FOOTE CANYON PUEBLO
EASTERN ARIZONA

JOHN B. RINALDO
FOOTE CANYON PUEBLO
Foreword

For several years, my colleague, Dr. Rinaldo, and I have collaborated on our yearly reports of excavations in western New Mexico. This time he had to go it alone. Administrative duties of the Department, planning and executing the details that were necessary for moving our camp and gear from New Mexico, where we had been located since 1939, to Vernon, Arizona—the location of our new field headquarters from which our future investigations will be conducted—claimed all my energy and time. In addition, I am engaged in writing a short, popular account of our work in New Mexico to summarize the results of our twelve seasons' work in the Mogollon culture.

For these reasons it became necessary for Dr. Rinaldo to undertake the presentation of the material unassisted by me. This he has done with his usual discernment and meticulous attention to detail. The professional reader will find in this volume a high quality of presentation done with noteworthy thoroughness and competence.

It might be well here, in the final report of the New Mexico work, to state briefly the intentions that have motivated our work in the area.

I should say at the outset that we picked the Reserve-Pine Lawn area as a field headquarters for long term investigation at the suggestion of two of our most valued friends and advisors, Dr. Emil W. Haury and Mr. E. B. Sayles, of the University of Arizona. In 1939, the region was archaeologically terra incognita and the Mogollon culture was then merely an infant, bawling lustily for attention, and marked by few with favor. Our aims have fluctuated somewhat from time to time, but essentially they are the same as those which stimulated our researches in Colorado (1929–38). These goals have been so well expressed by Steward (1955) that I can do no better than to paraphrase his comments:

Two main interests have been of primary concern to us and have provided our research goals. One of these was the search for and recognition of consistent interrelationships between cultural phenomena in order to establish similarities that might recur within or across cultural boundaries, or indeed even in historically separate areas. If such relationships and similarities could be established and if the particular lines of cultural evo-
olution could be discovered, one might then be able to make systematized statements or formulations that would have possible predictive value.

Such discoveries, by seeking causes and explanations, would throw light on how cultures evolve. Thus, we hoped to obtain information bearing on the reasons for the rise and decline of cultures. We hoped to offer some tentative answers to questions such as this: What brings about a harmonious relationship between the various elements of a culture—for example, the ratio between agriculture and hunting and gathering, on the one hand, and artistic and technical expressions, on the other? Is it possible that overemphasis on religion, conquest, or crafts and skills may bring about an imbalance that will result in a cultural skid? In short, one of our main objectives was to find out how food-gatherers became farmers, and eventually reached a "classic" stage that was what one might almost call a sub-civilization.

The other drive that guided us was an interest in the historical approach. The acquisition of historical data permits the description of a particular culture area in time and space in order to make it stand out in unique and bold relief.

Our two main guiding interests are interrelated. It is true that one may do research limited to the historical approach alone; but such research stops short of the major goal described above and therefore possesses a narrow compass of interest for us.

Obversely, our primary interest—that of searching for parallels of limited occurrence in a developmental sequence in order to devise some general formulations as to the ultimate destiny of a culture—cannot be undertaken without the particularizing, detailed, historical analyses of particular areas and culture-types.

Obviously we have not completely fulfilled our ambitious ideals; but we hope that we may have provided documented, raw data that can later be synthesized by a Kidder or a Kroeber.

Paul S. Martin

January, 1957
Preface

During the summer of 1955 we excavated a late pueblo ruin in the Blue River Canyon, east-central Arizona, as a final installment of a long-term archaeological program. The area of our investigations for the past several years has been the upper San Francisco River and Tularosa River drainages in the Apache National Forest, west-central New Mexico. However, in the Blue River Canyon we found a ruin which had surface indications of being later than any ruin we had examined in these other drainages, and for this reason we shifted the scene of our 1955 investigations to this site, located about three miles south of the present Blue Post Office.

This pueblo lies on private land, and our special thanks are due to Mr. and Mrs. Phil Mickey, the owners, for their interest and permission to excavate on their property.

Our preliminary reconnaissance and supplemental excavations on federal land were carried out under a permit issued to Chicago Natural History Museum by the Forest Service, United States Department of Agriculture, and we are grateful to Mr. John C. Baird, Forest Supervisor of the Apache National Forest, and Mr. Robert E. Carey, Ranger of the Reserve Ranger Station, for their co-operation and friendly assistance.

The furtherance of our research in this area has been made possible by the interest and generosity of President Stanley Field, Dr. Clifford C. Gregg, Director, and our Board of Trustees. We appreciate their continuing and deep interest.

Mr. and Mrs. Alan P. Olson were able assistants. Mr. Olson acted as excavation supervisor during my absence of several weeks and was also photographer and surveyor. Mrs. Olson was in charge of cataloguing and laboratory operations. We want to thank them for their loyalty and zeal.

We also wish to thank the members of our camp staff for their devotion and assistance, without which our achievement would have been impossible: Mr. Robert Lamb, Mr. David Collier, Mr. Roland Strassburger, Mr. Don McVickers and Mrs. Martha Perry, our cook. We wish to thank the men who dug for us: Mr. John Menges, Mr. Walter Hoosier and Mr. Marvin Hoosier.
We are also grateful to Mrs. Mary Crackel, Mr. Clair E. Gurley, Dr. Charles W. Keney, Mr. Emil Kiehne and Mr. Frank Turner, generous New Mexico friends who were especially helpful in the process of providing the necessaries for the expedition's well-being—housing, transportation, medical counsel, supplies and equipment.

In addition to the individuals mentioned above, who had a part in the Expedition phase of the effort and helped directly or indirectly in the collection of materials and data from which this report was written, there are a number of persons who have been of assistance to me in the analysis of the materials and the preparation of the report itself: I am grateful to Dr. Paul S. Martin, Chief Curator of Anthropology and leader of the Expedition, for turning over to me this material and these data to work up, and for inspiration and advice both in the field and in the Museum. I am grateful to Miss Elaine Bluhm for stimulating discussion of problems in Southwestern archaeology and for the free use of her unpublished data; to Mr. James Schoenwetter and Mr. Ira Fogle for help in gathering the data on pottery designs.

During the course of preparing this report the following archaeologists and anthropologists gave direct assistance or inspiration: Dr. E. B. Danson, Dr. Edward P. Dozier, Dr. Fred Eggan, Dr. Erik Reed, Mr. Watson Smith, Mr. Stanley Stubbs, Dr. Richard Woodbury.

Miss Lillian Ross, Associate Editor of Scientific Publications, who has shepherded so many of our manuscripts through the press, gave immeasurable assistance with this one and has made possible an organization and format of which we are proud.

Dr. Sharat Roy, Chief Curator of Geology, identified the materials of which the stone tools are made. Mr. D. Dwight Davis, Curator of Vertebrate Anatomy, identified the materials of which the bone tools are made. Dr. Fritz Haas, Curator of Lower Invertebrates, identified the shell. Mr. Phillip Young made the maps, plans, sections, and seriation charts.

John B. Rinaldo
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I. Introduction

LOCATION OF SITE

The Foote Canyon Site, a late pueblo ruin (fig. 58), is located some twenty miles due west of Reserve, New Mexico, in the Apache National Forest. This vast mountainous region is dissected in its southern half by four main drainage systems, the Black, the Blue, the San Francisco, and the Tularosa Rivers, and is bordered on the south by two ridges or breaks, the Mogollon Rim and the Sheep Basin Divide. Between the drainages the area is dominated by several prominent mountain masses of rugged character: Bear Mountain, Saddle Mountain, Brushy Mountain, Eagle Peak, the San Francisco, the Saliz, and the Tularosa Mountains. Most of these drainages and mountain ranges run in a general northeast-southwest direction, and the streams eventually flow into the Gila River. In their middle courses these rivers widen out into flat valleys of arable land, and the larger pueblos are usually to be found on ridges or terraces above these flats.

The pueblo ruin with which this report is concerned is located on a low, isolated, somewhat rocky mesa at the junction of the Blue River and Foote Creek (SW. 1/4, Sec. 21, T. 3 N., R. 31 E., G. and S. R. M.) about three miles south of the present Blue Post Office (Joy's Ranch). The river makes a sharp bend here so that it lies both to the east and south of the site. Foote Canyon lies west of the site, and on the north there is a little dale where the assembly kiva is situated. The altitude is approximately 5,700 feet above sea level. This site is one of a group of sites listed as nos. 48–50 by Hough (1907, pp. 53–54); it is listed by Danson (1956) as no. 39. The canyon at this point is dominated by high mountains on every side—Saddle Mountain to the northeast, Bear Mountain to the southwest, Sawed-off Mountain to the southwest and Middle Mountain to the northwest.

GEOLOGY

The geology has been described in general terms by Darton (1925, p. 261) as both sedimentary and volcanic in origin. In describing the Blue Mountain area he says: "In the steep slopes north of the Cameron
Blue River there is a thick succession of coarse sandstone, most of it conglomeratic and carrying considerable volcanic material, mostly in the form of a coarse agglomerate. This latter member is conspicuous near the junction of the Blue and the Cameron Blue Rivers near the State line. Sheets of volcanic rock appear at intervals in the lower part of the series, especially to the southward along the Blue River. At Blue Post Office 3 or 4 sheets of basalt, in part separated by gravel beds, cap 300 feet of brown conglomerate, which is underlain by a sheet of light colored rhyolite lying on red conglomerate. The latter is exposed on the stream bed and farther south grades into purplish agglomerate. . . . Some of the igneous rock appears to be latite but rhyolite was also noted. Much of the material in the agglomerate is in very large angular fragments some of them being 6 feet in diameter. . . . Some of the agglomerate has the aspect of Gila conglomerate."

CLIMATE

Climatic records were kept until recently at the Blue Ranger Station, which was located about three miles north of Blue Post Office and at about the same altitude as the Foote Canyon Site. Here the maximum and minimum daily temperatures are 64 and 1 degree for January, 101 and 33 degrees for June, 105 and 44 degrees for July, and 94 and 46 degrees for August, with an annual temperature range from 1 to 105 degrees. The last killing frost in the spring occurs on May 8 on the average and the first killing frost in the fall on October 15, leaving an average growing season of 160 days. The total annual precipitation is 19.9 inches, falling mostly during July (4.1 inches) and August (3.3 inches) and being lightest in May (0.5 inches) and June (0.7 inches). The snowfall is also heavy for the altitude, averaging 28 inches and being heaviest in December, January and February. The wind is an important factor in climate here as elsewhere in the Southwest. It is particularly strong and steady during the driest spring months. Fortunately, along the Blue River the winding nature of the canyon serves to alleviate this condition somewhat (Smith, H. V., 1945, p. 32, Table 2; Kincer, 1941, p. 672).

WATER

Most of the smaller creeks that are tributary to the Blue River are intermittent streams, but the river flows steadily the year round. However this was not always so. Even as recently as 1907 Hough speaks of the marshy land of the river bottom (1907, p. 53) and the "cool water" of the side canyon (1907, p. 50). Today there is only one beaver dam
Fig. 58. Map showing location of Foote Canyon Pueblo, Arizona.
left in this stretch of the Blue. Formerly there must have been many, as is indicated in Pattie’s narrative (Pattie, J. O., 1905).

FLORA AND FAUNA

The Foote Canyon site is in the lower reaches of the transitional zone or open yellow pine forest and on the edge of the Sonoran zone, where juniper and pinyon pine predominate. After the summer rains, the ground is covered with grasses and herbs, although prickly pear and staghorn cactus grow in the barren areas such as on the fallen walls of the ruins. Native foods include walnuts, acorns, gooseberries, wild squash, and seeds of several grasses.

The more important food animals of this region today are the same as those of Pine Lawn Valley: deer, bear, rabbits, squirrels, chipmunks, wood rats, turkeys, quails and doves.

BACKGROUND

As stated in the preface, the excavation of the Foote Canyon Site represents the final installment in a long-term archaeological program in the area around Reserve. Archaeological investigation of this area started out with the explorations of Duff (1897), Hales (1892), and Hough (1903, 1907). These men described the great number of pueblo ruins to be found along the main watercourses and furnished information as to certain details of the architecture, pottery, and artifacts found associated with them. Out of this group of early archaeologists Hough alone recognized and excavated the pithouse villages and reported on them as belonging to an earlier culture (Hough, 1919). Meanwhile in the area to the north, in the upper Little Colorado drainage, the work of Bandelier (1892) and particularly Fewkes (1896, 1898, 1904) described the later pueblo ruins here and attempted to link them up with the Hopi or Zuñi as determined by the native traditions.

Although some historical depth in the material was recognized by Hough, it remained for the work of Spier (1917) and Kroeber in the Little Colorado-Zuñi area to initiate the search for finer divisions in the sequence, through stratigraphic and statistical methods. This greater interest in historical reconstruction and time depth was furthered by the work of Gladwin and his associates (Haury, Hastings, Sayles) by means of survey and excavation. These men also went a long way toward making chronological distinctions and also defining other distinctions in culture. Gladwin, Haury and Sayles had a large part in defining the Hohokam culture by the excavation of Snaketown and in the definition
of the Mogollon culture by the excavation of the Harris Site, and Mogollon 1:15. Somewhat later phases of the Mimbres Branch of the Mogollon culture had been described by the Cosgroves (1932), Nesbitt (1931) and Bradfield (1937).

At this time, the Chicago Natural History Museum expeditions under Dr. Paul S. Martin initiated their program in this field. During this latter era, the work of Haury and his associates at Forestdale and Point of Pines, that of Nesbitt in the Reserve area, that of Brew (as yet unpublished) in the Quemado area, O'Bryan’s excavations near Jewett Gap, and Wendorf’s excavations east of Apache Creek, in addition to the contributions of four Museum expeditions, have resulted in the definition of five periods (Wheat, 1955), and considerable data on the Mogollon Culture.
II. Description of Architectural Details

 EXCAVATION PROCEDURE

The site as a whole consists of several house masses or blocks of rooms. The ruin selected for excavation is the largest of a group of five of these blocks, clustered in the vicinity of a large rectangular kiva, aptly termed by Hough (1907, p. 54) the “assembly kiva” for the group. Before excavation this block of rooms appeared as a mound of rocks from 6 to 7 feet high, 130 feet long and 90 feet wide. The ground plan could be easily traced and the outlines of the rooms were reasonably clear (fig. 59). Medium-sized live oaks, junipers, pinyon pine, and one yellow pine were growing on the ruin.

The larger rooms were excavated by the standard procedure of digging a trench from the center of the room to the wall and following the walls until the whole room was outlined, then clearing the room of fill, leaving a layer a few inches above the floor. The floor was then cleared with small tools, and the artifacts found on the floor were kept separate from those in the layers above. Notes were then made on the architecture and other features (such as burials) in each room, and the rooms accurately mapped by means of an alidade and plane table. Rooms and their special features—firepits, doors, masonry—were photographed. Then lower floors or fill beneath floors was removed down to native soil. Some of the smaller rooms were excavated by the “profile” method, whereby one wall is cleared and a trench as wide as the whole width of the room is excavated to the wall at the far end.

By following the native sterile soil, which on this ridge is yellow-red in color and gravelly, sub-floor pits, burials, and the pithouse below Room 2 were discovered.

ARCHITECTURAL DETAILS

Excavation and a careful tracing of fallen walls indicate that this block of rooms was roughly rectangular in plan and compactly built, with an enclosed courtyard or plaza near one end (figs. 60, 61).

Clear evidence concerning the succession of building in the pueblo was not found. The pithouse and the plaza certainly antedate Room 2
and Room 10, inasmuch as the walls of these rooms were built on the fill of the semi-subterranean structures. The evidence of the abutments and bonds of the walls and the character of the masonry (assuming that wherever neat-appearing composite masonry appears it was once exterior wall) would make it seem that Room 11 was an earlier nuclear room, and that it was followed by Rooms 12, 10, 7, 2, 1, 3, 6, 9, 5, 8 and 4 in something like that order. This would suggest that the unexcavated rooms to the south and east of Rooms 11 and 12 were still older. However, lack of time and inclement weather did not allow us to investigate further.

In general, the floor levels followed the original contour of the fill, so that some earlier floors were laid at a slightly lower level than others. When the native soil was lower, the earliest floors were also lower. In order to level up floors on the edge of a steep slope such as that of Room 5,
Fig. 61. Northwest end of Foote Canyon Pueblo. Mouth of Foote Canyon in background, showing surrounding terrain.
some of the slope was excavated or terraced back. In other instances, such as Room 1, irregularities or hollows were filled in with quantities of brown adobe.

There is some evidence for differences in the functions or uses of the various rooms. One smaller room, Room 6, contained several large corrugated jars smashed on the floor, and also a number of slabs and manos. Like the other two smaller rooms (Rooms 9 and 11) it lacked a firepit and mealing bins. These smaller rooms are thought to have been store-rooms. The next largest room, Room 7, had a firepit but lacked a mealing bin. Although Room 2 lacked both firepit and mealing bins, the other large rooms all had these features. Furthermore, most of them were equipped with vents or doors for ventilation opposite the firepit or some place in the room. These larger rooms were probably dwelling rooms.

Walls.—All partition walls and outside walls were built of stone masonry. These were laid directly on the orange gravelly soil, or less frequently on gravelly trash close to floor level. With the exception of one
short shallow trough extending out from an abutment (in Room 1), no example of trenching to prepare a footing for walls was found. Some walls contained through stones, but most of them consisted of two facings, one laid directly against the other without any core between. These facings were of two types: Type 1 (fig. 62): Mud rubble (a) of unshaped field stones of assorted sizes ranging from 10 to 17 cm. in length and from 4 to 7 cm. in thickness, and usually 2–3 cm. narrower than they are long; or (b) of larger boulders 18 to 50 cm. in length and 7 to 21 cm. in thickness. All mud rubble was laid up in copious amounts of mud mortar varying in color from dark gray to brown, but more frequently gray. Usually it was mixed with a little fine gravel or sand, although this could be natural inclusions, and in all except Room 9 it was soft enough to be scratched easily with one's fingernail. Although the joints were broken, they were not spaced regularly except where this was necessary, as at wall abutments or the sides of doors. Courses of this type of masonry are
not level or even; they have a tendency to slope and to change in thickness as the thickness of the stones demanded. Differences in the thickness of component stones in a course, or variations in the surface of the stones were evened by means of spalls and more mortar. These spalls might be small, rounded pebbles, or thin, flat or wedge-shaped small slabs 1 to 3 cm. thick and about the same length and width as the smaller stones. Type 2 (fig. 63): Large boulders (18–50 cm. long, 17–30 cm. thick) alternating with courses of small, thin slabs (best example is wall between Room 2 and Room 11). These courses are somewhat more level and even in thickness, but they are still irregular. There is also no particular regularity of joints. The spalls are usually thin, flat slabs that fill in the chinks in the masonry. They are not true stone-to-stone weight-bearing spalls.

The present exterior walls and presumably those which at one time were exterior walls, are built with one facing, usually of Type 2 masonry (boulders and slabs alternating) or, on occasion, of mud rubble of larger boulders (Type 1b). However, a few partition walls such as that between Rooms 6 and 9 were built entirely of smaller stones.
Ordinarily stones were laid flat, although in a few instances they were set on edge. The exterior of Room 8, which faces the courtyard (fig. 64), has large stones set this way. They give the impression of massive strength, as if much larger boulders had been set in place.

Although corners were bonded when two walls were built at the same time, not all of the courses of the two walls would be bonded. Instead, a few courses of the face made of the larger stones would be bonded, and small pebbles or spalls would be pressed diagonally between the corners of adjoining walls and "cemented" in with adobe mortar. However, when rooms were added the newer walls were simply abutted against the presumably standing walls (figs. 65, 66).

Plaster: The interior surface of walls, particularly those of rough mud rubble masonry, were finished off with a veneer or coating of brown adobe plaster (no lime added). This filled in the interstices between the courses and made a smooth surface. No more than a single coat was found on the walls of any one room. This varied in thickness from a few
millimeters up to one centimeter, but usually had a smooth or at worst a gently undulating surface.

Doors (figs. 67, 68).—All doors were rectangular in shape. Six out of the ten doors excavated had slab sills. One had a slab lintel. The other lintels had fallen in and may have been constructed of wooden rods with masonry above as at Hinkle Park and Higgins Flat Pueblos (Martin, et al., 1954, p. 46), although no evidence of rods was found. The sides of doors were of masonry or adobe. No door slabs or jambs to be used with slabs were found in place. Most of the doors were sealed with masonry. In some examples the plug was obvious on one face of the wall but concealed by nicely matched masonry on the other face. Usually some attempt was made to match roughly the masonry of the adjoining wall. The thresholds of the doors ranged in height from floor level up to 45 cm. above the floor. In width they averaged 42 cm., in height 50 cm. (Table 1). Most of the doors were in the corners of the rooms.

Ventilator Openings (fig. 69).—Four ventilator openings were found, two located opposite firepits in the approximate center of walls and two in the corners of rooms. One vent, placed between Rooms 3 and 8, was located opposite the firepit of Room 3 and in the corner of Room 8. Another vent was between Rooms 1 and 8. This was opposite the firepit in Room 1. Both these vents had sides made of slabs placed on edge. These vents were 25 cm. and 30 cm. wide, respectively, and 45 cm. and 40 cm. high. Two other low, narrow openings had been made in the corner wall of Rooms 10 and 12. That for Room 10 was furnished with a slab door or closing. These vents were 20 cm. and 22 cm. wide, respectively, and 30 cm. and 40 cm. high. There was no particular orientation to these openings, assuming that they were features related to the closest firepits. One opened up to the southeast (Room 3), another to the northeast (Room 1).

Floors (figs. 70–75).—Floors were made of a thick layer of brown adobe spread over the gravelly orange soil; occasionally they covered a fraction of the wall base. The deeper hollows were filled in and the floors more or less leveled off. In some large rooms the floor was 8 cm. (3 inches) higher at one side than at the other. The surface of the floors, especially in the vicinity of the firepits, was typically ashy gray. Some rooms (3, 5, 12) contained two floors. However, the earlier floor in Room 5 was not cotermious with the later floor. These successive floors were separated by a layer of trash from 3 to 20 cm. thick.

Mealing Bins (figs. 76–78).—The remains of flour receptacles or meal ing bins were found in Rooms 1, 3, 5, 8, 10, and 12. The most common kind of mealing receptacle was a shallow (about 20 cm. deep) pit about
Fig. 67. Rectangular doorway in east corner of Room 1 with plug removed, showing construction of lintel and sill; meter stick at right.

Fig. 68. Sealed rectangular doorway in east corner of Room 2; meter stick at right.
Fig. 69. Ventilator opening in partition wall between Rooms 1 and 8 showing construction of sides and sill. Scale at left in 10 cm. units.

Fig. 70. Room 1, showing artifacts around firepit. Meter stick in background; 50 cm. arrow points north.
Fig. 71. Room 5. Firepit in foreground belongs to Floor 1; rectangular firepit in center belongs to Floor 2; remains of mealing bins to right; sealed doorway to right of meter stick; 50 cm. arrow points north.

Fig. 72. Room 6. Rectangular doorway to left of meter stick, manos and slabs on floor; 50 cm. arrow points north.
32 cm. in diameter, with a stone slab bottom and a sherd baffle to catch the flour at the left side. Another kind contained a bowl tipped at an angle to catch the flour. Many of these flour receptacles had been floored over. Sets of receptacles in Rooms 10 and 12 were provided with sides made of slabs set on edge. One set, in Room 5, had an adobe partition wall like that found at Higgins Flat (Martin, Rinaldo, et al., 1956, p. 38). Manos were associated with several of these receptacles, but only those in Room 10 had metates with them. These metates were not enclosed by slabs but were fixed at an angle in adobe. It is possible that the stone slab bottoms of these receptacles could have been used secondarily as milling stones. These mealing bins were ordinarily located in the corner out from the wall 80–100 cm. This meant that the metates
were set at an angle and were about 40–50 cm. from the wall, depending on the length of the metate.

In Room 1 two lumps of faceted yellow and red pigment were in direct association with a rubbing stone and located near these receptacles.

*Firepits* (figs. 79–81).—Stone fireboxes containing quantities of white wood ash and charcoal were found in all except one of the larger rooms. These were rectangular in shape and had sides made of squared slabs of stone set on edge. Several of these fireboxes also had floors of fitted stone slabs (Rooms 1, 5, 8, 10). One of these slabs (Room 8) was circular. Other firepits had sides consisting of smaller rectangular stones (like manos) placed in a row along the edge. Two of the firepits (Rooms 1, 8) had pot supports in association with them.

*Ceiling-Roof.*—Although one wall was standing 150 cm. high, it showed no beam holes, sockets, or wall plates. Most of the standing walls were little more than one meter in height. No remains of beams were found in the rooms. Large hardened lumps of adobe containing the impressions
of large sticks or boards were found in the room fill, and it is believed that the roof consisted of beams laid across the walls and that over these were placed poles and sticks or board splints, and that the entire framework was then covered with a thick layer of adobe. Distinct sloping layers in the fill of several of the rooms were thought to be roof layers, but these had been so reduced and softened by the elements as to contain no impression of roof framework.

Sub-Floor Pits.—Circular pits, 105, 70, and 105 cm. in diameter and 30, 65, and 37 cm. deep, were located in the corners of Rooms 1, 7, and 9, respectively, below the adobe floors and extending beneath the adjoining walls. The contained fill was unusually stony and dark. The pits contained very few sherds. They are similar to the storage areas found in Hinkle Park Cliff Dwelling (Martin, Rinaldo, and Bluhm, 1954, pp. 40, 50).

Postholes.—Rough alignments of what are believed to be postholes were located in some of the larger rooms. In other rooms a single larger hole of this kind was found more or less centrally located. None of these
Fig. 76. Tularosa White-on-Red bowl set in floor as flour receptacle near rear wall of Room 5. Note angle at which bowl is set. Sealed doorway to right of meter stick.

contained posts or large charcoal fragments. They did contain darker fill than ordinary trash, and small fragments of charcoal. These may have been used as sockets for secondary vertical roof supports or props, but it is possible that they had another function. The postholes in the plaza did contain the butts of wooden posts, and it seems strange that no beams, stringers, lintel rods or other wood should remain in the rooms, although it is probable that the plaza had superior drainage. Records and observation indicate that precipitation is heavier here than in the San Francisco drainage.

Number of Stories.—The quantity of wall stones removed from the fill was not great enough to postulate more than one story for the rooms
excavated. On the other hand, the unexcavated rooms to the southeast undoubtedly had higher standing walls and were mounded up with wall stones, so that some two-story rooms seem probable there.

The Courtyard or Plaza.—This is a rectangular area enclosed by rooms, and with what appeared to be a gateway in the northeast wall at the north corner. The floor level of this area had been excavated somewhat below that of some of the surrounding rooms. Eight large postholes, some of which held the butts of posts, were located in three rows. Two of the rows were made up of three posts each and one row of only two (see fig. 60). These postholes ranged in diameter from 45 to 60 cm., and in depth below native soil from 33 to 61 cm. It seems probable that they supported some kind of a roof structure.

Pithouse (fig. 82).—A pit occupied the northeast half of Room 2. This was in the form of a rounded rectangle, or square. It was completely filled to the level of the surrounding sterile soil with fist-sized stones and fine gravel, broken pottery and very few artifacts. On top of this was a
Fig. 78. Mealing bins with stone slab walls and floor. Metates in situ in approximate position in relation to flour receptacles; 50 cm. arrow points north.

lens, about 35 cm. thick, of brown soil and charcoal. In the floor there was one centrally located pit which may have been a firepit.

Alterations.—This particular group of rooms might be characterized by the large amount of remodeling and alteration. Remains or evidences of old walls partially torn out, limited earlier floor areas of different levels, filled-in structures, floored-over features, additions to walls and the like, indicate a kind of obsession for altering and rebuilding. On the other hand there is not sufficient difference between the kinds of masonry of the various rooms to postulate any great lapse of time between the initial and the final construction. This homogeneity of construction is further corroborated by the pottery contents of the rooms.

DISCUSSION

In general, as mentioned above, there were two types of rooms: (1) Large rooms with firepits, ventilators and milling centers; (2) small
Fig. 79. Rectangular firepit with stone slab sides, Room 1. Pot support and pestle in background; mano and tablet in foreground; 50 cm. arrow points north.

rooms, without floor features, which usually had few manos on the floor. The former were thought to have been used as dwelling rooms, the latter as store rooms. Exceptions were Room 2, which was a larger room without the usual firepit and mealing receptacles, and which had been built over a semi-subterranean structure; and Room 7, which was a small-sized room with a firepit. On the whole, then, there was sufficient similarity in floor features, masonry, and artifact content to consider these rooms as a unit.

The majority of the masonry uncovered was of interior walls and is too crude for comparison with anything except the earlier masonry of the Reserve Phase and the interior walls of the Tularosa Phase ruins. On the other hand, the better masonry exhibits detailed resemblances to the
Fig. 80. Excavated firepit, Room 1, showing fitted stone slab floor and sides; 50 cm. arrow points north.

Fig. 81. Rectangular stone fire-box, Room 8; pot support buried in ashes to right of 50 cm. arrow, which points north.
better masonry from Higgins Flat Pueblo (Martin, et al., 1956, pp. 28, 32), Apache Creek Pueblo (Martin, Rinaldo, and Barter, 1957, pp. 27, 29), Starkweather Ruin (Nesbitt, 1938, pp. 37–38, pl. 10a) and superficial resemblances to that from the lower level at Showlow (Haury and Hargrave, 1931, pp. 16–17, pl. 3, fig. 2). In some minor characteristics it also resembles masonry from Kinishba (Baldwin, 1939, pp. 14–15, pl. 1, fig. 1) and Canyon Creek (Haury, 1934, pl. 27). Inasmuch as all of these latter types have been compared to Type 2 masonry from Chaco Canyon it does not seem too far fetched to see superficial resemblances there. The primary resemblance between all of these is the practice wherein large stones are laid in courses, alternating with one or more thin layers of laminated stone or small slabs. At the same time irregularities at the ends of the larger stones are filled in with a chinking of small slabs. In the north, at Chaco Canyon, these were always laid horizontally. In the south these slabs were often set on edge, creating the impression of a frame of slabs around some of the larger stones. This practice reached its apogee at Kinishba and Canyon Creek, and appears only rarely but in a possibly significant foreshadowing in the Reserve area.
The hearths or fire-boxes of the Foote Canyon ruins were similar to those in other ruins of the Reserve area and of the Mogollon area in general in that they were rectangular, slab-lined and with slabs projecting slightly above the floor. Pot supports rather than notches and poles as at Ariz. W:10:51 (Wendorf, 1950, p. 29) served to keep the cooking jars upright.

The flour receptacles are generally similar to those found at Apache Creek Pueblo, Higgins Flat Pueblo, Starkweather (Nesbitt, 1938), Aragon Site 13 (Schroeder, in Wendorf, 1954) and other sites in the Reserve area, and are generally similar to those described for Arizona W:10:51, Point of Pines (Wendorf, 1950, p. 29). They either have a slab floor and adobe walls with a sherd baffle in one wall (usually to the left of the miller) or consist of a broken bowl sunk in the floor and tipped at an angle toward the metate.
III. Pottery

INTRODUCTION

Pottery fragments were among the artifacts most frequently recovered at Foote Canyon Pueblo. Some twenty whole or restorable vessels and 19,078 potsherds were recovered, during the course of the excavation of twelve rooms and the plaza. These were sorted and classified into forty established types and their variants, thus providing a useful tool for estimating the chronological position of the pueblo and the direction from which it may have received cultural influences. They also provided a somewhat later and more complete extension of the developmental series in the area than had been obtained by previous excavations and yielded corroborative evidence as to their uses.

Some fragments were found which differ from the established types in certain details of decoration. These might be either variants of the established types or new types. However, the samples, which consist of no more than one or two fragmentary vessels, are thought to be too small to establish correctly their taxonomic position, or to describe them adequately as new types. Therefore, they are described as variants of the established types which they most closely resemble.

The classification used is that given by the University of Arizona, the Museum of Northern Arizona, and Gila Pueblo (Colton, 1955). All the sherds were classified and counted in the field. The textured and plain ware sherds (mostly Reserve Indented Corrugated, Tularosa Patterned Corrugated and Alma Plain) were then discarded. The painted decorated types were put into sacks numbered according to room and level and were shipped back to the Museum.

In the Museum each sherd was labeled as to site, room, and level, and all sherds of one type were compared with each other and with type specimens and whole vessels in the Museum collections.

USE

Household Utility Storage Jars.—Fragments of several large jars of Reserve Indented Corrugated were found in Room 6 (fig. 83). Most of
Fig. 83. Reserve Indented Corrugated jars (258158, 258159), floor, Room 6. Height of right specimen, 20.2 cm.
these had been standing in the north half of the room and had been smashed by the collapse of the walls and roof.

Other large Reserve Indented Corrugated jars were found in other rooms grouped around the firepits. Some of these, particularly those which were not soot-blackened, may have been storage jars.

A large Tularosa Patterned Corrugated jar (fig. 85, lower) was imbedded in the floor near the south corner of Room 12, not far from the ventilator opening. Other jars of Tularosa Patterned Corrugated or Reserve Indented Corrugated have been found sunk in the floor at other sites in the Reserve area such as Site 13 (Schroeder, in Wendorf, 1954, p. 81), Valley View (where it was also located near a ventilator opening) (Martin, Rinaldo and Barter, 1957, p. 38), and Higgins Flat Pueblo (Martin, et al., 1956, p. 139).

*Household Utility Cooking Jars.*—Large jars of Reserve Plain Corrugated ware were found grouped around the firepit in Room 3 and Room 8, a Reserve Indented Corrugated jar was found in Room 1, and a Tularosa Patterned Corrugated jar in Room 3. Most of these were soot-blackened on the exterior. On some vessels the soot was deposited in a heavy layer between the corrugations; on others this was a lighter surface deposit.
Fig. 85. Tularosa Fillet Rim bowl (258157), fill, Room 2; diameter, 29.4 cm. Tularosa Patterned Corrugated jar (258142), sunk in floor, Room 12; height, 25.4 cm.
A similar grouping of cooking pots near the firepit was found at Higgins Flat Pueblo (Martin, et al., 1956, p. 139) and Apache Creek Pueblo (Martin, Rinaldo and Barter, 1957, p. 33).

*Household Mealing Receptacles.*—Tularosa White-on-Red bowls (figs. 86, 87, right) were found in place for use as flour receptacles. These were set at a low angle at one end of the mealing bins or metate to catch the flour. Bowls of this type were sunk in the floor in Rooms 5 and 8. Two were found in Room 5, one near the door northwest of the firepit and another with the broken down mealing bins in the north corner. In Room 8, the bowl was sunk in the floor opposite the firepit near the northwest wall.

Fragments of ReserveIndented Corrugated, Smudged Interior variety, a Tularosa White-on-Red fragment and a Pinedale Polychrome fragment were found as baffles in mealing receptacles in Room 1. A St. Johns Polychrome fragment was used as a baffle in the mealing bin at the left end of the set in Room 10. This baffle had been placed on the miller's left. These receptacles in Rooms 1 and 10 had stone slab bottoms. A Tularosa White-on-Red sherds were used as a baffle with the mealing receptacle for bins in Room 12. Tularosa Fillet Rim bowls (a closely related type) were used at Higgins Flat Pueblo, Apache Creek Pueblo and Site 13 (Schroeder, in Wendorf, 1954, p. 73).

*Household Eating and Serving Dishes.*—An examination of the bottoms of bowls and bowl sherds indicates that the Tularosa White-on-Red and Tularosa Fillet Rim bowls (figs. 85, 86) received more wear than the Black-on-Red and the Polychrome, or the Black-on-White bowls. This suggests that the Tularosa White-on-Red bowls were used more often for general use and as serving or dough containers, whereas the other types may have served a specific use; they may have been food receptacles.

*Household Water Jars and Pitchers.*—Narrow-mouthed water jars and the smaller narrow-mouthed jars, which we term pitchers, with handles at one side, were made of Tularosa Black-on-White (fig. 84), Reserve Black-on-White and St. Johns Black-on-Red. Although no direct evidence of their use for water was found at Foote Canyon, there are in the Museum collection vessels of Reserve and Tularosa Black-on-White which have sprinkler type handles (Martin and Willis, 1940, pl. 86) that indicate this use, and a narrow mouth, which would limit evaporation.

**CONSTRUCTION TECHNIQUES**

An examination of a large random sample of the textured wares, and all of the painted decorated sherds, indicated that all of the pottery was
Fig. 86. Tularosa White-on-Red bowls (238156, 258139). Left, floor, Room 8. Right, floor, Room 10. Diameters, 27.7, 32.1 cm.
Fig. 87. Pinetale Polychrome bowl (258154), below floor, Room 1; diameter, 32.5 cm. Tularosa White-on-Red bowl (258155), Room 10, floor; diameter, 32.1 cm.
manufactured by the coil and scrape process. Although statistical data are lacking, apparently there was a tendency to use narrower coils—resulting in more corrugations per centimeter—than at earlier sites. This was particularly true of the smudged interior bowls of Reserve Plain Corrugated, Smudged Interior variety, and Reserve Indented Corrugated, Smudged Interior variety. The Red Indented Corrugated was polished over the coils, but most of the other textured wares were not. Coiling was indicated not only by corrugations, but also by fracturing along coil lines and incompletely smoothed-over coils on jar interiors and sometimes on exteriors.

Over 90 per cent of the pottery was possibly fired in an oxidizing atmosphere and is of a dark brown or red color. Some fire clouding and considerable variation in exterior surface color are evident on most of the larger sherds and whole pieces and seem to indicate inadequate control of firing.

The process of coiling is indicated not only by the corrugations of the textured ware, which spiral upward in a continuous strip or flattened rope from the bottom, but also by fractures along coil lines, and incompletely smoothed-over coils (particularly on jar interiors). In areas which were not polished, the scraping process is indicated by cuts, broad groove-like marks, and scratches that were usually made parallel to the coils or at a slight angle to them. All vessels were polished with strokes parallel to the rim of the vessel.

Over 35 per cent of the pottery recovered was polished and smudged on the interior. When perfectly done, this resulted in a shining, smooth, hard black or iridescent surface. Just how this smudging was accomplished is not known. Analysis of a limited sample from another area by F. G. Hawley indicated that the smudging was a carbon deposit and that the pottery was not painted with iron mineral. I have produced a similar surface by polishing the vessel and then firing it inverted over a resin rich pine which deposited a layer of carbon that will burn off if exposed to an oxidizing flame. Occasional sherds of Tularosa Fillet Rim without the normal smudged interior have been found in our excavations, especially from burned rooms. These smudged interiors were probably burned off. I have burned off the smudging from prehistoric sherds in low temperatures which would not burn off the paint from iron paint sherds.

Percentages of Smudged Types.—Reserve Indented Corrugated, Smudged Interior, 12.05 per cent; Tularosa Patterned Corrugated, Smudged Interior, 0.87 per cent; Tularosa Patterned Corrugated, Reserve var., Smudged Interior, 0.04 per cent; Reserve Plain Corrugated, Smudged
Fig. 88. Affinis Queceno Polychrome bowl (type unknown, 258141), trench, Room 2; diameter, 22.8 cm. St. Johns Polychrome bowl (258140), floor, Room 3; diameter, 24.6 cm.
FOOTE CANYON PUEBLO

Interior, 6.71 per cent; Reserve Incised Corrugated, Smudged Interior, 0.29 per cent; Reserve Smudged, 9.41 per cent; Tularosa Fillet Rim, 1.19 per cent; Tularosa White-on-Red, 5.06 per cent; Starkweather Smudged Decorated, 0.02 per cent; total, 35.64 per cent.

SEQUENCE OF POTTERY TYPES

In addition to the normal fill-to-floor-level relationships which occurred in all the rooms, other stratigraphic relationships were studied between Rooms 2 and 10 and their underlying structures and between the arbitrary levels excavated in the deep trash fill of the southeast section of the plaza. This plaza trash fill was excavated in approximately half-meter levels, but because of the slope of the surface the upper level contained more soil volume and also a greater quantity of pottery. The lower level was a true half-meter level and contained only about half as many sherds.

Reserve Series and Mimbres Series, Early.—The pottery types furnished some indication of an earlier occupation of the site, thus corroborating the sequences obtained to the east in the Pine Lawn, San Francisco and Tularosa valleys; for example, sherds of Mimbres Bold Face Black-on-White (Mangus Black-on-White), Alma Punched, Alma Neck Banded, Alma Scored and Three Circle Neck Corrugated appeared in the lower levels. Most of these occurred in the pithouse below Room 2. However, Alma Neck Banded was the only member of this group which appeared exclusively in the pithouse. The other members appeared in other rooms, but, with the exception of Mimbres Bold Face Black-on-White, they occurred only as single sherds in separate levels.

Alma Plain was found throughout the pueblo in varying amounts ranging from half a dozen sherds found in Room 6 to more than six hundred sherds from the pithouse and Room 2. These sherds could be body sherds from neck corrugated vessels; in certain instances they were sherds of interior smudged vessels which had become so weathered as to lose their polish. In this condition sherds of Alma Plain with an interior fire cloud cannot be distinguished from Reserve Smudged.

Fragments classified as San Francisco Red were in a minority. These include body sherds of polished red neck corrugated vessels.

The types mentioned above are described in the following sources:
Alma Plain (Gladwins, 1934, p. 18; Haury, 1936b, p. 32; Hawley, F. M., 1936, p. 104; Nesbitt, 1938, p. 137).
Alma Scored (Haury, 1936b, p. 38; Hawley, F. M., 1936, p. 106; Nesbitt, 1938, p. 138).
Alma Punched (Haury, 1936b, p. 39; Hawley, F. M., 1936, p. 106; Nesbitt, 1938, p. 138).
Alma Incised (Haury, 1936b, p. 40; Hawley, F. M., 1936, p. 106; Nesbitt, 1938, p. 138).
Alma Neck Banded (Haury, 1936b, p. 36).
Three Circle Neck Corrugated (Haury, 1936b, p. 36; Hawley, F. M., 1936, p. 105).
Mangus Black-on-White (Mimbres Bold Face Black-on-White) (Haury, 1936b, p. 22; Hawley, F. M., 1936, p. 62).
Reserve Smudged (Nesbitt, 1938, p. 139).

*Reserve Series and White Mountain Series, Intermediate.*—Occurring stratigraphically above the types listed for the Three Circle Phase are a number of types which first appeared in the Reserve Phase, although some continue as component pottery types of the Tularosa Phase. Some of these types, such as Reserve Indented Corrugated, appeared in all levels and areas of the pueblo; others, such as Reserve Incised Corrugated, Starkweather Smudged Decorated and Reserve Black-on-White, appeared only in certain rooms and in limited amounts.

Throughout most of the several stratigraphic series in Foote Canyon Pueblo there is a tendency for the plain ware types—Alma Plain, Reserve Smudged, and San Francisco Red—to decrease in quantity, whereas the corrugated types, particularly Reserve Plain Corrugated and Reserve Indented Corrugated, increase in quantity. These two trends may be inversely connected, that is, the corrugated types may have continued to replace the plain ware during the Tularosa Phase, as is clearly evident in the pottery from pure Reserve Phase sites. It does not seem probable that all the plain ware (about 13 per cent of the pottery from the plaza alone) was left around from the Reserve Phase occupation of the site, handed down as heirloom pieces, or erroneously classified; so there remains considerable likelihood that it was still in the process of being replaced in use as late in the sequence as the beginning of the Foote Creek Phase.

The distribution of Starkweather Smudged Decorated and Reserve Incised Corrugated is so limited as to make it seem probable that all of the sherds of the former type and most of the latter were relics or heirlooms of an earlier era.

Other types, such as Reserve Black-on-White and Tularosa Patterned Corrugated, Reserve variety, were still in the transitional process of being replaced by the sequent types, Tularosa Black-on-White and Tularosa Patterned Corrugated proper.

The types referred to in this section are described in the citations below:
Reserve Plain Corrugated (Martin and Rinaldo, 1950b, p. 526; Rinaldo and Bluhm, 1956, pp. 155-158).
Reserve Indented Corrugated (Nesbitt, 1938, p. 140; Rinaldo and Bluhm, 1956, pp. 159–162).
Tularosa Patterned Corrugated, Reserve variety (Rinaldo and Bluhm, 1956, pp. 169–171).
Starkweather Smudged Decorated (Nesbitt, 1938, p. 139; Rinaldo and Bluhm, 1956, pp. 171–175).

Reserve Series and White Mountain Series, Late.—We have usually distinguished the Reserve Phase sites from the Tularosa Phase sites by the presence in quantity or absence in the site as a whole, of Tularosa Black-on-White, Tularosa Fillet Rim, Tularosa White-on-Red, and St. Johns Polychrome. Some of the later Little Colorado polychromes such as Querino, Houck or Springerville Polychrome may also be present but usually are represented by only very few sherds at any one site. In the Tularosa Phase, Tularosa Black-on-White tends to replace Reserve Black-on-White. Tularosa Fillet Rim definitely replaces Reserve Fillet Rim, which is never more than a minority type and was absent at Foote Canyon Pueblo, and also replaces Reserve Smudged, which waned slowly in popularity.

It has been postulated that Tularosa White-on-Red (Rinaldo and Bluhm, 1956, p. 154) was directly related to Tularosa Fillet Rim on the one hand and to St. Johns Polychrome on the other. These three pottery types were used as flour receptacles and probably as food dishes. At this time these types were probably being replaced in use by interior smudged corrugated bowls and by the later polychromes such as Querino and Springerville Polychrome.

Sources for the description of pottery types in this section are as follows:
Tularosa Fillet Rim (Kidder, 1924, p. 98; Wendorf, 1950, p. 121).
Tularosa White-on-Red (Martin, Rinaldo, et al., 1952, p. 73; Rinaldo and Bluhm, 1956, pp. 173, 177).
Tularosa Black-on-White (Nesbitt, 1938, p. 139; Rinaldo and Bluhm, 1956, pp. 177–184).
St. Johns Polychrome (Glodaws, 1931, p. 36; Hawley, F. M., 1936, p. 49).
Querino Polychrome (Hawley, F. M., 1936, p. 44; Colton and Hargrave, 1937, p. 121).

White Mountain and Shiwanna Red Wares, Red Series and White Series, Late.—As guide types to the Foote Creek Phase we find Pinedale Polychrome, Pinedale Black-on-Red, Showlow Polychrome, Heshotauthla Polychrome, Pinnawa Polychrome and Kwakina Polychrome in small amounts. These types seem to have developed out of St. Johns Polychrome and appear to have been gradually replacing it in popularity.

St. Johns Polychrome and St. Johns Black-on-Red are the only two types which amount to more than 1 per cent of the total number of sherds found. Pinedale Polychrome sherds represent 0.62 per cent of the
total and no one of the other polychrome or black on red types represents more than half of one per cent of the total.

RESTORABLE AND WHOLE VESSELS BY ROOMS

Room 1
Pinedale Polychrome bowl, in shallow pit or mealing receptacle below floor east of firepit (fig. 87, left).
Reserve Indented Corrugated jar, southeast of firepit on floor.

Room 2
Tularosa Fillet Rim bowl, in trench near middle of southeast wall (fig. 85, upper).
Tularosa Black-on-White jar, fill and floor 1 (fig. 84).
Affinis Querino Polychrome, trench (fig. 88, left).

Room 3
Reserve Indented Corrugated jar, near firepit, floor 1.
Reserve Plain Corrugated jars (3), near firepit, floor 1.
St. Johns Polychrome bowl, fill and floor 1 (fig. 88, right).

Room 5
Tularosa White-on-Red bowl, mealing receptacle near door northwest of firepit, floor 1 (fig. 76).
Tularosa White-on-Red bowl, with mealing bins in north corner, floor 2.

Room 6
Reserve Indented Corrugated jars (3), on floor (fig. 83).

Room 8
Tularosa White-on-Red bowl, in mealing receptacle or bin near northeast wall, floor 1 (fig. 86, left).
Tularosa White-on-Red bowl, floor 1.
Reserve Plain Corrugated jar, floor.

Room 12
Tularosa White-on-Red bowl, floor.
Tularosa Patterned Corrugated jar, floor 1, south corner near ventilator opening (fig. 85, lower).
NOTES ON THE PAINTED POTTERY TYPES

The black-on-white, black-on-red, white-on-red and polychrome types noted below are arranged by series and in approximate chronological order. References to complete descriptions of these types have been cited above and will not be repeated here. This section is intended to give somewhat more specific information on the occurrence of these types at this particular site than is evident from the illustrations alone.

*Mimbres Black-on-White.*—Vessel shapes (from sherds only): Bowls only.

Design elements: Medium lines, solids bordered by parallel lines, longitudinal hatch, solids combined with longitudinal hatch, solids combined with diagonal hatch, simple scrolls, spotted checkerboard.

Remarks: Twenty-nine sherds of this type recovered, of which nine were from the pithouse. Most of these appear to be Mimbres Bold Face Black-on-White rather than Mimbres Classic Black-on-White. The predominance of the earlier type was also noted in the San Francisco River drainage.

*Reserve Black-on-White.*—Vessel shapes (from sherds only): Bowls, jars, pitchers.

Design elements: Diagonal hatch and solid elements, solid broad lines, solid and hatched interlocking scrolls, narrow lines, opposed solid stepped triangles, white dots on exterior.

Remarks: The distinction between this type and Tularosa Black-on-White is not as clear in the pottery of the Blue River drainage as it is in the pottery from the drainages to the east.

*Tularosa Black-on-White.*—Vessel shapes: Large jars (fig. 84), pitchers, bowls.

Design elements¹ (in the order of frequency from the most frequent): Diagonal hatch and solids, broad lines, solid and hatched interlocking scrolls, longitudinal hatch and solids, diagonal hatch, medium lines, longitudinal hatch, solid stepped triangles, spaced longitudinal hatch, opposed solid and hatched triangles, opposed diagonal hatch and triangles, negative lightning (opposed stepped triangles), lines and solids, opposed half terraces, stepped solids, simple scrolls, cross hatch, double sawtooth lines, squiggle, dot in square.

Remarks: A comparison of these frequencies with those delineated by Miss Bluhm (MS.) for twelve sites of the San Francisco, Three Circle, Reserve and Tularosa phases, shows that the frequencies of the Foote Canyon Pueblo design elements on black-on-white pottery are most sim-

¹ Derived from a tabulation of the design elements made by Mr. James Schoenhutter.
ilar to those for the later Tularosa Phase sites and continue the trends indicated in these sites. It should be noted that we found no glaze-painted Tularosa Black-on-White variant and no glaze-painted Pinedale Black-on-White such as one might expect in association with Pinedale Polychrome and Pinedale Black-on-Red.

_Tularosa White-on-Red._—Vessel shapes: Deep bowls with slightly incurving walls and slightly out-flaring rims (fig. 86).

Design: Line design in stepped pattern, zigzag, square spiral, interlocking fret, simple scroll, cross, chevron, terraces or trapezoids. Either in broad contiguous patterns forming a zone below the fillet, or (occasionally) in disconnected panels, as in Pinedale Polychrome.

Remarks: This type appears to be transitional between the earlier Mogollon pottery types and the polychromes of the White Mountain series. It was one of the dominant decorated types at the site.

_St. Johns Polychrome._—Vessel shapes (fig. 88, right): Deep bowls with incurving rims.

Design: Interior: repeated interlocking solid and hatched figures, chains of hatched diamond shapes common, these opposed to solid stepped triangles; simple solid scrolls, generally circular area in bottom without design; some darker-colored sherds decorated in sub-glaze. Exterior: broad white stepped lines or terraced figures, and simple scrolls, occasional narrow line design, ordinarily in broad connected patterns below the rim. Some narrow line designs, usually on smaller vessels.

Remarks: The exterior design and the sub-glaze variety interior design grades into that of Heshotauthla Polychrome. One fragmentary vessel with orange-tan slip which tends to flake off.

_Heshotauthla Polychrome._—Vessel shapes (from sherds only): Bowls with incurving rims.

Design (fig. 89): Interior: negative parallelograms, cross hatch, longitudinal hatch, narrow and wide lines, in black glaze paint. Exterior: narrow white lines in angular pattern.

Remarks: This type appears to be transitional between St. Johns Polychrome and Pinedale Polychrome. The color combination and to a lesser extent the pattern of the exterior design are like those of St. Johns Polychrome, the interior designs like those of Pinedale Polychrome.

_Pinedale Polychrome._—Vessel shapes (fig. 90; from sherds only): Large deep bowls with incurving rims.

Design: Interior: black glaze with some white outlines; longitudinal hatch, negative parallelograms, simple scrolls, hatched and solid triangles, narrow framing lines. Exterior: black pattern outlined in white,
Fig. 89. Bottom row, Pinedale Black-on-Red potsherds; remainder, Heshotauthla Polychrome.
Fig. 90. Top row, Pinedale Polychrome potsherds; remainder, Springerville Polychrome.

some continuous, some disconnected, stepped patterns, diamond-shaped panels, one bird form.

Remarks: The majority of the 75 sherds of this type were fitted into five fragmentary vessels. Although the type is usually considered transitional between St. Johns Polychrome and Four Mile Polychrome, the exterior designs are similar to those on most of the sherds of Kwakina Polychrome in the collection from Foote Canyon.
Springerville Polychrome.—Vessel shapes (from sherds only): Large bowls with incurving rims.


Remarks: This type is also transitional between St. Johns Polychrome and Pinedale Polychrome. In this collection, the interior design is like Pinedale Polychrome, the exterior like St. Johns Polychrome.

Querino Polychrome.—Vessel shapes (from sherds only): Bowls with incurved rims.

Design (fig. 91): Interior: black paint on red slip. Diagonal-hatched triangles, solid triangles, longitudinal-hatched simple scroll, hatched chains of diamond-shaped figures. Exterior: broad curvilinear designs in heavy coarse red slip on creamy slipped surface.

Remarks: These sherds constitute only a small percentage and are almost certainly trade sherds.

Kwakina Polychrome.—Vessel shapes (from sherds only): Bowls with incurved rims.

Design (fig. 92): Interior: black or greenish-black sub-glaze or glaze on white, creamy white, or pinkish white background; longitudinal hatch, diagonal hatch, hatched curvilinear, solid triangles, negative parallelograms; narrow framing lines. Exterior: disconnected rectangular or diamond-shaped panels in black, outlined in white on a red slipped background, also medium line white on a red background.

Remarks: The exterior designs are like those of Pinedale Polychrome, or occasionally like those of Heshotauthla Polychrome, and with the exception of the background color the interior designs are also like those of Heshotauthla and Pinedale Polychromes.

Pinnawa Polychrome.—Vessel shapes (from sherds only): Bowls.

Designs (fig. 93): Interior: paints weak and watery gray, or greenish to black; on pinkish white to gray background; hatched solid stepped elements or hatched and solid elements on red slip. Exterior: stepped solid rectangular and white stripes on red slip; or (1 sherd) green on cream zone of stepped solid and longitudinal hatch.

Remarks: These sherds were identified by Stanley Stubbs and Erik Reed. They occurred only in the plaza.

St. Johns Black-on-Red.—Vessel shapes (from sherds only): Pitchers, jars, bowls.
Fig. 91. Querino Polychrome potsherds.
Fig. 92. Kwakina Polychrome potsherds.
Fig. 93. Top row, polychrome potsherds of unknown type; remainder, Pinnawa Polychrome.

Designs: Diagonal hatch, longitudinal hatch, double sawtooth lines, solid and hatched interlocking scrolls, solid and hatched stepped triangles.

Remarks: This category probably includes many sherds of St. Johns Polychrome which lack the normal white exterior decoration of the polychrome; it may also include sherds of Pinedale Polychrome which lack the normal exterior decoration and glaze paint. The paste and many of the designs of the pitcher and jar sherds are identical with those of St. Johns Polychrome but lack the white decoration found on the bowl sherds. Martin and Willis (1940, p. 165) proposed calling similar vessels Tularosa Black-on-Red. Dittert (personal communication) and Mera (1934, p. 14)
have also referred to this type. However, data on it and its relationship to the earlier Wingate and other black-on-reds are too scanty yet to permit more detailed definition and description.

SIGNIFICANCE OF PAINTED POTTERY TYPES

The painted pottery types seem significant in that the black-on-white types furnish data showing trends in design elements from sites in the San Francisco and Tularosa River drainages to the east; and from the polychrome and black-on-red types there may be derived some interesting inferences concerning the development from St. Johns Polychrome through Pinedale Polychrome into Four Mile Polychrome on the one hand, and into Kwakina Polychrome on the other.

One of the more outstanding differences between the Tularosa Black-on-White of Foote Canyon Pueblo and that of sites located to the east, such as Higgins Flat Pueblo, is the greater amount of longitudinal hatch and broad lines on the sherds from the Foote Canyon collection. The trends in the other elements and designs such as diagonal hatch and opposed solid elements and longitudinal hatch appear to agree.

Furthermore, there appears to be considerable unity in design development between Tularosa White-on-Red, St. Johns Polychrome and the later polychromes; for example, the frequent use of stepped line designs in white-on-red on both Tularosa White-on-Red and on the exterior of St. Johns Polychrome seems to indicate a common source of inspiration. Some similarity may also be noted between the exterior designs of Pinedale Polychrome and the stepped line designs of St. Johns Polychrome, and between the disconnected diamond-shaped panels to be found on Tularosa White-on-Red and similar diamond-shaped panels on the exterior of Pinedale Polychrome. Furthermore, the tradition of white line exterior decoration as seen on St. Johns Polychrome and Heshotauthla Polychrome and of black outlined with white decoration as seen on Springerville Polychrome, Pinedale Polychrome and Kwakina Polychrome is indicative of a close relationship between these earlier polychromes and the early Zuñi glaze polychromes. A similar unity is noted in the use of similar interior design elements, such as considerable use of longitudinal hatching and solid triangles and some use of negative parallelograms.

Furthermore, a comparison of the Foote Canyon Pueblo complex of pottery types with those found at Ariz. W:10:51 at Point of Pines (Wendorf, 1950, pp. 35-53) and Showlow (Haury and Hargrave, 1931, pp. 31-42) and Pinedale (op. cit., pp. 61-71) seems to indicate certain additional
differences that may be significant. Chief among these is the scarcity of the early Zuñi glaze polychrome types at the latter sites and the scarcity of Four Mile Polychrome and Pinedale Black-on-White at Foote Canyon Pueblo.

Among the several possible explanations for these differences, two, which are in a sense complementary, stand out. The first of these is that the known center of distribution of Four Mile Polychrome is west of the Blue River and Foote Canyon, behind a barrier of high mountains (Haury, 1934, pp. 130–131). These mountains constitute a frontier which deterred the spread by travel and trade, not only of Four Mile Polychrome, but of the earlier MacDonald Corrugated as well. A second factor might be the probability of a rather close relationship between the makers of Four Mile Polychrome and the occupants of the area to the northwest (probably the Hopi); for example, at Awatovi, Watson Smith (1952, pp. 148–150, 278) noted that the designs on kilts and pottery depicted in the kiva murals resemble the designs on Four Mile Polychrome, and a further somewhat more tenuous indication of this relationship is seen in the kachina figure on a Four Mile Polychrome bowl illustrated in Martin and Willis (1940, frontis.). This seems to suggest a somewhat closer relationship between the makers of Four Mile Polychrome and the prehistoric Hopi and between the people of the Blue River and the prehistoric Zuñi or the occupants of the area to the northeast, thus corroborating other lines of evidence found in stone artifacts and architecture.
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1 All measurements of room features in centimeters; room dimensions in meters.
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**TABLE 2.—SHERD ANALYSIS, FOOTE CANYON (continued)**

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TABLE 2—SHERD ANALYSIS, FOOTE CANYON (continued)

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TABLE 2. SHERD ANALYSIS, FOOTE CANYON (continued)

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<td>Interior</td>
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<td>variety, Smudged</td>
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<tr>
<td>Total</td>
<td>4993</td>
<td>99.89</td>
<td>1499</td>
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TABLE 3.—TABULATION OF TREE RING DATES AND ESTIMATES OF DURATION FOR SOME LATE POLYCHROME POTTERY TYPES

<table>
<thead>
<tr>
<th>Tree Ring Dates</th>
<th>Estimated Dates</th>
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<tbody>
<tr>
<td><strong>St. Johns Polychrome</strong></td>
<td></td>
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<tr>
<td>Pecos, 1299-1612</td>
<td>1000-1200 (Gladwin, W. and H. S., 1931, p. 38)</td>
</tr>
<tr>
<td>Pindi, 1051-1349</td>
<td>1000-1200 (Hawley, F. M., 1936, p. 49)</td>
</tr>
<tr>
<td>Lamy, 1241-1273</td>
<td>1100-1200 (Martin and Willis, 1940, p. 165)</td>
</tr>
<tr>
<td>Los Alamos, 1193-1268</td>
<td>1110-1225 (Stubbs and Stallings, 1953, pp. 58, 154, chart)</td>
</tr>
<tr>
<td>Rio Puerco, 1233-1262</td>
<td>1100-1200 (Colton and Hargrave, 1937, p. 104)</td>
</tr>
<tr>
<td>Tesuque Valley, 963-1231</td>
<td>1150-1250 (Reed, 1955, p. 190)</td>
</tr>
<tr>
<td>Tecomote, 1170-1200</td>
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<tr>
<td>Forked Lightning, 1113-1120</td>
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<tr>
<td>Mesa Verde, Site 34, 978-1183 (trash)</td>
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</tr>
<tr>
<td>Showlow (lower), 1151</td>
<td></td>
</tr>
<tr>
<td>Ariz. W:10:51, Point of Pines, 1302</td>
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</tr>
</tbody>
</table>

| **Pinedale Polychrome** | |
| Ariz. C:1:14, 1295-1312 | 1295-1330 (Gladwin, W. and H. S., 1934, p. 19) |
| C:1:21, 1298-1313 | 1280-1320 (Hawley, F. M., 1936, p. 72) |
| C:1:40, 1303-1347 | 1250-1325 (Martin and Willis, 1940, p. 165) |
| C:1:44, 1310-1330 | 1250-1325 (Stubbs and Stallings, 1953, p. 154) |
| C:2:8, 1323-1348 | 1250-1325 (Colton and Hargrave, 1937, p. 107) |
| Pinedale, 1085-1375 | 1290 (Haury and Hargrave, 1931, p. 78) |

| **Heshotauthla Polychrome** | |
| Pecos, 1299-1612 | Latter 1200’s (Hawley, F. M., 1936, p. 76) |
| Pindi, 1051-1349 | 1200-1400 (Martin and Willis, 1940, p. 165; late Zuñi Glazes) |
| Armstrong, 1342-1366 | 1260-1350 (Stubbs and Stallings, 1953, p. 154, chart) |
| Cedro Canyon, 1285-1393 | 1200-1250 (Colton and Hargrave, 1937, p. 114) |
| | ca. 1300 to perhaps 1375 (Reed, 1955, p. 190) |

| **Kwakina Polychrome** | |
| Hawikuh, 1381-1480 | post 1300 (Zuñi Glazed Series; Stubbs and Stallings, 1953, chart, p. 154) |
| | 1300-1400 (Wallace and Adamana Polychromes; Colton and Hargrave, 1937, pp. 115, 117) |
| | 1325-1375 (Reed, 1955, p. 190) |

1 Tree ring dates from Smiley (1951), and Smiley, Stubbs and Bannister (1953).
<table>
<thead>
<tr>
<th>Tree Ring Dates</th>
<th>Estimated Dates</th>
</tr>
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<tbody>
<tr>
<td><strong>Pinnawa Polychrome</strong></td>
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<tr>
<td>Hawikuh, 1381–1480</td>
<td>1350 or 1375–1450 (Reed, 1955, p. 190) 1300–1400 (Colton and Hargrave, 1937, p. 116)</td>
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<tr>
<td><strong>Four Mile Polychrome</strong></td>
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<td>C:1:14, 1295–1312</td>
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<td>C:1:40, 1303–1347</td>
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<td>C:1:44, 1310–1330</td>
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<tr>
<td>C:2:8, 1322–1348</td>
<td></td>
</tr>
<tr>
<td>Showlow, 1151–1382</td>
<td>Late 14th century (Reed, 1955, p. 184)</td>
</tr>
<tr>
<td>Gila Pueblo, 1345–1375</td>
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</table>
IV. Artifacts

INTRODUCTION

The artifacts other than pottery are described in some detail in this chapter. An attempt has been made to learn how these artifacts might have been manufactured, and how they might have been used to meet the needs of the people of Foote Canyon Pueblo. For this purpose they were examined for marks of use and manufacture, records were kept of their associations and positions in the rooms, and they were compared with their modern analogues.

Furthermore, in order to search out the broader cultural relationships of this pueblo, they have been compared with similar types of artifacts in the Reserve area and throughout the Southwest.

HANDSTONES

The category of handstones as used here includes manos, rubbing stones, polishing stones, abrading stones and pestles. These objects are all generally oblong in shape and have one or more broad surfaces which have been worked and/or worn by use. Frequently, but not always, the used face is flat. The distinction made between these objects is one of size; manos are the largest and polishing stones the smallest. An arbitrary maximum length of 10 cm. was set for rubbing stones and 7 cm. for polishing stones, although this criterion was not paramount in making distinctions when other characteristics such as shape were more clearly diagnostic.

Manos were found with or near the flour receptacles in Rooms 1, 3, and 8, and near the firepits in Rooms 1 and 3; in other rooms they were usually grouped together, often in one corner. One small mano was found near the flour receptacles in Room 1 in association with faceted lumps of limonite and hematite pigment stones. These associations seem to indicate that the larger manos were used to grind (corn?) meal, whereas the smaller manos might have been used to grind paint.

In general, the manos were carefully worked, whereas the other handstones tend to be simply utilized stones which may be distinguished from
ordinary field stones and river pebbles only by their used working surfaces. The manos were generally worked on both their broad surfaces and edges. They were either symmetrical in outline or appeared to have been originally symmetrical and to have been worn into an irregular shape by use.

Manos were divided into two broad types—those with a single grinding surface and those with more than one (usually two) grinding surfaces. These, in turn, were subdivided according to their shape in outline (oval or rectangular) and the curvature or shape of the grinding surfaces. The majority of the manos were rectangular in outline with at least one flat grinding surface. They were usually made of coarse-grained stone shaped by pecking with a hammerstone all around, and their grinding surfaces were frequently roughened in the same way. Some of the thicker manos had grooves for finger grips pecked into the edges.

Seventeen manos of the beveled type were found. These have one or more grinding surfaces beveled in a double plane with a longitudinal middle ridge. The less worn examples of this type are usually rectangular in outline, but they apparently tended to become more oval as they were used and the corners were worn off.

Very few of the handstones had sharp corners. Straight edges were somewhat more common. The worn areas or grinding surfaces of the manos are in general symmetrical, the smooth surfaces being approximately the same texture from end to end and side to side. The beveled manos are an exception, for they are more worn at one end than the other. Most of the manos and some of the rubbing stones exhibit minute scratches at right angles to the long axis of their working surfaces. These match with scratches on the troughs of some metates and indicate that some material (probably corn) was ground in the trough with a back and forth motion and with the mano held crosswise in the trough (not with one end pointed down the trough). The wear on the beveled manos would indicate that the mano was held on the metate at an angle, with one end slightly lower than the other.

All of the polishing stones and a few of the other handstones had smooth working surfaces. The majority of the manos had parallel surfaces, but the more worn examples graded into those wedge-shaped in cross section.

Distribution.—Most of the beveled manos—those with two adjoining or beveled grinding surfaces—were from the fill. This seems to indicate that the beveled type was more popular with the occupants of some later unexcavated rooms. The tabular type or those rectangular in outline with a single flat grinding surface were found most frequently and more of
these also occurred in the fill levels. Most of the other types were about equally divided between fill and floor.

Most of the rubbing stones occurred in the fill or below the floor. Only one specimen was found on the floor proper. Both of the polishing stones were found on the floor.

Manos less than 15 cm. long are thought to be "one hand" manos, that is, they could have been used with one hand. Fourteen manos of this size were recovered, but the vast majority of the manos were longer, ranging up to 26.3 cm. in length. Furthermore, although 145 manos were recovered from this site only 11 rubbing stones were recovered. This corroborates the trend toward an increase in the number of longer handstones and a decrease in the number of shorter handstones observed elsewhere in the Reserve area (Martin, et al., 1956, p. 58). Woodbury (1954, p. 70) also found that the later manos from Awatovi and neighboring sites were significantly longer, and this trend seems to be duplicated throughout the Anasazi and Mogollon areas.

Seven pestles were found and only four stone bowls or mortars. The sharp decrease in the number of these tools subsequent to the Pine Lawn Phase was noted for Turkey Foot Ridge (Martin and Rinaldo, 1950a, p. 305) and later sites in the Reserve area (Martin, et al., 1956, p. 59).

Classification of Manos
(Figures 94–97)

Type I: Manos with Single Grinding Surfaces

TYPE Ia
Description: Oval in outline, surfaces parallel, grinding surface convex (fig. 94, c, d). Total 2.
Locations: From Room 7, floor; Room 1, trench.
Dimensions: Length, 21.0, 18.0 cm.; width, 11.8, 12.2 cm.; thickness, 4.1, 6.0 cm.

TYPE Ib
Description: Oval in outline, wedge-shaped in cross section, grinding surface bluntly convex. Total 1.
Location: From Room 1, trench.
Dimensions: Length, 20.6 cm.; width, 11.8 cm.; thickness, 5.0 cm.

TYPE Ic
Description: Oval in outline, surfaces parallel, grinding surface flat (figs. 94, b, 95, a). Total 4.
Locations: From Room 10, floor; Rooms 3, 5, fill; Room 1, trench.

Dimensions: Length, 10.5, 17.5, 14.5, 19.4 cm.; width, 7.4, 8.9, 12.3, 12.3 cm.; thickness, 1.9, 6.5, 4.2, 4.5 cm.

Fig. 94. Oval manos. Length of lower left specimen, 21.0 cm.

TYPE Id

Description: Rectangular in outline, surfaces parallel, grinding surface convex. Total 5.

Locations: From Room 3, floor 2; Room 1, below floor, trench; Room 3, fill.

Dimensions: Length, (fragment), 24.6, 22.0, 21.0, 18.8 cm.; width, 11.6, 11.1, 11.3, 11.5, 10.2 cm.; thickness, 5.4, 3.5, 4.0, 4.1, 3.8 cm.
ARTIFACTS

TYPE Ie

Description: Rectangular in outline, surfaces parallel, grinding surface bluntly convex. Total 6.

Locations: From Room 1, floor; Room 3, floor 2; Rooms 2, 3, trenches; Rooms 3, 9, fill.

Dimensions: Length, 19.3, 15.7, 20.0, 25.2, 23.3 cm., (fragment); width, 10.7, 11.4, 11.0, 11.6, 9.9, 12.1 cm.; thickness, 3.5, 4.8, 5.1, 2.6, 4.2, 1.7 cm.

Fig. 95. Oval one hand manos. Length of lower left specimen, 12.9 cm.

TYPE If

Description: Rectangular in outline, 2 specimens wedge-shaped in cross section, others with surfaces parallel, grinding surface flat (fig. 96, a, b). Total 19.

Locations: From Rooms 1, 2, 3, 5, 6, 12, floors; Rooms 3, 4, 5, 8, 9, 12, fill; Room 3, trench.

Dimensions: Length, 10.9–24.5 cm., average, 18.9 cm.; width, 6.1–14.3 cm., average, 10.4 cm.; thickness, 2.1–6.1 cm., average, 3.7 cm.

TYPE Ig

Description: Rectangular in outline, surfaces parallel, grinding surface more sharply convex lengthwise than crosswise. Total 4.
Fig. 96. Rectangular two hand manos. Length of lower left specimen, 23.7 cm.
**Locations:** From Rooms 1, 2, trenches.

**Dimensions:** Length, 20.5, 20.6, 20.6, 16.2 cm.; width, 9.6, 10.6, 9.9, 9.9 cm.; thickness, 7.5, 3.7, 3.3, 2.9 cm.

---

**Fig. 97.** Rectangular two hand manos. Length of lower left specimen, 19.9 cm.

**TYPE Ih**

**Description:** Rectangular in outline, triangular in cross section, grinding surface beveled in a double plane with a longitudinal ridge between (fig. 97, b, c). Total 6.

**Locations:** From Room 12, floor; Rooms 5, 10, fill.

**Dimensions:** Length, 22.0, 19.9, 15.9 cm., (fragments); width, 9.8, 6.7, 8.6, 8.4, 11.0, 11.8; thickness, 3.7, 2.5, 3.4, 3.3, 3.3, 2.0 cm.
Type II: Manos with Two or More Grinding Surfaces

TYPE IIa

Description: Oval in outline, surfaces parallel, grinding surfaces convex. Total 4.

Locations: From Rooms 1, 3, floors; Rooms 1, 3, trenches.

Dimensions: Length, 15.0, 14.9, 14.2, 17.0 cm.; width, 11.0, 7.4, 11.2, 11.5 cm.; thickness, 8.6, 4.8, 7.3, 7.3 cm.

TYPE IIb

Description: Oval in outline, wedge-shaped in cross section, grinding surfaces bluntly convex (fig. 94, a). Total 1.

Location: From Room 1, trench.

Dimensions: Length, 15.4 cm.; width, 11.1 cm.; thickness, 2.1 cm.

TYPE IIc

Description: Oval in outline, surfaces parallel, grinding surfaces flat. Total 2.

Locations: From Room 9, floor; Room 7, fill.

Dimensions: Length, 17.3 cm., (fragment); width, 10.8, 12.6 cm.; thickness, 6.1, 4.0 cm.

TYPE II d

Description: Oval in outline, one specimen wedge-shaped in cross section, the others with surfaces parallel, one grinding surface convex, the other flat (fig. 95, b, c). Total 5.

Locations: From Room 10, floor; Rooms 2, 3, trenches; Room 5, fill.

Dimensions: Length, 13.6, 12.9, 16.3 cm., (fragments); width, 7.3, 9.3 cm., (fragments); thickness, 2.8, 3.5, 4.4, 5.0 cm., (fragment).

TYPE II e

Description: Oval in outline, surfaces parallel, one grinding surface bluntly convex, the other flat (fig. 95, d). Total 2.

Locations: From Room 6, floor; Room 9, fill.

Dimensions: Length, 11.0, 24.0 cm.; width, 8.5, 11.5 cm.; thickness, 5.9, 5.7 cm.

TYPE II f

Description: Oval in outline, triangular in cross section, one grinding surface flat, the other beveled in a double plane with a longitudinal ridge between. Total 2.
Location: From Room 3, trench.
Dimensions: Length, 12.9 cm., (fragment); width, 6.8, 8.7 cm.; thickness, 4.6, 2.4 cm.

TYPE IIg

Description: Oval in outline, one grinding surface convex, the other beveled in a double plane with a longitudinal ridge between. Total 1.
Location: Pithouse fill below Room 2.
Dimensions: Length, 20.0 cm.; width, 8.8 cm.; thickness, 2.7 cm.

TYPE IIh

Description: Rectangular in outline, 4 specimens wedge-shaped in cross section, others with surfaces parallel, grinding surfaces convex. Total 17.
Locations: From Rooms 1, 2, 3, floors; Room 3, trench; Rooms 3, 5, fill; Plaza, fill.
Dimensions: Length, 17.0–23.9 cm., average, 19.2 cm.; width, 8.5–11.5 cm., average, 10.3 cm.; thickness, 2.2–5.7 cm., average, 4.0 cm.

TYPE IIi

Description: Rectangular in outline, one specimen wedge-shaped in cross section, the others with surfaces parallel, grinding surfaces slightly convex. Total 4.
Locations: From Rooms 3, 5, 10, fill.
Dimensions: Length, 10.8, 20.6 cm., (fragments); width, 10.0, 11.3, 7.2, 11.0 cm.; thickness, 5.9, 7.2, 2.0, 2.4 cm.

TYPE IIj

Description: Rectangular in outline, surfaces parallel, grinding surfaces flat (fig. 96, c). Total 16.
Locations: From Rooms 1, 2, 3, 8, 10, floors; Room 5, below floor; Plaza and Rooms 3, 6, 7, 10, fill; Rooms 1, 3, trench.
Dimensions: Length, 10.4–25.1 cm., average, 18.2 cm.; width, 6.7–12.4 cm., average, 10.9 cm.; thickness, 2.0–5.5 cm., average, 3.4 cm.

TYPE IIk

Description: Rectangular in outline, surfaces parallel, one grinding surface convex, the other bluntly convex. Total 7.
Locations: Rooms 2, 8, floor; Room 1, below floor; Rooms 1, 4, 9, fill.
Dimensions: Length, 20.9, 22.9, 19.7, 20.9 cm., (fragments); width, 10.9, 9.5, 11.6, 10.7, 11.0, 11.0, 9.5 cm.; thickness, 3.6, 5.2, 4.6, 3.6, 4.8, 6.7, 4.6 cm.
DESCRIPTION

TYPE III

Description: Rectangular in outline, 7 specimens wedge-shaped in cross section, others with surfaces parallel, one grinding surface convex, the other flat (fig. 96, d). Total 24.

Locations: From Rooms 1, 2, 3, 7, 8, 10, floors; Room 1, below floor; Rooms 2, 3, trenches; Rooms 1, 3, 10, 12, fill.

Dimensions: Length, 16.3–26.3 cm., average, 20.9 cm.; width, 7.6–12.8 cm., average, 10.3 cm.; thickness, 2.0–6.5 cm., average, 3.9 cm.

TYPE II'm

Description: Rectangular in outline, surfaces parallel, one grinding surface bluntly convex, the other flat. Total 3.

Locations: Room 6, floor; Rooms 1, 7, fill.

Dimensions: Length, 20.6 cm., (fragments); width, 10.2, 9.9, 10.6 cm.; thickness, 3.9, 2.7, 3.2 cm.

TYPE II'n

Description: Rectangular in outline, one grinding surface flat, the other beveled in a double plane with a longitudinal ridge between (fig. 97, a, d). Total 8.

Locations: Room 2, trench; Rooms 2, 3, 5, 10, fill; Room 5, below floor.

Dimensions: Length, 19.9, 23.0, 19.4 cm., (fragments); width, 9.1, 10.7, 9.5, 8.2, 10.5, 8.8, 9.3, 9.9 cm.; thickness, 3.5, 5.9, 2.7, 2.0, 4.3, 3.1, 2.4, 2.4 cm.

CLASSIFICATION OF RUBBING STONES

TYPE I: SINGLE RUBBING SURFACE

Description: Oval or irregular in outline, two specimens wedge-shaped in cross section, others with surfaces parallel, rubbing surface flat (fig. 98, a, c, e). Total 9.

Locations: Room 3, floor; Rooms 1, 2, below floor; Rooms 1, 3, trenches; Rooms 3, 8, 9, 10, 12, fill.

Dimensions: Length, 9.4, 8.5, 8.2, 8.3, 6.2, 9.0, 9.7, 6.6 cm., (fragment); width, 6.5, 5.0, 6.1, 7.9, 5.5, 6.1, 6.9, 6.6, 3.1 cm.; thickness, 3.2, 2.4, 1.5, 1.4, 1.8, 1.9, 2.0, 3.8, 2.5 cm.

TYPE II: TWO RUBBING SURFACES

Description: Oval in outline, surfaces parallel, rubbing surfaces flat (fig. 98, b, d, f). Total 3.
Location: Room 2 and Plaza, fill.

Dimensions: Length, 7.6 cm., (fragments); width, 5.7, 6.8, 5.0 cm.; thickness, 1.0, 2.3, 2.4 cm.

Fig. 98. Rubbing stones, miscellaneous types. Length of lower left specimen, 9.4 cm.

Classification of Polishing Stones

Description: Smooth oval pebbles with some highly polished surfaces (fig. 108, c). Total 2.

Locations: Rooms 3, 5, floors.

Dimensions: Length, 3.5, 2.6 cm.; width, 2.8, 2.5 cm.; thickness, 1.7, 1.6 cm.

Classification of Pestles

Multiface Type

Description: Thick, roughly oblong pebbles with some rubbed flat surfaces and pecked, bluntly convex ends (fig. 99, c). Total 3.

Locations: Rooms 1, 3, floors.

Dimensions: Length, 16.6, 13.6, 14.6 cm.; width, 8.8, 11.3, 6.0 cm.; thickness, 8.0, 11.0, 5.9 cm.
Fig. 99. Pestles, miscellaneous types. Length of lower left specimen, 19.8 cm.
Cylindrical Type

Description: Long, roughly cylindrical stones, tapering slightly toward one end, one end convex, the other flat and battered (fig. 99, a, d). Total 2.

Locations: Room 1, trench; plaza, fill.

Dimensions: Length, 14.6, 19.8 cm.; width, 6.0, 7.5 cm.; thickness, 5.9, 6.6 cm.

Oblong Type

Description: Roughly oblong in outline, rectangular in cross section, bluntly convex ends pecked and battered (fig. 99, b, c). Total 3.

Locations: Rooms 1, 3, floor; Room 7, fill.

Dimensions: Length, 13.9, 13.0, 11.8 cm.; width, 6.5, 8.0, 9.6 cm.; thickness, 5.3, 6.5, 8.0 cm.

Grinding Stones

Grinding stones include here several somewhat varied nether milling stones probably used in conjunction with the handstones for grinding. These are metates, small metate-like grinding stones, and mortars. Most of these have grinding surfaces that are dimpled from pecking, and many of the metates and small metate-like grinding stones are scored and scratched also. Several of the metates were worked on all surfaces; top, bottom, sides, and ends were shaped.

Very few of these grinding stones were found in place on the floors, and this is inconsistent with the number of rooms that had flour receptacles. Only three metates and one small metate-like grinding stone were in situ on the floors. Others were found in the room fill. The two metates in association with the mealing bins in Room 10 lay at a slight angle to what must have been their original position, although they were still inclined at an angle toward the flour receptacles (fig. 78).

Four of the thirteen metates were fragmentary. A like proportion of broken metates have been found on other sites of this general area (Martin, Rinaldo, et al., 1956) and it seems possible that they were broken intentionally. One metate had a shallow basin pecked into the center of the trough; but none was found which had been “killed” by having a hole knocked through the grinding surface.

The small metate-like grinding stones correspond in general outline, trough shape, and other characteristics to the metates, although they are not as well finished. The major difference is one of size; they probably were used as miniature or toy metates.
Three small mortars or stone bowls and one larger stone mortar were recovered. None of these was associated directly with a pestle, but it is believed that the two were used together.

**Distribution:** Two of the three metates found on floors were slab type; all the others were through trough metates but made of thinner slabs on the average than those of the San Francisco and Tularosa drainages. Furthermore, several were transitional between slab and trough types and had quite shallow troughs.

The trend toward slab or flat metates has been noted by Bartlett (1933, p. 27) and Woodbury (1954, pp. 58–59). These metates apparently were found earliest on sites in Utah, where they appear in Pueblo II. Strictly speaking, however, there remains the question whether the slab metates at Foote Canyon are not simply new metates that have not been used long enough to develop a trough, like those at the Swarts Ruin (Cosgrove, H. S. and C. B., 1932, p. 36). Only one specimen did not have the area of a trough pecked into the surface.

The mortars are rough affairs not comparable to the painted stone bowls from Higgins Flat Pueblo (Martin, et al., 1956, p. 82) or the carved stone bowls from Apache Creek Pueblo (Martin, Rinaldo and Barter, 1957, p. 63). In general, mortars and pestles have a more frequent distribution in the Mogollon area than in the Anasazi area.

**Classification of Metates**

**TROUGH TYPE**

**Description:** Trough open at both ends, made from large oblong blocks of stone, ends bluntly convex, all surfaces worked, one exception rough-hewn boat-shaped stone (fig. 100). Total 7.

**Locations:** Room 1, floor, Rooms 1, 7, 8, 10, 11, fill; plaza, fill.

**Dimensions:** Length, 43.2, 40.0, 40.1, 42.0 cm., (fragments); width, 32.1, 27.0, 29.1, 27.0 cm., (fragments); thickness, 5.6, 5.0, 8.0, 8.9, 15.0, 12.0, 11.0 cm.; width of troughs, 27.4, 22.1, 22.5, 22.0 cm., (fragments); depth of troughs, 2.0, 1.5, 0.5, 1.5 cm., (fragments).

**SLAB TYPE**

**Description:** Made from rectangular slabs, tops, bottoms and sides worked, flat grinding area covering upper surface. Total 6.

**Locations:** Room 10, floor with bins; Rooms 3, 9, 11, fill.

**Dimensions:** Length, 43.0, 35.0, 44.0, 40.0, 40.1 cm., (fragment); width, 25.0, 25.0, 16.0, 25.7, 16.0, 30.0 cm.; thickness, 4.0, 5.0, 4.5, 5.7, 13.5, 4.4 cm.
Fig. 100. Left, oblong through trough metate; length, 40.0 cm. Right, rectangular through trough metate; length, 43.2 cm.

Small Metate-like Grinding Stones

Description: Roughly rectangular in outline, ends bluntly convex, bottom surface unworked, shallow concave grinding surface, one specimen oval in outline. Total 4.

Locations: Room 8, floor 1; Rooms 1, 7, plaza, fill.

Dimensions: Length, 22.8, 23.6, 19.6, 22.3 cm.; width, 13.4, 16.2, 13.7, 15.2 cm.; thickness, 4.6, 6.9, 5.8, 3.7 cm.

Mortars

Description: Roughly round to oval pebbles with shallow cup-shaped depression carved in one face (figs. 101, 102, right). Total 4.

Locations: From Room 12, floor; Room 3, trench; Room 5, fill; plaza.

Dimensions: Diameter, 8.8, 11.7, 10.0, 22.0 cm.; thickness, 3.3, 4.5, 4.9, 10.5 cm.; cup diameter, 4.8, 7.8, 5.6, 7.5 cm.; depth, 1.2, 1.0 cm., (fragments).

Materials: Weathered scoriaceous basalt, limestone.
Fig. 101. Mortars or stone bowls. Diameter of lower right specimen, 11.7 cm.

Fig. 102. Left, axe grinding slab; length, 38.7 cm. Right, large mortar; diameter, 22.0 cm.
Fig. 103. Worked slabs. Length of lower specimen, 27.0 cm.
WORKED SLABS

A number of worked slabs that were found scattered throughout the rooms may have been used as door slabs or slabs to cover the vents, such as were found in Room 10 (see p. 173). They also correspond roughly in size and shape to these openings. None of them showed signs of fire-blackening or use as cooking slabs. The use of slabs in doors and ventilator openings has been noted for other ruins of the general Reserve area by Nesbitt (1938, p. 44; Martin, Rinaldo, and Barter, 1957, p. 58).

Description: Thin stone slabs, roughly rectangular in outline, broad surfaces flat, one or more edges chipped (fig. 103). Total 12.

Locations: Rooms 1, 7, floors; Room 10, below floor; Rooms 1, 3, 7, 11, fill.

Dimensions: Length, 16.7–51.0 cm., average, 35.7 cm.; width, 15.6–39.5 cm., average, 24.8 cm.; thickness, 1.1–5.8 cm., average, 3.7 cm.

AXE GRINDING SLAB

The worked slab described below resembles grooved tool-sharpening rocks found at Higgins Flat Pueblo (Martin, et al., 1956, p. 20) and at Tularosa Cave (Hough, 1914, p. 4; Martin, et al., 1952, pp. 36–38). The width of the groove corresponds roughly to that of the stone axes found in the pueblo and the slab was probably used to sharpen axes, as these are the only polished cutting edges found of this size.

Description: Large, thick slab, roughly triangular in outline, shallow groove across one face, sloping up at each end. Groove marked by minute longitudinal scratches (fig. 102, left). Total 1.

Location: Room 7, fill.

Dimensions: Length, 38.7 cm.; width, 31.5 cm.; thickness, 7.7 cm.; length of groove, 16.9 cm.; width, 12.1 cm.

HAMMERSTONES

These are one of the most widespread of artifact types. This category is sometimes termed "pecking stones" by other Southwestern archaeologists (Woodbury, 1954, pp. 85–87). Although these were probably multipurpose tools—used in the manufacture of stone tools such as mauls, manos, and metates, and in the crushing of minerals for paint or for pottery temper—they were probably used primarily for pecking the grinding surfaces of manos and metates to roughen them for more effective grinding.

Description: Battered and chipped pebbles, some angular shapes, some oval (fig. 104). Total 9.

Locations: Rooms 1, 5, below floor; Rooms 1, 3, 5, fill.
Fig. 104. Hammerstones. Length of lower right specimen, 8.0 cm.

*Dimensions:* Length, 5.2–10.0 cm., average, 7.8 cm.; width, 4.7–7.6 cm., average, 6.1 cm.; thickness, 3.8–5.9 cm., average, 5.1 cm.

*Materials:* Quartz, rhyolite, basalt.

**GROOVED TOOLS**

The axes were evenly balanced in number between those of the full grooved type and those of the three quarters grooved type. Probably
both types were imported; the full grooved type could have been traded in from the north, the three quarters grooved type from the south and west.

Only one of these axes appears to have been chipped to sharpen it; the others have been ground and polished to a sharp edge. All of the surfaces of these implements have been worked, and, with the exception of the grooves and the tops of the polls, have been polished. The grooves and the tops of the polls are pitted, as if they had been shaped with a hammerstone. The complete specimens are relatively short (the longest specimen is 14.2 cm. long), and the three quarters grooved specimens are thicker than the full grooved specimens. All of the three quarters grooved specimens and one of the full grooved specimens have one flat edge as if shaped to accommodate a "J-haft."

All of the mauls were full grooved. These grooves are near the middle of the mauls, whereas the grooves on the axes are located closer to the poll end. The blade of the axe is almost twice the length of the poll.

The three quarters grooved axes have a secondary groove on one face and on one edge above the primary groove. This gives the effect of a ridge bordering the groove on one face and one edge.

**Distribution:** The full grooved axe is thought to be typical of late Anasazi sites of the Great Pueblo period (Brew, 1946, p. 239; Woodbury, 1954, p. 36). They have been recovered in Mogollon sites at Starkweather Village (Nesbitt, 1938, pp. 103, 127), Wet Leggett Pueblo (Martin and Rinaldo, 1950b, p. 480), Higgins Flat Pueblo (Martin, *et al.*, 1956, p. 88), and other late sites of the Reserve area. They were also found at the Swarts Ruin (Cosgrove, H. S. and C. B., 1932, p. 41).

The three quarters grooved axe was more popular in the southern areas of the Southwest, among the Hohokam and in the Middle Gila (Reed, 1951, p. 45; Gladwin, *et al.*, 1937, p. 115). In general, this type of axe appears relatively late outside the Hohokam area (Woodbury, 1954, p. 30), although there are a few sporadic examples noted from the Mogollon area (Martin and Rinaldo, 1950a, p. 334; Haury, 1940, p. 104). Both three quarters grooved and full grooved axes were found at Higgins Flat Pueblo (Martin, *et al.*, 1956, p. 88) and Apache Creek Pueblo (Martin, Rinaldo, and Barter, 1957). Only the three quarters grooved type was found at Hinkle Park Cliff Dwelling (Martin, Rinaldo, and Bluhm, 1954, p. 115) and in the pueblo at Starkweather Village (Nesbitt, 1938, p. 103).

Only full grooved mauls were recovered from Foote Canyon Pueblo. This type of maul is not found in Hohokam sites (Sayles, *in Gladwin, et al.*, 1937, p. 104) but is present in both Mogollon and Anasazi sites. It is present in the Pine Lawn Phase (Martin, 1940, p. 56) and in other
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roughly contemporaneous phases of the Mogollon culture (Wheat, 1955, p. 122) and remained in use throughout the sequence. This culture element appears in Basket Maker III in the Anasazi area and remained in use there into historic times (Lambert, 1954, p. 125; Woodbury, 1954, p. 48).

Classification of Axes

THREE QUARTERS GROOVED TYPE

_Description_: Broad thick specimens with groove pecked and ground around three sides. Groove broad and located closer to poll end. On one specimen both inner and outer sides flattened, on the other only the inner side. The poll of the former specimen flat, that of the other round. The sides of the bit taper inward toward the center of the cutting edge (fig. 105, b, c). Total 2.

_Locations_: Room 12, floor; Room 5, fill.

_Dimensions_: Length, 14.2, 14.0 cm.; width, 8.5, 8.5 cm.; thickness, 6.3, 4.5 cm.; width of groove, 2.3, 2.9 cm.; depth, 0.5, 0.4 cm.

_Materials_: Basalt, diorite.

FULL GROOVED TYPE

_Description_: Short specimens with pecked and ground grooves which completely encircle the tools; groove located closer to poll end; one specimen with flat poll end, the others with bluntly convex poll; all specimens with polished cutting edges (fig. 105, a, d, e). Total 3.

_Locations_: Room 7, floor; Room 2, trench.

_Dimensions_: Length, 11.2, 11.7 cm., (fragment); width, 6.2, 7.1 cm., (fragment); thickness, 4.2, 4.5 cm., (fragment); width of groove, 2.1, 2.4 cm., (fragment); depth, 0.4, 0.6 cm., (fragment).

Mauls

_Description_: Full grooved type; roughly oval stones with wide pecked groove encircling the middle; surfaces rough (fig. 106). Total 3.

_Locations_: Room 1, floor; Room 7, plaza, fill.

_Dimensions_: Length, 10.4, 11.9, 12.8 cm.; width, 8.5, 9.5, 8.8 cm.; thickness, 6.4, 7.4, 7.9 cm.; width of grooves, 2.7, 1.6, 2.6 cm.; depth, 0.2, 0.3, 0.5 cm.

_Materials_: Granite, limestone.
Fig. 105. Grooved axes. Length of lower right specimen, 11.7 cm.

ARROW SHAFT TOOLS

Eight arrow shaft tools were recovered from the excavations. Most of them appear to have been shaped; some of them are symmetrical, others have surfaces which have been flattened by pecking, grinding, and polishing. A few of them have polished grooves. Others are made of weathered fossiliferous limestone and may have been smooth before weathering. Three of the specimens have two parallel grooves on one surface, the remainder have only a single groove. Although there were more than two of these recovered from some of the rooms, they do not appear to go together as pairs. All of the grooves are shallow. Only one
ridged tool was found, but this is the only one of this type we have found in our excavations in the Mogollon area. One of these objects was found in a cache of several tools in Room 5 below the floor and next to a patch in the partition wall between Rooms 5 and 9. It might be significant that only a single object of this type (not a pair) was placed in this cache.

Distribution: These objects have been recovered primarily from Reserve Phase or Tularosa Phase sites in this area (Martin, et al., 1956, p. 91). Woodbury (1954, p. 104) suggests a “Rio Grande–Mogollon Rim–Little Colorado distribution during Pueblo III and IV,” which would corroborate the data recovered here in the Reserve area.

Classification of Arrow Shaft Tools

TRANSVERSELY GROOVED TYPE

Description: Small blocks of stone with one or two grooves across them transverse to the long axis; rectangular (3 specimens), oval, one fragment of uncertain shape; grooved surface flat or bluntly convex. Groove U-shaped, of same width from end to end (fig. 107, a, d, e, h, i). Total 5.

Locations: Rooms 3, 5, trench; Rooms 2, 3, fill.
Dimensions: Length, 6.1, 8.0, 8.5, 10.6 cm., (fragment); width, 6.2, 6.0, 7.2, 6.6, 6.5 cm.; thickness, 3.4, 3.5, 3.3, 4.1, 2.5 cm.; width of grooves, 0.8, 1.1, 0.8, 0.9, 0.8 cm.

Material: Limestone.

ELONGATED TYPE

Description: Oval or rectangular blocks of stone with a single groove in approximately the center of the upper surface parallel to the long axis; sides and ends shaped by grinding, one specimen elongated oval, under surface flat. Groove shallow and U-shaped in cross section, width and depth uniform for entire length (fig. 107, f, i). Total 2.

Locations: Rooms 2, 5, below floor.

Dimensions: Length, 10.1, 9.4 cm.; width, 7.9, 5.2 cm.; thickness, 3.6, 4.1 cm.; width of grooves, 0.8, 1.0 cm.

Material: Limestone.

RIDGED TYPE

Description: Small oval blocks of stone, triangular in cross section with broad deep groove through the apex near the narrow end of the stone; bottoms flat; surfaces ground and polished; groove with uniform depth (0.6 cm.) and width, small parallel scratches in bottom (fig. 107, b). Total 1.

Location: Room 1, below floor.

Dimensions: Length, 6.5 cm.; width, 4.4 cm.; thickness, 3.2 cm.; width of groove, 1.4 cm.

Material: Limestone.

MISCELLANEOUS GROUND STONE OBJECTS

Grooved Abrader

Description: Irregularly shaped block of coarse-grained stone with shallow groove in one flat surface; stone broken at one end of groove; groove shallower at ends and wider in middle, one edge of groove straight, the other curved in a semi-circle (fig. 107, c). Total 1.

Location: Room 3, fill.

Dimensions: Length, 11.5 cm.; width (present), 9.9 cm.; thickness, 3.1 cm.

Material: Tuff.

Pot Supports

(Figure 81)

Two of these objects were found in place. The one from Room 8 was found in the firepit near one corner, almost buried in the ashes; the other,
from Room 1 (an adjoining room), was found just outside the firepit. The cooking pot was probably placed over the fire between the flat side of this lopsided sub-conical stone and the angle formed by the slab rim of the firepit, thus receiving support at three points.

These objects were made of a coarse-grained stone which was colored by the fire. They had flat bottoms, and the other end was sub-conical.

Fig. 107. Arrow shaft tools. Length of lower right specimen, 10.1 cm.
They were 21.0 and 15.7 cm. long, 16.0 and 11.4 cm. wide, and 14.5 and 9.6 cm. thick.

Distribution.—Similar objects have been reported from Poseuigne (Jeancon, 1923, p. 24), a late site in the Rio Grande area. Others made of clay are also from that area and time level, at Pecos (Kidder, 1932, pp. 144–145), Forked Lightning (loc. cit.), Pindi Pueblo (Stubbs and Stallings, 1953, p. 96) and Leaf Water Pueblo (Luebben, 1953, p. 29).

Smooth Saws

These are presumably objects of multiple function. Their sharp edges make it seem highly probable that they were used for sawing or cutting, and this is the use more frequently postulated for them. However, two specimens out of the four also bear pigment stains (one in red and yellow) and it does not seem unlikely that they were used in connection with pigment grinding.

Distribution: With the exception of Tularosa Cave, where these objects occurred in early levels, most of them have come from later sites such as Higgins Flat Pueblo (Martin, et al., 1956, p. 93), Hinkle Park Cliff Dwelling (Martin, Rinaldo, and Bluhm, 1954) and Swarts Ruin (Cosgrove, H. S. and C. B., 1932, p. 46). They also resemble the smallest of the fleshing knives from Babocomari Village (Di Peso, 1951, p. 150). They have not been reported from the Anasazi area.

Description: Small, thin, roughly rectangular slabs of grit stone, wedge-shaped in cross section, with one edge beveled from both surfaces, all edges and surfaces ground smooth (fig. 108, a, e, f). Total 3.

Locations: Room 1, fill; Room 1, below floor; Room 10, floor.

Dimensions: Length, 5.0, 10.3 cm., (fragment); width, 4.3, 5.2, 6.2 cm.; thickness, 0.8, 1.0, 0.7 cm.

Material: Cemented volcanic ash.

Tchamahia(?)

(Figure 108, g)

The resemblance of this specimen to the objects termed “tchamahia” is actually only that of shape in outline (cf. Woodbury, 1954, fig. 35d). It is much smaller (length, 10.5 cm.; width, 4.5 cm.; thickness, 0.5 cm.), and all the edges are blunt. One broad surface is highly polished, and the other has flaked off; the areas which have not flaked off are covered with small parallel scratches like the marks of a saw. It may be significant that this object is made of a red stone (weathered basalt). In size,
color, and general shape it resembles a celt-like object from Higgins Flat Pueblo (Martin, et al., 1956, pp. 91–93). This was found in the fill in Room 2.

**Fig. 108.** Smooth saws (a, e, f), whetstone (b), tapered stone (d), tchamahia (?; g), polishing stone (c), pipe-like object (h). Length of lower right specimen, 15.6 cm.

**Pipe-like Object**
(Figure 108, h)

This is an elongated conical object. One end is pointed, the other has a hole like the bowl of a pipe tapering down just past the center of the object. This hole is 2.5 cm. in diameter at the mouth and 8.9 cm.
deep. The exterior of the object is painted with four evenly spaced red stripes running lengthwise from the bowl to the pointed end, with faint traces of yellow paint between. The surface of the object is rough. It is 15.6 cm. long and 5.0 cm. in diameter and is made of volcanic tuff. It resembles an unfinished pipe, but from the stripes it appears to be a finished object. It was found in Room 2 below the floor.

Pendant

_Description_: A thin flat stone, rectangular in outline, one corner broken off. A small hole drilled off center near one end is hourglass shape, having been drilled from both surfaces (fig. 114, e). Total 1.

_Location_: Plaza, fill.

_Dimensions_: Length, 0.9 cm.; width, 0.8 cm.; thickness, 0.2 cm.

_Material_: Turquoise.

Hoe

_Description_: Thin plate of rough stone, roughly rectangular in outline with one curved edge, edges chipped to outline. Total 1.

_Location_: Room 1, floor.

_Dimensions_: Length, 8.9 cm. (present); width, 9.3 cm.; thickness, 1.4 cm.

_Material_: Basalt.

Small Tapered Stone

_Description_: Shape of elongated truncated cone, round in cross section, smooth and lightly polished (fig. 108, d). Total 1.

_Location_: Room 12, fill.

_Dimensions_: Length, 4.4 cm.; diameter, 1.0 cm.

_Material_: Cemented volcanic ash.

Whetstone

_Description_: Small, thin, roughly rectangular slab of stone. Worked surface concave; small parallel scratches lengthwise in concave surface (fig. 108, b). Total 1.

_Location_: Room 1, fill.

_Dimensions_: Length, 4.1 cm. (present); width, 3.9 cm.; thickness, 0.8 cm.

_Material_: Slate.
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PROJECTILE POINTS AND BLADES

All of the projectile points except one are small and triangular. They are made of obsidian. Although the majority have a slightly concave base, only one is definitely notched. The outline of each point is a little different, and the points do not conform closely to a specific pattern, but they would fit perfectly well within the group I have designated (Martin, et al., 1952, p. 156; Martin, Rinaldo, and Bluhm, 1954, p. 125; Martin, et al., 1956, p. 100) as “type S.”

The chipping is generally better than that of the basalt points of earlier phases, but this may be due to the material from which the earlier points were made.

The blades—the larger stemless points—are generally ovate or leaf-shaped in outline. Blades of this shape have a wide distribution both in time and space and are not considered diagnostic. One of these has a slightly concave base and faintly perceptible flat barbs.

Projectile points of this size are usually designated as arrowheads and have been found mounted in prehistoric arrows of the Mogollon area (Cosgrove, 1947, p. 63, figs. 76, 131; Hough, 1914, pp. 64-65). The burial found below the floor of Room 1 had a fragmentary chert point through the shoulder blade. The base of this point had been broken off.

CLASSIFICATION OF PROJECTILE POINTS AND BLADES

TYPE S

Description: Small triangular blades, edges and bases straight to slightly concave; five specimens lateral notched, one specimen with extra notch on one edge (fig. 109, b-h). Total 7.

Locations: Room 1, wall; Room 3, floor; Room 2, below floor; Room 6, fill; plaza, fill.

Dimensions: Length, 1.7, 1.9, 1.6, 1.7, 1.4, 1.5, 1.9 cm.; width, 1.1, 0.9, 0.8, 1.1, 0.9, 0.8 cm., (fragment); thickness, 0.2, 0.2, 0.2, 0.3, 0.3, 0.2, 0.3 cm.

Material: Obsidian.

TYPE V-4

Description: Triangular blade with straight edges, shoulders square, stem slightly contracting, base convex (fig. 109, k). Total 1.

Location: Room 3, floor.

Dimensions: Length, 3.6 cm.; width, 1.9 cm.; thickness, 0.4 cm.; stem about one fourth of total length.

Material: Obsidian.
Fig. 109. Upper two rows, projectile points; center, drill; lower two rows, blades. Length of lower right specimen, 3.1 cm.
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TYPE U

Description: Chip points; thin leaf-shaped points, chipped mostly on edges or on one surface (fig. 109, a). Total 2.

Locations: Room 3, trench; Room 4, fill.

Dimensions: Length, 2.1 cm., (fragment); width, 1.8, 1.4 cm.; thickness, 0.5, 0.5 cm.

Material: Obsidian.

TYPE M

Description: Leaf-shaped blades with convex edges and convex base, one with slightly concave base; notch midway up one edge of one specimen (fig. 109, j, l-n). Total 4.

Locations: Room 3, floor 2; Room 1, fill; plaza, fill.

Dimensions: Length, 3.1, 3.5, 3.9, 5.2 cm.; width, 2.2, 1.6, 1.9, 3.2 cm.; thickness, 0.5, 0.5, 0.6, 0.9 cm.

Materials: Obsidian, chert.

CHIPPED CUTTING AND PIERCING TOOLS

A variety of flake and core tools was used by the people of Foote Canyon Pueblo. The flakes range from 2.2 to 8.9 cm. in length and from 0.2 cm. to 2.1 cm. in thickness. In execution they range from carefully finished forms such as the drills and saws down to flakes struck off at random and used.

Most of the core tools we have termed choppers; a few may have been scraper-planes. None of these is carefully finished. They range from 6.0 to 13.2 cm. long and from 2.8 to 6.9 cm. thick. The majority have been chipped to an edge from both surfaces and are biface tools. A few have a portion of the original weathered surface or crust of the pebble left intact opposite the cutting edge, presumably for a grip.

Distribution: The recovery of only one drill corroborates the trend in this area from early to late. In our previous excavations more drills have been recovered from the earlier than from the later levels (Martin, Rinaldo, and Bluhm, 1954, p. 141).

A number of saws were recovered. This type of implement seems to have its center of distribution in the Upper Gila (Hough, 1914, p. 23). They have been recovered from Reserve Phase sites of the Pine Lawn Valley (Martin and Rinaldo, 1950b, p. 484), from Tularosa Cave (Martin, et al., 1952, p. 182), O Block Cave (Martin, Rinaldo, and Bluhm, 1954, p. 138) and Higgins Flat Pueblo (Martin, et al., 1956, p. 101). The variety of this implement having coarser, more widely spaced teeth.
had a later distribution than that with fine teeth found at Forestdale (Haury, 1940, p. 106) and in the middle levels of Tularosa Cave (Martin, et al., 1952, p. 116).

The simple flake knives and scrapers are essentially the same as those from other branches and horizons of the Mogollon culture. None of the specialized types such as end scrapers or hollow-edge scrapers was recovered.

The majority of the choppers came from the fill of the plaza or the rooms. More than one third came from below the floors or from the pit-house below the floor of Room 2. Only one doubtful specimen came from the floor of a room (Room 1). This seems to indicate that choppers continued in use along with the hafted axe but that they were waning in popularity. The preponderating majority were bifacially flaked, although one or two possible examples of the scraper-plane were recovered.

**Saws**

*Description:* Thin flakes, irregular or oval in outline with secondary chipping along one edge to form evenly spaced indentations and teeth (fig. 110). Total 5.

*Locations:* Room 3, floor; Room 2, below floor; Room 5, cache below floor; plaza, fill.

*Dimensions:* Length, 4.0, 2.5, 2.9, 4.4, 4.0 cm.; width, 3.9, 1.8, 2.7, 2.3, 2.9 cm.; thickness, 0.8, 0.4, 0.6, 0.5, 0.8 cm.

*Material:* Chert.

**Drill**

*Description:* Small, abruptly widening flange tapering into slender, straight-sided point (fig. 109, i). Total 1.

*Location:* Room 5, fill.

*Dimensions:* Length, 5.9 cm.; width, 1.5 cm.; thickness, 0.5 cm.

*Material:* Chert.

**Knives**

*Description:* Flake cutting edges made from oblong scraps, plano-convex in cross section, generally chipped along one edge, more rarely sharpened by pressure retouch chipping (fig. 111). Total 18.

*Locations:* Rooms 1, 2, 3, 6, 10, floor; Room 3, floor 2; Rooms 1, 2, 10, below floor; Room 12, fill; plaza, fill; pit-house.

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1 Left center specimen in figure 110 is from a site in Perry Lawson Canyon.
Fig. 110. Saws. Length of lower right specimen, 4.0 cm.
Fig. 111. Flake knives. Length of lower right specimen, 2.2 cm.
Dimensions: Length, 2.2–5.2 cm., average, 3.3 cm.; width, 1.0–3.2 cm., average, 2.1 cm.; thickness, 0.3–0.8 cm., average, 0.5 cm.

Materials: Chert, flint, obsidian.

Fig. 112. Scrapers. Length of lower right specimen, 6.8 cm.

Scrapers

Description: Large thick flakes with retouch chipping (possibly from use) along one or more edges; generally plano-convex in cross section; convex surface shaped by percussion chipping; no regularity of outline (fig. 112). Total 76.

Locations: Rooms 3, 7, 8, 9, floor 1; Rooms 3, 5, floor 2; Rooms 1, 2, 7, below floor; Rooms 1, 5, 9, 10, pithouse, plaza, fill.
Dimensions: Length, 2.0–8.9 cm., average, 4.6 cm.; width, 1.2–6.7 cm., average, 3.4 cm.; thickness, 0.4–3.4 cm., average, 1.5 cm.
Materials: Obsidian, chert, fine-grained basalt, flint.

Scraper-Plane

Description: Large thick angular implement, roughly semicircular in outline; percussion flaked part way around margin to produce sharp cutting edge (fig. 113, f). Total 1.
Location: Pithouse, fill.
Dimensions: Length, 4.8 cm.; width, 3.9 cm.; thickness, 1.8 cm.
Material: Fine-grained basalt.

Choppers

Description: Thick, angular core implements, percussion flaked on two surfaces to form sharp cutting edge; part of one surface trimmed or left intact for grip (fig. 113, a–e). Total 24.
Locations: From Room 1, floor; Rooms 3, 4, plaza, pithouse, fill; Rooms 1, 2, 5, below floor; Rooms 1, 3, trench.
Dimensions: Length, 6.0–13.2 cm., average, 8.1 cm.; width, 4.4–10.9 cm., average, 6.8 cm.; thickness, 2.7–6.8 cm., average, 4.2 cm.
Materials: Fine-grained basalt, rhyolite.

Shell Artifacts

The quantity of shell artifacts from Foote Canyon Pueblo and their type appear to indicate the chronological position of the pueblo. Although shell artifacts were not as abundant from this pueblo as they were at Higgins Flat Pueblo (Martin, et al., 1956, pp. 109–113) at least they were more abundant than at the earlier sites in the Pine Lawn Valley and other earlier sites in the San Francisco and Tularosa drainages. Also, the large, thick type of shell bracelet and to a lesser extent the whole shell pendant are probably characteristic of the later periods in this area and in areas to the south and west (Nesbitt, 1938, p. 108; Martin, et al., 1956, p. 110; Gladwin, et al., 1937, p. 142).

Bracelets

Thick Type

Description: Thick curved sections of bivalve shell, higher than wide, roughly tear-drop shape in cross section (fig. 114, f, h, j). Total 3.
ARTIFACTS

Fig. 113. Choppers (a–e) and scraper-plane (f). Length of lower left specimen, 8.3 cm.

Locations: Room 3, floor; Room 12, fill.

Dimensions: Length (all fragments); height, 2.2, 1.1, 1.3 cm.; width, 0.8, 0.4, 0.5 cm.

Material: Glycymeris shell.

THIN TYPE

Description: Thin curved sections of bivalve shell, roughly triangular in cross section, higher than wide (fig. 114, d). Total 3.
Locations: Room 1, floor; Room 2, plaza, fill.
Dimensions: Length (all fragments); height, 0.9, 0.9, 0.5 cm.; width, 0.4, 0.3, 0.3 cm.
Material: Glycymeris shell.

Pendant

Description: Whole shell type, entire valve of bivalve perforated through umbo, otherwise unaltered (fig. 114, b). Total 1.
Location: Room 12, fill.
Dimensions: Diameter, 3.0 cm.; thickness, 0.9 cm.
Material: Glycymeris.

BONE IMPLEMENTS

All except four of the 26 bone awls from Foote Canyon Pueblo were made of split bone. Only three had the head of the bone left intact, and two of these were made of deer ulnae. This type is believed to have been more popular in the Tularosa Phase (Martin, et al., 1956, p. 113; Martin, Rinaldo, and Barter, 1957, p. 82). With the exception of one awl made of a rib, the awls are all made from deer or antelope leg bones.

A series of partly worked bones from the refuse illustrates the technique used. The natural medial groove of the bone was extended and deepened by scoring or sawing repeatedly with a sharp implement, such as a flake knife. The bone was then split into the desired shape, scraped, abraded and polished to its finished shape.

Although none of the specimens has the deep grooves across the tip said to characterize weaving tools (Hodge, 1920, pp. 102–106), these tools are sharp enough to have been used for perforating hides or for the manufacture of coiled basketry; they probably were used for these purposes (Kidder, 1932, p. 203).

The tip of one of the awls is shouldered, and two other fragments are flattened in cross section. A fourth specimen is somewhat scarred and blunted, and the shaft is short and sturdy. This specimen might have been used as a flaker.

Classification of Bone Awls

Type with Head Intact

Description: Head of bone intact, other end ground and polished to a point (fig. 115, a–c). Total 3.
Locations: Rooms 3, 12, floors; Room 5, cache below floor.
Fig. 114. Copper bell (a), pendant (b), copper "fetish" (c), turquoise pendant (e), bone rings (g, i), fragments (d, f, h, j) of shell bracelets. Length of lower right specimen, 4.6 cm.
Dimensions: Length, 12.8, 13.1, 24.0 cm.

Materials: Mule deer (*Odocoileus hemionus*) ulnae and metatarsals.

**TYPE WITH HEAD SPLIT**

Description: Head of bone unworked except by original splitting, made from long bones split in half, four specimens with side notch (fig. 115, d, e). Total 5.

Locations: Room 3, floor; pithouse; plaza, fill.

Dimensions: Length, 9.9, 8.3 cm., (remainder fragments).

Material: Mule deer (*Odocoileus hemionus*) metatarsals.

**TYPE WITH HEAD PARTLY WORKED DOWN**

Description: Head of bone partly worked down, other end ground and polished to a point; made from long bones split in half or quarters (fig. 115, f, g). Total 5.

Locations: Room 3, floor; Room 5, fill; pithouse, fill.

Dimensions: Length, 18.0, 8.6, 19.4, 8.2, 7.5 cm.

Material: Mule deer (*Odocoileus hemionus*) metatarsals.

**TYPE WITH HEAD OF BONE REMOVED**

Description: Head of bone removed, cut off squarely, other end ground and polished to a sharp point (fig. 115, i, n). Total 3.

Locations: Room 10, floor; Room 5, trench; plaza, fill.

Dimensions: Length, 9.9, 11.5 cm., (fragment).

**SPLINTER TYPE**

Description: Splinter of long bone with one end ground and polished to a point (fig. 115, k). Total 1.

Location: Room 3, floor.

Dimensions: Length, 17.1 cm.

**FRAGMENTS**

Description: Points, tips and awls with heads broken off; made from long bones split in halves or quarters (fig. 115, k). Total 3.

Locations: Rooms 3, 5, floors; Room 12, fill.

Dimensions: Length, 18.2, 12.3, 9.7 cm.

**RIB TYPE**

Description: Section of mammal rib cut along one edge with diagonal strokes; one end ground and polished to a point, other end broken (jagged) (fig. 115, j). Total 1.
Fig. 115. Bone awls, miscellaneous types. Length of a, 8.6 cm.

Location: Room 1, floor.

Dimensions: Length, 15.2 cm.; width, 2.7 cm.; thickness, 1.6 cm.

**Bone Ring Blanks and Rings**

A series of blanks found on the floor of Room 3 illustrates the manufacture of rings or beads. First, the bone was hollowed out through a hole at one end. Then the shaft of the bone was scored lightly around the circumference at intervals. Most of these annular cuts were then
deepened by repeated sawing so that the bone could be snapped off at these grooves. The ring was then rubbed on the ends to smooth away the ragged, sharp edges at the cut. The shape of the cut on the bones and the association of a flint saw (fig. 110) with these ring blanks in Room 3 indicate that this kind of flint saw was used for this purpose rather than the smooth saw of abrasive stone described by Hodge (1920, p. 73).

_Distribution:_ Bone rings are known mostly from ruins of Pueblo III, IV, and V age, although there is at least one example from Pueblo I. They have been recovered from Arizona W:10:51 (Wendorf, 1950, p. 81), Pueblo III levels at Kiatuthlanna (Roberts, 1931, p. 153), Kinishba (Baldwin, 1939, p. 321), Canyon Creek (Haury, 1934, p. 126), Hawikuh (Hodge, 1920, p. 145), Pinedale (Haury and Hargrave, 1931, fig. 16) and Pueblo Bonito (Judd, 1954, p. 106). It may or may not be mere coincidence that the majority of the sites might be classed as prehistoric Western Pueblo. The beads made by this process in the Rio Grande, for example, are usually longer, although a few of the same general size do occur at Paa-ko (Lambert, 1954, Tables IX, X).

**RING BLANKS**

*Description:* Hollow long bones with one or more rings lightly scored or deeply incised around circumference of shaft; one specimen with parts of both condyles intact; three specimens with one condyle intact (fig. 116). Total 10.

*Locations:* Room 3, floor; Room 5, cache below floor; plaza, fill.

*Dimensions:* Length, 4.0–17.7 cm., average, 9.0 cm.; greatest diameter of shaft at rings, 1.6–2.3 cm., average, 1.9; length of ring, 0.6–1.3 cm., average, 0.9.

*Materials:* Shafts and ends of femurs, mule deer (*Odocoileus hemionus*).

**RINGS**

*Description:* Broad flat rings, fragments, one with edges rubbed smooth (fig. 114, g, i). Total 2.

*Locations:* Room 3, floor 2; plaza, fill.

*Dimensions:* Diameter, 1.5 cm., (fragment); length, 1.2, 0.7 cm.

**Scoop**

(Figure 117, a)

Broadly similar implements with beveled ends and hollow shafts have been termed chisels (Martin, _et al._, 1956, pp. 117–118; Hodge, 1920, p. 110; Wendorf, 1950, p. 81), fleshers (Judd, 1954, pp. 146–150; Martin,
1936, p. 69), and scoops (Hodge, 1920, pp. 134–135). This object is possibly not a scoop, but a chisel would demand a narrower, firmer, more nearly squared end than this specimen has, and “flesher” has acquired certain specific connotations which this specimen does not have. It appears to have a certain affinity to the spoon spatula (Roberts, 1931, p. 152) of the Pueblo III period and it is for this reason that we have classified it as a scoop. This specimen was recovered from the floor of Room 1.
It is made from a mammal femur shaft (may be black bear, *Ursus americana*) from which the cancellous portion has been removed so that a channel runs the length of the bone. One end has been cut at an oblique angle and abraded to form a smooth broad beveled edge. The entire specimen (which was broken when discovered) is 24.6 cm. long, the beveled end is 4.5 cm. wide, and the shaft is 3.1 cm. in diameter.

**ANTLER TOOLS**

These antler tools are made of tines which have not been modified except at their ends. The proximal or "handle" end of one specimen has been cut around the circumference with a sharp knife or saw and then broken off. The other specimens have jagged ends. The points have been blunted or flattened, probably by use, have from one to three facets, and are scored or scratched over the whole end of the tine. Although some of these tools have wedge-shaped ends, the opposed facets are seldom equally well defined and do not meet directly enough to form a sharp edge; therefore it seems improbable that they were intended for chisels or wedges, and the scoring about their tips seems to indicate that they were used for stone chipping.

**Distribution:** Flakers made of antler tines have been reported from both early and late periods of the Mogollon culture and from the Mimbres, Black River, and Forestdale branches (Wheat, 1955, pp. 144–145).

**Description:** Portions of antler tines with beveled and scored tips; five specimens with two facets, one with three facets, one with one facet (fig. 117, b–f). Total 7.

**Locations:** Rooms 1, 8, floors; Room 3, floor 2; Room 2, plaza, fill.

**Dimensions:** Length, 9.0, 4.0, 10.1, 7.1, 10.9, 8.9, 15.4 cm.

**Material:** Tip of antler, probably mule deer (*Odocoileus hemionus*).

**BAKED CLAY OBJECTS**

The baked clay objects include worked sherds of several shapes and a fragmentary animal effigy. All the worked sherds have rounded edges and were possibly made by rubbing the edge of one sherd against another. The larger specimens could have been used as scoops or spoons, the smaller discs could have been game counters, the perforated disc a spindle whorl. No definite evidence of their function was noted during excavation. As usual, discs outnumber sherds with square corners. However, the total number of worked sherds is few. The presence of worked sherds made of corrugated types corroborates evidence that these occur during the late
phases in the Pueblo occupation of the area. They have not been found in sites of the Reserve Phase or earlier (Martin, Rinaldo, and Barter, 1957, p. 84).

The animal effigy is like many others from the later Pueblo occupations of the Upper Gila. This specimen is badly broken. It also has the characteristic hole beginning just under the neck and coming out just below the tail (Nesbitt, 1938, p. 100).
Classification of Worked Sherds

DISC TYPE

Description: Pottery discs with edges ground smooth, one specimen with hole drilled through center; hole hourglass-shaped, drilled from two surfaces (fig. 118, c, e, f). Total 3.

Locations: Rooms 3, 8, floor; Room 3, fill.

Dimensions: Diameter, 3.7, 3.0, 3.8 cm.; thickness, 0.5, 0.5, 0.5 cm.

Materials: Alma Plain, Reserve Smudged.

FRAGMENTS WITH CURVED EDGE

Description: Fragments with curved edges ground smooth, possibly oval or disc shape (fig. 118, d). Total 2.

Locations: Room 3, floor; Room 1, fill.

Dimensions: Length (present), 6.1, 7.4 cm.; thickness, 0.5, 0.4 cm.

Materials: San Francisco Red, Reserve Black-on-White.

RECTANGULAR TYPE

Description: Fragments of sub-rectangular shape with edges ground smooth (fig. 118, b). Total 2.

Locations: Rooms 1, 10, fill.

Dimensions: Length, 3.9, 4.8 cm.; width, 3.4, 4.7 cm.; thickness, 0.6, 0.6 cm.

Material: Reserve Indented Corrugated.

ANIMAL EFFIGY

Description: Crudely modeled quadruped figure with long cylindrical body; three legs, tail, and head broken off; small hole through body from just below neck to just below tail (fig. 118, a). Total 1.

Location: Plaza, fill.

Dimensions (present): Length, 4.9 cm.; width, 4.1 cm.; thickness, 2.4 cm.

PIGMENTS

Worked Red Pigment

Description: Lumps of red pigment with some flat smooth worked surfaces; three specimens with one worked surface, five specimens with two worked surfaces, two specimens with four worked surfaces. Total 10.

Locations: Rooms 1, 2, 3, 9, 10, 12, floors; Room 5, cache below floor; Room 1, fill.
Fig. 118. Fragment of animal effigy (a); remainder, worked sherds. Length of lower right specimen, 4.9 cm.

Dimensions: Length, 4.7–9.5 cm., average, 5.4 cm.
Material: Hematite.

Raw Red Pigment

Description: Rough red lumps of pigment. Total 44.
Locations: Rooms 1, 2, 3, 10, 11, floor; Rooms 2, 3, below floor; Rooms 1, 3, 5, 8, 10, fill; plaza, fill.
Dimensions: 23 specimens less than 3 cm. in diameter, 18 specimens 3 to 4 cm. in diameter; 3 specimens over 4 cm. in diameter.

Material: Hematite.

**Worked Yellow Pigment**

*Description:* Lump of yellow pigment with single flat smooth worked surface. Total 1.
*Location:* Plaza, fill.
*Dimensions:* Length, 7.8 cm.
*Material:* Limonite.

**Raw Yellow Pigment**

*Description:* Rough lumps of yellow pigment. Total 12.
*Locations:* Rooms 1, 10, floor; Room 2, below floor; pithouse, Room 2, fill.
*Dimensions:* 8 specimens less than 3 cm. in diameter, 3 specimens 3–4 cm. in diameter, 1 specimen over 4 cm. in diameter.

**Raw Blue Pigment**

*Description:* Rough lumps of blue pigment. Total 4.
*Location:* Room 2.
*Dimensions:* Less than 3.0 cm. in diameter.
*Material:* Malachite.

**“Fetish” Stones**

*Description:* Section of crinoid stem, two quartz crystals.
*Locations:* Room 10, below floor; Room 3, floor 2; plaza, fill.
*Dimensions:* Length, 2.5 cm.; diameter, 1.2 cm.

**Copper Objects**

A small, crushed, copper bell and a lump of solid copper with a number of cuts in all its surfaces and a node projecting from one end were recovered from the plaza and from the floor of Room 1. The bell, like the majority of bells from the Southwest, is of the “hawk’s bell” or “sleigh bell” type. Before it was crushed it probably had a globular or pear-shaped slit resonator, and it has a semicircular eyelet or handle at the top placed at right angles to the slit. Inside the resonator of most prehistoric Southwestern bells there is a small, free-moving clapper which usually consists of a pebble or a small lump of copper, but the Foote Canyon bell has none.
ARTIFACTS

It has been ascertained by microscopic and other technical examination that these bells were manufactured by the "lost wax" method rather than by hammering (Haury, 1947, pp. 80-81; Hawley, F. G., 1953, pp. 104-110), and several discussions and descriptions of this "lost wax" method of making small bells have been published (Hawley, F. G., loc. cit.; Lothrop, 1952, pp. 16-18; McLeod, 1937, pp. 278-281). These are concerned with the conditions necessary to get molten copper to run into a mold that will produce such a thin-walled object as a small bell. Some of these conditions are: (1) the copper has to be of the sulphide type; (2) the mold has to be as hot as the molten copper; (3) gravity alone does not suffice, and centrifugal force, gas pressure, or some other means has to be used to force the metal into the small openings of the mold.

The present consensus of opinion among Southwestern archaeologists is that the bells came into the Southwest as trade articles from Mexico. There is, however, no direct evidence as to the source of the metal from which they were made.

The bells are of almost pure copper, as are the native copper samples submitted for spectroscopic analysis with the bells (Root, in Griffin, 1951, p. 91). No two of the bells are identical in chemical composition, although some are practically the same, and none is identical with the ores in chemical composition. For example, Dr. Meggers' analysis (in Judd, 1954, pp. 112-114) indicates that most of the bells he examined contained minute quantities of antimony, whereas none of the ores did. Furthermore, there is so much variability even in the ores of one region (for example, Fort Bayard and Santa Rita in the Silver City region) that these bells cannot be traced to their source with any certainty. Then there is the possibility that ores or bells from two different sources may have been melted together (Root, in Griffin, 1951, p. 91) or that small amounts of copper sulphide (and other minerals?) were added (McLeod, 1937, pp. 278-281). Again, differences in chemical composition might be explained by weathering and oxidizing.

The evidence, though not conclusive, indicates Mexico as a source. In the first place, only bells are found in the Southwest. No other objects such as celts, masks, rings, cups, and death's heads, which were made in Central America, are known from the Southwest. Also, all the bells were cast. Other more developed techniques known in Mexico, such as welding, gilding, sheathing and the like, are not in evidence in the Southwest. Most of the Southwestern bells are small and not ornamented, although there are a few exceptions such as that from the Delgar Ruin in New Mexico (Hough, 1914, p. 37) and the closely similar one from the ruin near Mammoth, Arizona (Haury, 1947, pp. 80-81). These bells are
stylistically so similar to a bell from Michoacán, Mexico, that Haury felt that they came from that area.

Furthermore, there are relatively few bells from the Southwest—usually only one or two from a site—the largest numbers being the necklace of 28 bells from Snaketown and the collection of 21 from Pueblo Bonito. Also, many of these sites are distant from locations of high grade minerals suitable for primitive metallurgy, and no recognizable crucibles, molds, or other tools of the craft have been found.

The other copper object is certainly not a finished artifact. It presents an intriguing problem. When it was first found it was thought to be a fetish. The cuts on its surface could represent attempts to divide it; or, like the Foote Canyon bell and many other Southwestern bells which have been crushed or broken, it is possible that this may have been ceremonially "killed" (Hawley, F. G., 1953, p. 103). Like the mass of native copper from the Delgar Ruin (Hough, 1914, p. 37) this lump has been "rubbed and smoothed and treated in every way as a stone."

**Copper Bell**

*Description*: Small, pear-shaped resonator, made of thin copper, slit in bottom and up sides, ends of slit cracked; semicircular eyelet or loop across top at right angles to the slit (fig. 114, a). Total 1.

*Location*: Plaza, floor.

*Dimensions*: Length, 2.5 cm.; width, 1.4 cm.; thickness, 1.2 cm.

**Copper Lump or "Fetish"**

*Description*: Roughly hemispherical mass with nine deeply carved or sawed cuts in surfaces, protuberance at one end, surface rubbed and smooth where not corroded (Fig. 114, c). Total 1.

*Location*: Room 1, floor.

*Dimensions*: Length, 2.6 cm.; width, 2.4 cm.; thickness, 2.1 cm.

**Painted (?) Stick**

*Description*: Limited areas of this irregularly shaped, badly decayed piece of wood are coated with a green substance, possibly malachite. One surface is flat, the other rough, the edges broken. The green coating may be accidental, and the preservation of the wood may be due to association with the copper oxide. The object could be part of a larger painted prayer stick.

*Location*: Plaza, fill.

*Dimensions*: Length, 10.4 cm.; width, 2.4 cm.; thickness, 1.4 cm.
CACHE

Below a patch in the wall underneath the floor in the west corner of Room 5, were found a chipped stone saw, a bone ring blank, a stone scraper, a bone awl and an arrow shaft tool. The association of the saw with the ring blank seems to indicate the use of the saw in the manufacture of bone rings (see p. 268), a theory which is supported by a similar association in Room 3. On the other hand, the association of this variety of tools may be purely accidental as to the types of tools included. Caches of objects beneath walls have been found in other sites in the Reserve area (Martin and Rinaldo, 1950b, p. 416), and it is possible that these objects have a ceremonial significance.

SUMMARY

The artifacts as a whole reveal an economy which is rooted firmly in the Mogollon tradition but which has been modified by late internal developments and by outside influences in the direction of the historic Western Pueblo culture. For example, the continuation in use of one hand manos, rubbing stones, mortars and pestles appears to indicate the retention to some degree of the ancient methods of milling foods and other materials; and the lack of change in form of choppers, scrapers, and knives appears to indicate very little change in cutting and scraping processes as applied to wood and other materials. Nevertheless, side by side with these "old-fashioned" tools and methods of work there appears to have been a trend toward the use of beveled manos on slab metates placed in bins, the use of hafted axes rather than choppers and the use of chipped stone and smooth stone saws rather than flake knives and scrapers.

At the same time, there were a number of other modifications of their way of life. For example, during the later phases we find more kinds of ornaments—thick as well as thin shell bracelets, pendants of shell and stone, bone rings and copper bells. Furthermore, the number of tools related to arrows and arrowheads, such as shaft straighteners, wrenches and flaking tools, seems to indicate a final ascendancy of the bow and arrow over the atlatl and dart.

Thus, the artifacts from Foote Canyon Pueblo seem particularly significant as a link between the earlier prehistoric Mogollon and Cochise cultures, on the one hand, and the historic Western Pueblo culture, on the other.
V. The Estimated Chronological Position of Foote Canyon Pueblo

There are a number of lines of evidence which indicate in a general way the period of time in which Foote Canyon Pueblo was occupied. Among these are stratigraphy, architecture and artifact typology, cross-dating and seriation.

Stratigraphy.—Below the floors of Rooms 2 and 10 there were earlier structures. One of these (a pithouse) contained some earlier pottery types (Three Circle Neck Corrugated, Alma Neck Banded, Alma Scored, Alma Punched, Mimbres Bold Face Black-on-White) as well as earlier types of artifacts (scraper-plane, choppers, and the like). These structures were also earth-walled rather than being veneered with masonry (unless all the masonry had been removed), and they were trash-filled and floored over.

There were also some instances of floors which had been built over earlier floors and firepits (Rooms 5 and 12) and occasional indications that walls had been torn out and rooms remodeled (Rooms 1, 2, 3).

Thus, it seems to be indicated that there was some duration to the occupation of the Foote Canyon Site; at least it was long enough for certain structures to be used and abandoned, then become trash-filled or razed and remodeled.

Architecture.—Evidence for an occupation of some duration was also noted in the architecture. Open areas were enclosed to make rooms, some rooms were torn down and rebuilt, floors were added, thus sealing over firepits and mealing receptacles, and doors were sealed up in such a way as to indicate that the neighboring rooms continued to be occupied at the time.

Some differences and similarities were observed between the masonry, firepits and mealing bins and other architectural features of Foote Canyon and those of the Tularosa Phase sites in the drainages to the east and later sites to the west and north. The masonry, for example, looks like that of Arizona W:10:51, Kinishba, Canyon Creek, and Showlow. More of the firepits were slab-lined, and there were more rooms with mealing receptacles than in the Tularosa Phase sites. Although these differences
could be differences of culture and area, the other evidence seems to indicate that they are products of culture and time.

Artifacts.—Many of the artifacts are those having a characteristic distribution in the later sites and periods of this area and in some instances throughout the Southwest. Some of these are copper bells, thick shell bracelets, bone rings and ring blanks, ridged arrow shaft tools, small triangular lateral notched arrow points, smooth stone saws, chipped stone saws and clay animal effigies. The frequency of through trough metates, beveled manos and hafted axe forms also indicates that this is a late site.

Seriation.—Although an attempt was made to arrange the rooms in sequence from early to late according to variation in the frequency of pottery types, nothing in the way of smooth lenticular curves for all the pottery types resulted. Lack of success along these lines may be due to a combination of factors, such as an increased specialization in the functions of rooms (a storeroom—dwelling room separation with different associated types), a comparatively short occupation (relatively shallow depth of fill, several rooms with only one floor), and disturbances due to remodeling.

A comparison of the sherds from the site as a whole with those from Cosper Cliff Dwelling, Hinkle Park Cliff Dwelling and other more distant Tularosa Phase sites (fig. 119) indicates that Foote Canyon Site is the latest of the series. A similar trend was borne out by a seriation of the design elements on the Reserve and Tularosa Black-on-White sherds. Once again the later design elements were the most frequent at Foote Canyon Pueblo.

Cross-Dating.—In the absence of tree-ring dates cross-dating by means of pottery types from dated sites is the next best method, although this gives only the relative placement of the site in time.

The painted decorated types are the only useful types for cross-dating purposes, as they are the only ones which are readily compared with types from sites that have been dated. The major painted decorated types by themselves would place the site no later than A.D. 1250. These are Tularosa Black-on-White, Tularosa White-on-Red, and St. Johns Polychrome. Although the estimated dates for these types vary, the earliest estimates (Hawley, F. M., 1936, p. 49; Gladwin, W. and H. S., 1931, p. 38) of A.D. 1000 now seem too early. Tularosa Black-on-White and St. Johns Polychrome have been found on a number of dated sites (Smiley, Stubbs, and Bannister, 1953) which range in the 1100's and 1200's, and a beginning date of around A.D. 1100 and a terminal date of around A.D. 1250 seem indicated (Table 4).

However, the presence of several fragmentary vessels and a number of smaller sherds of Pinedale Polychrome changes the picture. Although
### POTTERY TYPES

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### FIG. 119. Comparison of relationships of principal pottery types at Foote Canyon Pueblo with those of neighboring sites.
the span of this type may overlap that of St. Johns Polychrome by a few years it is the successor to St. Johns Polychrome and would date the site still later. Nevertheless, this type was definitely in use in the rooms and is the next most important type for consideration. It has been found on sites dating in the latter part of the thirteenth century and the early part of the fourteenth century (Smiley, 1951, p. 67; Haury, 1934, p. 13; Haury and Hargrave, 1931, p. 78) and has been dated accordingly by most of the authorities (Colton and Hargrave, 1937; Haury and Hargrave, 1931; Stubbs and Stallings, 1953). This pottery type would therefore tend to date the site in the latter part of the thirteenth century or the early part of the fourteenth.

Heshotauthla Polychrome was found throughout the site but in smaller quantities and proportions. This has been found at a number of tree-ring dated sites in the Rio Grande area and its span according to these dates and various estimates overlaps that of Pinedale Polychrome; as such, it would not alter the thirteenth century date on the Foote Canyon Site but it might perhaps extend the occupation a little later in the fourteenth century.

Sherds of Kwakina Polychrome from several of the rooms tend to confirm the later dating. Stubbs and Stallings (1953, p. 154) estimated that the Zuñi Glazed wares were made after 1300. Reed (1955, p. 190) and Colton and Hargrave (1937, pp. 115 and 117) would place this type as beginning in the early fourteenth century.

A number of sherds of Pinnawa Polychrome were found in the plaza. Although the span of this type is later than that of Kwakina there is some overlap. This would seem to indicate that later rooms existed in the unexcavated portion of the pueblo and that the site as a whole was occupied as late as A.D. 1350.

A very few badly weathered sherds of affinis-Four Mile Polychrome were found. Their classification is doubtful and inasmuch as the span of this type is similar to that of Kwakina Polychrome or more like that of Pinnawa Polychrome, these sherds would at most confirm the later dating of the rooms.

In summary, then, the excavated rooms might date from A.D. 1245 to A.D. 1325, and the plaza (and possibly some unexcavated rooms) in the site would date as late as A.D. 1350.
A large ruin at the junction of Foote Canyon and the Blue River in eastern Arizona was partially excavated. This village consisted of approximately 50 rooms, built around four sides of a quadrangle. Inside of the quadrangle thus formed was a roofed plaza, possibly used as a community ceremonial room. Entrance to this plaza was through a portal located in one corner of the quadrangle and by doors in the outer tier of rooms.

The rooms were both large and small. The larger rooms contained stone slab-lined firepits, and milling centers consisting of flour receptacles, metates, and, occasionally, mealing bins. The smaller rooms either contained broken utility storage jars and manos, or were bare of furnishings. It seems probable that the larger rooms were used for dwelling rooms and the smaller for storage.

Stone masonry was used for the walls of these structures. This masonry was classified into two types: (1) A better type constructed of large boulders laid flat side out alternating with courses of small, thin slabs; at its best this type has superficial resemblances to that of ruins in the White Mountains and along the Mogollon Rim. (2) An inferior type of mud rubble used for interior walls which is more like the field stone and adobe masonry of the Reserve Phase.

It seems probable that at least one section of the village had two stories.

At the foot of the mesa on which the pueblo was located a rectangular assembly kiva with a long ramp-entryway oriented to the east was situated. This is the kiva figured and described by Hough (1907, pp. 53–54, fig. 19), and on the surface it resembles the rectangular great kivas excavated at Higgins Flat Pueblo and the Sawmill Site. Another somewhat smaller pit or what appears to be a semi-subterranean structure could be seen at the southeast end of the village. Inside the pueblo beneath one of the rooms a pithouse was excavated, a rectangular structure which showed evidence of having been occupied before the final occupation of the pueblo.
The plaza roof was supported by six large wooden pillars or posts which in their size and placement were analogous to the roof supports found in the rectangular great kiva at Higgins Flat Pueblo. There were also found on the floor, or in the lower fill of the plaza, a copper bell, a painted stick, several colors of pigments (red, yellow, green?) and a clay animal effigy—objects presumed to be associated with ceremonies. These may not be convincing arguments for the use of the plaza for ceremonies such as dances, but when taken together with the historic use of plazas for public ceremonies (Bunzel, 1932, pp. 896–897; Parsons, 1939, p. 309; White, 1932, p. 104) and the occurrence of foot-drums, shrines, or other ritual structures in these historic courts, there seems to be a possibility that the Foote Canyon plaza was so used.

The pottery from this pueblo represents an appreciable development from that of the Tularosa Phase pueblos. Tularosa White-on-Red and various polychrome and black-on-red types were present in greater quantity here, and many more of them were decorated with glaze or sub-glaze paint. On the whole they constitute a relatively well-integrated series. Of some significance, too, in this connection is the presence in this series of some of the early Zuñi glaze types, which suggest a closer relationship with the area to the northeast than with that to the northwest.

However, along with the shift to polychrome and black-on-reds, one finds a persisting of the basic Mogollon brown utility wares—indented corrugated and plain corrugated and smudged interiors from the Reserve and Tularosa Phases. Actually the change in direction at this time, as in the past, was rather slight, inasmuch as Springerville Polychrome, Pinedale Polychrome and the other types that represent this deviation in trend constitute only a relatively small fraction of the pottery found.

A similar situation prevailed with regard to the stone and bone tools. There was a minor amount of change and a considerable degree of conservatism. The choppers, pestles, mortars, trough metates, and tabular manos continued to be used and the new types of axes, slab metates, and thick shell bracelets, like the glaze-painted polychrome pottery, had scarcely begun to replace the older forms.

CONCLUSIONS AND CONJECTURES

The results of previous investigations in the general Reserve area have made possible the reconstruction of several earlier stages in the growth of the Mogollon culture from about 2500 B.C. to about A.D. 1250. The general objective in the excavation of Foote Canyon Pueblo was to reveal information about a later period—from about A.D. 1250 up to about
A.D. 1350. These excavations had three more specific objectives: (1) To uncover a number of rooms and areas in the village in order to learn as much as possible about the way in which the former inhabitants of the village solved the problems of daily living; (2) to recover evidence of their relationships with people of neighboring areas; (3) to search for evidence as to how, why, and when the village was abandoned.

(1) The above summary and the trait list in the Appendix (p. 286) indicate in a general way the data we gathered on Foote Canyon Pueblo culture. (2) Evidence of trade relationships and possibly of closer ties to the people of the Zuñi area was found in the polychrome pottery types, the full grooved axes, and to a lesser extent in the masonry and architecture. Trade with the south was seen in the shell ornaments, the copper objects and the three quarters grooved axes. (3) It was evident from the contents of the rooms that the village had been abandoned gradually and in an orderly fashion. The former occupants took almost everything with them that could be carried easily or that was of any value. The objects left in the rooms were arranged carefully and there were no burned rooms or evidence of warfare. It was clear that the occupants had not been driven out of the village by an attack. On the other hand, the frequent addition of rooms, the alteration of room sizes by the building or tearing down of partitions, changes in floor levels with consequent changes in fire boxes and other furnishings seem to be more than would take place in the process of normal growth and change in the pueblo (although the Pueblo peoples today do a great deal of building and tearing down); the alterations seem to indicate a general dissatisfaction with the status quo and a desire for change. Furthermore, one burial was found with an arrowhead through the shoulder blade. A number of these evidences taken together suggest that factional strife combined with a general restlessness caused the village to divide, thus leaving too few people to carry on a complex series of ceremonies such as the present-day Pueblo peoples feel is essential to life. This, combined with too few children growing up to take part in the ceremonies, might cause those remaining to abandon the village entirely in order to join forces with a third group elsewhere. The decorated pottery types and other artifacts suggest that the village was abandoned during the middle of the fourteenth century.

The circumstances surrounding their departure may be important to a knowledge of Southwestern prehistory and culture change, but of perhaps greater importance is the question of where they went. In the final clarification of this question the protohistoric Zuñi polychrome pottery types found at Foote Canyon Pueblo seem particularly significant. These
contribute additional evidence to a case based heretofore chiefly on more generalized pottery type relationships and on resemblances of some painted animal figures and tablets to historic artifacts used by the Zuñi Indians. With the further clarification of this relationship the total culture at the site takes on added meaning, because it forms a link between the earlier Mogollon and Cochise cultures on the one hand, and the historic Western Pueblo cultures, on the other.
Appendix A. Tentative Trait List for the Foote Creek Phase

Burial Custom: Under house floors, or in trash, bodies flexed, and usually accompanied by pottery offerings.

Architecture: Domestic: Two story masonry pueblos, frequently in form of quadrangle and built around a roofed courtyard. Some walls of shaped coursed and chinked masonry, rectangular doors common. Ceremonial: Large rectangular, semi-subterranean structures, entered by long, broad, inclined passageway.


Metates and Manos: Through trough and slab metates. Rectangular manos with flat grinding surfaces, less often with beveled grinding surfaces. Used with flour receptacles.

Hoes: Broad blades.

Mauls and Axes: Full and three quarters grooved axes, full grooved mauls.

Stone Vessels: Simple, sometimes painted.

Chipped Stone Objects: Triangular projectile points, lateral notched and concave base projectile points, expanding base drill, saw.

Arrow Shaft Tools: Longitudinal, transverse and ridged types.

Bone Artifacts: Awls made of deer ulnae, notched awls, long awls, antler flakers, ring blanks, scoop.

Shell Artifacts: Thin and thick Glycymeris bracelets, whole shell pendants.

Metal Artifacts: Copper bell.
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Bunzel, Ruth  

Climate and Man  

Colton, Harold S.  

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Coscro, C. B.  
FOOTE CANYON PUEBLO

COSGROVE, H. S. and C. B.

CUSHING, FRANK H.

DANSON, EDWARD B.

DARTON, N. H.

DI PESO, CHARLES C.

DUFF, U. FRANCIS

FEWKES, J. W.

GLADWIN, HAROLD S.

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