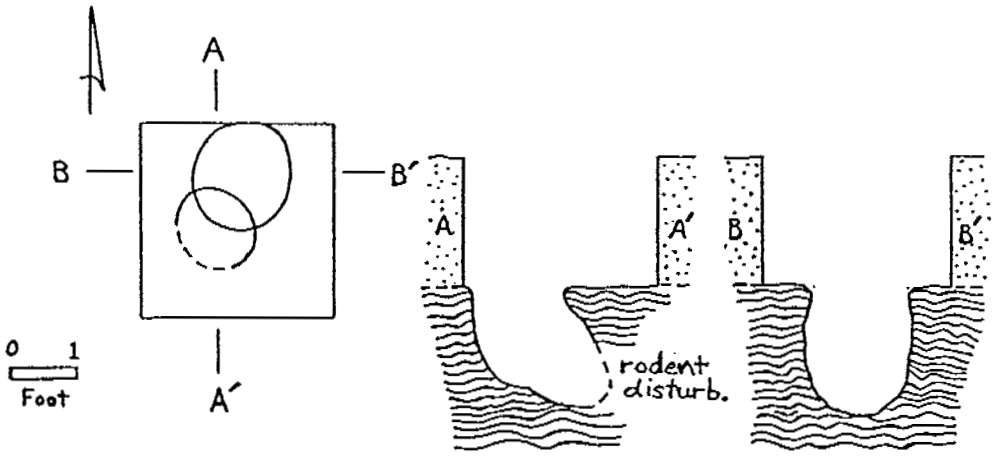
This pit, partially exposed by Test Pit #2, was evidently an extramural facility excavated into the caliche (Fig. 6). The bottom had a thin, roughly-finished adobe plaster. The unfinished (unplastered) sides are mostly vertical, though they are slightly undercut at the bottom (cultural?, or rodent burrowing?). Pit depth below the top of the caliche was 1'9" and below the present surface was 4'0". The size and shape were not fully determined, but a quasi-rectangular plan seems indicated by the portion outlined in the original test. The fill was tan sand with a somewhat greater concentration of sherds, lithics, and a few small pieces of charcoal than in the overlying fill. A small chunk of adobe noted in the fill had a construction wood impression.

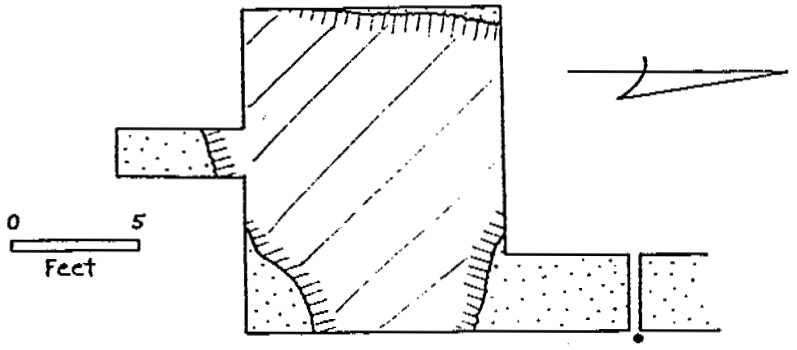
Use/Floor Surface (Feature 3)

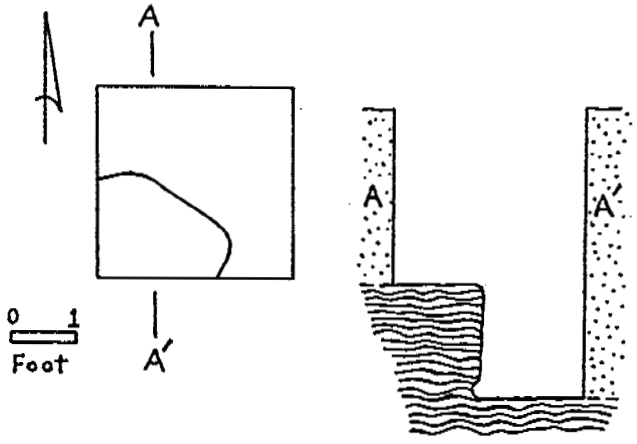
This surface, which was more or less level and had a somewhat higher clay content, was first encountered in the southern end of the trench. Excavations down to the surface were eventually extended to the south and west by means of four 5 by 5 feet squares and part of a fifth square (Fig. 7). It was found to lie an average of 2 to 4 inches below the present surface and to generally follow the curvature of the slope. Thus, whether this is actually some form of cultural feature or something natural is not totally certain. In all directions, the clayey nature of the use/floor surface degrades into a slightly compact sandy fill which differs in no other way than the slight clay content of the feature. Nowhere could a trace of walls be found to substantiate this as an actual floor. Test Pit #8, placed near the center of the exposed area, revealed the underlying deposits to consist of fairly-well compacted sand. Small numbers of sherds, lithics, and animal bones were recovered from the overlying fill, but none were seen in the test pit.

Probable Extramural Pit (Feature 4)

This pit in the caliche was discovered in Test Pit #4. It was a relatively small, deep basin with a smaller, sub-basin







Plans & Cross-Sections

Figure 8 (top): Feature 4, possible extramural pit

Figure 7 (middle): Feature 3, use/floor surface

Figure 6 (bottom): Feature 2, extramural pit

extending slightly downward and to the north from the bottom (Fig. 8). The main pit was 20 by 18 inches and 18 inches deep (into caliche); the bottom lay 43 inches below the surface. The walls and bottom were not plastered. No cultural materials or soil stains were recovered from either the pit or its extension.

Discussion

Test Pits 2-7 all revealed caliche at depths ranging from 25 to 33 inches below the modern surface. A pothunter's hole, dug sometime between late 1976 and late 1982, exposed caliche at 12 to 15 inches below the surface in the area of Square O. Yet, the deepest excavation in the nearby trench went to 54 inches without encountering the caliche. Instead, below the refuse accumulation, some 18 and more inches of laminated sands were exposed. Judging by the dish-shaped confiburation of these sands, it now seems highly likely that both the sand lenses and the bulk of the refuse deposit (Fea. 1) were in the depression of some sort of subterranean structure, probably a kiva or a pithouse. A kiva is the most likely as suggested by the depth. Although the pothunter did some damage, the structure and its fill should still be mostly intact.

CULTURAL MATERIALS

The surface collections and excavations recovered roughly 2400 pottery sherds, 1200 lithics, and 500 animal bones but only two dozen formal artifacts. A study of the locally-made painted ceramics (Santa Fe Black-on-white) has already appeared (Sundt 1984), and that of the animal bones will soon be available (Akin in press). Detailed studies of the utility pottery and the chipped lithic manufacturing debris are in progress and will appear at a later date. The following descriptions and discussions treat the materials as a single provenience since the excavation and painted ceramic data indicate essential homogeneity of the deposits.

Formal Artifacts

The formal artifacts comprise some 15 or so categories (types) and represent several general functional areas. Although many of the artifact types are known or suspected of having been used in two or more kinds of activities (metates for grinding

corn and pottery clay, for instance), this writer believes that most tools/artifacts were designed with a primary use in mind. In the case of the metate, we know from ethnographic studies that these tools were made primarily for grinding corn and perhaps other foodstuffs and that normally, only the old, nearly wornout metates are/were(?) used to grind clay for pottery making. Thus, here, metates are grouped under "Food Processing Artifacts (Vegetal-Related)". The general groupings are specifically used here to facilitate the discussion of site function.

Food Procurement Artifacts (Animal-Related)

Projectile Points: The single arrow point is a basal fragment of white chert; 11+ x 11 x 3.5 mm.

Projectile Point Preforms: Two. One is of clear black obsidian and was broken during notching (tang missing); 20 x 12+ x 3.5 mm. The other, of white chert, is a basal portion; 12+ x 11+ x 3+ mm; Fig. 9.

Food Processing Artifacts (Vegetal-Related)

Metates: The two complete metates are of vesicular basalt with the grinding surfaces being the only obviouus modifications. The smaller one is oval and measures ca. 400 x 325 x 150 mm. The larger one is pentagonal in shape and measures ca. 475 x 380 x 200 mm.

Mano: The one pinkish, indurated sandstone mano is a one-hand size specimen with upcurved ends indicative of use on trough metates. One grinding surface is well-developed and a second one, while functional, shows little use. Complete; 122 x 109 x 29 mm; 609 g. Fig. 10.

Manufacturing Tools

Awls: Two. A complete but poorly preserved awl made from a bird bone has the articular head intact; the shaft was split and the end ground down to a sharp, slender point; 61 x 4 mm; Fig. 11. The second item is a badly burned midsection of a bone splinter; it has grinding and polishing modification on its edges, and was probably part of an awl; 32+ x 13+ x 5 mm.

Hammerstones: Three, of river cobbles. One of sandstone with a battered end; 75 x 72 x 60 mm and 399 g. The second of quartzite with several flakes missing and three heavily-battered ridges; 92 x 86 x 54 mm and 502 g. The third of a green igneous stone with several flakes and a heavily battered ridge on one

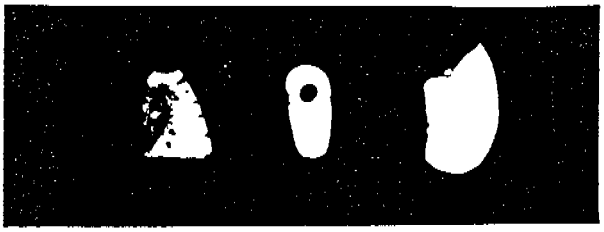
Figure 9 (following page):

Top Row- Shell ornament fragments (left & right) and stone bead (center).

2nd Row- White stone pendent (left) and red shale ornament fragment (right).

3rd Row- Miscellaneous biface fragment (left) and white chert projectile point preform fragment (right).

4th Row- Triangular bifaces or "hafted knives".

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end; several flakes missing at the other end apparently resulted from an attempted secondary use as a core; 89 x 67 x 37 mm and 359 g. Fig. 10.

Punch: A short bone splinter with a partially intact articular head has an abruptly tapered point; 55 x 14 x 8 mm; Fig. 11.

Ornamental/Ceremonial Artifacts

Stone Bead: A white, calcitic(?) stone bead is ellipsoidal with the hole drilled through the larger, thinner end; 12 x 6 x 3 mm; Fig. 9.

Bone Tube Beads: Two short sections of bird long bones have cut ends; a burned one is 29+ x 5 mm, and the other is 35+ x 6.5 mm; Fig. 11. The hole near the center of the unburned specimen may be from rodent gnawing.

Pendent: Two. A tabular, hexagonal piece of soft, white, calcareous(?) stone has a hole drilled near one edge; 25+ x 21 x 4 mm. A rectangular fragment of a tabular piece of orange-red argillaceous siltstone (reddle) has been ground to shape on both faces; 14+ x 19 x 1.5 mm; Fig. 9.

Ornament Fragment: Two small fragments of worked shell were probably once parts of jewelry. One small piece of shell has four small triangular notches on the intact edge. The other is equally small and was originally oval in shape (Fig. 9).

Miscellaneous Items

"Backed Knife": A small wedge-shaped section of a river cobble has one edge dulled and slightly polished from use. The opposite edge is naturally "backed" in that it is flat (part of a fracture plane) and lies at a right angle to the two major planes of the artifact. 51 x 21 x 9 mm. Fig. 10.

Triangular Bifaces: Two large flakes have been edge-trimmed to a triangular shape; their almost identical size suggests that they are finished tools, perhaps hafted knives. One is of chalcedony with white inclusions; 36 x 23 x 5 mm. The other is orange and black chert; 35 x 24 x 6 mm (Fig. 9).

Miscellaneous Biface: A small basal fragment of what may have been a leaf-shaped biface is made of chalcedony with white inclusions; 11+ x 11 x 3.5 mm; Fig. 9.

Figure 10 (following page):

Top Row- Shaped stone (left) and "backed knife" (right).

2nd Row- Hammerstones.

3rd Row- Mano (left) and hammerstone (right).

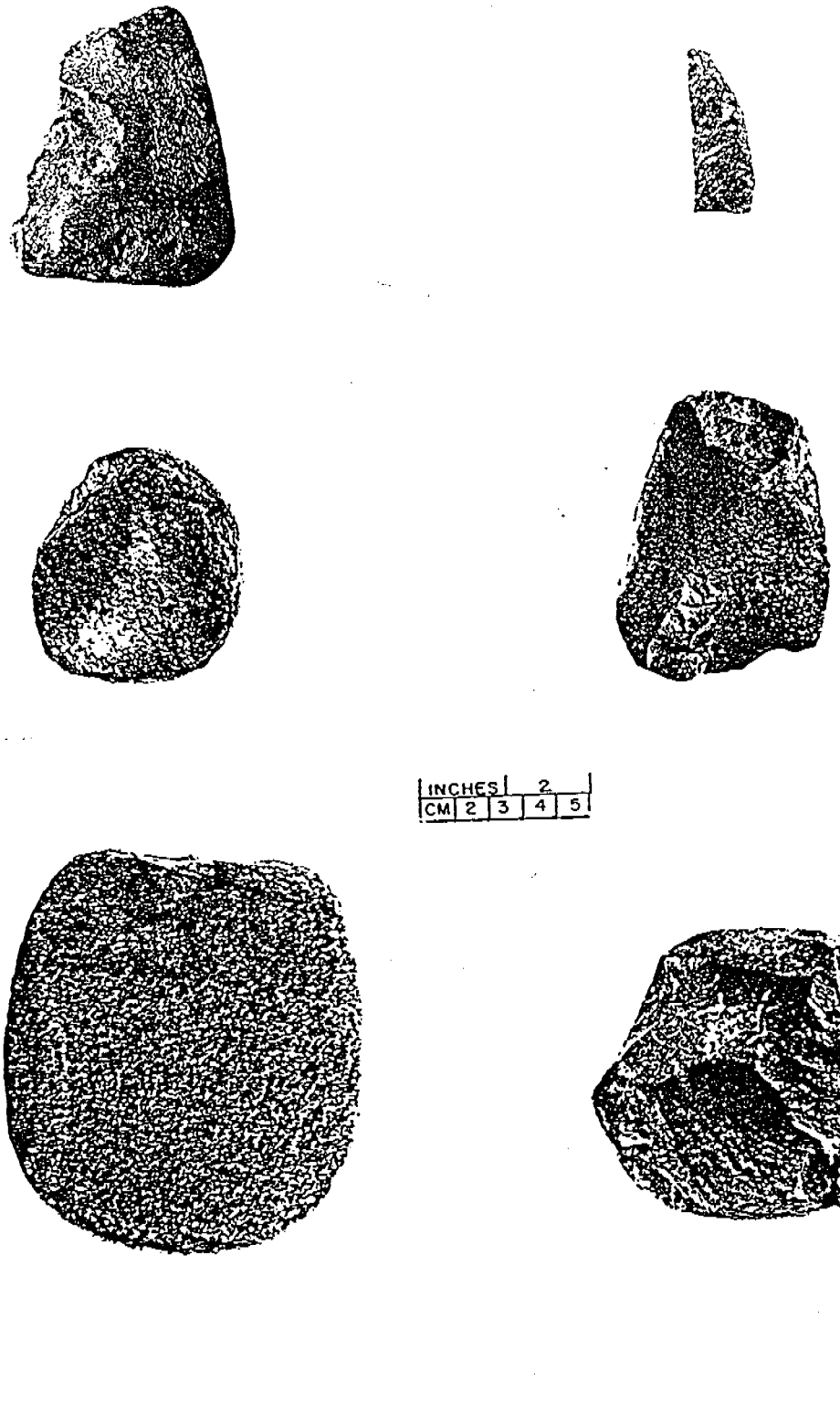
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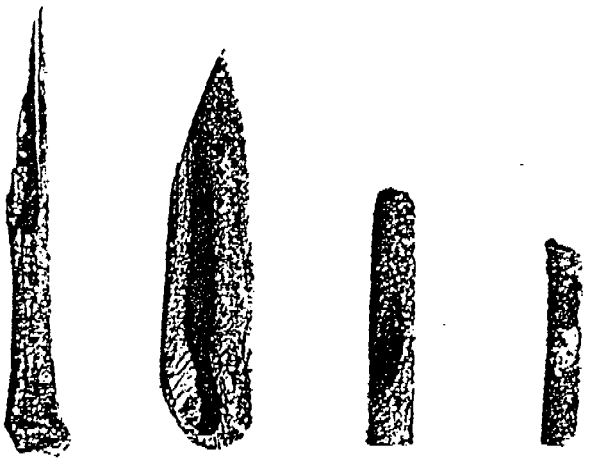
Figure 11 (following page):

Top Row (left to right)- Awl, punch, and two bone tube beads.

Bottom Row- Worked sherds.

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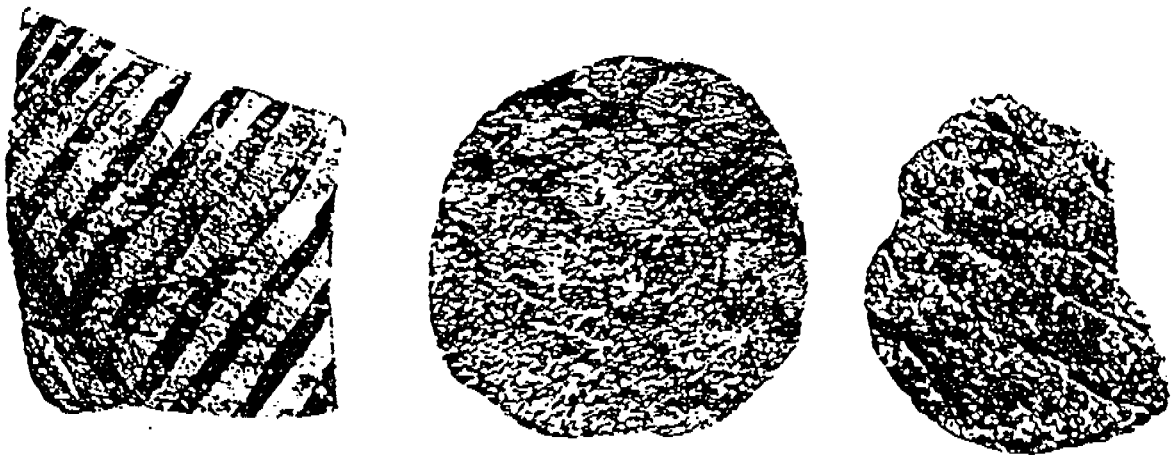

Cordage: A small mass of carbonized cordage is 2-strand, s-twisted; fiber type unknown; a 11 x 2 mm. section was preserved.

Floor Polisher: A circular, vesicular basalt artifact with flat, parallel surfaces may have been used to smooth plaster on the walls and floors of structures; 110 x 30 mm.

Worked Sherds: Three. One complete and one fragmentary corrugated sherds have roughly circular shapes but no central perforations; 51 x 50 x 6 and 49 x 4 mm. A rim sherd of Santa Fe B/w has been ground into a roughly rectangular shape; 53 x 44 x 5 mm (Fig. 11).

Shaped Stone: A tabular, trapezoidal-shaped river cobble fragment has been roughly shaped around the perimeter, and both surfaces have been partially ground flat; probably not completed; intended use unknown; dark gray to black aphanitic stone; 85 x 71 x 6 mm; Fig. 10.

Ceramics

Over 2000 ceramics include 600 painted sherds, 1600 utility sherds, and over 100 imported or "trade" sherds.

Local Painted Ceramics

Sundt (1984) classifies these sherds as a sherd-tempered variety of Santa Fe Black-on-white. Some 28 partially reconstructable vessels form the basis of his descriptions and design study. Two of the vessels and seven additional sherds are from jars, and the rest are from bowls. The reader should consult the reference for more details.

Local Utility Ceramics

Approximately two-thirds of all the pottery are utility sherds. Of these, roughly 40% are smeared-indented corrugated, about 20% are narrow-clapboard corrugated, a little less than 40 % are "plain", and the rest (about 2.5%) are indented (unsmeared) corrugated. Most, if not all, of the plain group are probably lower body sherds from vessels with one or another form of corrugation on the upper portions. The full study of the utility sherds is in progress and will be made available when completed.

Imported Ceramics

Over 100 sherds or approximately 5% of the pottery fragments belong to vessels exchanged into the site from areas to the south, west, and possibly northeast of the Albuquerque District. Three of them are almost certainly intrusive from the Basketmaker III-Pueblo I sites located immediately to the west of AL-12, unless, of course, a component dating to that period underlies the Pueblo III component. At this writing, only 94 sherds have been identified (Table 1), all with the assistance of Dr. A.E. Dittert, Jr.

TABLE 1

Imported Ceramics from the Trench and Test Pits 1-8.

Type	Number
Socorro Black-on-white	30
Los Lunas Smudged	24
Pitoche Rubbed-Ribbed	21
Cebolleta Black-on-white	1
North Plains Black-on-red	1
Northern Gray Corrugated	1
St. Johns Polychrome (matte and sub-glaze)	3
Galisteo Black-on-white (possibly Chaco-McElmo B/w)	8
Galisteo Basin copy of one of the western corrugateds	1
Tusayan Corrugated	1
Kana-a Neckbanded (probably intrusive from site west of AL 12)	2
Smudged Brown Ware (thin and well-fired; probably also intrusive to AL 12)	1
TOTAL	94

In addition to these, Sundt (1984: 20) has identified one partial vessel as a Chaco-McElmo Black-on-white bowl.

Interestingly, 81 (86%) of the sherds in Table 1 are from the region frequently characterized as a Mogollon-Anasazi "transition"

zone, the area lying between the towns of Socorro on the east and Gallup on the west. The fact that a relationship of some importance existed between the peoples of that zone and peoples in the Middle Rio Grande has been noted in other studies (Hammack 1966; Wiseman 1975). By way of contrast, sherds from other districts are most often either rare or non-existent in Middle Rio Grande sites; examples of nearby but poorly represented districts include the Jemez, Gallina, Taos, and Saline-Medano. The Tusayan Corrugated sherd from northeastern Arizona represents the greatest distance of exchange.

Chipped Lithic Manufacturing Debris

The well over 1000 cores, flakes, and pieces of shatter are currently being studied and will be reported at a later date. A number of rock and mineral types and many color variations are present. These include cherts, chalcedonies, basalt(?), obsidian, limestone(?), quartzite, greenstone, and miscellaneous quartzes. The vast majority (over 90%) are of chert or chalcedony, and most of those appear to be from the same or closely-related geologic sources. Furthermore, probably most or all of the materials were collected from the local gravels. No materials known to be from sources outside the Rio Grande drainage have as yet been identified in the assemblage.

Rock Samples

Three different kinds of rock recovered from the excavations would have made good tempering material for pottery. However, as far as is now known, none of the three was used in any of the AL-12 pottery.

Coarse Gray Sandstone

A chunk of a medium gray, quartzitic sandstone also contains occasional other minerals. It is loosely cemented by minimal amounts of whitish cement. The piece lacks water-rounding, and indeed, it is so crumbly that it had to be carried into the site by the Indians. It measures 55 x 38 x 30 mm.

Fine White Sandstone

This small chunk of an equi-granular quartzitic sandstone is so loosely cenmented by minimal whitish-colored cement that it

readily crumbles into a fine powder; it would have been most useful as pottery temper. In fact, it is quite similar to a type of sandstone temper found in a large number of Red Mesa and Red Mesa-like black-on-white sherds recovered from LA 835, the Pojoaque Grant Site located north of Santa Fe (research in progress).

Basalt Scoria

A very small piece of dark maroon-colored scoria lacks the rounding characteristic of water-transported rocks; it was evidently brought into the site by the Indians. 23 x 13 x 9 mm.

Faunal Remains

Nearly 500 whole and fragmentary animal bones were recovered and sent to N. Akin for study. The assemblage, dominated by jackrabbit and cottontail, nevertheless contains a wide variety of species, including fish, migratory water fowl, raptors, and reptiles as well as a variety of large and small mammalian species. Clearly, species composition, diversity, and evidence of use (indications of cooking) show an eclectic approach to animal procurement and consumption.

PHYSICAL ANTHROPOLOGY

by Sara Ann Noble

The single burial recovered was that of a child who was approximately 2 or 3 years of age at the time of death. The skeletal remains are in poor condition; the ends of all the long bones have been eroded away, the ribs are fragmentary, and the skull consists of fragments of the braincase and mandible. Because of this, the age of the individual is rather tentative and is based upon tooth eruption sequence. It should be noted that the mandible is incomplete and the maxilla is entirely missing.

The incomplete nature of the skeleton and poor preservation limit observations of anomalies and pathologies. The only anomaly observed is a slight shovel shaping of the lateral incisors. In terms of pathologies, it appears that the long bones are unusually porotic near the ends of the shafts.

Bones which are present include:

Cranium-
- 7 skull fragments
- the anterior portion and left side of the mandible
- teeth include: right- i/1, i/2, c, ml/m2
  left- i/2, c, ml/m2
  3 unsided tooth buds

Axial Skeleton-
- unsided scapula fragment
- left clavicle shaft
- 15 unsided rib shafts

Appendicular Elements
- right and left humeri shafts
- right and left ulna shafts
- right and left femur shafts
- unsided radius shaft

DATING THE OCCUPATION

In the absence of materials suitable for making absolute chronological determinations, the dating of the site must necessarily rely on ceramic evidence. Given the ceramic indicators discussed by Sundt (1984), the site most likely represents a single occupation. At the very least, the severe rodent disturbances noted throughout the site, any temporal differences would be virtually impossible to detect.

Several of the pottery types discovered have been dated by dendrochronological and other means elsewhere in the Southwest (Table 2).

Rio Grande Glaze A Red, though not present at AL-12, became the dominant painted type in the Middle Rio Grande region after its inception in the early 1300's. Its ubiquity there and widespread use as a trade item make it an excellent chronological marker, both when it is found and when it is not found. In the present context, its absence provides a maximum end date of A.D. 1300, or perhaps a little later, for the AL-12 occupation.

Since Santa Fe B/w is the dominant local type at AL-12, the beginning date for the occupation probably was no earlier than the date of its inception about A.D. 1200. Sundt (1984: 29), in his design analysis of the AL-12 Santa Fe, cautiously suggests

TABLE 2

Ceramic Dates

Type	Dates A.D.	Source
Santa Fe B/w	1200-1350	Breternitz 1966
Socorro B/w	1050-1275	Smiley, Stubbs, & Bannister 1953: 58
St. Johns Polychrome	1175-1300	Carlson 1970: 39
Galisteo B/w	1300-1400	Breternitz 1966
Los Lunas Smudged	1270-1370	Breternitz 1966
Tusayan Corrugated	1050-1300	Breternitz 1966
Chaco-McElmo B/w	1025-1125	Breternitz 1966
Rio Grande Glaze A Red	1300-1500	Breternitz 1966

that the AL-12 designs may date earlier than the styles common to both the Santa Fe and Galisteo B/w's recovered from Pindi Pueblo. The dates for Pindi have been established, on the basis of tree-ring dates, as A.D. 1250 -1350 (Robinson, Hannah, & Harrill 1972). If Sundt's assessment is correct, then the AL-12 Santa Fe, and therefore the occupation of the site, may pre-date A.D. 1250.

The last problem which needs to be considered in this context is the presence of what was originally identified as Galisteo B/w in the AL-12 assemblage. There was some question at the time of the identification of these sherds about how they related to ceramic developments in the Middle Rio Grande. The questions mainly revolved around the fact that they appeared to be early and that they might well represent some of the earliest made Galisteo. They shared some characteristics with the presumed antecedents from the Mesa Verde country, yet, they definitely were not either McElmo or Mesa Verde B/w's. As can be seen in Sundt's report (1984), he found a partial bowl (not part of the originally identified intrusive sherds) which he calls Chaco-McElmo B/w. Given this and the considerations just mentioned, it seems very possible that all of the sherds and the partial bowl may be Chaco-McElmo B/w and not Galisteo. If this is

accurate, then we no longer have to explain the presence of a later dating pottery type and reconcile this with the criteria for an earlier dating of the site. Thus, on the questionable strength of the available evidence, it appears that AL-12 was probably occupied for an unknown length of time within the first half of the 13th century, or A.D. 1200 to 1250.

SITE FUNCTION

The work performed at AL 12 thus far can only be characterized as a good beginning towards learning the nature and extent of the site as a whole. Even without knowing much about the type or types of structures present and, potentially, the full range of artifact types represented, we can make a few statements about site function and recommend those aspects in need of further research at AL-12. Cultural features currently known for the site include a refuse accumulation, one and possibly two extramural pits, and a use/floor surface. Both the wood-impressed adobe chunks found in the trash and the documentation of a stratified sand deposit at depths exceeding the known caliche stratum elsewhere in the site point to the existence of one or more structures. These should be locatable through more intensive testing efforts.

At the present time the length and nature of the occupation, as interpretable from architectural remains, cannot, of course, be discussed directly. It is probably reasonable to suggest from the rather sizable amount of refuse, as well as the breadth of the artifact inventory, that the occupation was more substantial and complex than that normally attributed to a special-use site such as an agricultural "field house".

The artifact inventory and other evidence indicate a number of activities were performed at AL-12. In the summary which follows, items currently documented for the AL-12 artifact inventory are denoted by an asterisk

- Hunt-related: The faunal remains show that food animals were taken. The larger aimals were probably taken by the use of the bow and arrow. This equipment was, at least to an extent, made and maintained at the site as evidenced by the preforms* and the fragmentary hafting element of an arrow point*. The numerous small species in the faunal inventory were probably taken by such means as snares, traps, and deadfalls, most examples of which include the use of cordage*.

- Vegetable Food Processing: As discussed briefly in the introduction to the artifact section, metates and manos are believed to have been made and used primarily for grinding

corn and perhaps other vegetal foods. The presence of the metates* and mano* at AL-12 is thought to indicate the use of corn by the site occupants. Since the excavations took place before the collection of flotation samples became a routine aspect of field work, the presence of corn at AL-12 cannot be verified at this time.

- Manufacturing and Maintenance Equipment: Several different artifact types could have been and probably were used for a variety of tasks. Hammerstones* suggest at least two different uses - core reduction for chipped lithic manufacturing and the production and/or maintenance of grinding equipment, especially of manos and metates. Awls* also can be used for a variety of tasks, including the fabrication of basketry items (baskets, sandals, etc.) and articles of hide. Punches* or stubby awls would be useful for pressure-flaking lithic items such as projectile points, drills, knives, and scrapers, among other things. The triangular "knives"*, if such they are, would have been useful in a variety of cutting tasks, with butchering and meat-cutting being two of the more prominent activities at AL-12.

- Storage: The storage of items or materials is indicated by the extramural pits. In the absence of direct evidence, the items or materials stored are conjectural. However, food is considered to be one of the more likely materials.

- Food Cooking and Consumption: The presence of numerous painted and utility ceramic vessels at the site, in both bowl and jar forms, indicates that activities concerning food and beverages were important at AL-12. The burning and carbonization on many of the utility vessel exteriors clearly indicate that food was cooked. The painted bowls indicate that food was also served/consumed. Given that these two activities were engaged in, it is therefore logical to assume that food storage, at least on a short-term basis, was also performed. This could have been accomplished in jars or the extramural pits or both (see above). Whether or not some or most of the vessels were made at AL-12 cannot be determined on the basis of present knowledge of the site. The presence of the animal bones, particularly those showing evidence of cooking (Akins, in press), indicates that animal foods were prepared and presumably eaten at the site.

The length of the occupation remains unknown because of an absence of direct evidence. However, it is likely that the accumulation of debris to the depth and extent of the trash deposit (Feature 1) indicates a moderately lengthy period; perhaps a few years is represented.

Equally little information is at hand regarding seasonality.

Akin's assessment (in press) of the faunal assemblage shows that late spring and early summer occupation can be inferred from the presence of a number of very immature individuals and the turtles. Young adult individuals, plus migratory species such as bald eagle and crane, indicate occupation into the fall and possibly winter. Thus, a year round occupation, for one or more years, is a possibility.

SUMMARY AND CONCLUSIONS

To this day, the full nature and extent of AL-12 remain obscure. However, we do know several important things about its content and therefore its function and significance. Clearly, much more work should be done in order to verify or reject and to amplify the remarks to follow. The site carries a fair degree of significance for two reasons. One is that so little is known about the Pueblo III or Coalition Period in the Albuquerque District. The other is that this situation is greatly exacerbated by the rapid spread of the urban environment and consequent loss of large numbers of sites with little or no prior knowledge of their existence.

The excavation of one trench, several test pits, and several squares exposed a number of cultural features, among them, a refuse area, a use/floor surface, and one or two extramural pits of aboriginal origin. The recovery of several pieces of wood-impressed adobe, the discovery of an anomaly in the substratum, and observations made on a large pothunter's hole clearly indicate the presence of architectural features. Pueblo rooms, pithouses, and/or a kiva can be expected, if other excavations in the district are any indication.

The cultural remains, while not all yet analyzed in detail, represent a wide variety of activities connected with food procurement, preparation, and comsumption; tool manufacture and maintenance; and storage, presumably of foodstuffs, but possibly of other things as well. The impression gained is that the full round of activities undertaken on a daily basis at a habitation site are represented. This, of course, is reenforced by the indications for the presence of habitation structures, extramural storage facilities, and the accumulation of refuse. The duration and seasonality of the occupation, however, are basically poorly known at the present time. The available evidence suggests a year round occupation for perhaps a few years.

The subsistence data for AL-12 are incomplete, though the faunal aspect is currently better known. A wide variety of mammals of all sizes, migratory birds, reptiles, and fish were taken, and most evidently were eaten. Jackrabbits and

cottontails were the most important species, though surprisingly, quail are comparatively well represented and may have been fairly important as well. The other species are numerically incidental, but their importance, especially in the aggregate, should not be underestimated.

The vegetal component of the diet is basically unknown, although corn can be assumed to have been important on the basis of the grinding equipment and the time period. However, the roles of corn and other vegetal products in the diet are poorly understood and the subject of intense interest in scholarly circles today. Future work at AL-12 should be directed towards obtaining adequate samples of floral data in order to verify and greatly expand upon our knowledge of plant use by the site occupants.

Dating the occupation is based solely upon the dominance of a local variety of Santa Fe Black-on-white, the presence of several intrusive pottery types dated elsewhere, and the absence of Rio Grande Glaze A Red, the major pottery type of the succeeding Pueblo IV or Classic Period in the Middle Rio Grande Province. The sum of data suggests that AL-12 was occupied during the first half of the 13th century, but the acquisition of more specific, more reliable dates is critical to our eventual understanding of the Coalition and all succeeding periods.

And finally, the analyses of two categories of AL-12 materials have not yet been completed. These are the utility pottery and the chipped lithic manufacturing debris. Both are in progress, but their completion will not be in the immediate future. The results of both, when in hand, will be made available to interested persons.

RECOMMENDATIONS FOR FUTURE WORK AT AL-12

The excavations and analyses of the AL-12 data given here and in the cited studies (Sundt 1984 and Akin, in press) can only be considered a beginning. While further work at the site is not being planned by the present writer because of too many other commitments, others are strongly encouraged to continue the work started here. Topics which should be considered in any future work include:

- The location and excavation of the structures. One structure, a possible kiva or pithouse, has already been located, though it apparently dates earlier than the features treated here. However, structures temporally associated with the early 13th century materials almost certainly do exist and need to be investigated; many essential details of that occupation are

currently lacking and are necessary to our understanding of the site and its place in the social and economic organization of the Coalition population in the Albuquerque District.

- Elucidation of the intra-settlement pattern of AL-12. Much more of the site should be excavated in order to expand upon the known cultural features, their temporal relationship to one another, and the activities they represent.

- Acquisition of botanical materials. Data on the vegetal component of the diet are currently lacking for AL-12. The acquisition of a sufficient number of flotation samples and any other pertinent materials should be given high priority in order to reconstruct this part of the subsistence base.

- Acquisition of absolute dates for the occupation(s?). Dating is currently based upon ceramics. While this information is useful in some respects, it relies upon several assumptions which render the dating less than fully satisfactory. Several absolute dates deriving from dendrochronological, radiocarbon, and archaeomagnetic techniques will be much more reliable and therefore of greater value. Securing good samples for these techniques should be given high priority in any future work.

REFERENCES CITED

Akins, Nancy

in press An Analysis of Faunal Remains from the Midden at AL-12. Manuscript submitted to COAS: New Mexico Archaeology and History, COAS Publishing and Research, Las Cruces.

Breternitz, David A.

1966 An Appraisal of Tree-Ring Dated Pottery in the Southwest. Anthropological Papers of the University of Arizona No. 10, Tucson.

Brown, David E. and Charles H. Lowe

1983 Biotic Communities of the Southwest (Map). U.S.D.A. Forest Service, Rocky Mountain Forest and Range Experiment Station, General Technical Report RM-78 (Revised), Tempe.

Carlson, Roy L.

1970 White Mountain Redware, A Pottery Tradition of East-Central Arizona and Western New Mexico. Anthropological Papers of the University of Arizona

No. 19, Tucson.

Cordell, Linda S.

1979 Cultural Resources Overview: Middle Rio Grande Valley, New Mexico. U.S.D.A. Forest Service, Southwestern Region and Bureau of Land Management, State Office, Albuquerque and Santa Fe.

Cordell, Linda S. (Editor)

1980 Tijeras Canyon: Analyses of the Past. Maxwell Museum of Anthropology Publication Series, University of New Mexico Press, Albuquerque.

Dane, Carle H. and George O. Bachman

1965 Geologic Map of New Mexico. United States Geological Survey, Washington, D.C.

Frisbie, Theodore R.

1967 The Excavation and Interpretation of the Artificial Leg Basketmaker III - Pueblo I Sites Near Corales, New Mexico. Unpublished M.A. thesis, Department of Anthropology, University of New Mexico, Albuquerque.

Gabin, Vickie L. and Lee E. Lesperance

1977 New Mexico Climatological Data: Precipitation, Temperature, Evaporation, and Wind - Monthly and Annual Means, 1850-1975. W.K. Summers and Associates, Socorro.

Hammack, Laurens C.

1966 The Tunnard Site, A Fourteenth Century Ruin Near Albuquerque, New Mexico. Museum of New Mexico, Research Records No. 3, Santa Fe.

Kuchler, A.W.

1964 Potential Natural Vegetation of the Conterminous United States (Map and Booklet). American Geographical Society, Special Publication No. 36, New York City.

Maker, H.J., J.J. Folks, J.U. Anderson, and W.B. Gallman

1971 Soil Associations and Land Classification for Irrigation, Sandoval and Los Alamos Counties. New Mexico Experiment Station Research Report No. 188,

Las Cruces.

Oakes, Yvonne Roye

1979 Excavations at Deadman's Curve, Tijeras Canyon, Bernalillo County, New Mexico. Museum of New Mexico, Laboratory of Anthropology Notes No. 137, Santa Fe.

Robinson, William J., John W. Hannah, and Bruce G. Harrill

1972 Tree-Ring Dates from New Mexico I, O, U, Central Rio Grande Area. Laboratory of Tree-Ring Research, University of Arizona, Tucson.

Smiley, Terah L., Stanley A. Stubbs, and Bryant Bannister

1953 A Foundation for the Dating of Some Late Archaeological Sites in the Rio Grande Area, New Mexico: Based on Studies in Tree-Ring Methods and Pottery Analyses. University of Arizona, Laboratory of Tree-Ring Research Bulletin No. 6, Tucson.

Snow, David H.

1976 Santiago to Guache: Notes for a Tale of Two (or More) Bernalillos. IN Collected Papers in Honor of Marjorie Ferguson Lambert edited by Albert H. Schroeder. Papers of the Archaeological Society of New Mexico: 3, Albuquerque.

Sundt, William M.

1984 Design Analysis of a Pure Variety of Santa Fe Black-on-White. IN Collected Papers in Honor of Harry L. Hadlock edited by Nancy Fox. Papers of the Archaeological Society of New Mexico: 9, Albuquerque.

Tuan, Yi-Fu, Cyril E. Everard, Jerold G. Widdison, & Iven Bennett

1973 The Climate of New Mexico - Revised Edition. New Mexico State Planning Office, Santa Fe.

U.S. Department of Commerce, Weather Bureau

1967 State of New Mexico Precipitation Maps. U.S. Government Printing Office, Washington, D.C.

Wiseman, Regge N.

1971 A Preliminary Report of Excavations at Artificial Leg, Site No. 12, Bernalillo, New Mexico. Manuscript on file in the ARMS file (LA 35493), Laboratory of

Anthropology, Museum of New Mexico, Santa Fe.

1974 An Archaeological Clearance Investigation and Impact Statement for the World Humates, Ltd. Mine Near San Ysidro, New Mexico. Museum of New Mexico, Laboratory of Anthropology Notes No. 106, Santa Fe.

1980 The Carnue Project: Excavation of a Late Coalition Period Pueblo in Tijeras Canyon, New Mexico. Museum of New Mexico, Laboratory of Anthropology Notes No. 166, Santa Fe.

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DESIGN ANALYSIS OF A PURE VARIETY OF SANTA FE BLACK-ON-WHITE

WILLIAM M. SUNDT

"...But to me all are still as alive in memory and in grateful affection as they were when most of us were young and each of us was working toward the common end of learning what we could of the forces that shape human destinies." A. V. Kidder, 1958, xiv

INTRODUCTION

Early Studies

In many ways, an account of the archaeological study of the type of pottery now called Santa Fe Black-on-white is a history of archaeological study of the upper Rio Grande and Pecos River drainages. At first, only the most obvious characteristics were noted of the many potsherds which explorers found lying about, such as color combinations and surface texture treatments. But to early pioneers, like Adolph Bandelier, exploring a new country peopled by living pueblos in whose very shadows lay the ruins of ancestral dwellings, there came to mind the possible usefulness of potsherds, with their ever differing designs, as markers of the comings and goings of people, past and present. For these early explorers recognized broad differences in the pottery from one group of pueblos to another, just as they recognized broad differences in the culture from one area to another.

As the early period of exploration gave way to the beginnings of scientific study, there arose a need for refined observations of pottery to distinguish in more detail the various kinds found associated with archaeological sites in different areas.

A. V. Kidder (1915) was the first to publish a more detailed study of this sort on the pottery he found on the Pajarito Plateau and in the environs of Santa Fe. Of course this included Santa Fe Black-on-white, but not as a distinct type. The distinct nature of the various redwares was recognized, but all the early "Black-and-White Wares," as he then called them, were lumped together. The later biscuitwares were recognized as distinct, as were the black-on-white wares further west from the Mesa Verde, Kayenta, Chaco Canyon, and Tularosa. But the early Pajarito black-on-white wares seemed to show Kidder certain affinities to each of these more western wares.

Today, reading Kidder's first description of the early "black-and-white" wares, it is clear to me that the bulk of what he was looking at was Santa Fe Black-on-white. "The sherds have a dark gray paste, remarkably homogeneous and fine...The slip is very thin, considerably softer than the paste and is ordinarily little lighter than it in color" (Ibid., p. 413). But at that time he was also lumping it with material he and Amsden later recognized as different.

Meanwhile N. C. Nelson had been working to the south in the Galisteo Basin. Here too the earliest pottery was called simply black-on-white. Nelson (1916) lumped all black-on-whites save the biscuitwares. Were these two black-on-whites the same? From both Nelson's description and the present day knowledge, it is clear that the dominant type here was Galisteo Black-on-white. Santa Fe Black-on-white was present, though, and represents at least one of the exceptions

to the norms necessitating Nelson's broad description. But Nelson's concerns were primarily with the development of a chronology demonstrating time depth and seriation of these pueblos whose people were mostly producing glaze-decorated pottery, and a lumping of all earlier black-on-white wares suited his needs admirably.

The Pecos Years

The next big step forward in archaeological studies of the Rio Grande region was about to start. Nelson's method of stratigraphic excavation to obtain temporal data was about to be employed and refined during the excavation of Pecos Pueblo by the Southwestern Expedition of the Robert S. Peabody Foundation for Archaeology of the Phillips Academy under the direction of Alfred Vincent Kidder. At Pecos, and nearby Forked Lightning, Rio Grande archaeology would be given a magnificent ceramic time piece in the form of well described and carefully seriated pottery types. But with it certain preconceived notions and romantic ideas would be questioned, ideas about the Pueblo Indian's self-sufficiency and lack of sophistication in commerce and industry in past centuries.

In his introduction to The Pottery of Pecos, Volume I, The Dull-Paint Wares, A. V. Kidder remarks: "Like all Pueblo Indians, the Pecos were diligent potters. Their way of life required the use of many vessels for cooking and serving food and for carrying and storing water, and their supply of these fragile utensils naturally needed constant replenishment. So throughout the centuries the making of pottery never ceased; the potter's art was never at a standstill; styles grew and changed, new wares developed or were introduced and old ones dropped out of use" (Kidder and Amsden, 1931, p. 3).

Note that Kidder (and he was not alone in this, even today) says like all Pueblo Indians, the people of Pecos never ceased making pottery. A natural supposition we will return to later.

It was in this volume that C. A. Amsden first divided the early black-on-white wares into separate types, calling the one that H. P. Mera was later to name Santa Fe Black-on-white (Mera, 1935, p. 12) the "Blue-Gray" type (Kidder and Amsden, 1931, pp. 21-24, 68-70). However Amsden relates his struggles with the variability of Pecos Black-on-white pottery, the strong feeling he got that "easily recognizable, quite valid types must lurk within it," and his study of thousands of sherds "on the basis of such criteria as rim form...color, outside decoration, paste, outside slip, outside polish...in a desperate effort to find some tangible feature of consistency in the group. None proved a touchstone" (Ibid., p. 22). Kidder laments the weakness of the technological descriptions (Ibid., p. 13), brought on by the limited time and resources available to Mr. Amsden, and notes that sets of sherds of all types have been deposited at institutions concerned with Southwestern research to augment the written descriptions which lack "look" and "feel." It remained for A. O. Shepard to strengthen the area of technological description, which she did in meticulous detail (Kidder and Shepard, 1936, pp. 461-464, 470-487). Concerning the black-on-white wares of Forked Lightning and of Pecos, and with regard to Amsden's work she says "Technological analysis shows that the pastes of the types recognized by him are even more distinctive than the surface characteristics upon which his classification was primarily based...different kinds of tempering material have been found in what otherwise appear to be homogeneous types...It is clear, however, that emphasis upon exterior finish has tended to confuse the relationship of types and increased the difficulty of classification...external features of one style [of pottery] grade almost imperceptibly

into those of another...Materials, however, remain distinct...Consequently, in the final analysis of this group, tempering material is probably one of the best means of localizing types... Identification of materials also makes possible the classification of the 'borderline' pieces" (Ibid., p. 470). At last, here was the touchstone sought earlier by Amsden. But with it came other problems.

Kidder's Problem. The Blue-Gray (Santa Fe) type, and most other types included varieties (or even whole classes of pottery) with tempering material that was unavailable in the Pecos Valley! In the introduction to Volume II of The Pottery of Pecos Kidder remarks that "It has always been assumed that potting was one of the regular household tasks of every Pueblo woman; that each town in this regard was self sufficient. But if whole classes of Pottery...were imported, we must postulate an extraordinary volume of trade and allow for a compensating outward flow of other commodities. Furthermore, we must believe that the production of vessels at the source of supply was much greater than was needed for home consumption, in other words, that rudimentary commercial manufacturing was practised" (Ibid., p. xxiii).

The above thoughts were almost too much for Kidder. He wondered if perhaps Pecos was unique in importing much of its pottery. After all, it was a peripheral town and a trade center. On the other hand, if the vessels were made locally of foreign materials, other difficult questions would have to be faced. Why? Slavish copying of imported prototypes, down to importing the foreign materials? New residents refusing to give up old materials? Later he observed that the first really distinctively Pecos pottery is Rowe Black-on-white (Amsden's Late Crackle) with its sand and siltstone temper. If it was the first made there,

> ...it would indicate that no decorated ware at all had been produced in the Valley during the whole span of Forked Lightning's occupancy, and the first years of Pecos [but footnotes pot-polishers were found at Forked Lightning]. Although this seems most unlikely, it must be considered as a possibility, as none of the earlier types has ingredients that could not have been obtained in other areas, and a very large percentage of them contain demonstrably foreign temper. If many hundreds or thousands of vessels were imported, as they must have been if Miss Shepard is right, why not all? And if any decorated pottery was being turned out at home, why bring in so much? (Ibid., p. 600).

Kidder characterized Miss Shepard's findings as a bombshell that wrecked his complacent conclusions he was on the point of issuing. "Everything was quite simple until she brought her relentless microscope to bear on the sherds from Forked Lightning" (Ibid., p. 601). But he recognized the wider horizons she had opened, the resultant need for greater knowledge of the ceramic situation in other areas, and never quite let go of the possibility that materials, not vessels, were imported.

> To begin with, there can be no question that certain ingredients, not obtainable in the Pecos Valley, were used in the manufacture of an extraordinarily great proportion of the vessels that saw service at Forked Lightning and Pecos. Miss Shepard believes that these vessels were made in the regions producing the non-local materials, and her reasoning seems to me sound. Every effort, however, should be made to settle the matter beyond doubt. Con-

clusive proof will perhaps never accrue. But, as Miss Shepard suggests, the first step should be a thorough examination of the pottery from the regions which produce the non-Pecos ingredients. A start has been made in this direction (see p. 483), but the work should be carried much further. Specifically, the decoration of Santa Fe and Galisteo Black-on-white needs meticulous analysis, and Blue-gray and Crackle, the local representatives of those types, should receive the same treatment. If there proves to be no difference between the designs of the material from Forked Lightning and that to be collected in the ruins from which the supposedly traded pottery is thought to have come, the case of importation will be strengthened [emphasis by present author]. Particularly close comparison should also be made of the untempered Blue-gray, which may have been made at Forked Lightning, and the tuff-tempered pieces that would appear to have emanated from the Rio Grande Valley. For this study great quantities of Forked Lightning sherds are available in the Department of Archaeology at Andover. Much Crackle is also in the collection, both from Forked Lightning and from Pecos (Ibid., pp. 599-600).

Later Studies

So what progress have we made? Some, and yet little. Kidder was most hopeful that Stanley Stubbs' and W. S. Stallings' work at Pindi would provide some answers. It did result in a large body of material, too much in fact for the resources available in the depression years to cope with. Stubbs was able to reconstruct over 200 whole vessel designs from Santa Fe, Pindi, Wiyo, Galisteo, and Poge Black-on-white sherds (Stubbs and Stallings, 1953, pp. 60-91). But evidently he was unable to pursue further study before press time for their report, as correlations of design with type of temper neither appear nor are mentioned. Also lacking are correlations of designs with the periods of occupancy that had been worked out earlier using stratigraphic and ceramic type frequencies, and correlations of designs with vessel size, other than the general observation that simpler designs were on smaller vessels. But nonetheless Stubbs' analysis of the designs is a valuable contribution.

Another depression era project, the excavation of Paa-ko, was equally low on resources. But in spite of this, M. F. Lambert (1954) did a commendable job in many respects. Santa Fe Black-on-white was present here too in the earlier pueblo, and its frequency suggests it may have been locally produced, as she suggests (p. 86). But the design study of the early black-on-white types had to be done without the benefit of an accompanying petrographic analysis of the temper. But some information was developed on bowl diameter frequency from sherd reconstructions (p. 41).

Since the 1930s, several other excavations have been made in sites having Santa Fe Black-on-white. But, except for the report on Prieta Vista (Bice and Sundt, 1972), none resulted in a report that illustrated even sherds or examined the interaction of design and temper. The studies directed by A. H. Warren on the sherds from the Cochiti Reservoir work did include simultaneous classification of temper and design elements, but evidently no full vessel design reconstructions were obtained (Warren, 1979).

Which brings us to the present, and an opportunity to make a contribution toward solving Kidder's problem, which really extends well beyond

the confines of Forked Lightning and the Pecos Valley. It encompasses the whole upper Rio Grande Valley, its prehistoric commerce, industry, and trade relationships with surrounding regions, and how these varied over the centuries. But Kidder recognized the problem. He directed attention to one thing -- design descriptions -- that might help solve the problem. We need, for each pottery type, separate descriptions of the designs for each of its temper varieties, preferably as found on specimens from probable production centers in areas where the temper is plentiful. The design descriptions must be detailed and as complete as possible so that comparisons can be made convincingly with the designs found on sites elsewhere, to help decide where the pottery in question was made.

In this paper I will describe the designs found on a sherd tempered variety of Santa Fe Black-on-white from a site whose pottery was almost all sherd tempered, suggesting a source area.

FIELDWORK AND INITIAL ANALYSIS

Location

Along the west side of the Rio Grande from Corrales on the south to Highway 44 on the north, are a series of 23 sites that were the subject of investigations by University of New Mexico students at irregular intervals starting in 1951. They were called the Artificial Leg sites, because a discarded limb was found on one of them. Consequently they were given numbers with the prefix AL. One of these, number AL12, was investigated by Regge N. Wiseman in 1968, 1969, and 1971. Wiseman reported his results early in 1971 in two student papers, one on ceramics dated January, the other a brief general summary dated April, 1971.

Site AL12, now numbered LA 35493 by the Museum of New Mexico, is located west of Bernalillo about two miles south of state highway 44. It is on the first bench above the river. Here the first bench is narrow, being cut by the river on the east and bordered by the rise to the much higher second bench on the west. At present a relatively stable sand dune covers most of the bench. But the wind still moves some sand around. This part of the first bench is limited in its north-south extent by arroyos from the west. It has a few junipers on it, sparse bunch grass, and other low vegetation.

Wiseman reports that at the start of field work, the only evidence for the presence of the site was a number of sherds, exposed by wind action, and two metates, one from the surface and the other from the bank cut by the river.

Excavations

Field work consisted of opening a north-south test trench through what proved to be a refuse area, and a series of test pits in a futile search for structural remains. Either the structures are buried under the dune or have been washed away by the river. I am hopefully inclined to believe they still lie buried just west of the refuse area.

The test trench was 3 feet wide and was excavated in 5 foot long sections and 6 inch levels. Test pits were 3 feet square and were excavated in 6 inch levels. As work progressed, additional squares 5 feet on a side were opened where greater surface exposure seemed advisable. One of these, square 0 east of trench section 1, was excavated in 12 inch levels.

All fill was screened through one-quarter inch mesh screen and artifacts recovered separately.

Wiseman reports the refuse area consisted of a lens of cultural debris 2 feet thick with a maximum extent of 20 feet where cut by the trench. Materials recovered included the usual

cultural debris, chunks of adobe and small pieces of charcoal but none large enough for tree-ring dating. The deposit, besides being relatively shallow, had been badly disturbed by rodent activity, and no natural stratigraphic layering was observed.

Besides the refuse area, one or possibly two subsurface pits were located and also a harder layer south of the refuse area that Wiseman thought could be either natural or a use surface. About 130 square feet of this feature was uncovered by the grid of 5 foot squares southwest of the trench. Later, after his initial analyses, square 0 was excavated. It adjoined trench section 1 on the east.

Initial Analysis

For his student papers, Wiseman made an initial analysis of the materials recovered up to that time. These included 534 paint decorated sherds, 1312 utility ware sherds and 99 sherds he believed to be non-local in nature. He also reported on his study of 1063 lithic specimens and 23 artifacts of all types. Animal bone remained unreported, as did all the material recovered from square 0 which was excavated after the papers had been turned in. Its content will increase the above totals substantially.

During Wiseman's initial studies of the ceramics he found numerous sherds which could be pieced together that were from many different excavation units displaced both horizontally and vertically. He saw this as further confirmation of the mixed and essentially homogeneous nature of the deposit observed in the field. Taken together, field observations of a shallow deposit and matching sherds displaced both horizontally and vertically suggest the refuse was deposited in a relatively short time (rodent activity notwithstanding).

AUTHOR'S STUDIES

Some time after Mr. Wiseman completed his scholastic commitments, he asked me if I would make a more intensive analysis of the ceramics. I agreed to do this on a time-available basis. It has taken a number of years to find the time, much interrupted, and to date only the paint decorated wares have been studied.

Technological Analysis

Paste Composition. My studies started with microscopic examination of fresh fractures of the sherds. After examining a few sherds, I discovered that essentially all of them contained crushed sherd temper. The sherd tempering, in turn, was frequently from pottery that had been tempered with vitric tuff. The sherds had been ground to sizes ranging from very fine to medium, rarely coarse, but not well graded. Just over 50% was fine or smaller. Most of the rest was medium, but occasional coarse sizes occurred. Likewise the amount of temper added to the clay was not too consistent, varying from sparse to moderate, but 16% of the sherds were judged to be heavily tempered. This variation in amount of tempering, particularly the medium to coarse sizes in large amounts, causes about a fifth of the sherds to have weaker walls which sometime break with a so-called crumbly fracture. This is due in part to the clay being used, which also seems to fire occasionally to a tan color instead of the light gray seen in most paste. The presence of the tannish colored specimens, coupled with use of sherds with vitric tuff for tempering, can cause some specimens to be confused with Wiyo Black-on-white, particularly if the sherd tempering has been finely crushed. But most specimens upon careful examination reveal

their sherd-tempered nature and must therefore be classed as Santa Fe Black-on-white.

Only about 16% of the vessels have this tannish color, and its dependence on variation in firing conditions is illustrated by one vessel that was only part tan, the rest being the usual light gray.

Of the 12% having different temper, almost half have vitric tuff or finely crushed pumice. The rest have silt (or were made from naturally silty clay) or had mixtures of light firing sherd and a dark rock, which may have come from crushing culinary ware sherds.

Vessel Identification and Reassembly. All of the sherds that Wiseman had previously illustrated in his student paper were examined next. As he had noticed, a number of these matched, and all such instances were glued together, each such union representing the start of a search for more sherds from the same vessel. Both microscopic examination of the paste and macroscopic study of surface features were used to search through Wiseman's collection of well over 600 painted ware sherds. From these, 144 were found to be parts of 29 different vessels represented by 2 or more sherds, with an average of 5 sherds per vessel. The most sherds per vessel was 15 for vessel V2, which enabled reassembly to about one-third of its original size, although not all sherds could be glued together. (The extent of reassembly is made clear for all vessels in the design pattern reproductions illustrated later.)

Some 70 more sherds were large enough to be useful and were set aside for use as either paste description standards or in design studies. These 70 sherds plus the 144 in vessel assemblages give a total of 214 sherds that form the basis for the rest of this report and should be enough to be representative of the site as a whole. Furthermore they should form a statistically valid sample because the randomness of their selection is only impaired by judgmental selection of all the larger pieces, or pieces having an appreciable segment of the vessel's design. All that are left are small pieces with little or no design. And all pieces came from screening all the dirt excavated from a cross-section of the whole refuse area and one large square that probably encompased a large fraction of the thicker part of the refuse area.

The technological stage of my analysis was completed with two exercises. One was to examine vessel assemblage data for evidence of stratigraphy or mixing in the dump. The other was to determine the distribution of vessel sizes as estimated from the reconstructed vessel segments or from single large sherds.

Test for Unmixed Strata. Concerning mixing of the relatively shallow dump, recall that the segments of the test trench were excavated in 6 inch levels, but square 0 on the east side of it was excavated in 12 inch levels. Examination of where each vessel's sherds came from, section and level, confirmed Wiseman's observation that the dump constituted a single strata. Combining data conservatively on sherd location from within the thicker levels in square 0 with that from the thinner levels in sections of the trench, only 6 of the 29 vessels had all their sherds from the same level of one or more sections. Sherds for 11 vessels came from adjacent levels, 8 came from levels separated by one other level, 3 came from three adjacent levels, and 1 came from levels separated by two other levels. The latter one, and two other vessels for a total of three, had sherds from sections that were at least 45 feet apart horizontally (test pit 3 to section 1 of the trench). (For data on all vessel's sherd provenience see Table 4 at the end of the paper.)

Vessel Shapes and Sizes. Two of the 29 vessels were jars and 7 of the 70 sherds were from jars; the rest were from bowls. Projected jar diameters, from one of the sherds and the two vessel portions, are 14.4, 18.0 and 34.0 cm. The two larger dimensions are only approximate, but indicate jars ranged from small to large. The presence of large jars is also supported by a neck sherd with a 10 cm. opening. The rest of the jar sherds confirm the somewhat larger than expected size range, as well as the somewhat more frequent occurrence of jars relative to bowls than has been observed elsewhere ("rare" at Pindi and Paa-ko, 5.4% of the Santa Fe Black-on-white at Prieta Vista, Bice and Sundt, 1972, p. 123).

The remaining 27 vessels were all bowls, one of which was a Chaco variety of McElmo Black-on-white and will therefore be deleted from further consideration (it had a simple continuous band of seven parallel lines). The rest were all Santa Fe Black-on-white with sherd tempering. However for purposes of bowl diameter estimation, 7 could not be used (only lower part of vessel remaining) leaving 19. In addition, 13 large sherds could be used for diameter estimation, making a grand total of 32 pieces of data on bowl diameter. (For further details see Table 4 at the end of the paper.)

In the introduction, I mentioned that Lambert had reported on bowl diameters at Paa-ko. Speaking of the early Black-on-white wares as one, she said there were six bowl sizes: miniature, small, medium small, medium, medium large, and large (Lambert, 1954, p. 41). The diameters separating these sizes were given in inches and were $4\frac{1}{2}$, 6, 8, $9\frac{1}{2}$ and 12 (in centimeters 11.4, 15.3, 20.3, 24.2 and 30.5). Apparently these represent the combined characteristics of Santa Fe, Galisteo, and the less frequent black-on-whites.

If bowls tend to come in discrete sizes, there must be a reason. It could be mechanical, e.g., so they would nest together, or because pukis come in fixed sizes. But the reasons could be cultural in nature, and with such a reason there could be rules about what sort of designs are appropriate to certain size bowls. To investigate the latter, I wanted to see if Santa Fe Black-on-white came in discrete sizes when tempered with sherd, and also I was curious about how they compared with the Paa-ko material. The results are given in Table 1.

A word of caution. While a quick

Table 1. Bowl diameter estimates for sherd tempered Santa Fe Black-on-white. All measurements are in centimeters.

Characteristic	Bowl Size Classes				
	Small	Medium Small	Medium	Medium Large	Large
Sample size	1	9	7	5	10
Minimum diameter	14.4	17.0	22.8	27.0	30.0
Maximum diameter	14.4	20.8	25.2	28.0	35.2
Mean	14.4	18.7	23.9	27.4	32.1
Std. deviation	--	1.3	0.9	0.4	1.6
Average separating size classes	16.6	21.3	25.7	29.7	
Lambert's dividers	15.3	20.3	24.2	30.5	

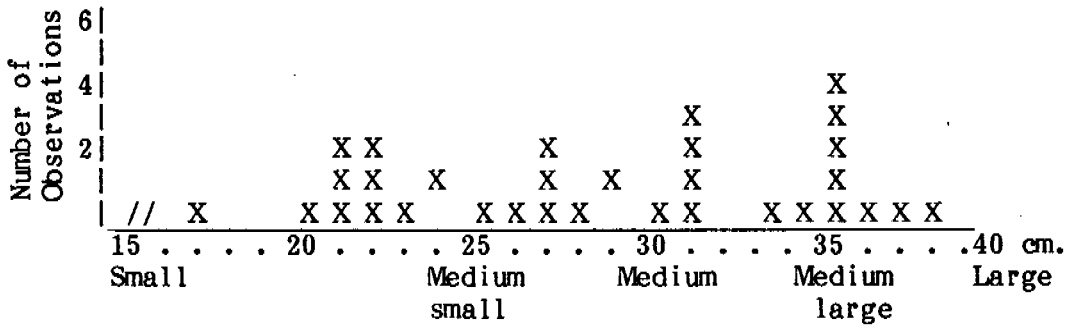
glance would seem to indicate fair agreement, and indeed that may be the case, measurement accuracy is too poor to treat the above as anything more than suggestive. On repeated trials with the same sherd or vessel segment, if it was 5 to 10 cm. wide the diameter estimates could have a standard deviation as high as 10% of the mean. Besides this, primitive pottery varies from circular, so my estimates could easily be off by 15 to 20%. But in spite of this, as can be seen graphically in Figure 1, a histogram of the diameters does tend to have five nodes. Therefore a comparison will be made of the designs on different size bowls to see what differences exist, if any.

Design Analysis

Artistry, Limitations and Achievements. The ancient potters, who may have lived at or near AL12, having decided to make some paint decorated pottery, faced certain economic and technological limitations and social norms. To achieve their goals they had certain skills, both technical and artistic. Their choice of color combinations was evidently limited to a blackish paint on either a white or light gray to gray or yellowish gray surface, depending on availability of white firing slip clay (scarce in the Rio Grande Valley) or, if that was unavailable, on the vagaries of firing locally available clay in the (socially?) accepted manner. Their choice of designs was largely determined by their training and by popular demand, the socially moulded and enforced norms. And the quality of their decoration was as variable as the artistry skills they had developed.

The combined effect of colors achieved, designs used, and artistry on the aesthetic quality of their pottery is one of mediocrity. In common with other varieties of Santa Fe Black-on-white, the quality is poor. It has a rather miserable reputation that may not be totally deserved. Certainly these artisans of the past were limited by available technology. But in spite of evident scarcity of white firing clays and poor controls on firing atmosphere and temperature, and the further degradation of decorative quality by wear until the vessel was broken and discarded, and by soil chemistry during burial since then, an occasional sherd is found that suggests the original vessel was rather pleasing. See,

Figure 1. Histogram of sherd tempered Santa Fe Black-on-white bowl diameter estimates and average class separations, all estimates rather approximate.



for example, the reconstructed segment of Vessel 22 in Figure 2. But then other sherds demonstrate mediocre artistry, as, for example, the piece of Vessel 15 shown in Figure 3.

The large vessel in Figure 2 was well made, with good hard gray paste walls, and originally probably had a fairly good black paint on a light gray field (light gray because thin white slip is unable to cover gray paste). The design was executed with fairly good artistry, i.e., even width, and straight lines with a minimum of overlapping or protruding tag ends or splotched paint.

The vessel in Figure 3 was not as well made, its surface was a yellowish gray instead of the usual (and therefore more acceptable?) light gray. But the paint was a fairly good black on a nonetheless pleasing tan colored surface. But look at the sloppy artistry!

Both these vessels are atypical in the relatively higher contrast between paint and background color, and were figured simply because they could be photographed without too much trouble. Figure 4 illustrates a more nearly average paint to background color contrast, and many vessels came out a nearly uniform dark gray, or became badly stained on their way to the dump. For example, Vessel 2, the partly reconstructed jar mentioned earlier, was so badly trash burned, stained, and sluffed that selective wetting had to be used over much of it to make out its design pattern. But a piece on its other side was more nearly normal and the pattern was easily visible.

The three vessels illustrated are unslipped or very thinly slipped specimens. The addition of a thicker white slip, of course, improved contrast. But all too frequently it was thin, the artistry was mediocre, and the overall general impression was not very good, the same as for Santa Fe Black-on-white elsewhere.

Pattern Reconstruction. Whole vessel design patterns could be reconstructed fairly confidently from small portions of the vessel because the originals were geometrically decorated in a systematic methodical way. First the design field was laid out. Narrow lines were used to outline and subdivide the field to be decorated, and then a few elements, singly or in a motif, were used repeatedly to fill in a unit of design. This was done repeatedly to complete the design on the whole vessel. The methods of laying out the field and subdividing it have been reported in some detail by various authors (Kidder and Amsden, 1931; Stubbs and Stallings, 1953; Lambert, 1954) and will not be repeated here. But it should be emphasized that the method can be observed directly in most cases because the layout lines are often still visible due to the thinness of subsequent paint used to fill spaces next to them.

Patterns used are almost exclusively in a band around the inside wall of the bowls, and around the outside surface of jar bodies, both above and below their center. When copied on a flat surface, such band designs can be unrolled and flattened without too much distortion. But when there is an isolated figure in the bottom of a bowl (two known instances in these vessels), when the rim is painted (four instances), or when the bowl is covered entirely with another type of layout (one instance), then additional views or perspective reconstructions are necessary.

In making reconstructions, one of the troublesome problems is deciding when to attempt it and when not to, for fear of not having all the information needed. Some sherds were not used for a reconstruction because the extent below the rim was in doubt. Others were used anyway, but a question mark was added where reconstruction was doubtful. And in all drawings the sherds upon which the reconstruc-

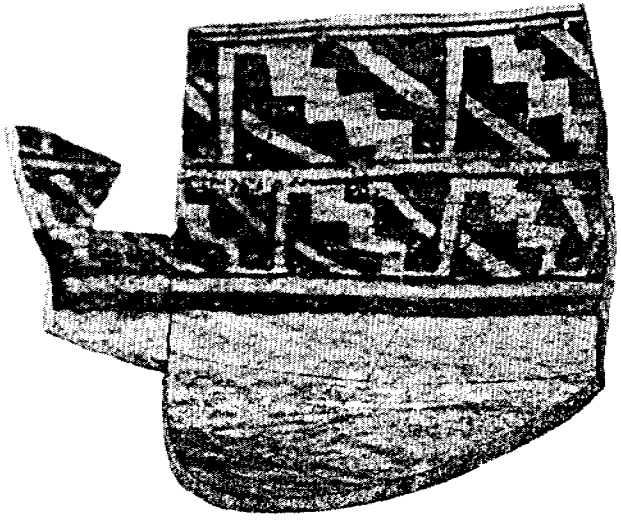


Figure 2. Reassembled portion of vessel V22 (four other sherds recovered not shown).

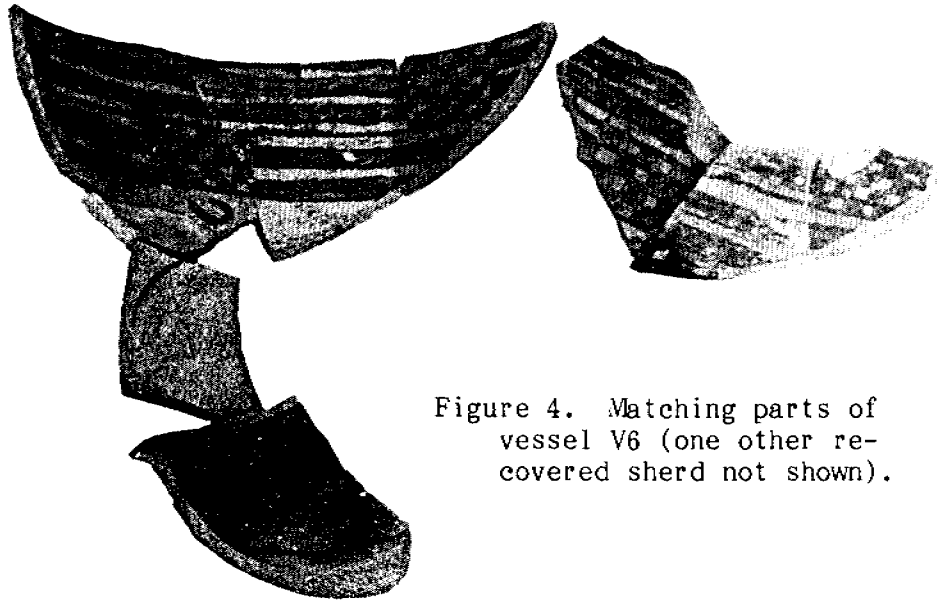


Figure 4. Matching parts of vessel V6 (one other recovered sherd not shown).

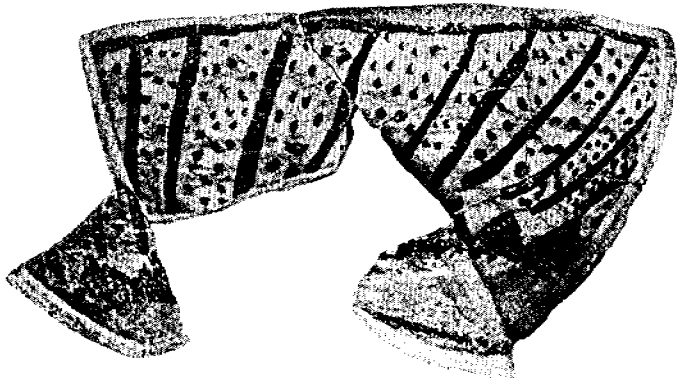


Photo by Tracy Green

Figure 3. Reassembled portion of vessel V15.

tion is based are outlined. Also, unfilled units are sometimes included to show layout lines.

All design pattern drawings are by the author and are in the concluding figures. Supplemental data are in Table 4 at the end of the paper.

Analysis. I have used Stubbs' nomenclature where possible to facilitate comparisons and impart a degree of standardization. But additional analytic steps have been taken to segregate designs by vessel shape and size, to test the universality of his observation that the smaller vessels have the simpler patterns.

Frequencies of the various patterns and their percentages of the total are tabulated in Table 2 and compared with their frequencies and percentages in Stubbs' illustrations (Stubbs and Stallings, 1953, pp. 65-86). It was necessary to add three new categories not represented in Stubbs' illustrations. Study of the table shows several things.

First, notice that the totals of design patterns on all size vessels from AL12 are noticeably different from the Pindi illustration totals for Multiple Bands (26.9% vs 15.1%), and Bands with Emphatic Paneling (7.7% vs 24.7%). The other totals, while different, are not too far off, although Continuous Bands are somewhat different (34.6% vs 41.9%). Before we draw any rash conclusions on this observation, we must ask the question: Do the number of design patterns illustrated in Stubbs' report fairly represent their frequency in the Pindi deposits? I suspect only somewhat. It would be natural not to bother putting in designs already illustrated. But while I have no way of judging this point, I suspect it did not happen too often in comparison to the great diversity of design. If this is true, paneled bands are about one-third as common at AL12 as at Pindi, and multiple bands are about twice as common, which could be related to vessel size distribution.

The second observation is that Small and Medium size bowls have continuous bands more frequently than Medium Large and Large vessels (two-thirds of the time or better, compared to about one-tenth), and any other kind of band appears less frequently. Also note that the two smaller sizes are alike in this regard, as are the two larger sizes.

The third thing to notice is that the jars tend to have multiple bands whatever the size. The lone exception is more nearly a pitcher or cup shape, with a half-band around the outside of the rim. The restricted neck jar shapes tend to have one band below the girth and one above; and if the jar is large, it is likely to have a third band like a collar just below the neck on its upper shoulder.

The above observations suggest a couple of actions to both simplify and strengthen the statistics on the AL12 data. First, combine like vessel sizes and form only two classes of bowls: medium or smaller, and larger than medium. Second, recognize that most large bowls and all small neck jars are going to have multiple bands, and therefore treat each such band the same as if it were from a separate vessel. Third, recognize that at AL12 about 10% of the smaller class of bowls may have an overall design, and about 8% of all sizes of bowls may have pendant triangle patterns, and eliminate this class of design from further consideration. If we do all of the above, and similarly treat Stubbs' illustrations, we can compare band patterns. This is done in Table 3, and visually in Figures 5 and 6 for the AL12 patterns.

Clearly, several things are evident. First, when sherd tempered Santa Fe Black-on-white from AL12 is divided into two size classes, as it should be, about 86% of the band patterns from smaller vessels (or jar

Table 2. Design pattern frequencies for Santa Fe Black-on-white: all temper varieties illustrated in the Pindi report versus sherd tempered variety at AL12.

Design Pattern Categories	Stubbs' Pindi Report Illust.		Sherd tempered from Wiseman's AL12															
			Jars		Small		Medium Small		Medium		Bowls Medium Large		Large		AL12 Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Continuous Bands that are:	39	41.9	1	33.3	0	--	5	71.4	2	66.7	0	--	1	11.1	9	34.6
Checkered	7	7.5	0	--	0	00	2	28.6	0	--	0	--	0	--	2	7.7
Alternately line and checkered	0	--	0	--	0	--	2	28.6	0	--	0	--	0	--	2	7.7
Half bands	7	7.5	1	33.3	0	--	1	14.3	1	33.3	0	--	0	--	4	15.4
Opposed half bands of different motifs	0	--	0	--	0	--	0	--	1	33.3	0	--	0	--	1	3.8
Other: line; and opposed triangles, key figures unstalked or stalked and interlocking on two banding lines	25	26.9	0	--	0	--	0	--	0	--	0	--	0	--	0	--
Simple Sectioned Bands with:	16	17.2	0	--	1	100	0	--	0	--	1	33.3	3	33.3	5	19.2
X or double X sectioning	1	1.1	0	--	0	--	0	--	0	--	1	33.3	1	11.1	2	7.78
Triangular sectioning	2	2.2	0	--	1	100	0	--	0	--	0	--	0	--	1	3.8
Diagonal sectioning	3	3.2	0	--	0	--	0	--	0	--	0	--	1	11.1	1	3.8
Vertical sectioning	10	10.8	0	--	0	--	0	--	0	--	0	--	1	11.1	1	3.8
Bands with Emphatic Paneling:	23	24.7	0	--	0	--	0	--	0	--	1	33.3	1	11.1	2	7.7
Diagonal subdivision, two opposed corners cut off	5	5.4	0	--	0	--	0	--	0	--	1	33.3	1	11.1	2	7.7
All other subdivisions: opposed keys, jogged horizontal, horizontal, double-ended keys, ends cut off: vertical subdivision, four corners cut off, X and double X, opposed figures on four panel lines and rhythm	18	19.4	0	--	0	--	0	--	0	--	0	--	0	--	0	--
Multiple Bands	14	15.1	2	66.7	0	--	1	14.3	0	--	0	--	4	44.4	7	26.9
Layouts other than Encircling Bands	1	1.1	0	--	0	--	1	14.3	1	33.3	1	33.3	0	--	3	11.5
Pendant triangle patterns	1	1.1	0	--	0	--	1	14.3	0	--	1	33.3	0	--	2	7.7
Transverse overall pattern	0	--	0	--	0	--	0	--	1	33.3	0	--	0	--	1	3.8
Totals	93	100	3	100	1	100	7	100	3	100	3	100	9	100	26	100

Note: all percentages are of column totals.

Table 3. Band pattern frequencies for Santa Fe Black-on-white: sherd tempered large and small vessels from AL12 versus all temper varieties illustrated in the Pindi report.

Design Pattern Categories	Stubbs' Pindi Report Illust. No.	%	Sherd tempered from Wiseman's AL12, combined jar & bowl bands: Medium and Smaller No.	%	Larger than Medium No.	%	AL12 Total No.	%
Continuous Bands that are:	58	47.5	12	85.7	5	29.4	17	54.8
Checkered	11	9.0	2	14.3	0	--	2	6.5
Alternately line and checkered	1	0.8	4	28.6	0	--	4	12.9
Half bands	14	11.5	3	21.4	1	5.9	4	12.9
Opposed half bands of different motifs	0	--	1	7.1	0	--	1	3.2
Opposed or offset triangles on the two banding lines	14	11.5	2	14.3	0	--	2	6.5
Unstalked key figures on banding lines	9	7.4	0	--	4	23.5	4	12.9
Other: line; stalked key figures on the two banding lines	9	7.4	0	--	0	--	0	--
Simple Sectioned Bands with:	21	17.2	2	14.3	8	47.1	10	32.3
X or double X sectioning	2	1.6	0	--	2	11.8	2	6.5
Triangular sectioning	4	3.3	2	14.3	0	--	2	6.5
Diagonal sectioning	3	2.5	0	--	1	5.9	1	3.2
Vertical sectioning	12	9.8	0	--	5	29.4	5	16.1
Bands with Emphatic Paneling:	28	23.0	0	--	4	23.5	4	12.9
Diagonal subdivision, two opposed corners cut off	7	5.7	0	--	4	23.5	4	12.9
All other subdivisions: opposed keys, jogged horizontal, horizontal, double-ended keys, ends cut off: vertical subdivision, four corners cut off, X and double X, opposed figures on four panel lines and rhythm	21	17.2	0	--	0	--	0	--
Totals	122	100	14	100	17	100	31	100

Note: all percentages are of column totals.

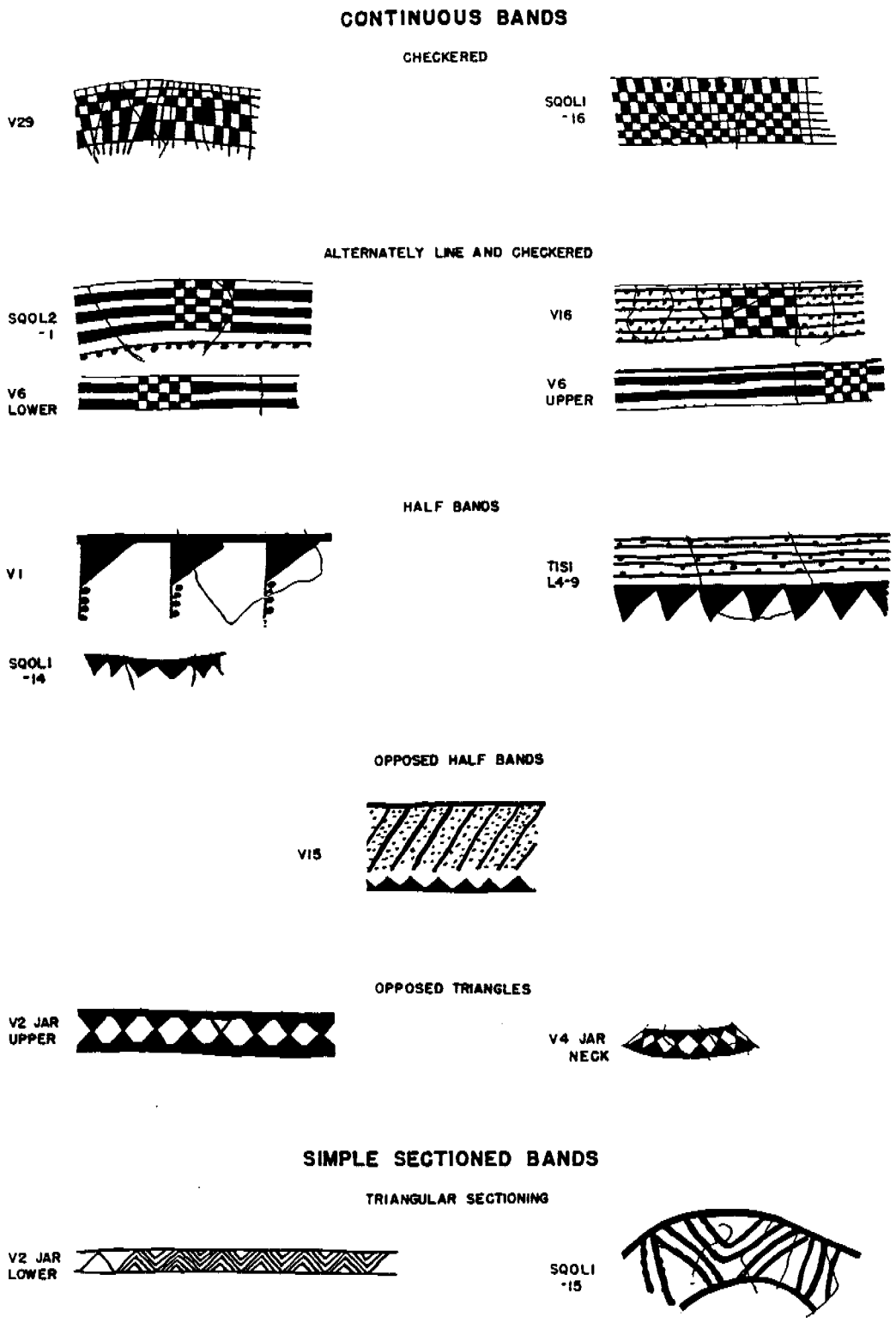


Figure 5. Band patterns from medium and smaller size vessels. All drawings are to the same scale for Figures 5 and 6.

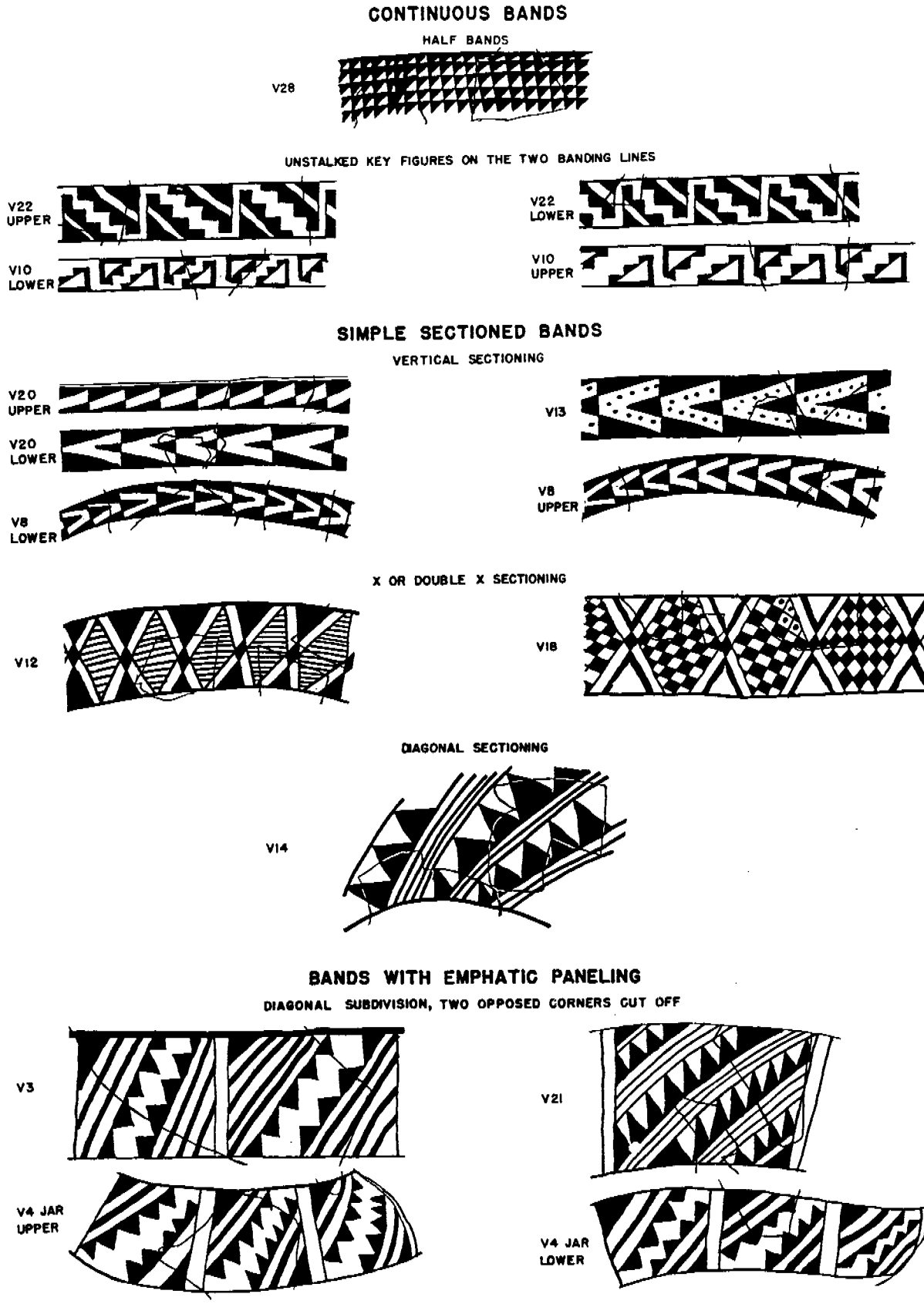


Figure 6. Band patterns from larger than medium size vessels. All drawings are to the same scale in Figures 5 and 6.

collars) are continuous bands, with checkered or alternately wide or narrow lines and checkered blocks quite popular, as are half-bands. Opposed triangles or different kinds of half-bands account for the rest of the continuous bands, and the remaining 14% are simple sectioned bands with triangular sectioning. This can be contrasted with the very different norms for larger than average vessel bands. For them, 47% are simple sectioned bands, compared to 14% for smaller vessels, of which most are vertically sectioned. The rest are either X or double X sectioning or diagonal sectioning. Bands with emphatic paneling account for about 24%, all with diagonal subdivision, and continuous bands have dropped from 86% to 29%. But notice that this 29% is made up mostly of the more complex pattern of key figures on the two banding lines, a design not present in smaller vessels. Also note that the one entry under Simple Sectioned Bands for the smaller vessels is triangular sectioning. Thus there is almost a complete shift from bands with simple layouts for smaller vessels, to bands with more complex layouts for larger vessels.

It now seems clear that generalizations about design patterning without regard for vessel size can be meaningless or at least misleading. Stubbs recognized this, but he never quantified his observation.

Finally, and again probably the weakest comparison, the combined total of all AL12 band designs on all vessel sizes have different pattern percentages from those found in the illustrations in the Pindi report, due in part to the mixing of vessel sizes and to the unknown biases in reporting, but possibly due to differences in design pattern preferences from one manufacturing center to another and from one time period to another. I would suspect that sherd tempered Santa Fe Black-on-white from the middle Rio Grande Valley, such as at AL12, is comparatively early (based upon less frequent use of emphatic paneling, which was very popular on the somewhat later Galisteo Black-on-white at Pindi), and may have been the source of the sherd tempered pottery found in the lower levels of the stratigraphic tests of both Forked Lightning and Pindi pueblos.

SUMMARY AND CONCLUDING REMARKS

Sherd tempered Santa Fe Black-on-white, as found at AL12 on the Rio Grande near present day Bernalillo, New Mexico, exhibits a decorative system involving two sets of band pattern distributions, one for medium size and smaller vessels, the other for vessels larger than medium. The set of small vessel band patterns is dominated by the simpler forms of continuous bands (about 14% checkered, 29% alternately line and checkered, 21% half-bands, 7% opposed half-bands of different motifs, and 14% opposed or offset triangles on the two banding lines) and of simple sectioned bands (14% with triangular sectioning). The set of larger vessel band patterns includes the somewhat more involved forms of continuous bands (about 23.5% of the bands having unstalked key figures on the two banding lines), is dominated by simple sectioned bands of the more involved sort (29% with vertical sectioning, 12% with X or double X sectioning, and 6% with diagonal sectioning), and has just begun to have an appreciable number of bands with emphatic paneling, but only moderately complex ones (23.5% with diagonal panel sectioning with two opposed corners cut off).

In addition to band patterns, about 8% of all vessels (mostly medium sizes) have triangular patterns pendant from the rim, instead of band patterns, and an additional 4% have overall patterns.

Table 4. Vessel and sherd shapes, diameter estimates and provenience data.

Vessel Number	Bowl,B; Jar,J	Est. Outside Dia. cm.	2S,2S1W&3S1W0B	Sq3S1W	S2S	Surface	T1SQL2	T1SQL3	T1SQL4	T1S1L1	T1S1L2	T1S1L3	T1S1L4	T1S1L6 to 9	SqQL1	SqQL2	T1S2L1	T1S2L3	T1S2L4	T1 Walls	TP3	Notes
1	B	17.8	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	slipped
2	J	14.4	-	-	-	-	-	2	-	-	1	1	-	-	8	1	-	-	-	1	1	
3	B	31.1	-	-	-	-	-	-	-	-	-	2	-	-	3	-	-	-	-	1	-	
4	J	34.	-	-	-	-	-	-	-	-	1	-	1	-	2	-	-	-	-	-	-	
5	B	24.4	-	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Chaco Variety of McElmo B/W
6	B	20.1	-	-	-	-	-	-	1	-	-	-	-	-	11	-	-	-	-	-	-	
7	B	24.	-	-	-	2	-	-	-	-	1	-	-	-	5	-	-	-	-	-	-	
8	B	30.	-	-	-	-	-	1	-	-	-	1	-	-	1	-	-	-	-	-	-	
9	B		-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	slipped, incomplete design
10	B	32.8	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	
11	B	19.	-	-	-	1	-	-	-	-	-	-	-	-	1	-	2	-	-	-	-	
12	B	27.	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	-	-	-	
13	B	31.	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	slipped
14	B	31.	-	-	-	-	-	1	-	-	-	1	-	-	1	-	1	-	-	-	-	thin slip
15	B	25.2	-	-	-	-	1	1	-	-	-	-	1	-	-	4	-	-	-	-	-	
16	B	18.8	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	thin slip
17	B		1	-	-	-	-	-	-	-	-	-	-	-	3	-	1	-	-	-	-	thin slip, incomplete design
18	B	31.	-	-	-	1	-	-	-	1	-	1	-	-	4	-	-	-	-	-	-	thin slip
19	B	27.4	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-	-	-	-	slipped
20	B	31.4	-	-	-	1	-	-	-	-	-	-	-	-	6	-	-	-	-	-	-	slipped
21	B	27.4	-	-	-	-	-	-	-	-	-	1	-	-	3	-	-	-	-	-	-	thin slip
22	B	33.0	-	-	-	-	-	-	-	-	-	-	1	-	10	-	-	-	-	-	-	thin slip
23	B		-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	1	-	-	-	slipped, incomplete design
24	B		-	-	-	-	-	-	-	-	-	-	1	-	2	1	-	-	-	-	-	thin slip, incomplete design
25	B		-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	thin slip, incomplete design
26	B		-	-	-	-	-	-	-	-	-	-	2	-	-	1	-	-	-	-	1	- undecorated base of large bowl,tan
27	B		-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	2	incomplete design
28	B	34.	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	thin slip
29	B	18.8	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	
Sherd No.																						
2	B	25.2	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PM	B	14.4	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	dipper bowl?
1	J	18.	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	wide mouth jar
16	B	20.8	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	
17	B	22.8	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	
1	B	18.8	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	
2	B	27.0	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	
3	B	17.0	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	
4	J	10.6	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	diameter is the lip of a large jar
2	B	35.2	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	
1	B	23.7	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	
4	B	28.	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	
7	B	17.1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	
8	B	23.1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	
9	B	23.6	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	

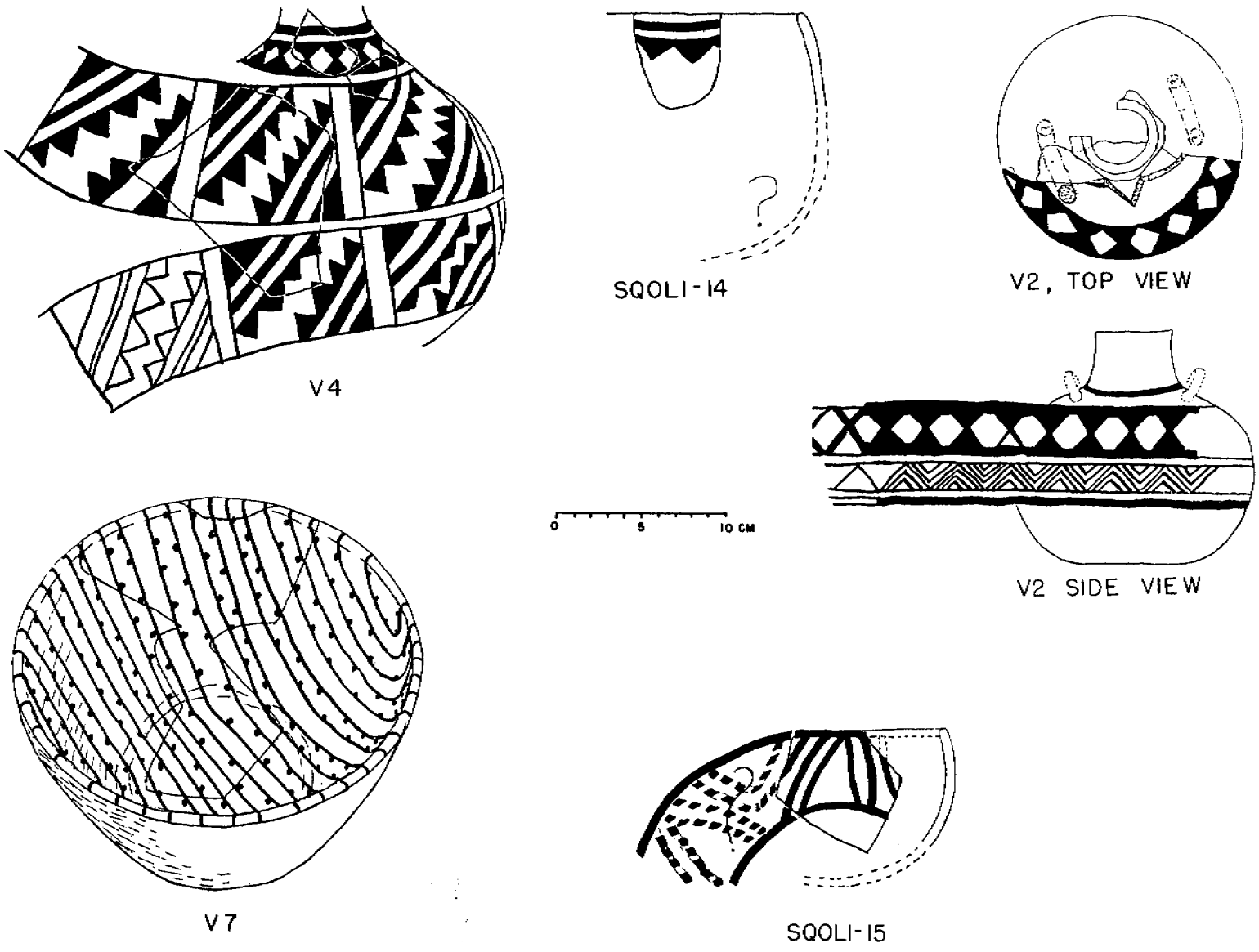


Figure 7. Jar and bowl design reconstructions. All drawings are to the same scale. See Table 4 for additional data on vessels shown.

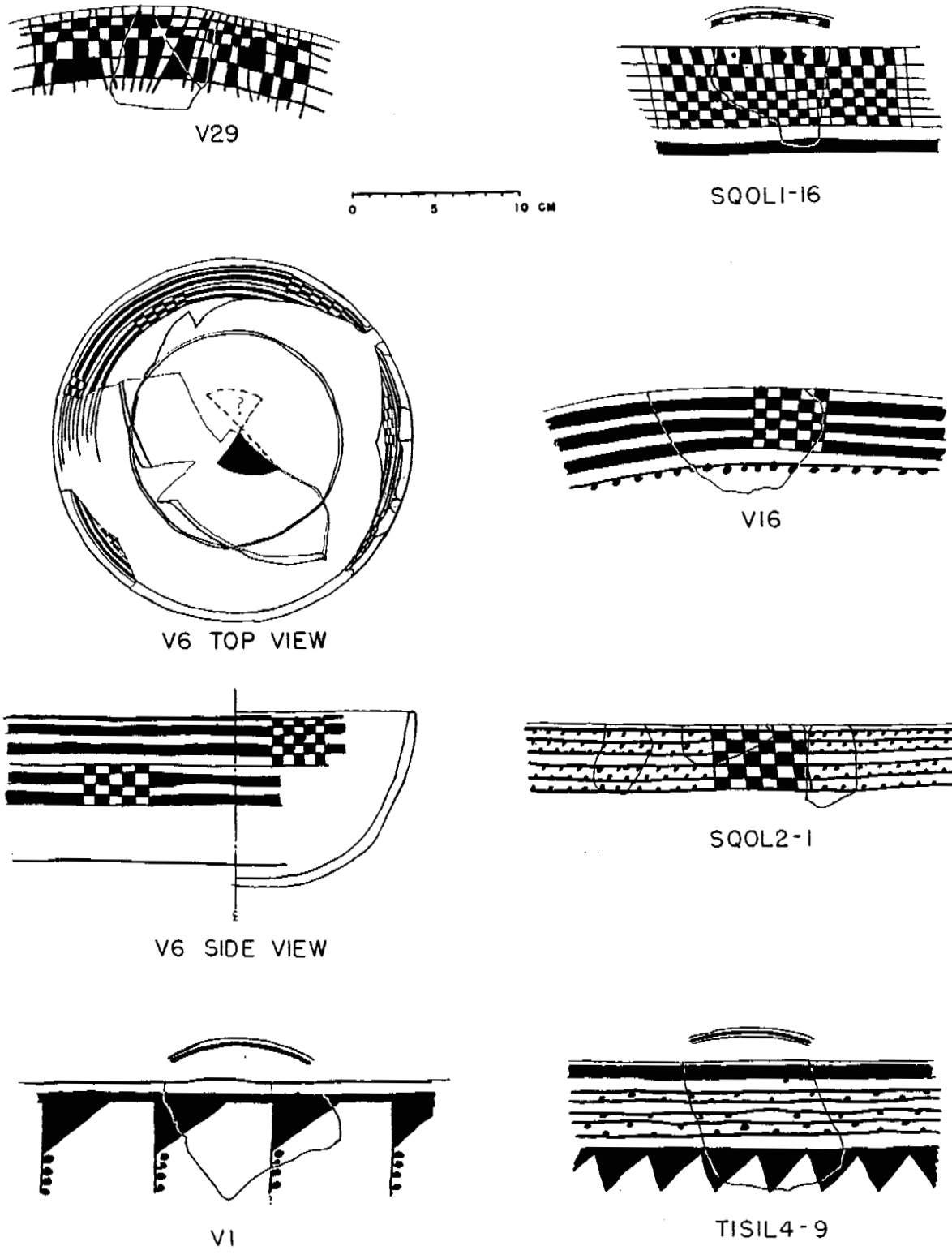


Figure 8. Bowl design reconstructions. All drawings are to the same scale. See Table 4 for additional data on vessels shown.

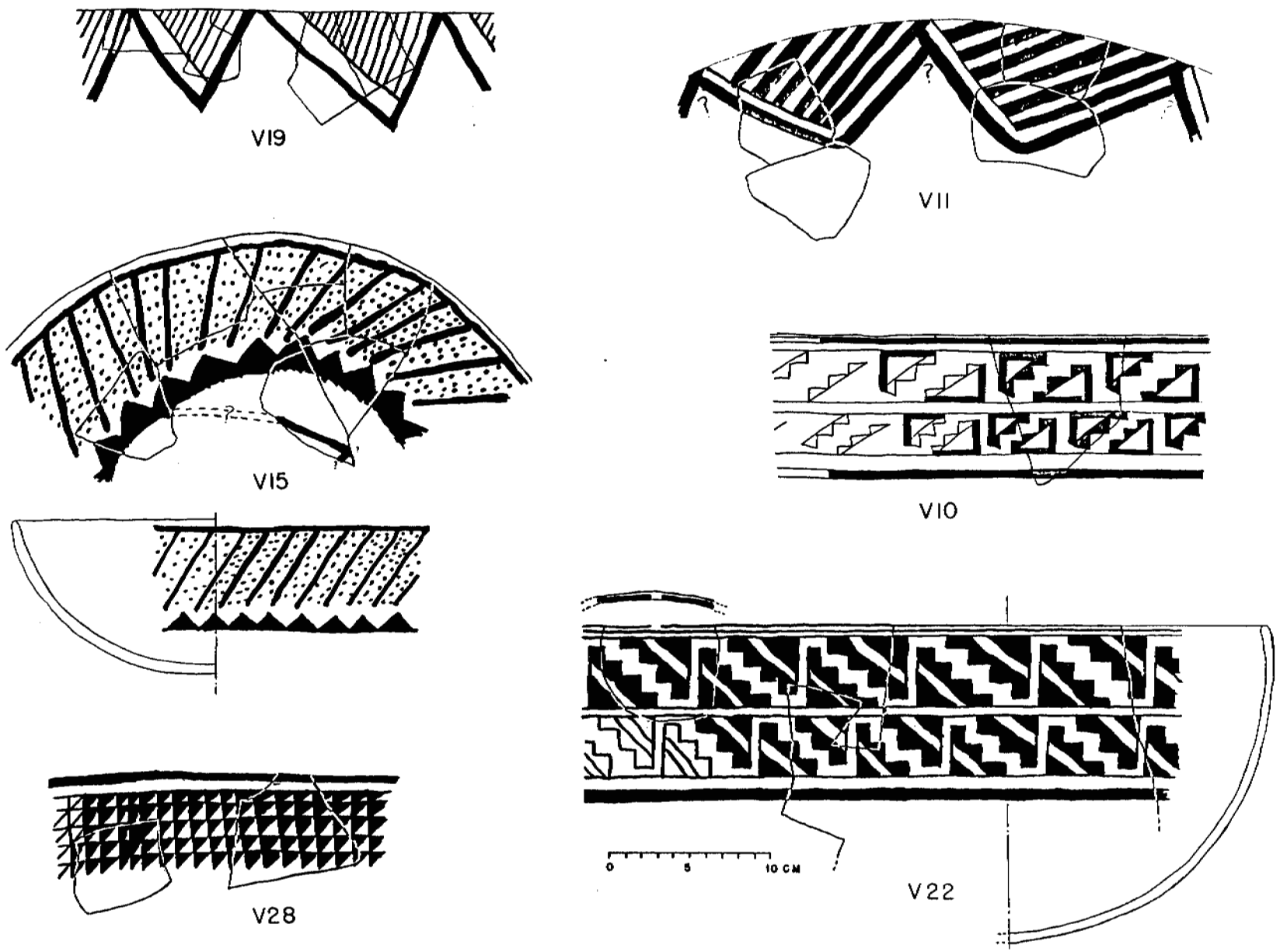


Figure 9. Bowl design reconstructions. All drawings are to the same scale. See Table 4 for additional data on vessels shown.

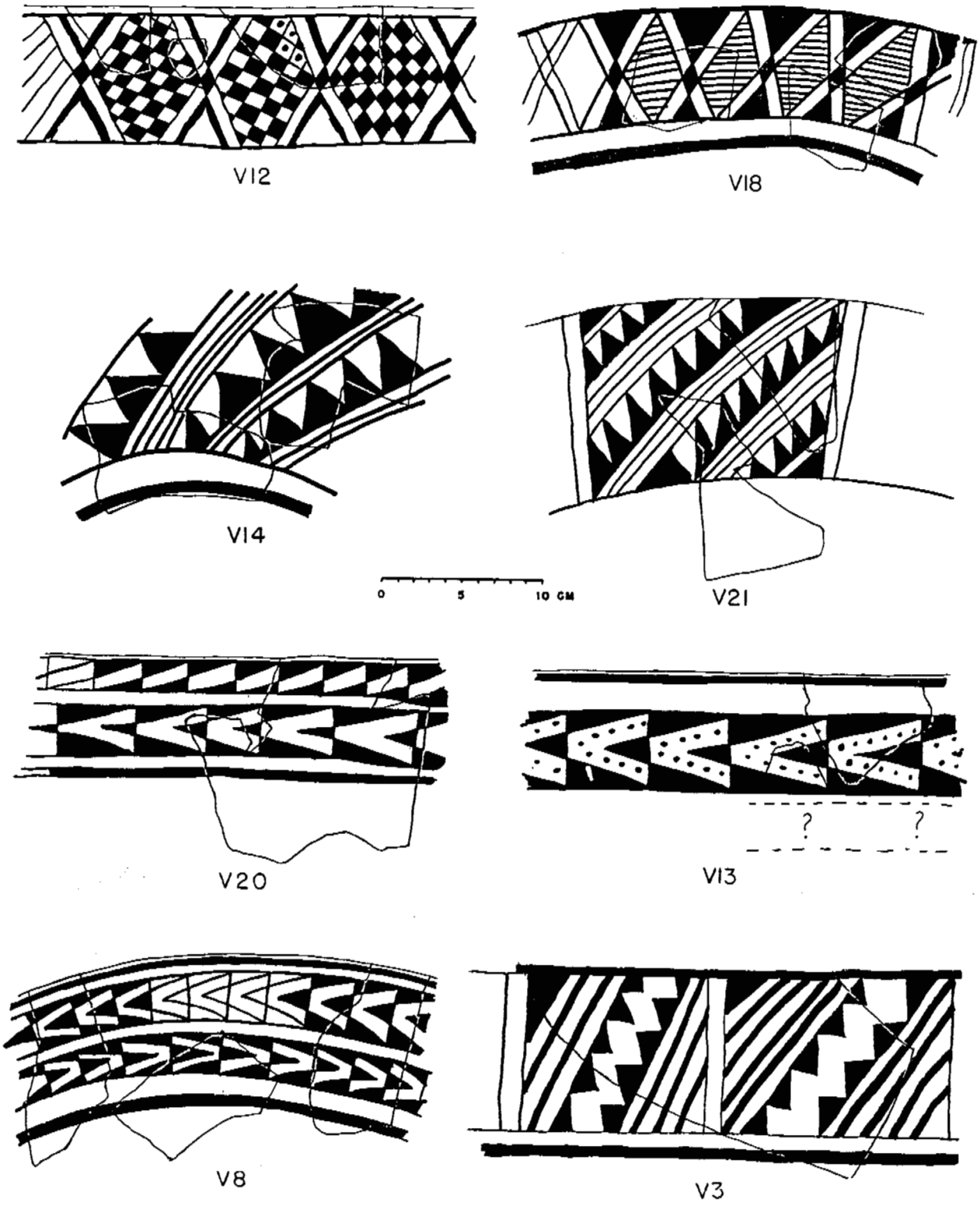


Figure 10. Bowl design reconstructions. All drawings are to the same scale. See Table 4 for additional data on vessels shown.

The artistry on the average is rather mediocre, and control of firing occasionally lapsed, resulting in tannish gray surfaces (not to be confused with Wiyo Black-on-white because these are sherd tempered vessels) instead of the dominant light gray to gray color. Slipped surfaces are comparatively rare.

Vessel shapes are about 90% to 93% bowls and 7% to 10% jars. Jars are both large and small, some with constricted neck openings, as well as an occasional shouldered jar or mug-like shape, judging from sherd material only. Bowl diameters are possibly distributed among five size classes, with average class dividing diameters of 16.6, 21.3, 25.7, and 29.7 cm.

With the above characteristics in hand, one step has been taken toward equipping archaeologists working in and around the upper Rio Grande Valley with an enhanced kit of ceramic tools for use in tracing 13th century trade and studying the associated commerce and industry. In short, a step has been taken toward solving Kidder's problem.

Albuquerque, N.M.

BIBLIOGRAPHY

Bice, Richard A., and William M. Sundt
1972 Prieta Vista, A Small Pueblo III Ruin in North-Central New Mexico. Albuquerque Archaeological Society, Albuquerque.

Kidder, A. V.
1915 Pottery of the Pajarito Plateau and of Some Adjacent Regions in New Mexico. Memoirs of the American Anthropological Association Vol. 2, Pt. 6, pp. 407-462.
1958 Pecos, New Mexico: Archaeological Notes. Papers of the Robert S. Peabody Foundation for Archaeology, Vol. 5, Phillips Academy, Andover.

Kidder, A. V., and Charles A. Amsden
1931 The Pottery of Pecos, Volume I, The Dull-Paint Wares. Papers of the Southwestern Expedition, No. 5, Yale University Press (for Phillips Academy), New Haven.

Kidder, A. V., and Anna O. Shepard
1936 The Pottery of Pecos, Volume II, The Glaze-paint, Culinary, and Other Wares, and The Technology of Pecos Pottery. Papers of the Southwestern Expedition, No. 7, Yale University Press (for Phillips Academy), New Haven.

Lambert, Marjorie F.
1954 Paa-ko: An Archaeological Chronicle of an Indian Village in North Central New Mexico. Monographs of the School of American Research, No. 19, I-IV, Santa Fe.

Mera, H. P.
1935 Ceramic Clues to the Prehistory of North Central New Mexico. Laboratory of Anthropology Technical Series, Bulletin No. 8, Santa Fe.

Nelson, N. C.
1916 Chronology of the Tano Ruins, New Mexico. American Anthropologist, Vol. 18, No. 2, pp. 159-180.

Stubbs, Stanley A., and W. S. Stallings, Jr.
1953 The Excavation of Pindi Pueblo. Monographs of the School of American Research and the Laboratory of Anthropology, No. 18, Santa Fe.

Warren, A. H.
1979 Ceramic Studies in Cochiti Reservoir, 1976-1977. In Archaeological Investigations in Cochiti Reservoir, New Mexico, Volume 3: 1976-1977 Field Seasons, edited by Jan V. Biella, pp. 27-39. Office of Contract Archaeology, University of New Mexico, Albuquerque.

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AN ANALYSIS OF FAUNAL REMAINS FROM THE MIDDEN AT A.L. 12

Nancy J. Akins

Introduction

Located south of Bernalillo on the first terrace west of the Rio Grande, LA 35493 is one of the Artificial Leg Sites (A.L. 12). The tested portion consists of midden deposits from a site of unknown size. Units of excavation include trench sections (3 by 5 feet) and test pits excavated in levels of six or 12 inches. Rodent disturbance was severe and the deposits indicate a single component occupation in the 13th century.

The faunal assemblage consists of just under 500 elements which were recovered from three trench sections and an adjacent five by five foot test pit. With two exceptions, the taxa recovered are consistent with other sites from the Middle Rio Grande Valley. Bald eagle and fish remains are the most unusual finds.

Taxa Recovered

The faunal identifications were made using my personal comparative collection and those of the Museum of Southwest Biology at the University of New Mexico. Dr. Manuel Molles of the fish division of the museum identified the fish bones.

Rabbits

Both cottontail and jack rabbit are present in the collection. The cottontails are most likely the desert cottontail (*Sylvilagus audubonii*), which is found throughout the Sonoran zone and is

particularly numerous in areas where eroded hillsides are cut by arroyos but are also found along the river in tamarisk-saltgrass flats, on arid rock slopes, on mesas, on alluvial fans and in sanddrift areas within Bernalillo County (Ivey 1957). *Lepus californicus*, the black-tailed jack rabbit, is found in most habitats in Bernalillo County but is most often found in the arroyos of alluvial slopes on the sides of the river valley and in the tamarisk-saltgrass flats of the river bottom (ibid.).

Jack rabbit elements consistently outnumber cottontail elements in Middle Rio Grande Valley sites dating through Pueblo III. There is some evidence that this is reversed in Pueblo IV sites, probably as the floodplain was transformed from saltgrass flats to agricultural fields. Two Artificial Leg Basketmaker III sites with fair samples of bone had cottontail to jack rabbit ratios of 1:1.5 and 1:2.8 while the Pueblo III sites, Belen Bridge and Coors Road, had ratios of 1:3.0 and 1:2.3 respectively (Akins 1986b, 1986c, 1987). A.L. 12 has one of the lowest ratios at 1:1.6.

Rodents

Only three species of rodent were found in the collection and then in small numbers. *Thomomys bottae*, Botta's pocket gopher, is abundant in old agricultural fields off of the Rio Grande Valley and in tamarisk-saltgrass flats but also occurs in areas of denser vegetation on mesas and alluvial slopes (Ivey 1957). It is a common post-occupational burrower in archeological sites and since none of the elements were burned and there was extensive rodent disturbance this is

likely to be true for these specimens. The high MNI (three individuals for six elements) is due to the presence of four mandibles, three of which were rights. The mandible is one of the largest bones in a pocket gopher body and is often the most common element recovered since most others will pass through quarter inch screen.

Dipodomys spectabilis, the banner-tailed kangaroo rat, is the second-most common rodent with three elements recovered. It inhabits well developed grasslands (ibid.) and is primarily nocternal and solitary (Reichman 1983). One element was partially burned suggesting that it may have been roasted. This species was fairly common in the Belen Bridge faunal assemblage and appears to have been a dietary item (Akins 1987).

A single bone from a woodrat, most likely *Neotoma albigula* -- the the white throated woodrat, was the final rodent representation. It is a grassland species that often lives at the bases of chollas or burrows into the sides of arroyos (Findley et al. 1975).

Carnivores

A number of carnivores have been found in Middle Rio Grande Valley faunal assemblages including dog and/or coyote, badger, bobcat and bear. Canids are the most common followed by badger then bobcat and bear (Akins 1986c). Two elements from a bobcat are the only definite carnivore elements found. Body parts include a dew claw phalanx and the distal epiphysis from an ulna. Bobcat was also present in one of the Artificial Leg Basketmaker III sites (Akins 1986a). This species is found in all habitats throughout the state (Findley et al. 1975).

Artiodactyls

Artiodactyl elements are much less common than those from small mammals in the Rio Grande Valley sites. Deer and pronghorn are almost always found yet the numbers are low. A singe element of each and only seven others that could represent artiodactyls or large mammals were found at A.L. 12, accounting for less than two percent of the total assemblage. Considerably more was found at both of the other Pueblo III sites, Coors Road with 17.9 percent and Belen Bridge with 8.0 percent (artiodactyl and large mammal).

Mule deer (*Odocoileus hemionus*) are found throughout the state but are more numerous in mountain-foothill habitats (ibid.). Pronghorn (*Antilocapra americana*) inhabit open grasslands below woodlands and may have been relatively common east of the Rio Grande between the mountains and river.

Birds

Four species of birds were found in the collection. The bald eagle (*Haliaeetus leucocephalus*) is rarely found in archeological sites, possibly because the remains were ceremonially disposed of rather than discarded with domestic rubbish. The body parts found were phalangies and talons which could have been attached to a skin, although Beaglehole (1936) describes the Hopi method of skinning eagles as leaving the claws and head attached to the corpse.

Bald eagles inhabit shore areas and their principal food is fish (Robbins et al. 1966). In the Rio Grande Valley they are fairly common in winter at Cochiti Lake and are seen irregularly farther south (Hink

and Omart 1984).

Two fragmentary elements that are almost certainly from a turkey (*Meleagris gallopavo*) were all that represent this taxon. Turkey elements are infrequent in Middle Rio Grande Valley sites dating through this time period. Turkey burials have been found at one Artificial Leg Basketmaker III site (Akins 1986a) and at the Belen Bridge site (Akins 1987). Turkey elements represent less than 2.0 percent of the total at both the Coors Road and Belen Bridge sites as well as here at A.L. 12.

Wild plants that could provide natural forage for turkeys are not found along the river and human stores would be necessary when birds were kept. Three pieces of egg shell consistent with turkey in curvature and color were found but again do not suggest a greater presence.

Sandhill cranes (*Grus canadensis*) presently winter in the Lower Rio Grand Valley and are occasional as far north as Dixon. They migrate north in February and return in fall (Hubbard 1978). Early explorers describe cranes as abundant in corn fields along the RIo Grande (Bailey 1928). The Coors Road Site and Pauray also contained crane elements (Akins 1986c). Those from A.L. 12 include most of a sternum, a coracoid and a portion of a femur.

Scaled quail (*Callipepla squamata*) is the most numerous of the birds found at A.L. 12. A number of the bones were partially burned or scorched suggesting they were roasted. While it is primarily a grasslands species, a few are seen at the outer margins of the riparian

zone (Hink and Omart 1984). At least two of the earlier dating Artificial Leg sites have had quail represented (Akins 1986c).

Turtles

Small pieces of turtle shell that could not be identified to species and shell, femora and a scapula from a painted turtle (*Chrysemys picta*) were found. Painted turtles are found in a number of habitats including rivers and ponds at rivers edges (Degenhardt and Christiansen 1974). Terrestrial turtle remains (*Terrapene ornata*) have been found at one other the other Artificial Leg sites (Akins 1985a) and the painted turtle at the Belen Bridge site (Akins 1987). Both sites had burned and partially burned elements suggesting that turtles were eaten.

Lizard

A partial dentary from a lizard (Lacertila) was found but not identified further. Seventeen species of lizard were recorded by Hink and Omart (1984) during their biological survey. The A.L. 12 specimen most likely is a post-occupational or accidental deposition.

Fish

All but one of the fish elements were *Ictiobus*, the buffalofish. Two species, *I. bubalus* (smallmouth buffalofish) and *I. niger* (black buffalofish) are possible. The former is native to the lower Rio Grande and Pecos River while the latter is found in the upper Rio Grande. Both are found in lowland, upland, big river and stream habitats (Smith and Miller 1986).

The fish found in prehistoric sites are often of more interest to

biologists than to archeologists. Because rivers have been modified by building dams, irrigation, pollution and stocking of exotic and game fish, biologists often do not known which species are native to a given stream or river (Miller 1977; Molles personal communication 1987).

Regardless of the proximity of the Rio Grande, few sites have produced fish remains. The earliest reported come from A.L. 12 and the Belen Bridge site. This absence in earlier assemblages does not appear to result from poor preservation of fish remains in archeological sites. The fish from both these sites are in excellent condition with even delicate spines intact. Assemblages dating before these have included sufficient amounts of rodent remains to further suggest that small remains were recovered and sampling is not a factor.

Fish bones appear in Pueblo III and Pueblo IV assemblages from the Middle Rio Grande Valley. The Belen Bridge site had the remains of one species of fish that is no longer found in the northern Rio Grande but has also been found at a site near Cochiti. Those from ~~Arlon 12~~ Belen Bridge include the river carpsucker (Carpiodes carpio), the buffalo fish (Ictiobus), a catfish (Pylodictis olivaris), and a drum (Aplodinotus).

The Pueblo IV sites with fish include the Taylor Ranch Site where a vertebra was found (Stiner 1986) and Chamisal which has a relatively large number of fish remains (Kit Sargent personal communication 1986). The species identified at Chamisal include flathead catfish (*Plyodictis olivaris*, the longnose gar (*Lepisosteus osseus*) and the smallmouthed buffalofish (*Ictiobus bubalis*).

Unidentified Elements

Elements that are too fragmentary to assign to a specific taxon

were placed in one of a number of size graded groups. Briefly, large rodents are the size of a woodrat or large kangaroo rat, small mammal is jack rabbit or smaller, medium to large mammal is coyote or larger, large mammal includes the artiodactyls and large carnivores, small birds are quail or smaller, medium to large birds are duck or larger, and large birds include the turkey, crane and eagles. Unknown was used when the element could be either mammal or bird, or might represent an amphibian or reptile.

Discussion

Table 1 gives most of the significant information on the collection. The site has been treated as a single sample and only the minimum MNI (minimum number of individuals represented) is presented. Well over half of the collection was rabbit remains which emphasizes the importance of these two species.

Heat Alteration

Heat alteration was recorded as complete or partial burns or scorches and is given by taxon in Table 1. The amount of burning for the sample is fairly high but it is a midden deposit and this is as expected. Percentages are comparable to those from a trash deposit at the Belen Bridge site (Feature 20) where heat alterations percentages were as follows: cottontail 24.0; jack rabbit 37.0; small mammal 41.2; turtle 86.0; and duck 44.4. More heat alteration was found in the upper levels of fill and may have contributed to the preservation of those elements.

Age

A fair number of the elements were from animals that were not yet full grown (Table 2). Immature rabbits, some of which were very immature, suggest some deposition occurred in spring or early summer while the young adults could have been procured from summer into winter.

Seasonality

A mentioned above, the presence of immature rabbits suggests at least spring through winter exploitation of these species. Other taxa that are available only seasonally were also found. Turtles indicate warm weather deposition while cranes and bald eagles are available in winter.

Taphonomic Considerations

In general, the bone was fairly well preserved. Checking from exposure was rare and less than half was etched by roots (Table 3). Etching tends to decrease with depth as does burning. The latter may suggest some deterioration in the upper levels of fill.

Conclusions

The sample of bone from A.L. 12 is sufficient to indicate a subsistence strategy similar to that represented at other Middle Rio Grande Valley sites dating from the same time period. Rabbits formed the bulk of the animal diet with only occasional use of turkey and the artiodactyls. In addition, a variety of other animals were procured including mice, turtles, large and small birds, and possibly fish, suggesting a broad spectrum or generalized pattern of animal

exploitation.

References Cited

Akins, Nancy J.
1986a The NM I:10:4:8 faunal remains. Ms. on file with author.

1986b The Coors Road Site faunal remains. Ms. on file with author and at the Laboratory of Anthropology, Research Section, Santa Fe.

1986c Animal utilization in the Middle Rio Grande Valley area. Paper presented at the Albuquerque Area Conference, New Mexico Archeological Council and New Mexico Archeological Society, Albuquerque.

1987 Faunal remains (Belen Bridge Site). Ms. on file with author and at the Laboratory of Anthropology, Research Section, Santa Fe.

Bailey, Florene Merrian
1928 Birds of New Mexico. New Mexico Department of Fish and Game.

Beaglehole, Ernest
1936 Hopi hunting and hunting ritual. Yale University Publications in anthropology 4.

Degenhardt, William G., and James L. Christiansen
1974 Distribution and habitats of turtles in New Mexico. The Southwestern Naturalish 19(1):21-46.

Findley, James S., Arthur H. Harris, Don E. Wilson and Clyde Jones
1975 Mammals of New Mexico. University of New Mexico Press, Albuquerque.

Hink, Valerie C. and Robert D. Omart
1984 Middle Rio Grande biological survey. Report on file with the Army Corps of Engineers, Albuquerque.

Hubbard, John P.
1978 Revised Check-List of the birds of New Mexcio. New Mexico Ornithological Society Publication 6.

Ivey, R. Dewitt
1957 Ecological notes on the mammals of Bernalillo County, New Mexico. Journal of Mammalogy 38(4):490-502.

Miller, Robert Rush
1977 Composition and derivation of the native fish fauna of the Chihuahuan Deaert region. IN Transactions of the aymposium on the biological resources of the Chihuahuan Desert region, United States and Mexico, edited by Roland H. Wauer and David H. Riskind. National Park Service Transactions and Proceedings Series 3:365-381.

Reichman, O. J.
1983 Behavior of desert heteromyids. Great Basin naturalists memiors: Biology of desert rodents 7.

Robbins, Chandler S., Bertel Bruun, and Herbert S. Zim
1966 Birds of North America. Golden Press, New York.

Smith, Michael Leonard and Robert Rush Miller
1986 The evolution of the Rio Grande Basin as inferred from its fish fauna. IN The zoogeography of North American freshwater fishes edited by Charles H. Hocutt and E. O. Wiley, pp. 457-485. John Wiley & Sons, New York.

Stiner, Mary C.
1986 Faunal sample from LA 33223 test excavations. IN Where's the aite? archeological inveatigations at LA 33223 by Beth Laura O'Leary and Jan V. Biella. Archaeological Research Consultants Publications in Anthropology Series No. 106-85-2:115-126.

Table 1. Summary of Faunal Remains from LA 35493.

taxon	n=	mni=	% heat altered burned	partial burn	scorch	total
Sylvilagus sp.	130	7	13.8	5.4	10.0	29.2
Lepus californicus	204	9	25.0	8.3	5.4	38.7
Thomomys bottae	6	3				
Dipodomys spectabilis	3	1		33.3		33.3
Neotoma cf. *albigula*	1	1				
Felis rufus	2	1				
Odocoileus hemionus	1	1	100.0			100.0
Antilocapra americana	1	1				
Haliaeetus leucocephalus	4	1				
cf. *Meleagris gallopavo*	2	1	50.0			50.0
Grus canadensis	6	1	30.0			30.0
Callipepla squamata	16	2		18.7	12.5	31.2
Testudinata	5		40.0	20.0	20.0	80.0
Chrysemys picta	5	2		20.0		20.0
Lacertilia	1	1				
OSTEICHTHYES	1					
Ictiobus	5	1-2				
large rodent	2					
small mammal	62		27.4	8.1	6.4	41.9
medium to large mammal	3					
artiodactyl	3			33.3		33.3
large mammal	1		100.0			100.0
small bird	1					
medium to large bird	2			100.0		100.0
large bird	8		25.0		12.5	37.5
large hawk or eagle	2		50.0	50.0		100.0
small mammal/medium to large bird	4		25.0			25.0
unknown	4		50.0			50.0
totals	485	33-34	20.4	7.8	6.8	35.0

Table 2. Percent of immature and young adult elements for those taxa in which they occur.

taxon	n=	immature	young adult
Sylvilagus sp.	130	12.3	11.5
L. californicus	204	9.3	14.7
T. bottae	6		16.7
D. spectabilis	3		66.7
N. albigula	1		100.0
F. rufus	2		50.0
Grus canadensis	6		16.7
C. squamata	16		18.7
large rodent	2		50.0
small mammal	62	4.8	
medium to large mammal	3	33.3	
unknown	4	25.0	

Table 3. Percent of etched, checked and heat altered bone by level.

level	n=	etched	checked	heat altered
overburden	5	20.0		100.0
Level 1	88	61.3		38.6
Level 2	104	46.1		49.0
Level 3	111	39.6	2.7	32.4
Level 4	128	32.8		25.8
Level 5	30	16.6	6.7	30.0
Levels 6-9	10			
pot hunters dirt	3	33.3		66.7
totals	479	40.7	1.0	35.4

A PRELIMINARY REPORT OF EXCAVATIONS AT ARTIFICIAL LEG, SITE NO. 12 (LA 35493), BERNALILLO, NEW MEXICO

by

Regge N. Wiseman
April 1971

During the spring and fall of 1968 and the spring of 1969, a test trench and a series of test pits were excavated into a small Pueblo III site located across the river (west) from the town of Bernalillo. The land is owned by Rio Rancho Estates, the managers of which graciously consented to the excavations. The site is situated on the first bench above the river and approximately ten meters from the water's edge. It is the furthest south of three such sites located along the river south of Bandelier's Puaray, a large Pueblo IV-V site roughly 1000 meters to the north. The sites mentioned as well as Site No. 12 are recorded in Frisbie (1967).

The first bench along this section of the river is small both in terms of extent along the river and of depth (distance from the water's edge to the slope of the second bench). Currently, the river is cutting the edge of the bench. Large and small arroyos further cut the bench in an east-west direction. A large arroyo on the north and a small one on the south have delimited a portion of the bench on which stratum composing the bench is overlain by caliche layer which is in turn overlain by both stabilized and shifting sand. Primary flora are saltbush and bunch grasses on the bench and tamarisk at the water's edge. A single stunted juniper is located on the high point of the first bench near the site.

The only evidence for the presence of the site was a number of sherds exposed by wind action and two metates recovered from the surface and the bank cut. There are no mounds or other evidence of structures or cultural features. Since work was initiated, wind has exposed a great deal more of the refuse.

Testing consisted of a trench through the refuse area (Feature 1), a series of test pits for the purpose of discovering structures, and a grid to uncover the compacted surface (Feature 3). The trench was excavated in three by five foot horizontal sections and six inch levels. The test pits were three feet square and started in six inch levels. However, it was soon discovered in all cases that the cultural debris was to be found within ten inches of the surface. Test pit #2 did reveal the presence of what appears to be a subsurface pit (Feature 2). Test pit #4 revealed what may be a second pit, but heavy rodent action has rendered accurate interpretation impossible. A grid of squares five feet on a side were excavated to the compacted surface (Feature 3) as single fill units. Depth of Feature 3 from the present surface ranged from four to zero inches, the southeastern portion of it having been exposed by wind action. Before the excavations of the various trench sections, test pits and grid squares were commenced, all sherds and lithics were removed from the surface and bagged as to that provenience. Next, the overburden (uncompacted aeolian sand) was removed and the sherds and lithics from it bagged as that provenience. Depth of the overburden ranged from one-half to three inches. All fill was screened through one-quarter inch mesh screen and then hauled by wheelbarrow to the edge of the bench where it was dumped down the slope. Fill from some of the test pits and the grid squares was backfilled into the test pits and trench.

The Features

Feature 1, the refuse area, consisted of a lense of cultural debris two feet in thickness and a maximum of twenty feet in diameter where it was dissected by the trench. The cultural debris comprised chunks of adobe, charcoal (no pieces over one inch in diameter), charcoal stain, sherds, lithic debitage, animal bone, and artifacts. Section 1 was excavated to a depth of four and one-half feet, the last two and one-half feet of it being in stratified aeolian and/or waterlaid sand. The portion of the deposit (fill and sand) excavated was badly disturbed by rodents, a fact that obviated the significance of the arbitrary six inch levels.

The subsurface pit (Feature 2) revealed in test pit #2 had been dug through a caliche layer to a depth of one foot nine inches (four feet below the present surface). The minimum diameter is two and one-half feet. The unprepared sides were slightly undercut, and the level floor was plastered but somewhat rough. The fill was nearly sterile and contained only five sherds, all apparently from the same Los Lunas Smudged vessel. A lack of time precluded complete excavation of this feature.

The possible subsurface pit exposed in test pit #4 was oval in horizontal plan with inward sloping sides and rounded bottom. As mentioned above, a great amount of rodent activity has made identification of the pit as a cultural feature impossible. The extremely rough sides and bottom suggest it is not.

Feature 3 was encountered just below the surface south of the refuse area. It was denoted by its harder consistency and tendency to follow like a floor. The parts of it which were covered by deeper accumulations of sand had cracks reminiscent of adobe, but the fact that it sloped commensurate with the natural slope of the bench suggests that it may either be natural or merely an occupation surface. In the 130 square feet uncovered, there were no features suggestive of a superstructure or other activity. A test pit excavated through the surface to a depth of fifteen inches revealed only sterile, compacted sand. It is interesting to note that the refuse lense is somewhat lower than the occupation surface, if such it is, and is immediately adjacent to it. A few sherds and pieces of lithic debitage were on the feature and in the fill above, but otherwise the fill was relatively sterile.

The Artifacts

Surprisingly few artifacts were recovered from the site. Most of them came from the surface. Figure 1 gives a brief description and the dimensions of each artifact.

The Ceramics

A resume of the pottery types, numbers, and percentages recovered from the site is presented in Figure 2. Because of the disturbed nature and relative

shallowness of the refuse deposit, no separations by excavation unit or provenience have been followed here. Analysis has strongly pointed to an essentially homogeneous population of the local painted-decorated ceramics in the form of a transition ware between Santa Fe Black-on-White and Wiyo Black-on-White. Very few sherds in the collection could be classed as one or the other; hence, the totality is presented as if it were a single "type". The textured-decorated sherds, although they have been presented in Figure 2 as comprising four types, show a continuum from the indented corrugated through the smeared indented corrugated to the clapboard and the "plain". It is suggested that the plain category mostly represents the bottom portions of clapboard vessels. A more comprehensive report on the ceramics is in preparation to be published.

*The majority of the non-indigenous sherds are of types characteristic of sites in the Albuquerque-Socorro area and west. This is not so surprising considering the conclusions reached by Hammack (1966) and Mera (1935). Several sherds of what has been herein reported as Galisteo Black-on-White show a strong affinity to McElmo Black-on-White. It might be noted that certain sherds of the "local" textured-decorated also have a Mesa Verde appearance to them. Dr. A. E. Dittert assisted in the identification of the non-indigenous sherds.

Lithic Debitage

Figure 3 presents a breakdown of the flakes and cores by material color and mineral type. The majority of flakes (over 70%) are of the white, translucent to opaque chalcedony-agates. All others in the sample comprised only a small percentage each.

Dating the Site

Dating the occupation of Site No. 12 is, at the present time, necessarily based on the ceramic data. Smiley, Stubbs, and Bannister (1953: 58, Figure 4) indicate an overlap of Santa Fe Black-on-White and Wiyo Black-on-White during the first half of the fourteenth century. Wiyo is given a starting date of A.D. 1300. Dating of the non-indigenous types is as follows: Socorro B/W- 1050-1275 (Smiley, Stubbs, and Bannister, Ibid: 58); St. Johns Polychrome- 1175-1300 (Carlson, 1970:39); Los Lunas Smudged- 1270±-1370± (Breternitz, 1966: 84); and Tusayan Corrugated- 1050-1300 (Breternitz, Ibid: 100). In view of the above data, it is suggested that Site No. 12 was occupied somewhere within the time span A.D. 1280-1310.

Tentative Conclusions

Judging from the size of the site and the nature of the remains, it is suggested the occupation was one connected with agriculture, i.e. a farm site. This interpretation is somewhat tenuous because I am not totally sure that all the features were uncovered. The restricted size (circa 20 foot diameter) and depth of the refuse area certainly indicates the occupation was not excessively long and/or a small social unit was involved. Trade relations involving ceramics were primarily with groups to the south and west. The presence of a limited amount of Galisteo Black-on-White which strongly resembles McElmo Black-on-White is taken to indicate the recent arrival of Mesa Verde immigrants within the region. Trade ceramics and

the fact that the local ceramics represent a transition between two local black-on-whites (Santa Fe and Wiyo) have provided the basis for dating the occupation of the site as falling somewhere within the time span A.D. 1280-1310.

REFERENCES CITED

Breternitz, David A.
1966 An Appraisal of Tree-Ring Dated Pottery in the Southwest. Anthropological Papers of the University of Arizona No. 10, Tucson.

Carlson, Roy L.
1970 White Mountain Redware: A Pottery Tradition in East-Central Arizona and West-Central New Mexico. Anthropological Papers of the University of Arizona No. 19, Tucson.

Frisbie, T. R.
1967 The Excavation and Interpretation of the Artificial Leg Basketmaker III - Pueblo I Sites Near Corrales, New Mexico. Unpublished M.A. Thesis, University of New Mexico, Albuquerque.

Hammack, Laurens C.
1966 The Tunnard Site. Museum of New Mexico Research Records No. 3, Santa Fe.

Mera, Harry P.
1935 Ceramic Clues to the Prehistory of North-Central New Mexico. Laboratory of Anthropology, Technical Series, Bulletin No. 8, Santa Fe.

Smiley, Terah L., Stanley A. Stubbs, and Bryant Bannister
1953 A foundation for the Dating of Some Late Archaeological Sites in the Rio Grande Area, New Mexico. University of Arizona, Laboratory of Tree-Ring Research Bulletin, No. 6, Tucson.

Artificial Leg, Site No. 12

Stone Flake Material Distributions

	level or unit →	Feature 1: Section 0					Section 1						Section 2					Sec. 3			Test Trench S.4		Test Trench S.5		Fea. 2	Test Pits							Feature 3: Grid Squares + Sections									Surface
		OB	1	2	3	4	OB	1	2	3	4	5	6/9	1	2	3	4	5	OB 1	2	3	OB	1 2	OB 1	2	fill	2	2 ext.	X	3	4	5	6	7	1S OB	(1) OB	(2) OB	(3) OB	1S	2S	2S 1W	3S 1W	2S 2W	3S 2W	4S 1W	
Chalcedony	1*	×	×	×	×	×		×	×	×	×		×	×	×	×	×	×	×	×	×	×	×	×	×	×		×	×		×	×	×	×	×	×		×	×	×	×	×	×	×	×
	2	×	×	×	×	×		×		×	×	×	×	×	×	×	×	×	×	×	×		×		×	×		×	×		×	×	×	×	×	×		×	×	×	×	×	×	×	×
	3		×	×		×						×		×		×	×		×	×	×		·	×	×			×		×	×	×								×					×
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Other Quartz	19		×	×											×										×				×															×
	20																						×																					
	21																																											×
Limestone	22			×						×			×					×	×							×				×														×
	23			×				×						×						×						×		×																×
Other	24		×					×								×			×							×		×																×
	25														×	×			×							×																			×

*see accompanying key for mineral descriptions

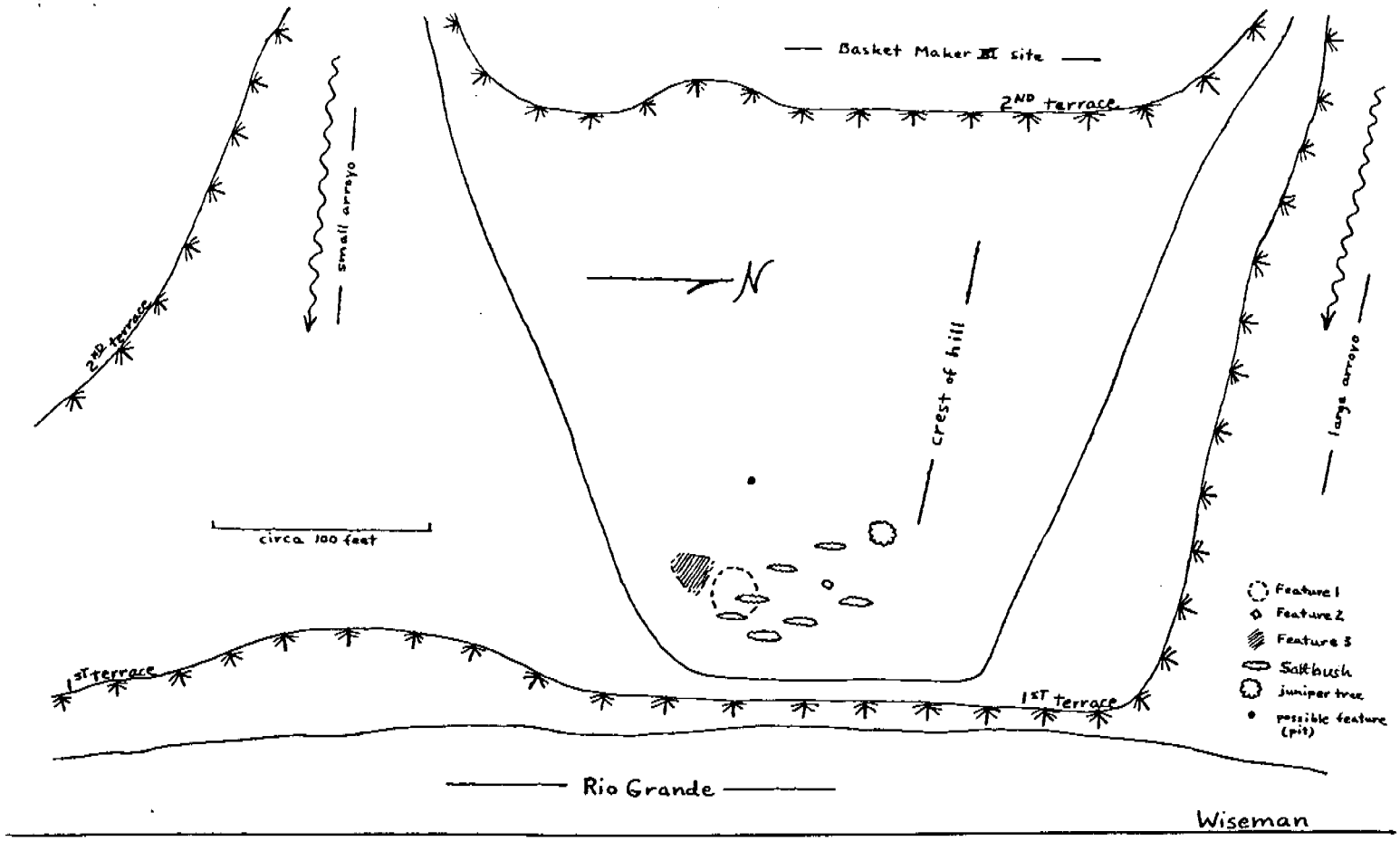
OB = overburden

(1) OB = overburden for section 2S and squares 2S1W and 3S1W

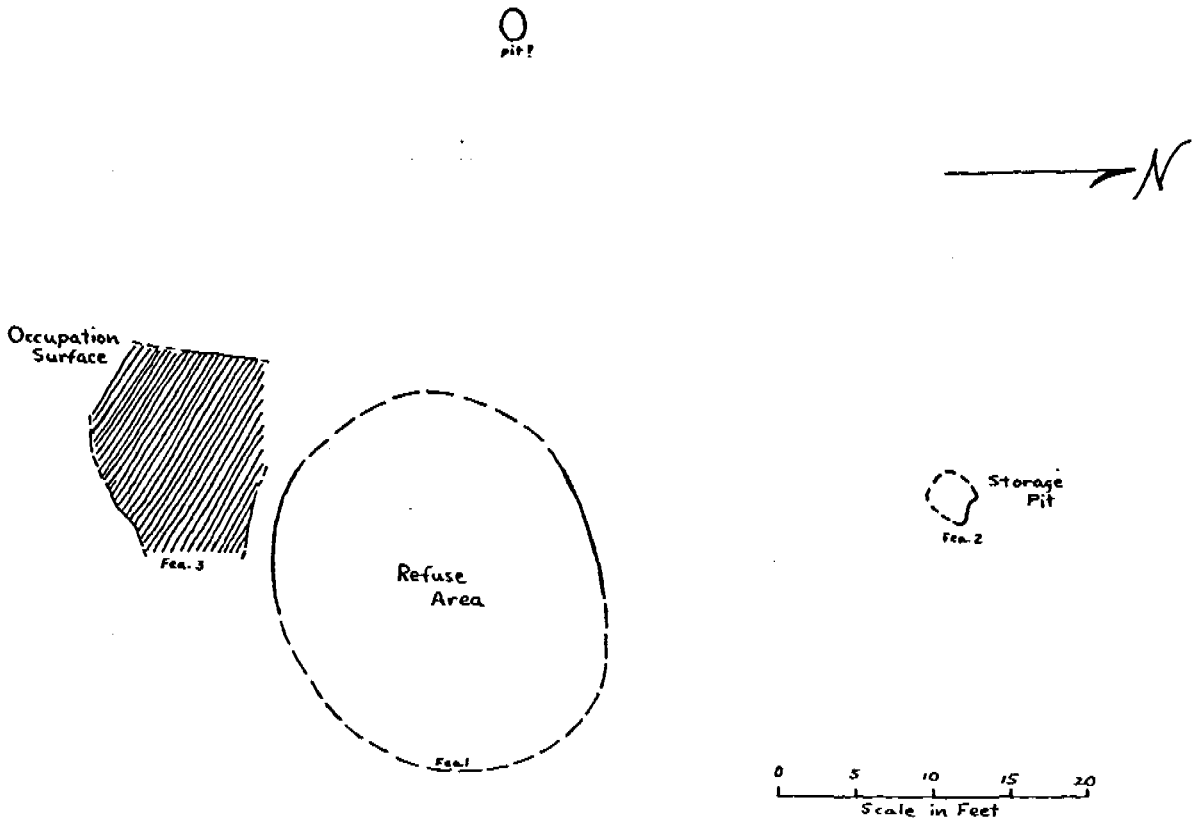
(2) OB = overburden for squares 2S2W and 3S2W

(3) OB = overburden for square 4S1W

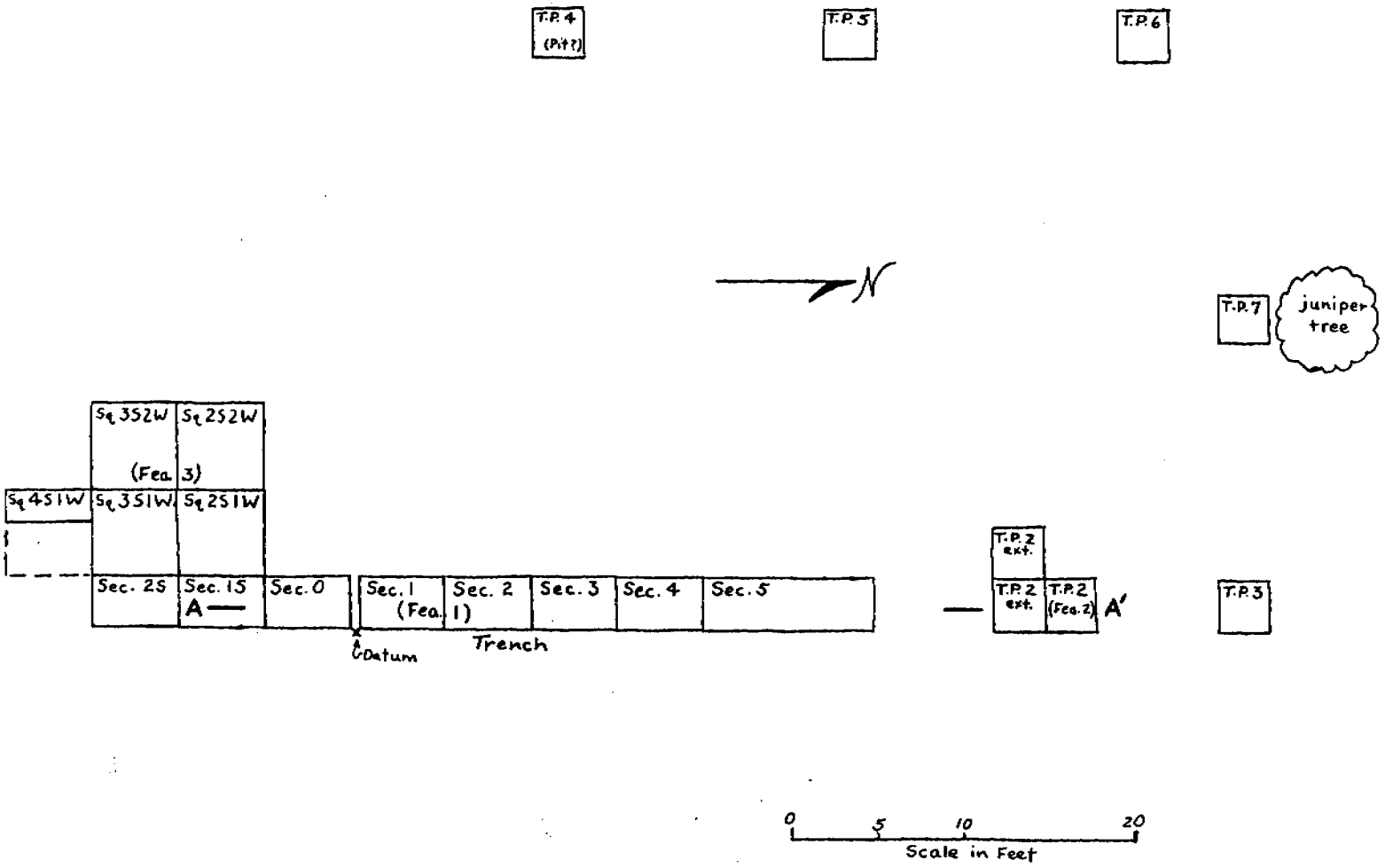
Artificial Leg, Site No. 12: Site Situation



Artificial Leg, Site No. 12: Site Map

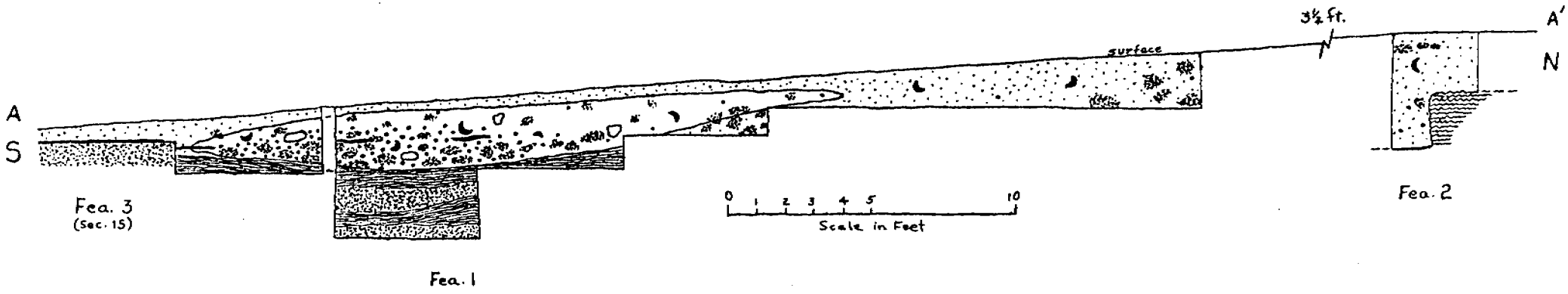


Artificial Leg, Site No. 12: Excavation Units



Wiseman

Artificial Leg, Site No. 12: Trench Profile and Feature No. 3 Plan



- charcoal flecks and staining
- fire broken rocks
- unmodified river cobbles
- approximate extent of refuse
- ash lenses
- adobe chunks
- adobe-like surface of Features #3+2
- wind-blown sand
- more compacted (by water action?) sand
- aeolian sand showing definite stratification
- caliche layer

Wiseman

Feature No. 3 Plan

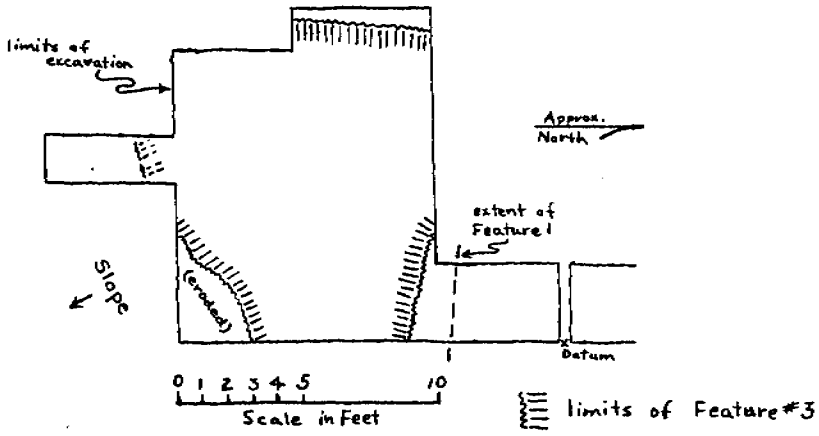


Figure 1: Artifacts

Artifact	Description	L. (mm)	W. (mm)	T. (mm)
projectile point	triangular obsidian probably broken during notching; complete except for one corner of base; straight base	20	12	3.5
projectile point	triangular w/convex base; opaque white chert; basal part only	11*	11	3.5
biface	probably originally leaf-shaped; translucent chert w/white inclusions; basal fragment; convex base	18*	21*	4.5
biface	triangular w/convex blade edges and base; translucent chert w/white inclusions; flake edge retouched to shape	36	23	5
biface	same as above; orange-tan and black chert	35	24	6
bone punch	short, pointed splinter w/partial articular head; point sharply tapered	55	14	8
awl?	badly burned midsection; splinter	32*	13*	5
bone tube	short section of bird bone showing evidence of work on one end; burned	29*	5	
bone tube	same as above but w/hole in one side at midsection (possibly by rodent)	35*	6.5	
worked sherd	roughly disc shaped corrugated sherd; no perforation; partly missing	49		4
worked sherd	roughly rectangular local painted-decorated rim sherd	53	44	5
cordage	two-strand s-twist of unknown fiber; charred	11	2	
pendent	hexagonal object of white calcareous (?) material (soft); hole near one side	25*	21	4
bead	white ellipsoidal w/hole in large end; notch on either edge near hole	12	6	3
metate	vesicular basalt w/shallow V-shaped transverse cross-section and irregular outline			
metate	vesicular basalt w/slightly raised edges, flat grinding surface, and oval outline			

Figure 1: Artifacts (Cont.)

Artifacts	Description	L. (mm)	W. (mm)	T. (mm)
ornament	rectangular; red-orange argillaceous siltstone (?); ground to shape	14*	19	1.5
discoidal	vesicular basalt; circular stone w/ flat, parallel faces ("floor polisher")	110	30	
mano	fragment of one end; wedge-shaped transverse cross-section; sandstone			
worked shell	small fragment w/notch			
hammerstone	dark quartzite river cobble w/several flakes removed and heavily battered edge	90	80	50
hammerstone	sandstone river cobble battered on one end	110	110	45
chopper	aphanitic blue-black river cobble w/flakes removed from both sides of one end; opposite end battered	87	70	35

* Denotes present dimension of a fragmentary artifact.

Figure 2: Summary of Ceramics

Textured-Decorated Ceramics	#	%
Indented corrugated	30	2.3
Smeared indented corrugated	537	40.8
Clapboard corrugated	253	19.2
Plain	492	37.4
Total	1312	99.7
Painted-Decorated Ceramics		
Gray and transitional paste with white slip	88	16.5
Soft brown paste with soft brown slip	31	5.8
All other	420	77.7
Total	534	100.0
Other		
Gray paste, smudged interior	3	
Non-Local Ceramics		
Socorro Black-on-White	30	
Los Lunas Smudged	24	
Pitoche Rubbed-Ribbed	21	
Gallsteo Black-on-White	8	
St. Johns Polychrome (matte and sub-glaze)	3	
Rio Grande copy of Tseh So Corrugated	2	
Kana-a Neck-Banded (intrusive from site on 2nd bench)	2	
Cebolleta Black-on-White	1	
North Plains Black-on-Red	1	
Northern Gray Corrugated	1	
Tusayan Corrugated	1	
Gallsteo Basin (copy of one of western corrugateds)	1	
Thin, hard, smudged brownware	1	
Total	96	
Total Collection		
Local textured-decorated	1312	67.4
Local painted-decorated	534	27.4
Non-local and other	99	5.1
Total	1945	99.9

Figure 3: Lithic Mineral Types*

Cherts and Chalcedonies

1. translucent clear to white
2. translucent clear to white with black inclusions
3. semi-translucent to opaque white
4. translucent rose-colored
5. opaque white with bluish-black dendrites
6. translucent red and brown
7. semi-translucent bluish
8. semi-translucent black
9. light and dark brown
10. yellow brown
11. opaque white
12. opaque off-white
13. opaque white with fracture pattern (mineral coloration in fractures)
14. opaque white with fracture pattern (without coloration)
15. gray
16. blue-green
17. brownish-red (dark)
18. possibly fire tempered

Others

19. quartzite, various colors
20. quartzose with prominent individual crystals
21. cryptocrystalline quartz
22. blue-black and black aphanitic basalt (?)
23. gray limestone (?)
24. obsidian
25. light green aphanitic stone

* There were some indications that some of the types may be one and the same as far as source is concerned. These are: 1-4, 7-8, 9-10, 11-12, and 13-14.

	#	%
Cherts & Chalcedonies	987	92.9
Basalt (?)	20	1.9
Limestone (?)	14	1.3
Obsidian	25	2.4
Quartzite	10	0.9
Cryptocrystalline quartz	2	0.2
Quartzose	1	0.1
Greenstone	4	0.4
Totals	1063	100.1