



LIBRARY
OF THE
UNIVERSITY
OF ILLINOIS

572.05

FA

v. 49-52

CENTRAL CIRCULATION BOOKSTACKS

The person charging this material is responsible for its renewal or its return to the library from which it was borrowed on or before the **Latest Date** stamped below. **You may be charged a minimum fee of \$75.00 for each lost book.**

Theft, mutilation, and underlining of books are reasons for disciplinary action and may result in dismissal from the University.

TO RENEW CALL TELEPHONE CENTER, 333-8400

UNIVERSITY OF ILLINOIS LIBRARY AT URBANA-CHAMPAIGN

DEC 1 0 1998

When renewing by phone, write new due date below previous due date.

L162

.1096

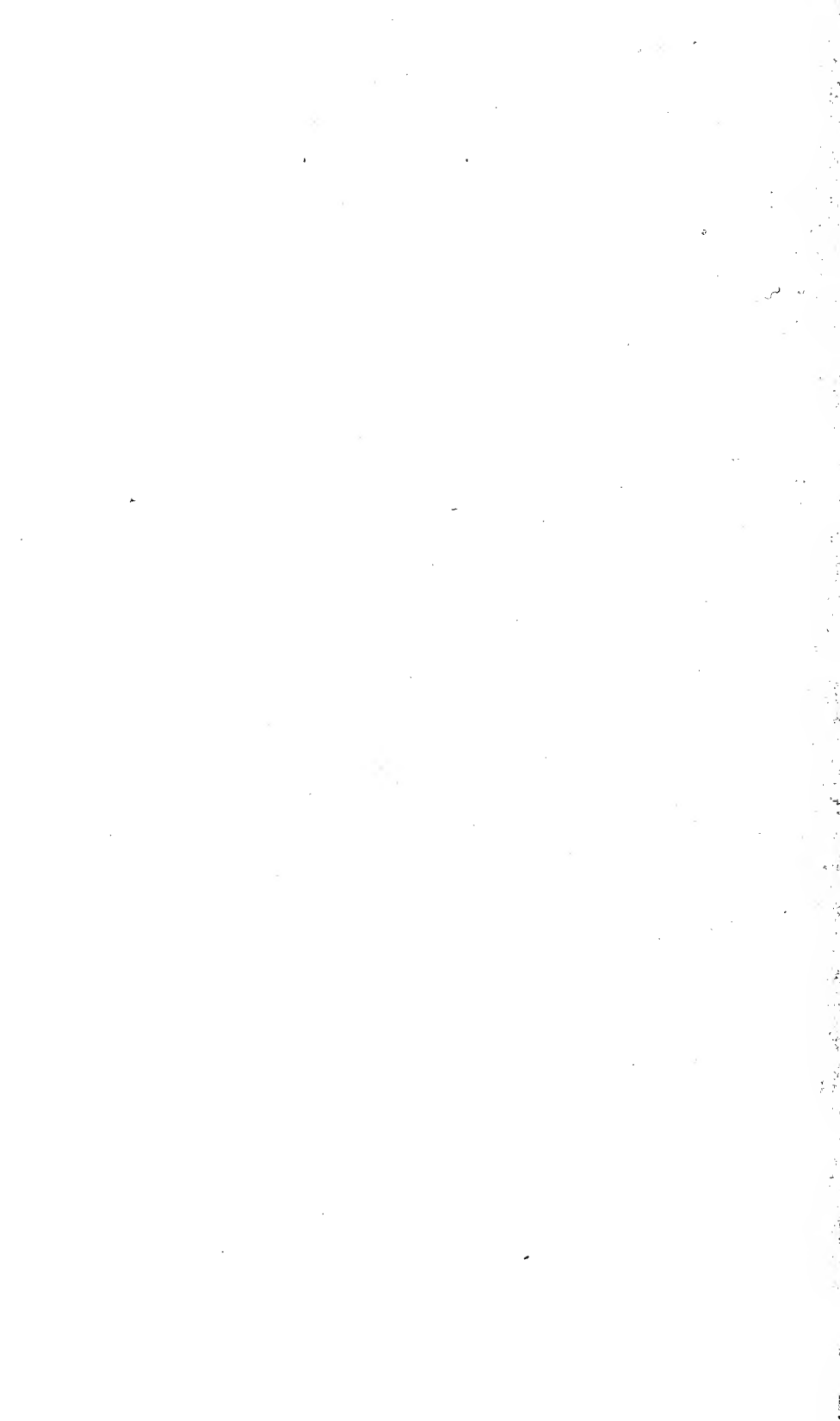
72.05
A
51
.1

EXCAVATIONS
IN THE
UPPER LITTLE COLORADO DRAINAGE
EASTERN ARIZONA

PAUL S. MARTIN
JOHN B. RINALDO

FIELDIANA: ANTHROPOLOGY
VOLUME 51, NUMBER 1
Published by
CHICAGO NATURAL HISTORY MUSEUM
MARCH 11, 1960

THE LIBRARY OF THE
UNIVERSITY OF ILLINOIS
1960



EXCAVATIONS
IN THE
UPPER LITTLE COLORADO DRAINAGE
EASTERN ARIZONA



MAP SHOWING EASTERN ARIZONA AND WESTERN NEW MEXICO

EXCAVATIONS
IN THE
UPPER LITTLE COLORADO DRAINAGE
EASTERN ARIZONA

PAUL S. MARTIN
Chief Curator, Department of Anthropology

JOHN B. RINALDO
Assistant Curator, Archaeology

FIELDIANA: ANTHROPOLOGY
VOLUME 51, NUMBER 1
Published by
CHICAGO NATURAL HISTORY MUSEUM
MARCH 11, 1960

Edited by LILLIAN A. ROSS

Library of Congress Catalog Card Number: 60-11006

PRINTED IN THE UNITED STATES OF AMERICA
BY CHICAGO NATURAL HISTORY MUSEUM PRESS

572.05

FA

v. 51

no. 1

Preface

This report embraces the findings of our first field season in east central Arizona, near Vernon.

Four different sites were excavated in the 1957 season. Two of these occupied the ancient beaches of brackish lakes—Little Ortega and Laguna Salada—east of the ghost town of Floy, Arizona. The other two were near Vernon Creek, approximately three miles south of Vernon. The name and location of each site is as follows:

- (1) Little Ortega Lake site (Sec. 2, T. 11 N., R. 25 E., G.S.R.M.).
- (2) Laguna Salada site (Sec. 20, T. 11 N., R. 25 E., G.S.R.M.).
- (3) Site 30, a pit-house village (Sec. 27, T. 10 N., R. 25 E., G.S.R.M.).
- (4) Site 31, an incipient pueblo village, about two hundred yards south of Site 30 (Sec. 27, T. 10 N., R. 25 E., G.S.R.M.).

The purposes and aims of our research in this area are several: (1) to learn more about the nature and chronological position of the various sites in eastern Arizona in the Show Low, St. Johns, Springerville district; (2) to ascertain the similarities and differences of this area compared with the Southwest as a whole; (3) to seek connections, if they exist, between prehistoric and contemporary or historic groups; (4) to work out in detail the local sequences of culture history and to discover the ways in which the various elements in the cultures evolved, how they worked, and how they were interrelated; and (5) to determine if the peoples of the Reserve area moved into this district when they abandoned the Reserve-Pine Lawn homeland about A.D. 1350.

We feel fairly confident now that traits were diffused and that, perhaps later, people did in fact shift from western New Mexico to the area in which we are now working; but present also in the Vernon area were some earlier, indigenous traits which, for want of a better name and more data, are here called the *Concho Complex*. Both the Concho Complex and the Cochise—the early facet of the Mogollon and perhaps the Hohokam Culture—are probably local manifestations of the widely spread Desert Culture (Jennings, 1957). Some progress has been made toward clarifying some of these problems.

The success of any expedition depends on the good will and hard work of many people. I should like to thank Messrs. Arden Brady, Marvin Christensen, Arnold Gillespie, Leon Gillespie, Emerson Mulford, Genaro Nuarez, Alfred Padilla, Benjamin Padilla, Eddie Padilla, Gilbert Padilla and Floyd Penrod for their help in digging. Miss Elizabeth Morris assisted with cataloging and Mr. Roland Strassburger was in charge of photography.

For their good will and neighborly help in many ways, we are indebted to Mr. and Mrs. Tom Cox, Mr. and Mrs. Don Goodman, Mr. and Mrs. Charles Gillespie, Mr. and Mrs. Milton Gillespie, Mr. and Mrs. Leonard Penrod, and Mr. and Mrs. Eben Whiting.

For permission to excavate sites on their ranches, we are grateful to Mr. and Mrs. Lester Curtis, Mr. D. Chilcott, Mr. and Mrs. Claude Phipps, Mr. Earl Thode, and Mr. Frank Stradling.

Mr. C. E. Gurley, President of the Central Motor Company of Gallup, a friend of the Southwest Archaeological Expedition since 1932, was again most helpful in leasing trucks to us.

Mr. Frank Turner, of the Charles Illfeld Company, Albuquerque, New Mexico, was once more of great assistance in our major purchases.

I particularly wish to express our deep appreciation to President Stanley Field, the Board of Trustees, and Dr. Clifford C. Gregg of the Museum for their continuing interest in and support of our archaeological projects. Without this, our work would not be possible.

Chapters 1, 3, and 4 were written by Dr. John B. Rinaldo, and Chapters 2 and 5 by me.

PAUL S. MARTIN

September, 1958

Contents

	PAGE
LIST OF ILLUSTRATIONS	7
LIST OF TABLES	8
I. THE ARCHAEOLOGY OF THE BEACH SITES	9
Description of the Sites	9
The Artifacts	12
Affiliations of the Artifacts	15
Manos	17
Rubbing Stones	22
Metates	22
Hammerstones	24
Projectile Points	24
Scrapers	29
Flake Knives	32
Choppers	34
Drill	34
II. ARCHITECTURAL DETAILS	35
Pit-House A, Site 30	35
Pit-House B, Site 30	36
Pit-House C, Site 30	40
Burial in Pit near Pit-House C	44
Pit-House D, Site 30	44
Pit-House E, Site 30	45
Pit-House F, Site 30	45
Pit-House G, Site 30	50
Pit-House H, Site 30	54
Site 31, "Formative" Pueblo	56
Walk-In Well(?), Site 31	62
III. ARTIFACTS FROM THE VILLAGE SITES	63
Handstones	63
Milling Stones	64
Mauls	65
Pipe	66
Chipped Stone Artifacts	66
Scrapers and Knives	67
Shell Objects	67
Bone Tools	67
Baked Clay Objects	68
Affiliations of the Artifacts	68

Ground and Pecked Stone Artifacts	69
Manos	69
Rubbing Stones	73
Pestles	75
Metates	75
Mortars	76
Worked Slabs	76
Mauls	76
Discoidal	80
Stone Pipes	80
Chipped Stone Artifacts	80
Projectile Points	80
Blades	83
Knives	84
Scrapers	84
Saws	88
Bone Tools	88
Awls	88
Bodkin	90
Shell Objects	90
Bracelet	90
Unfinished Pendant	90
Disc Bead	91
Baked Clay Objects	91
Worked Sherds	91
Miniature Ladles	93
Data on Identifiable Unworked Bone Fragments	93
IV. POTTERY	94
The Pottery from Site 30	95
Pottery Types Made at Site 30	95
Trade or Intrusive Types	100
The Pottery from Site 31	101
Native Types	103
Trade Types of Earlier Phases	106
Trade Types of Later Phases	106
Technology	107
Cultural Relationships	108
V. SUMMARY	114
Pre-Pottery Sites on Old Beaches	114
Sites 30 and 31, Earl Thode Ranch	115
Pit-Houses: Site 30	115
Pottery: Site 30, Pit-House Village	117
Surface Houses: Site 31	118
Pottery: Site 31, Surface Houses	118
Artifacts: Sites 30 and 31	119
Subsistence: Sites 30 and 31	119
Dating of Sites 30 and 31	119
BIBLIOGRAPHY	121
INDEX	125

List of Illustrations

Map showing eastern Arizona and western New Mexico Frontispiece

Text Figures

	PAGE
1. Site 90, Little Ortega Lake, showing trenches	10
2. Panoramic view of Site 65 at Laguna Salada	11
3. Site at Laguna Salada, showing fire-cracked stones of hearth, fragment of mano, and basin metate	13
4. One hand manos from beach sites	18
5. One hand manos from beach sites	20
6. Rubbing stones from beach sites	23
7. Basin metate from surface, Locus C	25
8. Shallow basin metate (Class B) from Laguna Salada	25
9. Hammerstones and choppers from beach sites	27
10. Projectile points and drills from beach sites	28
11. Scraper-blades and knives from beach sites	30
12. End scrapers, hollow-edge scrapers and side scrapers from beach sites	31
13. Serrate scrapers and side scrapers from beach sites	33
14. Pit-house A, Site 30	36
15. Plan and sections of Pit-house A	37
16. Pit-house B, Site 30	38
17. Plan and sections of Pit-house B	39
18. Pit-house C, Site 30	40
19. Plan and sections of Pit-house C	41
20. Pit-house D, Site 30	42
21. Plan and sections of Pit-house D	43
22. Pit-house E, Site 30	46
23. Plan and sections of Pit-house E	47
24. Pit-house F, Site 30	48
25. Plan and sections of Pit-house F	49
26. Pit-house G, Site 30	50
27. Plan and sections of Pit-house G	51
28. Pit-house H, Site 30	52
29. Plan and sections of Pit-house H	53
30. Over-all view of Site 30	54

	PAGE
31. Map of Site 30	55
32. Site 31, showing Rooms 1 and 2. Room 4 and part of Room 3 in left back-ground	57
33. Site 31, Rooms 3 and 4	58
34. Site 31, showing masonry in south wall of Room 4	59
35. Site 31, Room 1, Burial 1	59
36. Site 30, Burial 1, in pit near Pit-house C	60
37. Site 31, showing Pit-house A or "walk-in well" (?)	60
38. Plan and sections of Site 31	61
39. Manos from Site 30	70
40. Rectangular manos from Site 30	72
41. Rubbing stones from Site 30	74
42. Metate from Site 30	77
43. Boulder mortar from Site 30	77
44. Worked slab from Site 30	78
45. Mauls from Site 30	78
46. Lower, pestle from Site 30; upper, discoidal from Site 31	79
47. Fragmentary and unfinished pipes from Site 30	81
48. Projectile points and blades from Sites 30 and 31	83
49. Flake knives from Sites 30 and 31	85
50. Scrapers from Site 30	86
51. Saws and shell objects from Sites 30 and 31	87
52. Bone awls, miscellaneous types, and bodkin from Sites 30 and 31	89
53. Worked sherds and miniature ladles from Sites 30 and 31	92
54. Alma Incised and Alma Scored potsherds from Site 30	96
55. White Mound Black-on-White, Mimbres Bold Face Black-on-White, Three Circle Red-on-White, and Alma Plain variant potsherds	97
56. Woodruff Smudged and San Francisco Red, Vernon variety, bowls, Site 30	98
57. Snowflake Black-on-White potsherd from Site 31	103
58. Snowflake Black-on-White, Reserve Black-on-White, and Wingate Black-on-Red potsherds	104
59. San Francisco Red, Vernon variety, bowl from Site 31	105
60. MacDonald Painted Corrugated and Reserve Indented Corrugated bowls, Site 31	105
61. Puerco Black-on-White bowl and pitcher from Site 31	105

TABLES

1. Sherd Analysis, Site 30	110
2. Sherd Analysis, Site 31	113

I. The Archaeology of the Beach Sites

DESCRIPTION OF THE SITES

Evidence of prehistoric camp sites—milling stones, projectile points and other chipped stone artifacts—was recovered from the beaches of Little Ortega Lake and Laguna Salada, two lakes situated on Highway 61 between the ghost town of Floy and the village of Concho, Arizona. Laguna Salada is located just east of Floy (Sec. 20, Twp. 11 N., R. 25 E., G.S.R.M.). It is mentioned and pictured in Harrell and Eckel (1939, pp. 31, 74, pl. 10). Little Ortega Lake is situated closer to Concho (Sec. 2, Twp. 11 N., R. 25 E., G.S.R.M.). Both of these lakes are playas and they lie in depressions without true outlets. They are surrounded by relatively low rolling hills and steep-sided mesas dotted with juniper trees. The rounded outlines of the White Mountains frame the southern horizon at both lakes (figs. 1, 2) and Laguna Salada is dominated on the west by the escarpment of Dutch Mountain, an outlier of the White Mountains.

Little Ortega Lake is dry at certain seasons of the year. Laguna Salada has brackish water, as its name indicates, and as it is fed by springs it rarely dries up completely. At the end of the rainy season in July and August of 1957 Little Ortega Lake was nearly half a mile long; Laguna Salada was somewhat smaller. Harrell and Eckel indicate that both lakes have been larger, and at Little Ortega Lake there are stone piers and diversion dams of piled rocks which in 1957 were several hundred yards from the water's edge, thus attesting to the previous larger size of the lake. Mr. Frank Stradling, manager of the Chilcott Ranch, on which the lakes are located, said that water had been pumped from Little Ortega Lake to irrigate a small valley north of the lake, and the area of water must have been much larger at that time to make this feasible.

The inlet to Little Ortega Lake is from the south. There are high rocky shores on the west and northwest. A broad rocky peninsula enters the lake from the northwest (on the west edge of the site) and a narrow peninsula enters it from the eastern shore.

The artifacts from Little Ortega Lake were found mostly at the northwest end of the playa (fig. 1), on the surface of a sloping area where the growth of weeds ended rather abruptly and where the soil had a



FIG. 1. Site 90, Little Ortega Lake, showing trenches through Loci A and C; looking south.



FIG. 2. Panoramic view of Site 65 at Laguna Salada; truck in middle ground.

more powdery texture on the side toward the water. This slope extended in a broad curve at approximately right angles to the wide rocky peninsula and apparently represented one of the older shore lines or beaches. The flint chips and artifacts were quite scattered in their distribution. However, there were a number of metates and mano fragments in scattered heaps along this "beach," and these, together with certain small areas where the flint materials were more concentrated, appeared to mark possible camping places. No hearth areas were seen on the surface at this site.

The artifacts described and illustrated below came from clay and sand deposits on the northern margins of these lakes, and in fact rested in or on what we assume to be old beach sands. The material from Little Ortega Lake was scattered over an area some 200 meters long and 32 meters wide. Trenches were excavated in three widely separated areas where the flint chips, scrapers and other cultural materials appeared to be thickest on the surface. Two of these "camp" areas, designated Locus A and Locus C, were trenched more intensively; trenches 14 to 16 meters long and 2 meters wide were laid out in 2-meter squares and excavated in 20 cm. levels to bed rock or to sterile soil, which was found about 80 cm. below the surface.

At Laguna Salada the cultural material was more concentrated over the surface of a long oval hillock which appeared to have been a sand spit

or an island in the lake at one time (fig. 2). This rise was about 200 meters long and 75 meters wide at the broad end, narrowing to 18 meters at the narrow end. In the middle, the little ridge was about 90 meters wide.

Scattered over the surface of this sandy ridge, there was a series of hearths and milling stones, with many flint chips, broken manos and the like scattered in between. These hearths (fig. 3) consisted of clusters of fire-cracked rocks with charcoal and charcoal-darkened earth between and around them, and in at least two cases small unworked fragments of animal bone. This site was devoid of vegetation, probably because there is a heavy concentration of salt in the soil. Large crystals occurred on the surface and in the soil.

Three general areas were trenched at Laguna Salada, one in the middle and one at each end of the ridge, designated Locus A, Locus B, and Locus C, respectively. Other artifacts were located with reference to a line of stakes 25 meters apart laid out along the spine of the ridge. A few slab fragments of metates were discovered below the surface, and the hearths were found to continue in charcoal concentrations as deep as 30 cm. In some hearth areas the clay was burned to a red-brown color. The ten hearth areas found averaged 130 cm. in diameter, and one hearth which was selected as representative contained 47 rocks. Many of the nineteen metates or fragments thereof that were found on this site were in reasonable proximity to the hearths, in groups of two or three.

Certain differences were noted between the Little Ortega Lake Site and the Laguna Salada Site. More projectile points, blades and other chipped stone artifacts were found at Little Ortega Lake. Although charcoal was found below the surface at Little Ortega Lake it was scattered and there were no hearths or rocks and charcoal as at Laguna Salada. The Laguna Salada Site had many more milling stones and manos. In spite of these differences in quantities of chipped stone as compared with ground stone artifacts, there was a general similarity in the types of the tools used at both sites; for example, the same types of metates and manos were found at both sites. Although few artifacts were found below the surface by trenching at either site, those few seem sufficient to indicate that there were no radical differences in artifact types between the material located above and below the surface, and they also indicate that neither site was purely a surface phenomenon and might represent some antiquity.

THE ARTIFACTS

The artifacts include manos, metates and rubbing stones shaped primarily through use by grinding; tools made through percussion-flaking such as scrapers and choppers; and projectile points, blades and drills



FIG. 3. Site at Laguna Salada, showing fire-cracked stones of hearth, fragment of mano, and basin metate, from Locus C. Focusing card for scale is 7.2 by 10 cm.

fashioned by pressure chipping. In types these artifacts correspond roughly to those which occur in the Concho Complex and to a lesser extent to those found with the San José Complex.

The manos are short, one hand types, mostly oval in outline. A very few were shaped on their ends and edges by pecking. The great majority had two grinding surfaces; both broad surfaces had been used for grinding until they have distinct rounded facets. About one third of the manos have grinding surfaces that are convex across the short axis and flat or slightly convex across the longer axis. The other manos have grinding surfaces that are convex on both axes or flat. A few manos have a tendency toward having a wedge-shaped longitudinal cross section, or toward being wedge-shaped on a line diagonal to the long axis of the mano. Haury (1950, p. 313) says that this type of wear is produced by a rocking motion of the mano on a flat or shallow basin metate.

The metates from these sites are predominantly flat or shallow basin types. The majority of them were made of quite thick (10 cm.) slabs of dark gray igneous rock. These are irregular in outline and usually longer than they are broad. The grinding surface is pitted around the margins but polished in the center from the use of the mano. Another series is made of thinner slabs (5.0 cm.) of quartzite sandstone. The complete specimens of this type are generally rectangular in outline but they were not shaped. The grinding surface of these metates is oval and small.

The chipped stone artifacts from these sites include projectile points, blades, scrapers, knives, choppers, and one drill fragment. At Little Ortega Lake the chipped stone artifacts outnumbered those of ground stone, whereas at Laguna Salada the ground and pecked stone artifacts outnumbered those made of chipped stone.

At both sites scrapers were the most numerous of the chipped stone artifacts. These scrapers are made from thick primary flakes or from small cores. The majority have been shaped by percussion flaking but have some part of the margin—usually a longer edge—sharpened by pressure chipping. Many are plano-convex in cross section and shaped only on the convex surface. However, most of the larger specimens and a few of the smaller ones are bifacially chipped.

A few core implements were found: three choppers from Laguna Salada and three hammerstones from Little Ortega Lake. The choppers are of the biface type with the edge sharpened from both surfaces by percussion chipping. They are rough, thick and angular, but opposite the edge there is either a rounded or a flattened portion for a grip, so that the implement can be grasped more comfortably. The edges have been sharpened and are wavy.

Many thin random flakes were found but very few show any secondary chipping or retouch along the edge. However, a number of thicker flakes were fashioned into a blade-like implement or pointed biface scraper. These are roughly triangular in outline and lenticular in cross section. There is a secondary chipping on all surfaces and the edges are sharp. However, what is apparently the basal end of most of the specimens is thick and appears to have been broken off.

The projectile points do not form a uniform series; no two are exactly alike. However, there is sufficient regularity in certain of the specimens to sort them out into a number of categories. One group consists of stemmed indented-base specimens; a second has broad lateral notches and concave bases; a third is lateral notched also and has blunt flaring ear-like protrusions on an indented base. The edges of the blades of this group of specimens are sometimes serrated. A fourth, more generalized group consists of small specimens which are rather longer than wide, with leaf-shaped blades and poorly defined contracting stems.

LIST OF ARTIFACTS

	Number (Little Ortega)	Number (Laguna Salada)
Manos	19	25
Rubbing stones	4	0
Metates	5	19
Hammerstones	3	0
Projectile points	16	7
Knives	3	0
Scrapers	31	10
Choppers	0	3
Drills	0	1

AFFILIATIONS OF THE ARTIFACTS

In view of the proximity of these beach sites to Concho, and the fact that Mr. and Mrs. Thomas (Thomas, 1952) collected in this area southwest of Concho, it seems logical to analyze the similarities and differences between the artifacts described herein and those of the Concho Complex. There are, first of all, resemblances in the projectile points. The points from the beach sites Classes A and B resemble San José and "Pinto" projectile points (Stemmed Indented Base), as do those illustrated by Wendorf and Thomas (1951, pl. 49, *a-h*). There are also two points from Little Ortega Lake which are reminiscent of one of the types from the Concho Complex said to be "rare" (Wendorf and Thomas, 1951, pl. 49, *o*). There are a few end scrapers, flake knives, a drill fragment, biface choppers, numerous side scrapers, and some blades which also appear to be similar

to those illustrated. One hand manos and basin metates were found with the Concho Complex as they were on the beach sites.

There are certain differences which were also noted. Some types of projectile points found on sites of the Concho Complex were not found at the beach sites and there are apparently some differences in quantities of chipped stone as compared with ground and pecked stone. In comparing the Concho Complex with the Cochise Culture, Wendorf and Thomas (1951, p. 111) mention the relative scarcity of manos and metates on sites of the Concho Complex. They were not rare at either Little Ortega Lake or at Laguna Salada. The absence from these beach sites of types of certain projectile points found in the Concho Complex may be accounted for by the vagaries of collecting—Mr. and Mrs. Thomas collected from thirty sites whereas this collection is but from two—but in my opinion the differences in quantity of ground and pecked stone are of another order. Grinding tools were just as abundant on these beach sites as they were on sites in west-central New Mexico such as the Wet Leggett (Martin, Rinaldo and Antevs, 1949) or the Atrisco sites near Albuquerque (Campbell and Ellis, 1952), although they were not as abundant as they were on some Cochise sites in southeastern Arizona (Sayles and Antevs, 1941). Furthermore, the shapes of the manos and the configurations of the grinding surfaces are strongly reminiscent of types from Cochise sites of the Chiricahua stage in southeastern Arizona (Sayles and Antevs, 1941, pl. IX) and equivalent levels at Ventana Cave (Haury, 1950, p. 313), particularly in that the grinding surfaces of many are flat along the longer dimension and convex across the short axis. In general proportions they resemble the majority of early manos, being short and thick. The metates also resemble the milling stones from Cochise sites, although again they are apparently not as abundant as they were on the Cochise sites in southeastern Arizona. On the other hand, certain differences in chipped implements tend to separate this material from the Cochise; for example, the ground edge scraper and the scraper plane are rare or lacking from these beach sites, as they are from sites of the Concho Complex as described by Wendorf and Thomas (1951, p. 111). Another difference is in the quantity of specimens found rather than in the presence or absence of any particular type; for instance, end scrapers were present but were rare.

Perhaps the closest comparison may be made between this material and the San José sites found originally near Grants, New Mexico, by Bryan and Toulouse (Bryan and Toulouse, 1943; Agogino and Hester, 1956; Olson and Wasley, 1956). These sites contain projectile points similar to the Class A and Class B projectile points described below for the beach sites. Other artifact types found both in the San José sites and among the materials from Little Ortega Lake and Laguna Salada are

various forms of side scrapers, end scrapers, drills, flake knives and choppers. Also, the manos and metates appear to be quite similar. Gravers were not recovered from our beach sites nor are they recorded from all the San José sites reported by Agogino and Hester (1956, Table 1), although they were reported both in the original publication (Bryan and Toulouse, 1943) and from the sites surveyed by Olson and Waseley (1956, pp. 269-271). Thus the culture from these lake sites seems at least closely related to the San José and Concho complexes.

It seems premature as yet to attempt to assign these beach cultures more definitely to any one of the known and recognized Southwestern cultures of the two or three millennia preceding the Christian era. Although additional comparisons might be made with such pre-ceramic Southwestern lithic assemblages as the Atrisco sites (Campbell and Ellis, 1952), the San Augustin Plains sites (Hurt and McKnight, 1949) or the pre-pottery levels in Tularosa, Cordova and O Block caves (Martin, *et al.*, 1952, 1954), these assemblages appear at this time to be more closely related to the Cochise tradition than to the San José in spite of the fact that occasional San José-like projectile points have been found associated therein. It seems to be widely accepted that both San José and Cochise traditions fall within the Desert Culture category, but the specific relationship between the two is still uncertain as is also the relationship of the San José and Concho complexes to the later Pueblo culture in the upper Little Colorado.

MANOS

(Figures 4, 5)

Single Grinding Surface

CLASS I A

Description: Oval in outline, surfaces parallel, grinding surface convex, polished. Total 1.

Occurrence: Little Ortega Lake, Locus A.

Dimensions: Length, (fragment 6.5 cm.); width, 9.0 cm.; thickness, 3.9 cm.

CLASS I B

Description: Oval in outline, surfaces parallel, grinding surface convex across short axis, slightly convex lengthwise (fig. 4, *b*). Total 2.

Occurrence: Little Ortega Lake, Locus B; Laguna Salada, Locus A, Trench A.

Dimensions: Length, 10.2, 10.4 cm.; width, 7.1, 8.5 cm.; thickness, 4.8, 4.2 cm.

Material: Diorite.

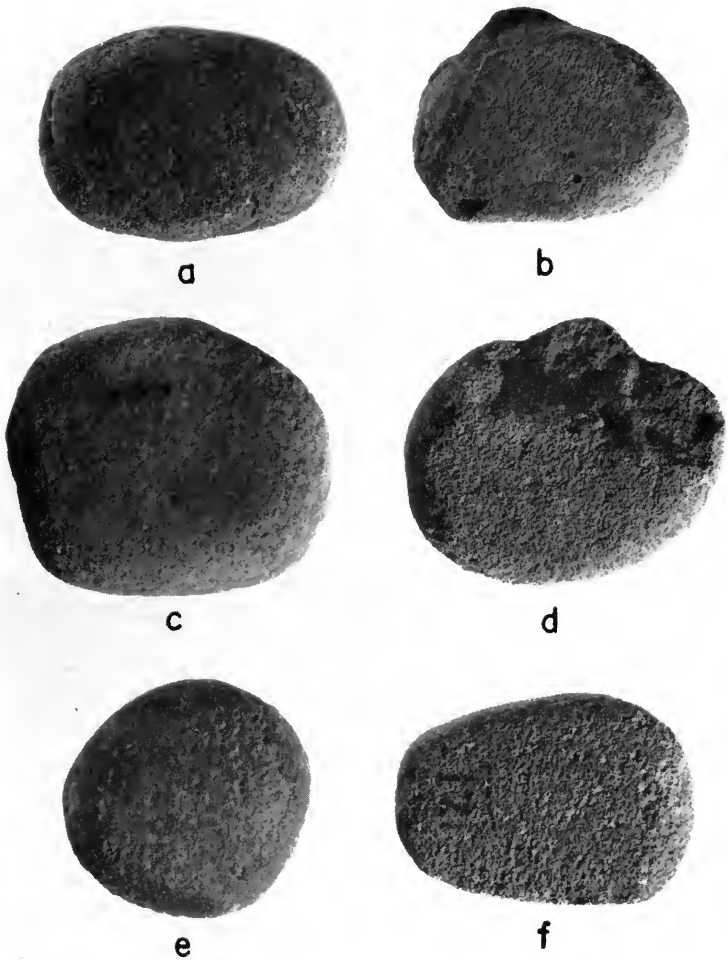


FIG. 4. One hand manos from beach sites. Length of *f*, 11.3 cm.

CLASS I C

Description: Oval in outline, one specimen wedge-shaped in cross section, two with parallel surfaces, grinding surface bluntly convex. Total 3.

Occurrence: Little Ortega Lake, Locus A; Laguna Salada, Locus A, Trench A.

Dimensions: Length, 12.3 cm., (two fragments); width, 10.0, 10.4, 7.1 cm.; thickness, 4.0, 4.4, 4.8 cm.

Material: Sandstone.

CLASS I D

Description: Oval in outline, surfaces parallel, grinding surface flat (fig. 4, *d*). Total 3.

Occurrence: Little Ortega Lake, Locus C; Laguna Salada, Locus A, Trench C.

Dimensions: Length, 12.1 cm., (two fragments); width, 9.6, 9.6, 7.2 cm.; thickness, 4.4, 5.1, 3.9 cm.

Material: Sandstone.

CLASS I E

Description: Oval in outline, surfaces parallel, grinding surface convex lengthwise, bluntly convex crosswise. Total 1.

Occurrence: Little Ortega Lake, Locus C.

Dimensions: Length, 9.9 cm.; width, 8.9 cm.; thickness, 5.1 cm.

Two Grinding Surfaces

CLASS II A

Description: Oval to round in outline, surfaces parallel, grinding surfaces convex, pecked and lightly polished by grinding (fig. 4, *a*). Total 5.

Occurrence: Little Ortega Lake, Locus A; Laguna Salada, Locus B, Locus C.

Dimensions: Length, 9.5, 8.7, 11.6 cm., (two fragments); width, 8.6, 9.5 cm., (three fragments); thickness, 5.0, 4.6, 3.5, 4.4, 6.3 cm.

Material: Jasper conglomerate.

CLASS II B

Description: Round or oval in outline, surfaces parallel, one grinding surface convex across the short axis, flat lengthwise, the other grinding surface convex (fig. 4, *c*, *e*). Total 6.

Occurrence: Little Ortega Lake, Locus C, Square B-8, Level 3; Laguna Salada, Locus B, Locus C.

Dimensions: Length, 9.6, 8.7, 12.3, 10.7, 6.8, 9.2 cm.; width, 9.1, 8.3, 8.1, 10.7, 9.2, 7.4 cm.; thickness, 4.2, 3.2, 5.5, 5.6, 4.5, 4.8 cm.

Material: Sandstone.

CLASS II C

Description: Oval or round in outline, surfaces parallel, grinding surface convex across short axis, bluntly convex lengthwise (figs. 4, *f*; 5, *b*, *e*, *f*). Total 10.

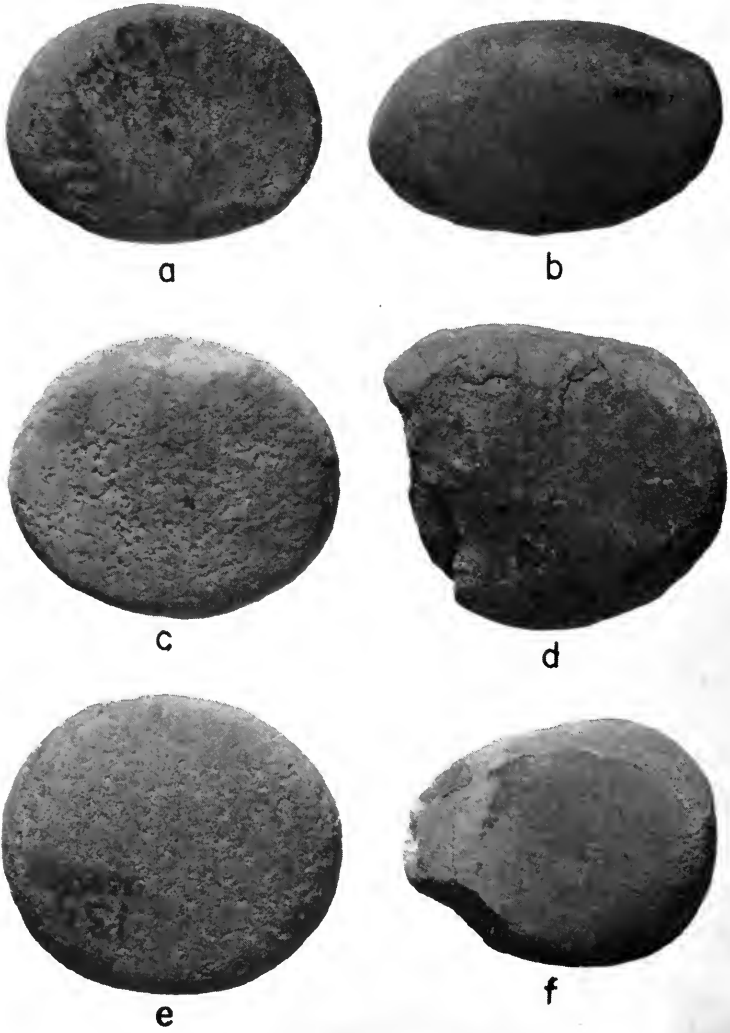


FIG. 5. One hand manos from beach sites. Length of *f*, 10.0 cm.

Occurrence: Little Ortega Lake, Locus C; Laguna Salada, Locus A, Locus B, Locus C.

Dimensions: Length, 10.0–13.2 cm., average, 11.1 cm.; width, 6.9–9.6 cm., average 8.0 cm.; thickness, 4.0–5.9 cm., average, 4.8 cm.

Material: Sandstone, arkosic sandstone.

CLASS II D

Description: Oval in outline, surfaces parallel, one grinding surface convex, the other bluntly convex (fig. 5, *d*). Total 3.

Occurrence: Little Ortega Lake, Locus A, Locus B.

Dimensions: Length, 11.3 cm., (two fragments); width, 8.9, 9.9, 10.4 cm.; thickness, 4.9, 4.8, 6.0 cm.

Material: Sandstone.

CLASS II E

Description: Oval in outline, surfaces parallel, one grinding surface flat, the other convex. Total 1.

Occurrence: Laguna Salada, Locus A, Trench A.

Dimensions: Length, (fragment 5.7 cm.); width, 8.8 cm.; thickness, 4.4 cm.

CLASS II F

Description: Oval in outline, one specimen wedge-shaped in cross section, two with parallel surfaces; one grinding surface convex crosswise, bluntly convex lengthwise, the other flat (fig. 5, *a*). Total 3.

Occurrence: Little Ortega Lake, Locus B; Laguna Salada, Locus A, Locus C.

Dimensions: Length, 10.0, 9.6 cm., (fragment); width, 7.7 cm., (fragments); thickness, 4.1 cm., (fragments).

Material: Sandstone.

CLASS II G

Description: Oval in outline, surfaces parallel, edges shaped by pecking; one grinding surface convex across the short axis; the other beveled in two plane surfaces at either end of the mano with a ridge between across the short axis (fig. 5, *c*). Total 1.

Occurrence: Laguna Salada, Locus B.

Dimensions: Length, 10.6 cm.; width, 9.2 cm.; thickness, 4.0 cm.

Material: Sandstone.

CLASS II H

Description: Oval in outline, surfaces parallel, edges shaped by pecking and grinding, working surfaces bluntly convex along both axes. Total 1.

Occurrence: Laguna Salada, Locus C.

Dimensions: Length, 10.5 cm.; width, 10.0 cm.; thickness, 5.5 cm.

CLASS II I

Description: Oval in outline, oval in cross section; both grinding surfaces bluntly convex across the short axis. Total 1.

Occurrence: Laguna Salada, Locus B.

Dimensions: Length, 10.2 cm.; width, (fragment); thickness, 4.1 cm.

CLASS II J

Description: Oval or rectangular with rounded ends in outline; one specimen wedge-shaped in cross section, two with surfaces parallel; grinding surfaces flat. Total 3.

Occurrence: Little Ortega Lake, Locus A.

Dimensions: Length, 6.3, 12.4 cm., (fragment); width, 4.5, 8.9 cm., (fragment); thickness, 4.0, 4.2, 5.2 cm.

RUBBING STONES

CLASS A

Description: Roughly circular in outline, surfaces parallel, single rubbing surface convex, pecked; upper surface convex (fig. 6, *a*). Total 1.

Occurrence: Little Ortega Lake, Locus C, Trench B.

Dimensions: Length, 7.2 cm.; width, 6.9 cm.; thickness, 4.3 cm.

Material: Diorite.

CLASS B

Description: Oblong, oval or circular in outline; surfaces parallel; single bluntly convex rubbing surface polished through use; one specimen with edges pecked (fig. 6, *b, c, d*). Total 3.

Occurrence: Little Ortega Lake, Locus A.

Dimensions: Length, 8.0, 7.9, 8.0 cm.; width, 5.9, 7.1, 6.5 cm.; thickness, 3.4, 3.8, 3.0 cm.

Material: Rhyolite, quartzite.

METATES

CLASS A

(Figure 7)

Description: Thick slabs of igneous rock, no regularity of outline, shallow basin formed in broad surface by pecking and grinding, polished smooth in center, pitted near periphery, edges and lower surface unshaped. Total 13.

Occurrence: Little Ortega Lake, Locus A, Locus B; Laguna Salada, Locus A, Locus B, Locus C.

Dimensions: All fragments averaging 30 cm. long, 25 cm. wide, 10 cm. thick.

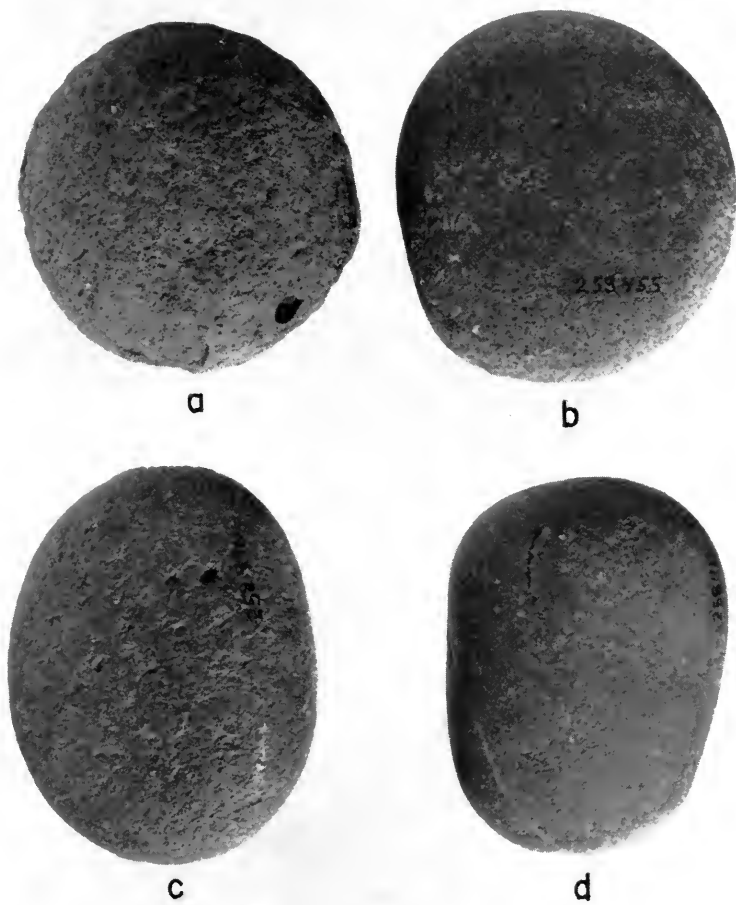


FIG. 6. Rubbing stones from beach sites. Length of *d*, 8.0 cm.

CLASS B

(Figure 8)

Description: Thin slabs of sandstone with shallow oval basin formed by pecking and grinding, polished smooth in center, pitted near periphery; grinding area longer than wide. Total 9.

Occurrence: Little Ortega Lake, Locus A near Trench B, Locus C near Trench A; Laguna Salada, Locus A, Locus B, Locus C.

Dimensions: Length, 34.0 cm., (fragments); width, 27.9 cm., (fragments); thickness, 5.7, 4.6, 4.5, 2.4, 2.3 cm., (fragments).

CLASS C

Description: Thick slab, probably oval in shape; one surface has large oval depression worn deep through use; surface of depression polished. Total 1.

Occurrence: Laguna Salada, Locus C.

Dimensions: Length, (fragment 23.8 cm.); width, 27.0 cm.; thickness, 9.4 cm.

CLASS D

Description: Large thick slab of igneous rock, irregular in outline; upper surface polished from grinding and with shallow cuplike depression in center. Total 1.

Occurrence: Laguna Salada, Locus B.

Dimensions: Fragment.

HAMMERSTONES

Description: Dense, flinty, rough angular pebbles, surfaces battered and chipped, some rounded contours (fig. 9, *a, c, e*). Total 3.

Occurrence: Little Ortega Lake, east of Locus A.

Dimensions: Length, 6.2, 8.1, 8.6 cm.; width, 5.2, 7.5, 6.4 cm.; thickness, 2.8, 6.8, 5.8 cm.

Material: Agate, jasper, weathered chert.

PROJECTILE POINTS

CLASS A

Description: Straight stem, indented base, edges of blade convex, lenticular cross section; some specimens parallel-flaked, all fragments (fig. 10, *f, g, h*). Total 3.

Occurrence: Little Ortega Lake, Locus B, Locus C.

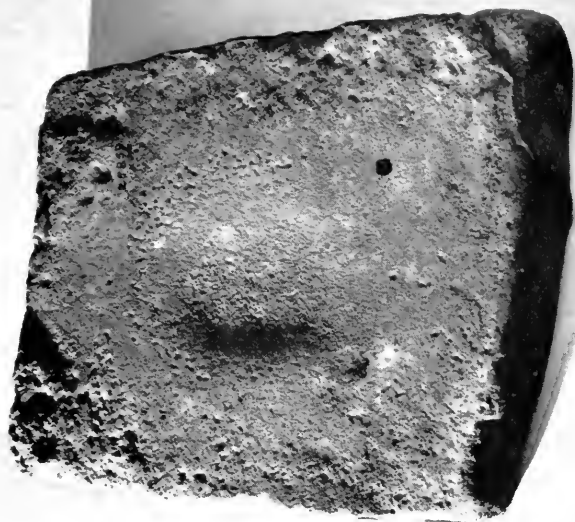


FIG. 8. Shallow basin metate (Class B) from Laguna Salada. Length, 34.0 cm.



FIG. 7. Basin metate (Class A) from surface, Laguna Salada, Locus C.

Dimensions: Length, (all fragments about 2.0 cm.); width, 2.7, 1.6, 1.7 cm.; thickness, 0.4, 0.7, 0.6 cm.

Material: Chalcedony, jasper.

CLASS B

Description: Triangular blade with convex edges which are occasionally serrate; shallow lateral notched, expanding stem as wide as or wider than poorly developed shoulder; two blunt, flaring ear-like protrusions from expanding base; base concave; lenticular cross section (fig. 10, *k-o*). Total 6.

Occurrence: Little Ortega Lake, Locus B; Laguna Salada, Locus B, Locus C.

Dimensions: Length, 4.5, 4.4, 4.9 cm., (fragments); width, 1.8, 2.3, 2.3, 2.0, 1.9, 2.2 cm.; thickness, 0.5, 0.5, 0.5, 0.6, 0.7, 0.5 cm.

Material: Chert, jasper, chalcedony.

CLASS C

Description: Short broad triangular blade with convex edges, lateral notched, expanding base wider than shoulder, base concave, lenticular cross section (fig. 10, *a, b*). Total 2.

Occurrence: Little Ortega Lake, surface.

Dimensions: Length, 2.5, 2.6 cm.; width, 2.3, 2.5 cm.; thickness, 0.4, 0.4 cm.

Material: Agate, chalcedony, chert.

CLASS D

Description: Lateral notched, expanding base narrower than shoulder, straight base, probably triangular blade with convex edges, lenticular cross section (fig. 10, *e*). Total 1.

Occurrence: Little Ortega Lake, surface.

Dimensions: Length, 1.9 cm. (fragment); width, 1.7 cm.; thickness, 0.5 cm.

Material: Chalcedony.

CLASS E

Description: Narrow leaf-shaped blade, poorly defined contracting stem, lenticular cross section (fig. 10, *p-s*). Total 5.

Occurrence: Little Ortega Lake, Locus C, Square B-1, Level 1; Locus A.

Dimensions: Length, 5.5, 3.9, 3.1, 3.1, 4.7 cm.; width, 2.9, 2.5, 1.8, 1.7, 1.2 cm.; thickness, 0.9, 0.8, 0.6, 0.6, 0.4 cm.

Material: Chert.

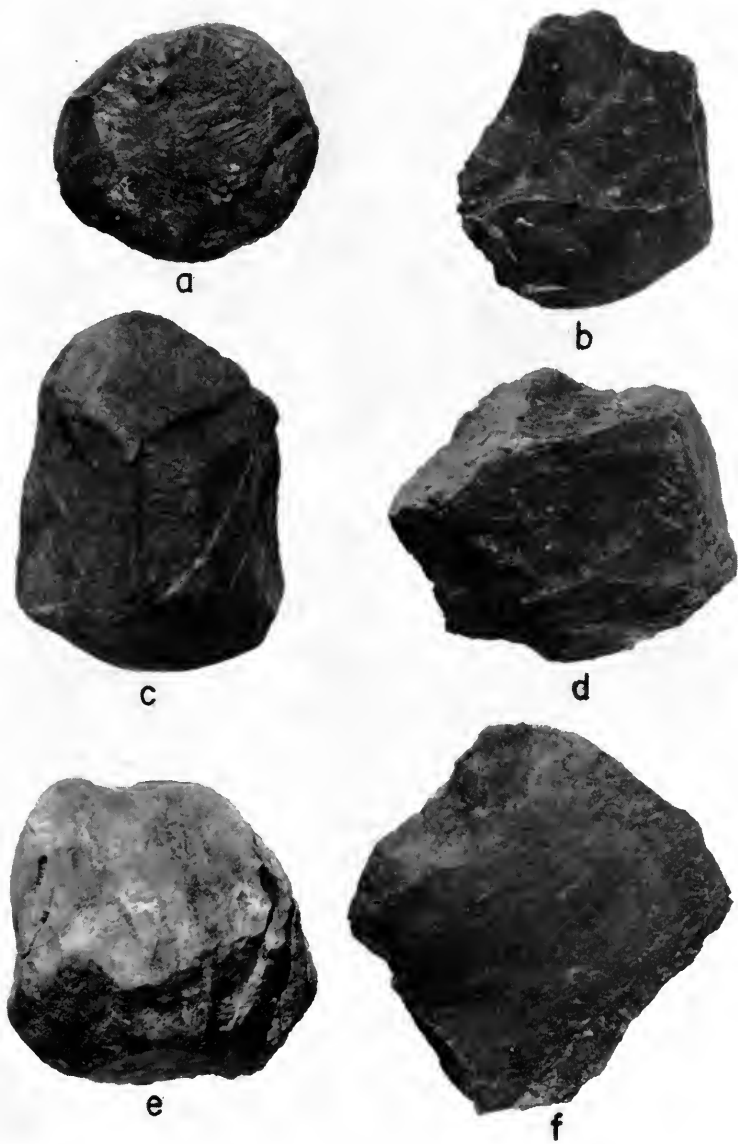


FIG. 9. Hammerstones and choppers from beach sites. Length of *f*, 9.2 cm.

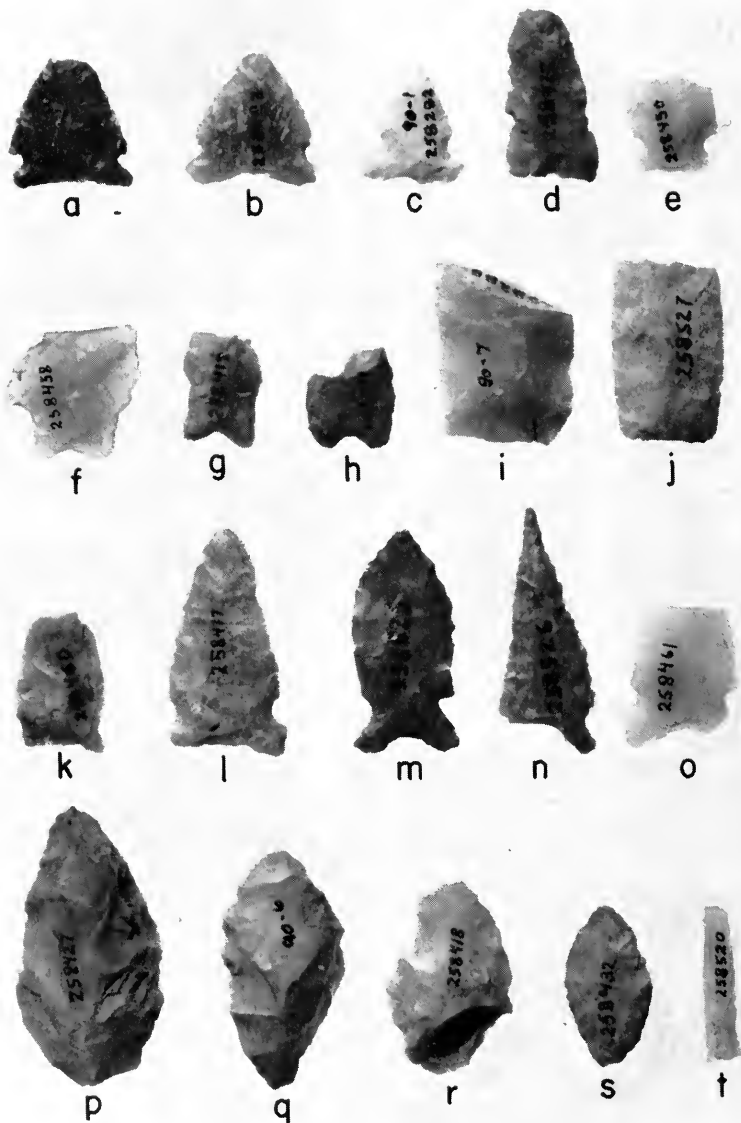


FIG. 10. Projectile points and drill; miscellaneous types from beach sites. Length of *l*, 3.0 cm.

CLASS F

Description: Very shallow lateral notched, triangular blade, expanding stem wider than shoulder; very shallow indented base; diamond-shaped cross section (fig. 10, *d*). Total 1.

Occurrence: Little Ortega Lake, Locus C, near Trench B.

Dimensions: Length, 3.5 cm.; width, 1.7 cm.; thickness, 0.6 cm.

Material: Chert.

CLASS G

Description: Leaf-shaped blades, straight base, edges slightly convex (fig. 10, *i, j*). Total 1.

Occurrence: Laguna Salada, Locus C.

Dimensions: Length, (fragment); width, 2.2 cm.; thickness, 0.6 cm.

Material: Chert.

CLASS H

Description: Tip fragments of projectile point blades. Total 4.

Occurrence: Little Ortega Lake, Locus A, Locus B; Laguna Salada, Locus B, Locus C.

Dimensions: (All fragments); thickness, 0.6, 0.5, 0.5, 0.5 cm.

Material: Chert, jasper, chalcedony.

SCRAPERS

CLASS A

Description: Pointed biface scrapers, blade-like in appearance; roughly triangular in outline, chipping on all major surfaces, lenticular cross section, base end broken off, other edges sharp (fig. 11, *b, c, e, f, h, i*). Total 9.

Occurrence: Little Ortega Lake, Locus A.

Dimensions: Length, 3.1–4.6 cm., average, 3.9 cm.; width, 3.2–4.1 cm., average, 3.5 cm.; thickness, 0.7–1.6 cm., average, 1.1 cm.

Material: Chalcedony, agate, chert.

CLASS B

Description: End scraper type; thick oblong flake, plano-convex in cross section; sharpened at one or both ends by secondary chipping (fig. 12, *g, j*). Total 2.

Occurrence: Little Ortega Lake, Locus C near Trench B.

Dimensions: Length, 5.5, 3.6 cm.; width, 3.8, 3.1 cm.; thickness, 1.2, 1.5 cm.

Material: Chalcedony.

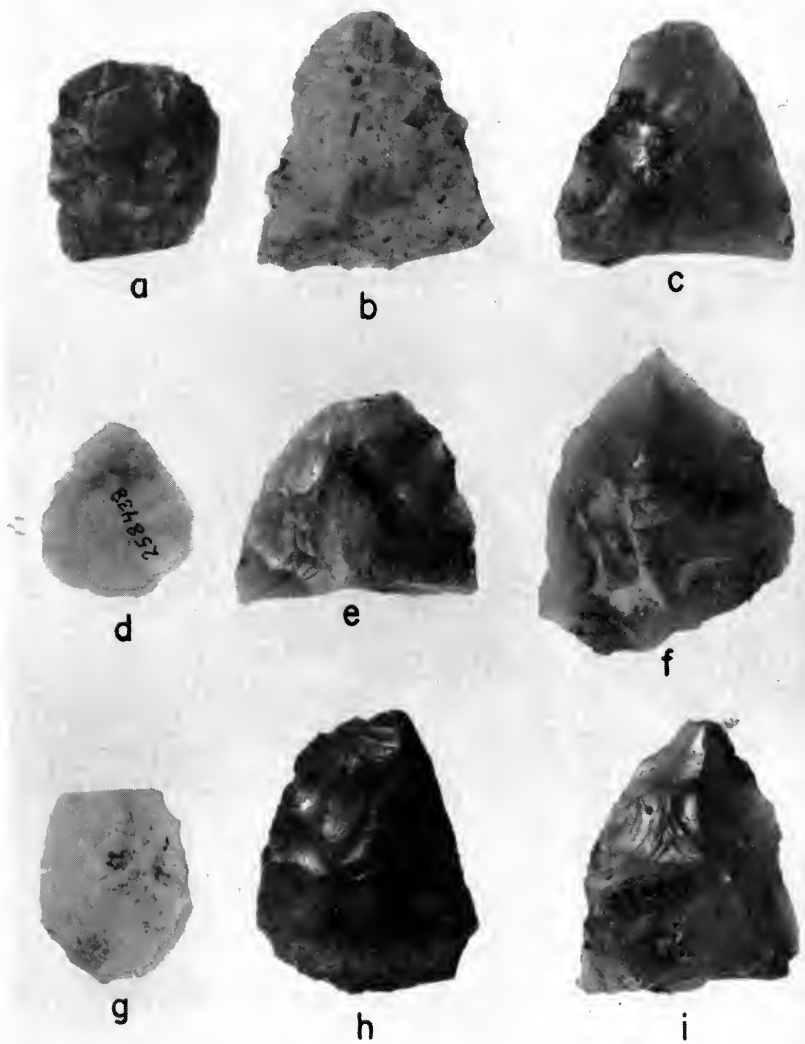


FIG. 11. Scraper-blades and knives from beach sites. Length of *i*, 4.1 cm.

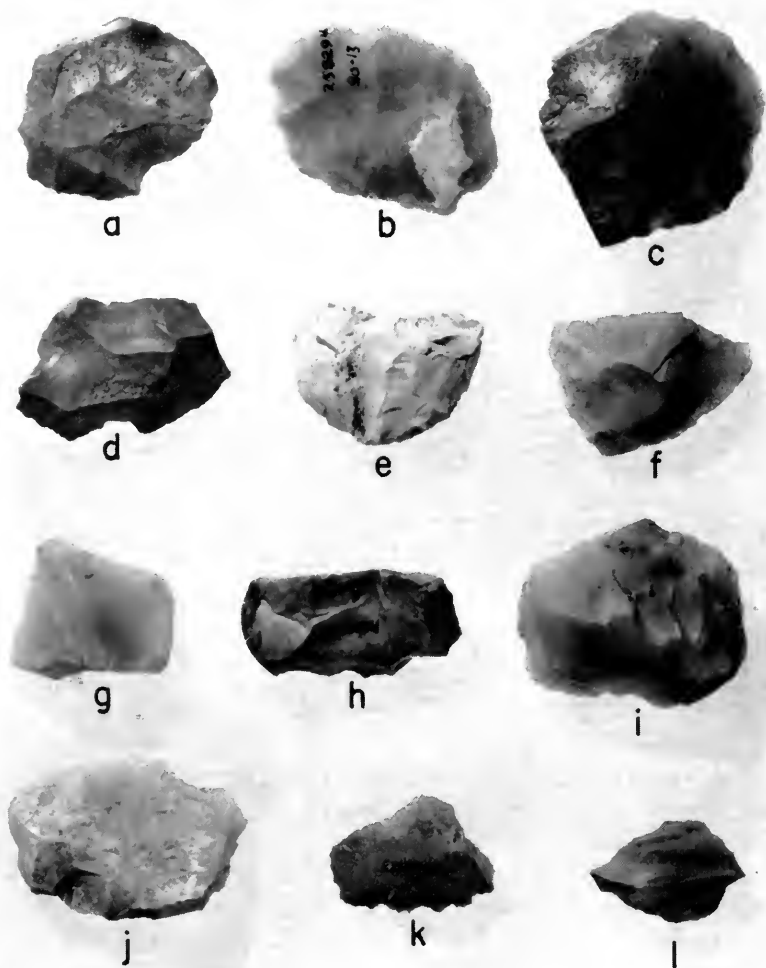


FIG. 12. End scrapers, hollow-edge scrapers and side scrapers from beach sites. Length of *l*, 3,6 cm.

CLASS C

Description: Hollow-edge type, oblong in outline, plano-convex in cross section, percussion chipping on convex surface; one edge deeply notched by secondary chipping (fig. 12, *a, d*). Total 2.

Occurrence: Little Ortega Lake, Locus C, near Trench B.

Dimensions: Length, 5.0, 4.9 cm.; width, 3.5, 4.1 cm.; thickness, 1.1, 1.2 cm.

Material: Chert.

CLASS D

Description: Serrate type; thick core-like implement, circular in outline, bi-convex in cross section; both convex surfaces shaped by percussion chipping, edges deeply notched and serrate (fig. 13, *e*). Total 1.

Occurrence: Little Ortega Lake, Locus A, Trench B.

Dimensions: Length, 6.8 cm.; width, 6.5 cm.; thickness, 3.7 cm.

Material: Chert.

CLASS E

Description: Roughly circular in outline, lenticular in cross section, all surfaces shaped by percussion flaking; one margin steeply chipped to sharp edge (fig. 13, *a, c*). Total 2.

Occurrence: Little Ortega Lake, Locus C.

Dimensions: Length, 6.7, 7.2 cm.; width, 5.9, 6.7 cm.; thickness, 3.3, 2.7 cm.

Material: Chert, jasper.

CLASS F

Description: Oblong to oval in outline, plano-convex or concavo-convex in cross section, usually some percussion chipping on convex surfaces, secondary chipping along one edge (figs. 12, *b, c, e, f, h, i, k, l*; 13, *b, d, f*). Total 25.

Occurrence: Little Ortega Lake, Locus C, Square B-7, Level 2; Square A-8, Level 1; Locus A, Locus B, Locus C. Laguna Salada, Locus A, Locus B, Locus C.

Dimensions: Length, 2.8–7.7 cm., average, 5.0 cm.; width, 2.8–5.6 cm., average, 3.5 cm.; thickness, 0.6–3.8 cm., average, 1.4 cm.

Material: Chert, chalcedony, agate, jasper.

FLAKE KNIVES

Description: Thin flakes, roughly oval to oblong in outline, plano-convex in cross section, percussion flaking on convex surface, secondary chipping along one edge (fig. 11, *a, d, g*). Total 3.



a



b



c



d



e



f

FIG. 13. Serrate scrapers and side scrapers from beach sites. Length of *f*, 6.5 cm.

Occurrence: Little Ortega Lake, Locus C, Square B-7, Level 1.

Dimensions: Length, 3.2, 3.0, 2.7 cm.; width, 2.9, 2.3, 2.3 cm.; thickness, 0.7, 0.5, 0.3 cm.

Material: Chert, chalcedony.

CHOPPERS

Description: Thick nodules with percussion flaking on surface forming cutting edge along one margin (fig. 9, *b, d, f*). Total 3.

Occurrence: Laguna Salada, Locus A, Locus C.

Dimensions: Length, 8.0, 7.2, 9.2 cm.; width, 7.0, 6.5, 7.1 cm.; thickness, 6.2, 4.8, 3.9 cm.

Material: Jasper, dark igneous rock.

DRILL

Description: Long slender tapering shaft, abruptly widening to base; most of base and tip of point broken off; lozenge-shaped in cross section (fig. 10, *t*). Total 1.

Occurrence: Laguna Salada, Locus C near thick hearth.

Dimensions: Length, (fragment 3.0 cm.); width, 0.9 cm.; thickness, 0.6 cm.

Material: Chalcedony.

II. Architectural Details

PIT-HOUSE A, SITE 30

(Figures 14, 15, 30, 31)

Shape.—D-shaped, flat side on north; greatest diameter, 4.5 meters; least diameter, 4.2 meters.

Walls.—Gravelly earth, light yellow to white; covered by one coat of mud plaster, 1 cm. thick, burned to orange color by house fire.

Floor.—Of brown adobe on gravel; uneven; depth below present ground level, 1.75–1.85 meters.

Firepit.—In center of floor; circular; dug into native gravel; unlined; diameter, 40 cm.; depth, 15 cm.

Deflector.—None.

Lateral Entrance.—None.

Cupboard or Wall Niche.—Rectangular opening on east, excavated into gravelly layer; 60 cm. high, 65 cm. wide, 60 cm. deep.

Pits.—None found.

Postholes.—Four primary and possibly one secondary; least diameter, 19 cm.; greatest diameter, 28 cm.; least depth, 35 cm.; greatest depth, 40 cm. About equally spaced in outer zone. One posthole, 6 cm. in diameter, found in wall of south zone, just above floor.

Roof.—Main beams rested on four upright posts; on these, at right angles, lay the rafters, and on them, pine boughs; covering these was adobe plaster, about 6 cm. thick. Large masses of burned adobe and burned pine needles found.

Pottery Types.—Alma Plain, Forestdale var.; San Francisco Red, Vernon var. Woodruff Smudged occurred on the floor. In the fill, Alma Neck Banded and Forestdale Smudged.

Phase.—Vernon.

General Comments.—This house burned. A few broken metates (scoop type) and manos found in roof fill.



FIG. 14. Pit-house A, Site 30; floor cleared, showing postholes near wall and firepit in center. Arrow 50 cm. long points north; meter stick in background.

PIT-HOUSE B, SITE 30

(Figures 16, 17)

Shape.—Roughly round with slight flatness on one side; greatest diameter, 5.3 meters; least diameter, 5.1 meters.

Walls.—Of unplastered light-colored gravelly earth in lower zone, succeeded by red clay, humus, and thin layer of trash fill.

Floor.—Covered by brown adobe, about 1 cm. thick, plastered on gravelly earth; uneven and rocky; depth below present ground level ranged from 1.20 meters to 1.50 meters.

Firepit.—Circular; sides possibly plastered with adobe; diameter, 63 cm.; depth, 15 cm.

Deflector(?).—Vertical slab set in slot in floor east of firepit.

Lateral Entrance.—None found.

Pits.—None.

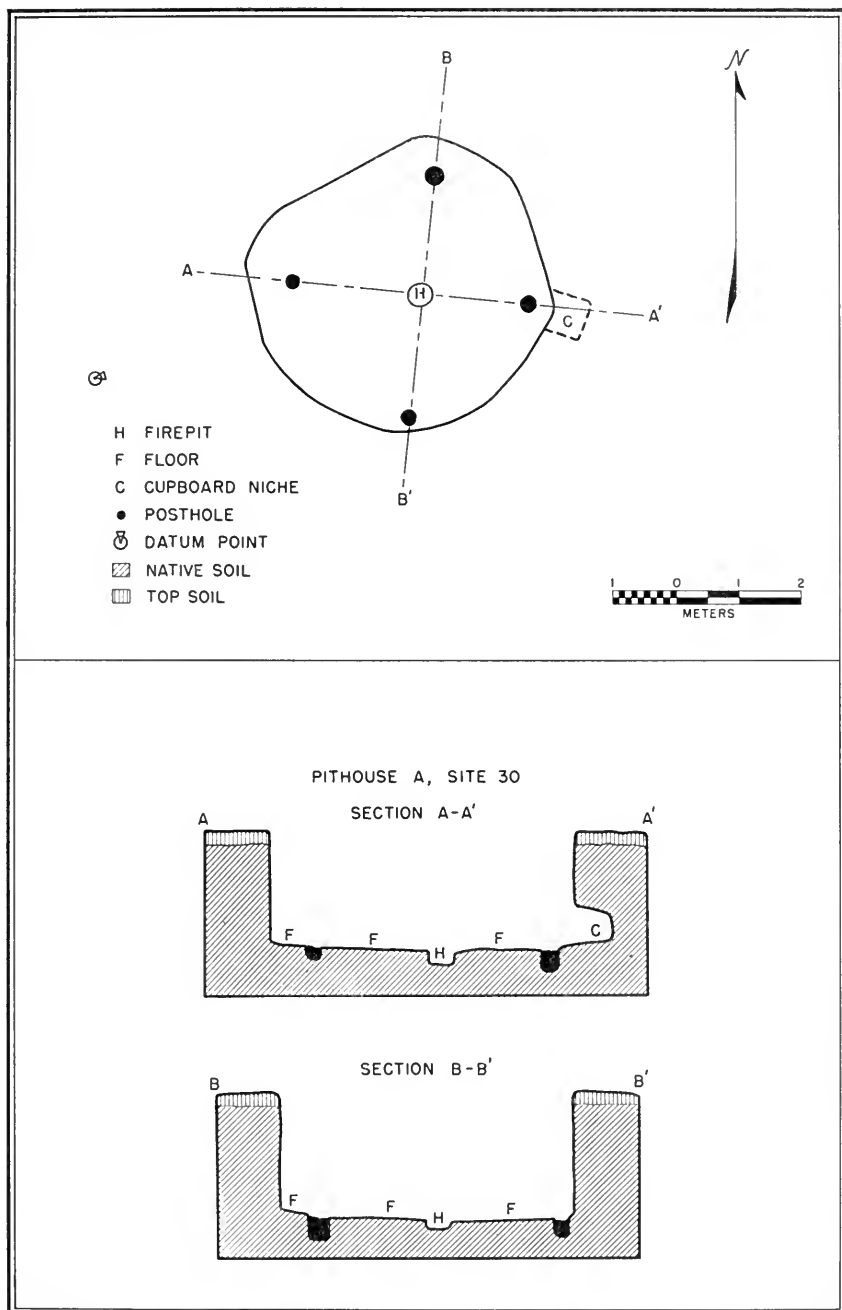


FIG. 15. Plan and sections of Pit-house A.



FIG. 16. Pit-house B, Site 30; floor cleared, showing postholes around wall and fire-pit in center; milling stones *in situ*.

Postholes.—Five primary and one secondary; greatest diameter, 44 cm.; least diameter, 15 cm.; greatest depth, 70 cm.; least depth, 15 cm. Postholes in outer zone.

Roof.—From reddened earth, baked adobe from roof, and remnants of charred rafters, roof structure assumed to be typical of most pit-houses: on main horizontal cross beams branches were laid, and on top of them adobe was spread to a thickness of 4 or 5 cm. Haphazard placement of postholes gives rise to idea that ends of horizontal cross beams lay on dirt walls.

Pottery Types.—Alma Plain, Forestdale var.; San Francisco Red, Vernon var.; Woodruff Smudged, Forestdale Smudged, and Lino Gray. Some Alma Scored in fill.

Phase.—Vernon.

General Comments.—Pit-house B burned. Reason for deflector in house lacking entrance not known.

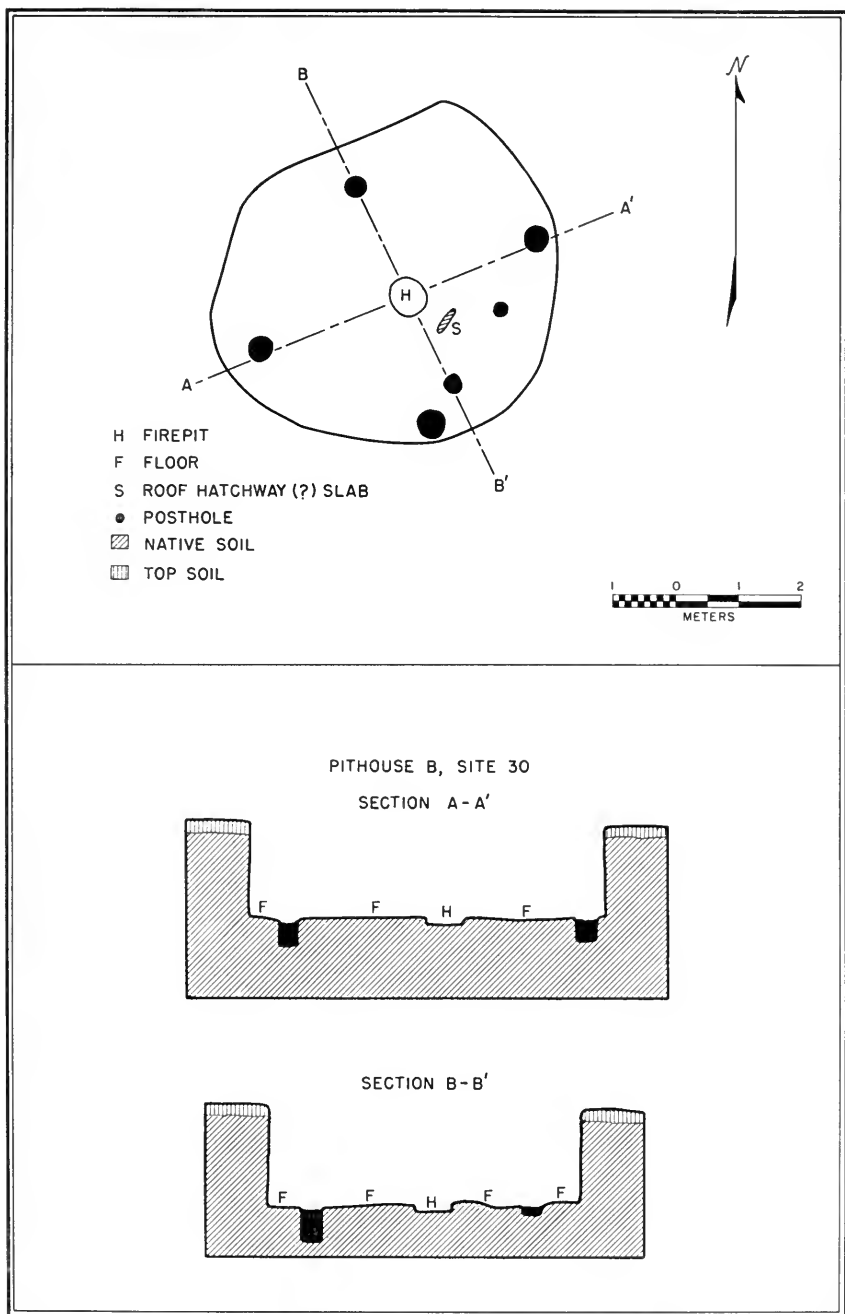


FIG. 17. Plan and sections of Pit-house B.



FIG. 18. Pit-house C, Site 30; floor cleared, showing postholes near wall and fire area in center; storage pit near (west) side wall with stone slab cover lying near by; metates *in situ*. Arrow 50 cm. long points north; meter stick in background.

PIT-HOUSE C, SITE 30

(Figures 18, 19)

Shape.—Roughly pear-shaped; greatest diameter, including entrance, 5.2 meters; least diameter, 4.3 meters.

Walls.—Of gravelly earth near floor, and of clay and humus near top. Evidence of plaster not found.

Floor.—Of gravelly earth, covered by gray adobe; surface, uneven and undulating, slopes to center firepit. Depth below present surface, 1.1–1.25 meters.

Firepit.—No definite pit; merely a burned area about 80 cm. in diameter, in center of floor area.

Deflector.—No slab found, but between entrance and fire area is a groove, 15 cm. deep.

Lateral Entrance.—On east periphery of house; ramp type; ramp extending into house along north wall. Height of wall at inner end, 1.1 meters, at outer end, 60 cm.; length, about 1.65 meters; width at inner end, 2 meters, at outer end, 1 meter.

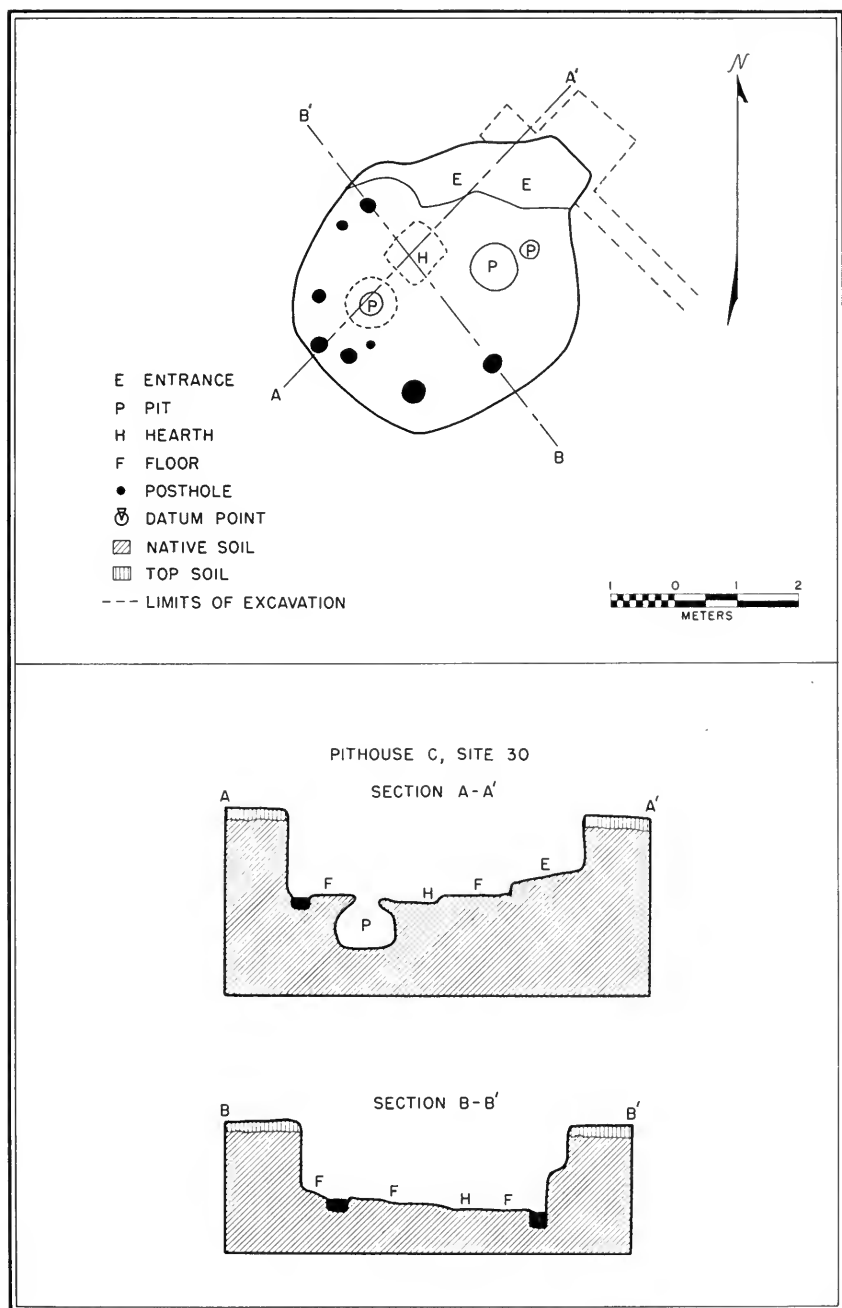


FIG. 19. Plan and sections of Pit-house C.



FIG. 20. Pit-house D, Site 30, showing floor with metates *in situ*. Arrow 50 cm. long points north; meter stick in background.

Pits.—Three in number, two bell-shaped and one bowl-shaped. Greatest diameter at mouth, 70 cm.; least diameter at mouth, 32 cm.; greatest diameter at floor level, 80 cm.; least diameter, 50 cm.; greatest depth, 75 cm.; least depth, 30 cm. Walls and floors of gravelly earth. No. 1 pit contained shell pendant, “medicine” cylinder, rim sherds of pottery bowls, slab cover, and bits of bone. No. 2 pit contained fragments of metates, slabs, and bones.

Postholes.—Six in number, spaced at uneven intervals, near walls. Greatest diameter, 34 cm.; least diameter, 10 cm.; greatest depth, 40 cm.; least depth, 14 cm.

Roof.—Because of uneven distribution of postholes, it may be that ends of main rafters lay on solid ground surrounding pit. Exact character unknown because fire consumed frame, beams, rafters and the like. Ample evidence of burned roof adobe from profile and it is assumed that branches and adobe were placed on top of main rafters.

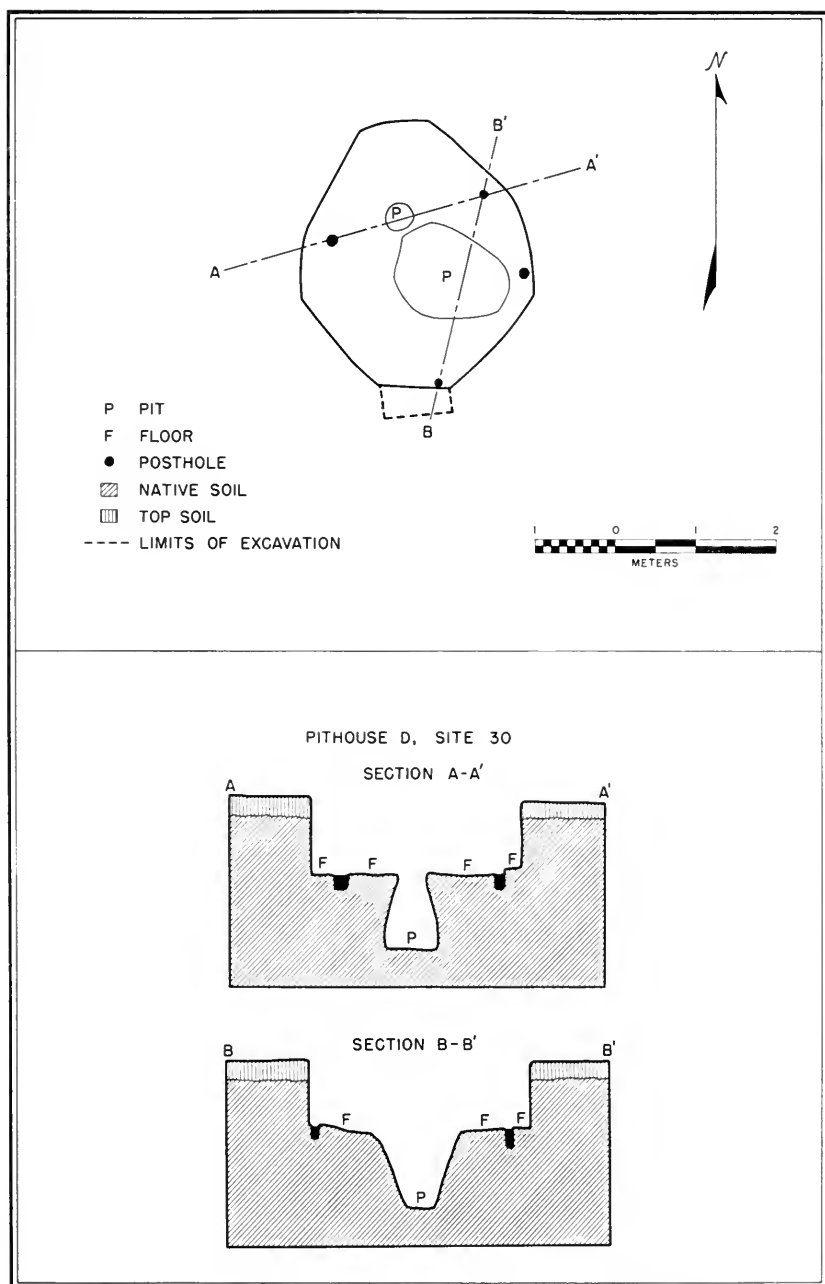


FIG. 21. Plan and sections of Pit-house D.

Pottery Types.—Alma Plain, Forestdale var.; San Francisco Red, Vernon var.; Woodruff Smudged. In fill, Forestdale Smudged.

Phase.—Vernon.

General Comments.—Pit-house C burned. Five metates on floor, two intact.

BURIAL IN PIT NEAR PIT-HOUSE C

(Figure 36)

Position.—Semi-flexed on back, lower left arm across body, right hand to chest, head of skeleton toward east.

Associated Object.—Bowl, San Francisco Red, Vernon variety, at right elbow.

Pit.—Round, 1.2 meters in diameter, 1.2 meters deep; 4.2 meters south of Pit-house C entrance.

Fill.—Dark earth.

PIT-HOUSE D, SITE 30

(Figures 20, 21)

Shape.—D-shaped to circular; greatest diameter, 2.65 meters.

Walls.—Of native clay, covered with one coat of plaster.

Floor.—Of native reddish clay covered with adobe plaster; uneven; greatest depth below present surface, 90 cm.

Firepit.—Ashy fire-area in center of floor, but no definite firepit.

Deflector.—None found.

Lateral Entrance.—None found.

Pits.—Two; one bell-shaped, the other oblong. Greatest diameter at mouth, 90 cm.; least diameter, 35 cm. Both about 1 meter deep.

Postholes.—Four in number; in outer zone. Greatest diameter, 15 cm.; least diameter, 12 cm.; greatest depth, 20 cm.; least depth, 12 cm.

Roof.—Type uncertain, but probably much like type described for Pit-houses B and C. On floor were fragments of charcoal and pieces of burned adobe.

Pottery Types.—Alma Plain, Forestdale var.; San Francisco Red, Vernon var.; Woodruff Smudged.

Phase.—Vernon.

General Comments.—Pit-house D burned. Five metates on floor, all cracked by fire.

PIT-HOUSE E, SITE 30

(Figures 22, 23)

Shape.—"Key-hole;" greater length, including "shelf-entry," 3.9 meters.

Walls.—Of unplastered gravelly earth, red clay fill, and humus.

Floor.—Of gravelly earth, uneven. Depth below present sod-line, 1.95 meters.

Firepit.—None found, but a central fire area was located.

Deflector.—None.

Lateral Entrance.—On southwest; a "shelf" or large offset; floor about one meter below present ground level; length of entryway, 1.9 meters, width at inner end, 2.1 meters.

Pits.—None located.

Postholes.—Three; greatest diameter, 20 cm.; least diameter, 15 cm.; depth, 20 cm.

Roof.—From burned adobe found on floor, it seems probable that roof was constructed as in Pit-house A and other houses at this site.

Pottery Types.—Alma Plain, Forestdale var.; San Francisco Red, Vernon var.; Woodruff Smudged; an effigy-animal head; and one appliqué sherd.

Phase.—Vernon.

General Comments.—Pit-house E probably burned.

PIT-HOUSE F, SITE 30

(Figures 24, 25)

Shape.—Approximately D-shaped. Greatest diameter, 4.35 meters; least diameter, 4.1 meters.

Walls.—Of unplastered gravelly earth.

Floor.—Of gravelly earth and red clay, parts of which bore plaster or a smooth coating of clay; very uneven, with rocks protruding through floor. Depth below present ground level, 97 cm. to 1.15 meters.

Firepit.—No well-defined pit; a centralized "fire area" containing white ashes in hollows. Dimensions about 25 by 30 cm.

Deflector.—None found.

Lateral Entrance.—On east side. Depth of floor below ground level at inner end, 96 cm., at outer end, 88 cm.; width at inner end, 1.45 meters, at outer end, 85 cm.; length, 1.20 meters.



FIG. 22. Pit-house E, Site 30, showing posthole(?) in floor and offset.

Pits.—Two, both bell-shaped, walls of gravelly earth. Diameters at mouth, 15 cm., at bottom, 20 and 27 cm.; depths, 30 and 33 cm. Contents: dark earth and a few sherds.

Postholes.—Seven, all located in outer periphery of floor. Greatest diameter, 20 cm.; least diameter, 15 cm.; depths from 16 to 40 cm. Butts of roof posts in floor.

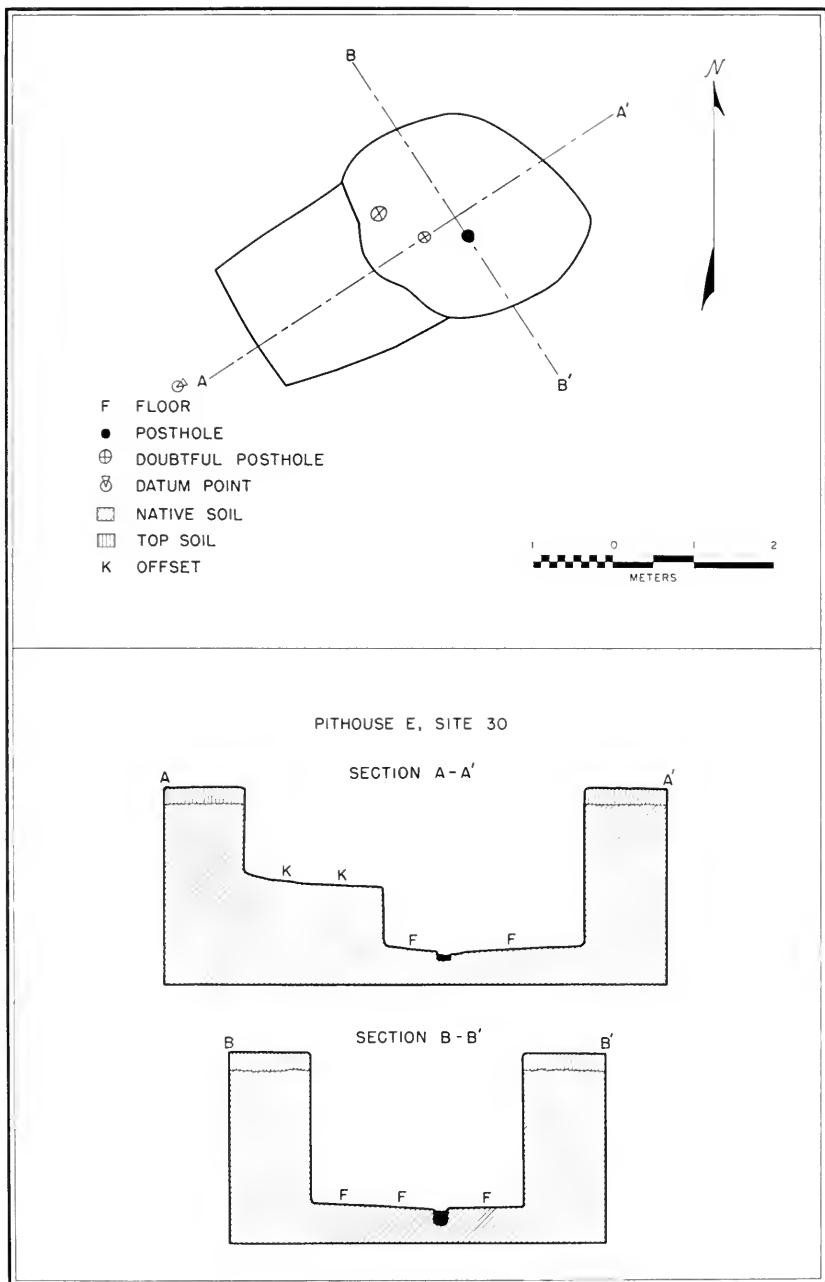


FIG. 23. Plan and sections of Pit-house E.



FIG. 24. Pit-house F, Site 30, showing postholes near wall, manos, hearth area, and lateral entrance.

Roof.—From burned adobe impressions, probably like roofs described for Pit-houses A and B.

Pottery Types.—Alma Plain, Forestdale var.; San Francisco Red, Vernon var.; Woodruff Smudged; Forestdale Smudged; Lino Gray; White Mound Black-on-White.

Phase.—Vernon.

General Comments.—Pit-house F probably burned.

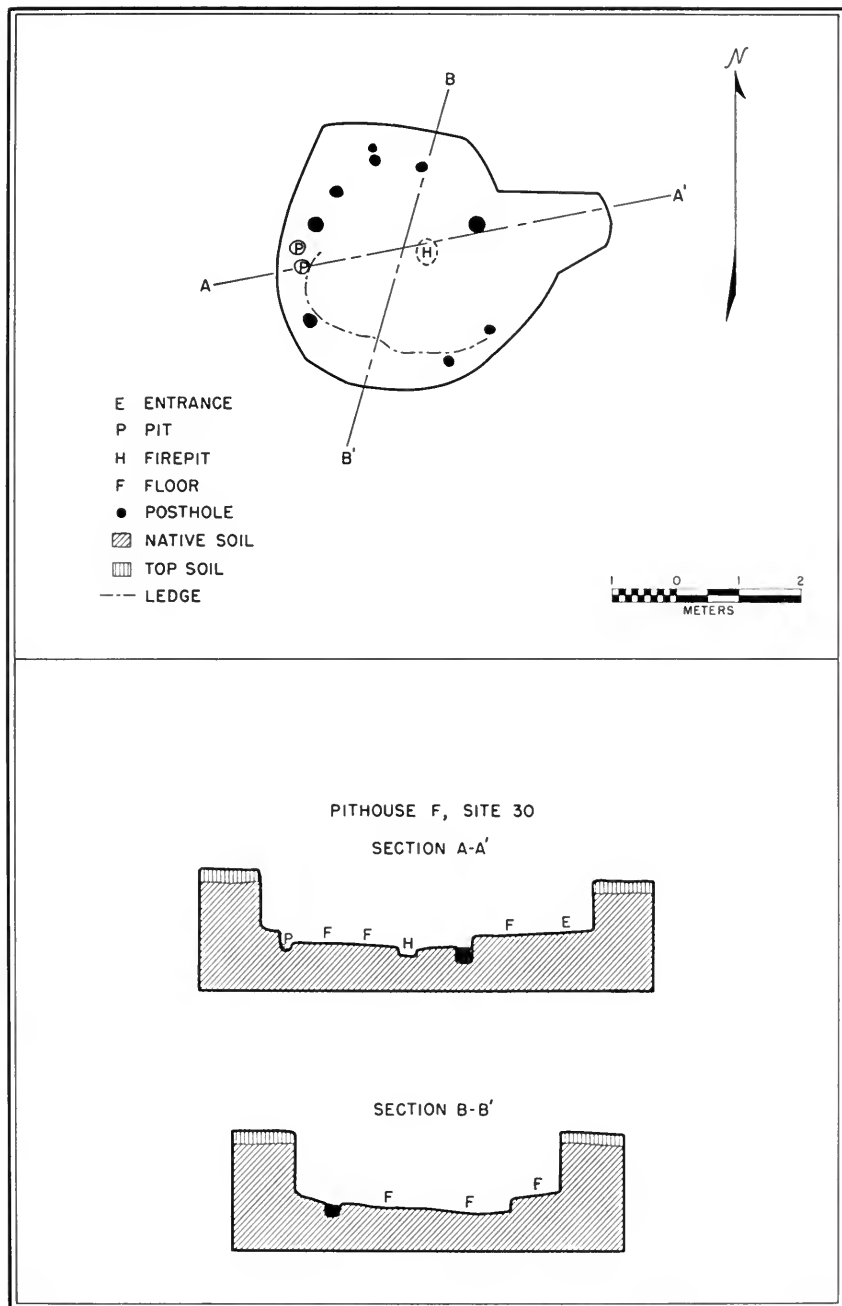


FIG. 25. Plan and sections of Pit-house F.



FIG. 26. Pit-house G, Site 30, showing postholes, metates, manos, and fire area. Arrow 50 cm. long points north; meter stick in background.

PIT-HOUSE G, SITE 30

(Figures 26, 27)

Shape.—Roughly D-shaped. Greatest diameter, 3.45 meters.

Walls.—Of native, dark red clay.

Floor.—Of unsmoothed, unplastered gravelly earth and reddish clay; very uneven. Depth below present ground level, 45 to 70 cm.

Firepit.—Irregular oval-shaped shallow pit, 45 by 42 cm.

Deflector.—None.

Lateral Entrance.—None.

Pits.—None.

Postholes.—Two, near wall in east zone. Diameters, 12 and 24 cm.; depths, 11 and 15 cm.

Roof.—From burned adobe impressions, it is assumed to have been like that on Pit-house A.

Pottery Types.—Alma Plain, Forestdale var.; San Francisco Red, Vernon var.; Woodruff Smudged; Forestdale Smudged.

Phase.—Vernon.

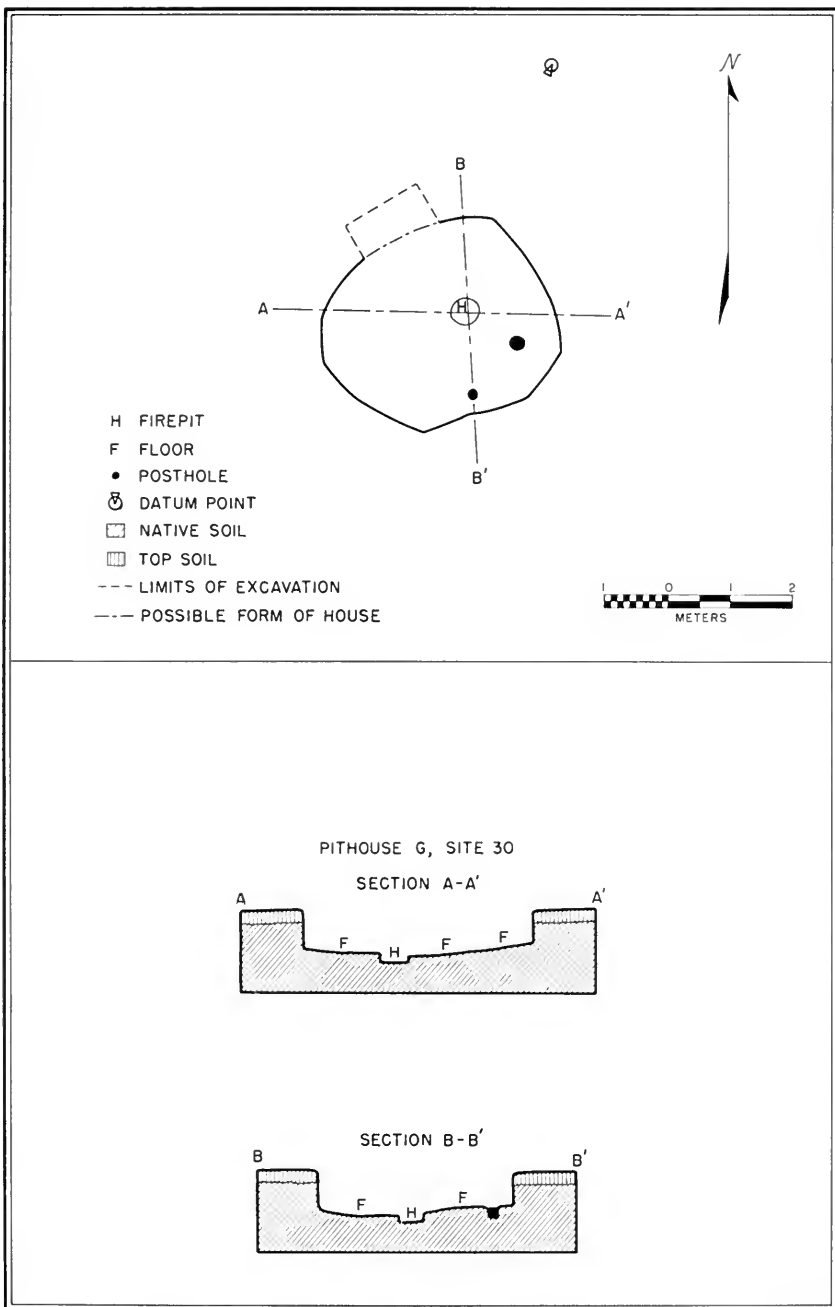


FIG. 27. Plan and sections of Pit-house G.

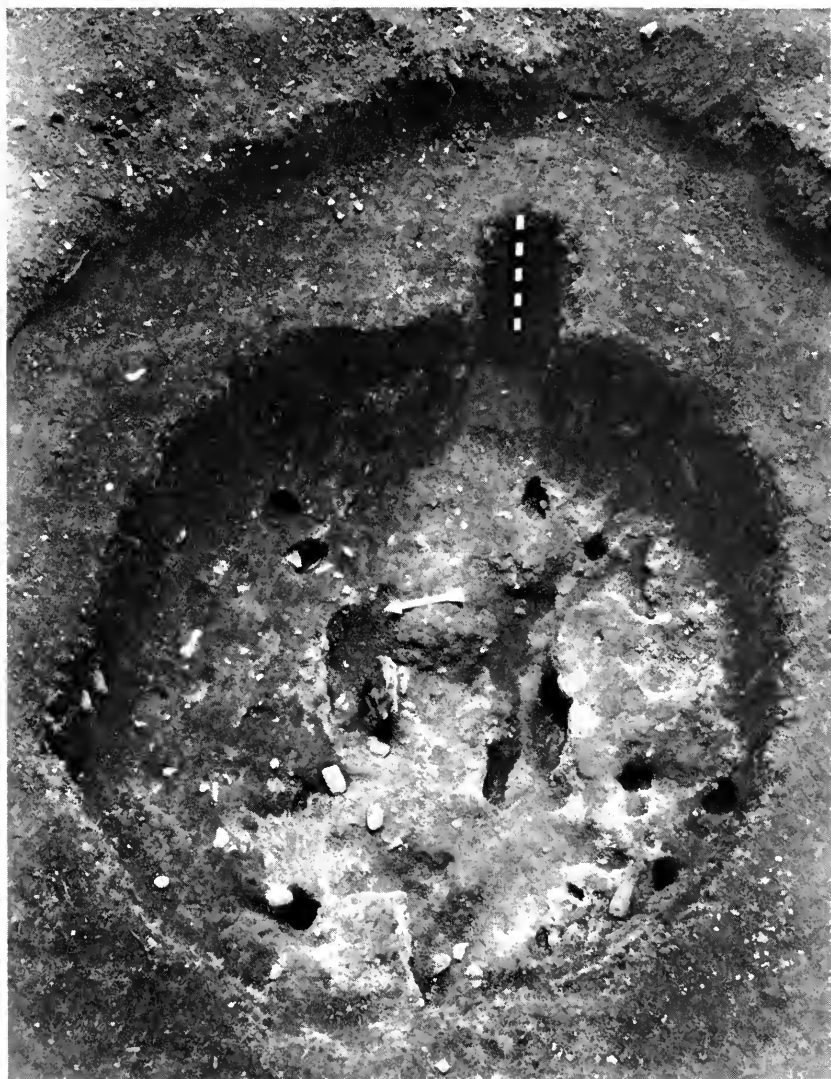


FIG. 28. Pit-house H, Site 30, showing entryway, postholes, hearth area, manos, and "drum" grooves. Arrow 50 cm. long points north; meter stick in background.

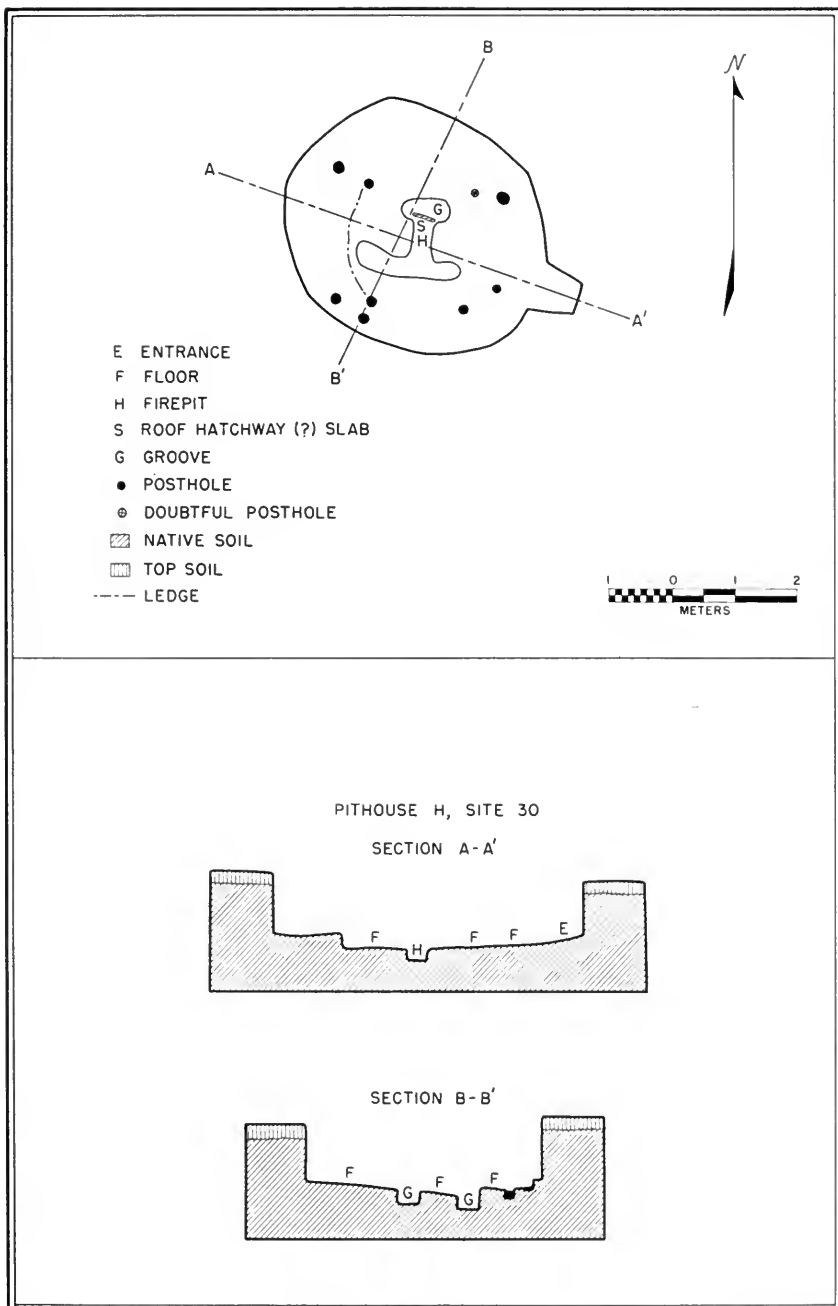


FIG. 29. Plan and sections of Pit-house H.



FIG. 30. Over-all view of Site 30; Pit-house H not shown.

PIT-HOUSE H, SITE 30

(Figures 28, 29)

Shape.—Circular. Greatest diameter, 4.1 meters.

Walls.—Of unplastered gravelly earth and native red clay.

Floor.—Of gravelly, chalk-colored earth; uneven. Depth below present ground level, 80 to 90 cm.

Firepit.—Not well defined; appears confined to shallow groove that connects with two other floor grooves and forms what might be called the bar to the “H.”

Grooves in Floor.—Two, at right angles to “firepit” groove. The one on the north side of the firepit is 1 meter long, 45 cm. wide, and 20 cm. deep; the one on the south is 1.5 meters long, 45 cm. wide, and 30 cm. deep. These grooves may have served as foot drums.

Lateral Entrance.—Probably one on east side; floor, 85 cm. below ground level; length, 90 cm.; width at inner end, 55 cm.

Pits.—None.

Postholes.—Eight in number; depths, 10 to 30 cm.; diameters, 15 to 20 cm.

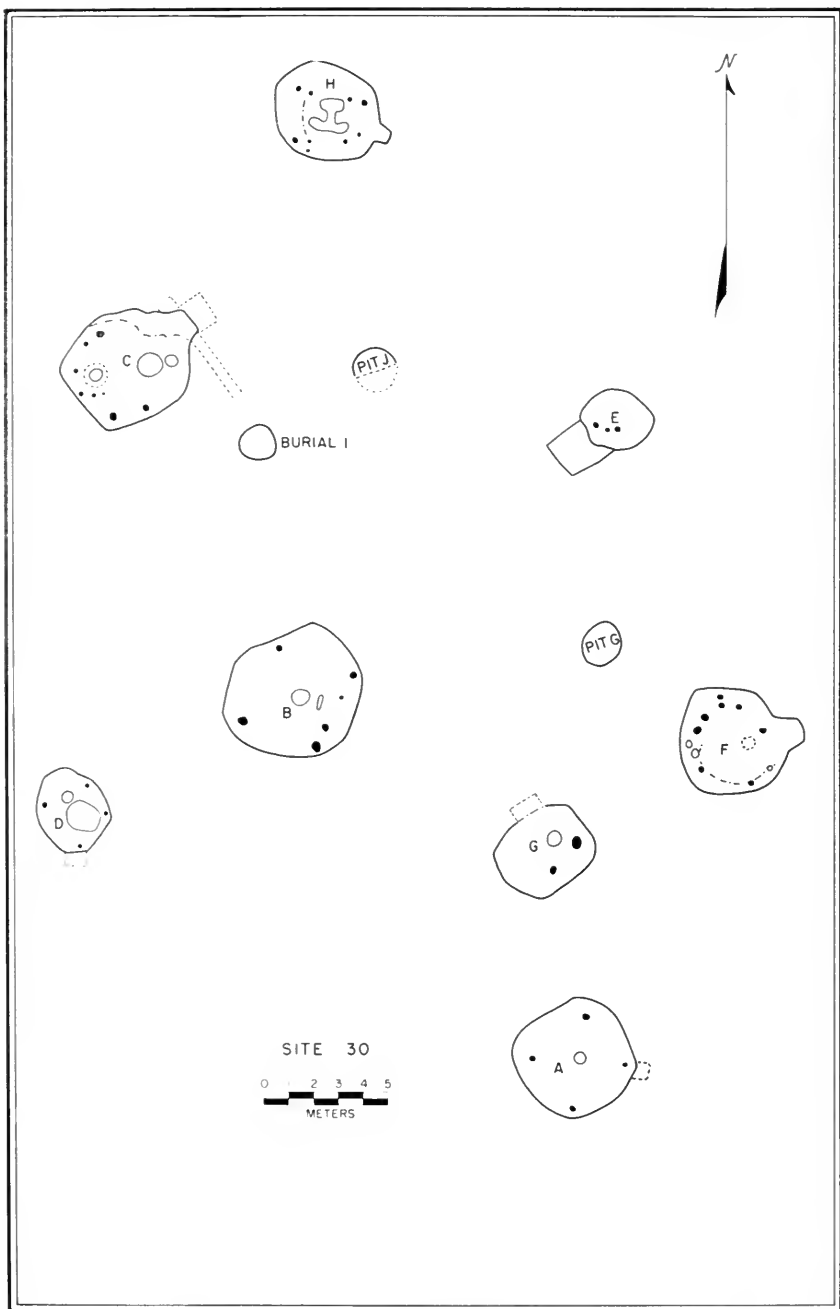


FIG. 31. Map of Site 30.

Roof.—No fragments of roof materials recovered; probably the same as described in Pit-house A.

Pottery Types.—Alma Plain, Forestdale var.; San Francisco Red, Vernon var.; Forestdale Smudged; Woodruff Smudged.

Phase.—Vernon.

SITE 31, "FORMATIVE" PUEBLO

(Figures 32–35, 37, 38)

Number of Rooms Excavated.—Four; adjacent but not contiguous; rectangular in shape. Rooms arranged in roughly rectangular fashion. Dimensions: Room 1, 2.08 by 2.25 meters; Room 2, 2.1 by 2.5 meters; Room 3, 1.75 by 2.05 meters; Room 4, 2.80 by 2.3 meters.

Walls.—Of crude masonry made of unshaped boulders of assorted sizes: lengths from 12 to 22 cm.; widths from 8 to 16 cm.; thicknesses from 6 to 19 cm. Stones generally laid up in single thickness with bottom stones resting directly on the floor with no special footing or foundation. Portions of some walls consisted of double thickness of stones. Although masonry now extends up to the present ground level, we assume, from masses of rocks around rooms, that the walls continued upward in the same crude fashion for perhaps 3 or 4 feet above ground. It is amazing that such a crude masonry wall stood at all. *Spalls* of sherds and small stone slabs. *Mortar* of mud. No bonding; no core; some pebbles or lumps of clay filled up interstices between boulders.

Wall Heights.—At present, the walls range from 30 cm. to 1.20 meters in height. *Plaster* of mud was found on a portion of one wall.

Entrances.—None.

Floors.—Of yellow-orange gravelly clay; very uneven; some depressed below old and/or present ground level more than others; depths range from 30 cm. to 1.20 meters below present ground level; unplastered.

Groove.—Found on east side of floor in Room 1. Use unknown. No slab found in it. Length, 50 cm.; depth, 12 cm.

Firepits.—Found in Rooms 1, 2, and 4. The one in Room 1 was round, 55 cm. in diameter and 10 cm. deep; the one in Room 2 was rectangular, 40 by 31 cm. and 12 cm. deep; and the one in Room 4 was round, 30 cm. in diameter and 12 cm. deep. Ashes found in firepits.

Pits.—One in southwest corner of Room 3; dimensions at mouth, 55 by 75 cm.; depth, 70 cm. Contained dark fill and few sherds.

Burials.—Two. (1) Semi-flexed skeleton in southwest corner of Room 1 on floor. On chest was sherd of San Francisco Red, Vernon var.; a Puerco



FIG. 32. Site 31, showing Rooms 1 and 2. Room 4 and part of Room 3 in left background. Arrow 50 cm. long points north; meter stick in background.



FIG. 33. Site 31, Rooms 3 and 4, showing pit, posthole, and wall outlines. Arrow 50 cm. long points north; meter stick in background.



FIG. 34. Site 31, showing masonry in south wall of Room 4.



FIG. 35. Site 31, Room 1, Burial 1. Arrow 50 cm. long points north.



FIG. 36. Burial 1, in pit near Pit-house C, Site 30. Arrow 30 cm. long points north.



FIG. 37. Site 31, showing Pit-house A or "walk-in well"(?). Arrow 50 cm. long points north; meter stick in background.

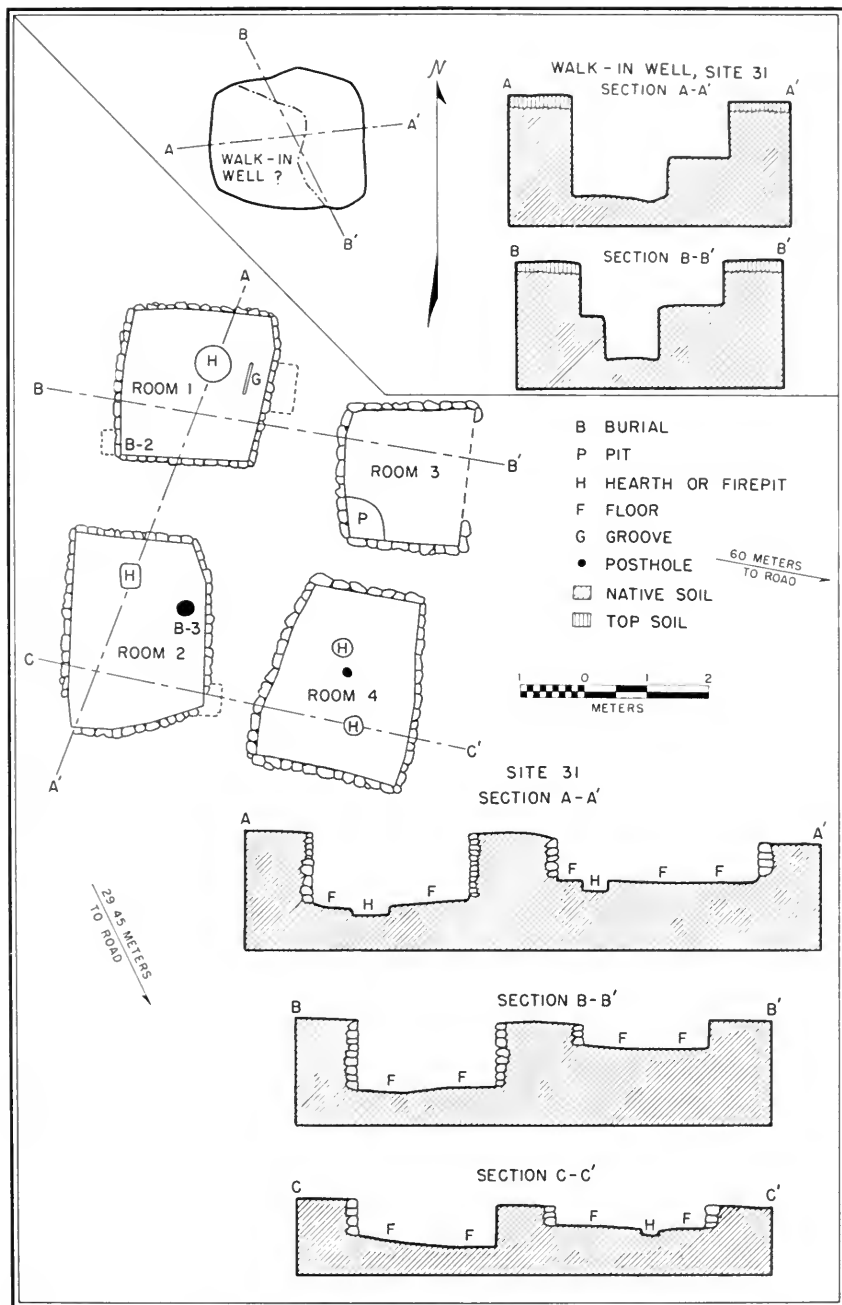


FIG. 38. Plan and sections of Site 31.

Black-on-White bowl and a Reserve Indented Corrugated jar near head. Head of skeleton toward south. Female. (2) Infant (probably less than 2 years old) on east side of Room 2, on floor, a few feet from east wall. Over it, a MacDonald Painted Corrugated bowl.

Postholes.—Two. One in Room 2; diameter, 25 cm.; depth, 40 cm. One in Room 4; diameter, 15 cm.; depth, 15 cm.

Roof.—Height and exact character not known. Beams probably supported by walls.

Pottery Types.—Alma Plain, Forestdale var.; Woodruff Smudged; Puerco Black-on-White; Reserve Black-on-White; Snowflake Black-on-White; Tularosa Black-on-White; Wingate Black-on-Red; Reserve Indented Corrugated; Reserve Plain Corrugated.

Phase.—Pinyon.

General Comments.—None of the rooms burned. They appear to be intermediate stage between pit-houses and true surface rooms; cellular and contiguous.

WALK-IN WELL(?), SITE 31

Shape.—Rectanguloid; dimensions 2.2 by 2.45 meters.

Walls.—Of unplastered chalky-white soil.

“Shelf.”—Occupies about one-half the area on east side; 90 cm. below present ground level; distance from shelf to floor, 62 cm.

“Pool” or Pit or Floor of lowest section was 1.52 meters below present ground level; floor of chalky-white soil; uneven.

Phase.—Mineral Creek.

General Comments.—No signs of firepit, fire, postholes or beam holes. The whole unit is strange and difficult to classify. It probably was not a pit-house, unless the excavation was unfinished; but if this were true, the house would have been much smaller than the others. We suggest a “walk-in well” partly because the structure was near a stream bed. There are some resemblances between this unit and Pit-house E, Site 30 (see p. 45). Both are fairly deep, both have a “shelf,” and both lack firepits.

III. Artifacts from the Village Sites

For comparative purposes the details of the stone, bone and shell artifacts have been outlined below. They have been arranged in order by material and method of manufacture. Those used in certain activities such as milling or hunting have been grouped together as closely as possible.

The artifacts were studied with the following interests in mind: (1) the data that their distribution might contribute toward the chronology of the area; (2) the uses of the artifacts; (3) the methods of manufacture.

HANDSTONES

Manos were found on the floors of all the houses at Site 30 except Pit-houses A and E, which had them in the fill. Only one was recorded from Site 31. In all, 44 manos were recovered. Most of them were made from igneous rocks such as diorite and granite, or from sandstone. More than half of them were shaped by pecking on their ends and edges to a rounded rectangular outline, and a few have grooves or hollows pecked in their edges for finger grips. Fourteen specimens were less than 15.0 cm. long and have been classed as one hand manos. The others ranged up to 20 cm. in length (average about 16.0 cm.). Only seven had been used on both surfaces. Generally the grinding surfaces are pitted, showing that they were pecked to roughen them, but many were also polished by use in grinding. The manos that were used long enough to become wedge-shaped in cross section through the short axis are in a decided minority. One group had the grinding surfaces worn so as to be more sharply convex lengthwise than across the short axis. This type of wear was taken as evidence of use of these manos on a trough metate rather than on a basin metate. Only metates with troughs open at one end (scoop type) were found, and in Pit-houses C and D manos were found in association with this type of metate. About half of the manos were more or less oval in outline and could be distinguished from ordinary pebbles only by their pecked or polished grinding surfaces.

The manos found at Site 30 are generally comparable to those from sites of the earlier pottery-making periods in this part of the Southwest (Basket Maker III, Pueblo I, Mogollon 1, 2, 3) in that there is a relatively high proportion of short manos in the collection and a large number of

oval or rounded rectangular manos as contrasted with long tabular ones. The collection may be distinguished from those of later sites by the lack of beveled manos, with three or more grinding surfaces, and from those of earlier, particularly pre-ceramic sites by the number of longer manos averaging more than 14 or 15 cm. long.

The rubbing stones are also difficult to distinguish from natural pebbles. They are very much like the oval one hand manos, but they are smaller. Only one specimen had been shaped in outline. The others were distinguished from natural pebbles in the pit-house fill only by their rubbing surfaces. Some of these have distinct facets; others are simply polished or scratched through use. In general, a smooth surface is more common. Like the manos, they may have been used on the metates in the milling process, or for smoothing and bonding the plaster on the floors and walls of the houses. There is little that is distinctive about these artifacts, but apparently the oval and rounded forms are more frequent from Mogollon than from Anasazi sites.

Few rubbing stones were found. It is possible that some of the shorter manos should be grouped with the rubbing stones, as the dividing characteristic is arbitrary. In contrast with the Reserve area, rubbing stones seem relatively scarce (cf. Martin and Rinaldo, 1950a, Table 9, p. 356; 1950b, Table 13, p. 496).

Pestles were also rare. The two found were of the short thick multi-face type. The scarcity of pestles correlates with the infrequent occurrence of mortars and the general paucity of both types of implements in the more northern sections of the Southwest (Woodbury, 1954, p. 118). They are more frequent in the Reserve area (Martin and Rinaldo, 1950a, Table 9, p. 356). They were probably used for milling and crushing, like the metates and manos.

MILLING STONES

All the metates recovered were trough type. The whole specimens and some end fragments were of the kind with the trough closed at one end, sometimes termed "scoop type." Thirty-one metates or fragments thereof were recovered. These were found on the floors of all the houses except Pit-houses A, E, and H at Site 30 and there were fragments in the roof fill of Pit-house A. Fragments were also found in the trenching of Rooms 1, 2, and 3 at Site 31. As the sides of the troughs of most of these metates curve only slightly in toward the mouth they are more like the Anasazi metates of this period, which have straight-sided troughs, than like many of the Mogollon metates, which are in effect closer to metates of the "open basin" type than to the "scoop type." One specimen was like the Utah type and had a groove for the mano rest pecked in the shelf end.

This type of metate was common at the Forestdale "Little Bear" Ruin (Haury, 1940, p. 98). The metates from Site 30, like the manos, correspond to those found most frequently in the earlier pottery-making periods of both Anasazi and Mogollon (Woodbury, 1954, p. 200), in which trough types with one end of the trough closed are more common. On the whole, they are rather rough specimens; their bottoms and sides are unworked, the thick slabs from which they were made are not symmetrical and the trough itself is the only carefully shaped feature.

Metates and manos were found in the position in which they were used in only three of the houses, and in two of these houses they were upside down, that is, trough face to the floor. In Pit-house C they were grouped around the entrance. Several fragments and a mano fragment were in a shallow pit near this entrance, and a metate lay in position for use beside the pit. We conjectured that this was a milling pit and that a receptacle such as a basket bowl may have been placed in the pit just below the mouth of the metate to receive the flour. The other two houses in which metates were found *in situ* were smaller, much less deep and lacked entrance passage-ways; so we cannot correlate the position of the metates with reference to the entrance. However, in both of these houses, they were located in the west half of the house. In Pit-house D, one metate was leaning against the south wall. The metates which were trough side up, and supposedly in position for use, rested directly on the floor; they were not propped up at an angle. The metates in Pit-houses D and G were broken and cracked from the fires which burned these houses.

Only two mortars were recovered: a small one and a large "boulder" one. The small one was found in Pit-house C near the entrance and near the shallow pit. A pestle lay near by. This smaller mortar is a crude specimen, scarcely recognizable as an artifact except for a distinct shallow depression pecked and battered in one face. The large mortar had been broken in several pieces. It was found in and near Pit-house E. Part of it was found in the lower fill, and part, which fitted with it fortunately, was found on the surface near the house. Apparently it had been broken intentionally, as a hole had been broken through the bottom of the cup. The distribution of mortars, like that of pestles, is more frequent in the southern areas of the Southwest.

MAULS

Two of the three mauls recovered are among the more carefully shaped specimens in the collection. One of these is three-quarters grooved and the other is full grooved. They tend to be rounded rectangular or oval, with flattened striking surfaces. According to Roberts (1931, p. 155), this type

was developed in the Little Colorado area. The fact that one of the mauls is made from a stone that had been used as a mano illustrates the re-use of an artifact for a purpose other than that for which it was originally intended. Similar grooved manos have been reported from a number of sites in the Jeddito area, including Awatovi (Woodbury, 1954, p. 47).

This practice of making a groove around a mano and thus converting it into a "maul" seems to hint that these implements may have been used in milling as pestles, rather than to pound stakes or to dress building stone. Burned potter's clay in the pores of a maul at Crooked Ridge village suggested to Wheat (1954, p. 140) that these implements were used for pulverizing various materials, and the close association of one of these implements with a boulder mortar at Turkey Foot Ridge (Martin and Rinaldo, 1950a, p. 308) also suggests such a use. Another instance which possibly indicates this use is the association of a full grooved maul with metates, a pestle, and pecking stones in a milling or storage pit at the SU Site (Martin and Rinaldo, 1947, fig. 109, and also field notes). The use of hafted mauls, or pestles, for pulverizing meat among the historic tribes of the Plains, "the northern Northwest Coast and in the Southwest among tribes like the Apaches and Navahos which show Plains influence," is cited by Driver and Massey (1957, p. 239).

PIPE

The single finished "tobacco" pipe is like Mogollon pipes in that it is tubular in form and has an hourglass-shaped interior. The fluting on the exterior is unusual.

CHIPPED STONE ARTIFACTS

Sixty-nine chipped stone artifacts were recovered from the two sites. The relatively unshaped artifacts such as flake knives and scrapers outnumber the shaped ones such as projectile points and blades. There is a variety of projectile point and blade shapes. No two are exactly alike and, in the absence of a larger series from which valid types might be made up, they have been placed in classes on the basis of size, manner of notching, and proportion of length to width. Even so, the numerically greatest category contains only three specimens. These are medium-sized, narrow lateral notched points vaguely reminiscent of some from Basket Maker sites such as Woodchuck Cave (Lockett and Hargrave, 1953, p. 24, fig. 13, *g, k, m*), or a form from Georgetown Phase levels of Tularosa Cave (Martin, *et al.*, 1952, p. 159, fig. 47, *j, k*).

SCRAPERS AND KNIVES

Side scrapers and utilized flake knives were not abundant. They are simple flake tools generally longer than they are wide with some secondary chipping along one or more edges, usually the longer edges. The scrapers are made from thick flakes and are generally chipped at a steep angle to the edge of the flake. Chalcedony is the most common material of which they were made, but there are some of chert and jasper.

Choppers were recovered from Sites 30 and 31, but they were very rare. In form and size they were much like those from Laguna Salada. They had a portion of the crust left intact for a grip and were made from fist-sized pebbles. It is assumed that in the absence of axes they were used in cutting poles and in other wood work.

SHELL OBJECTS

Few shell objects were found. A bracelet fragment was recovered from Site 30 and a triangular piece of cut shell from Site 31. The only process in evidence on these specimens is cutting. They were not engraved or carved. The use of the cut piece of shell is unknown, although it resembles some pendants and may be an unfinished pendant. Bracelets are more common in the southern parts of the Southwest as are other forms of shell work, and the thinner or intermediate specimens tend to be earlier than the thick specimens (Haury, *in* Gladwin, *et al.*, 1937, p. 142).

BONE TOOLS

The bone awls are made from long bones with the head of the bone and part of the shaft intact, from long bones split in half, and from bone splinters. Most of them were made from bones split in half. There is one small delicate awl and one fine long bone needle or bodkin fragment, but most of the bone implements are medium-sized, rather sturdy-appearing specimens. Their tips exhibit cutting marks on the upper portions and polishing on the points; apparently they were first pared to a point and then ground and polished. Most of them have very shallow straight parallel scratches which run diagonally across the tips and extend up the shafts beyond the tip. These may be marks of use from repeated rubbing on the fabric elements in weaving. One of these awls has a pronounced shouldered tip and the marks left by cutting in the process of manufacture are distinct. A group of awls came from the southwest quadrant of Pit-house C, near the wall. It is conjectured that they were part of a set of weaver's tools.

There is nothing particularly distinctive about the collection of bone tools. They might have come from any site in the Southwest. There is

possibly only one notched awl from Site 30, although other traits indicate that this is a Mogollon site. This awl has the head of the bone left intact and the shaft has been tapered down to a point first by splitting it in half; the notch results from this splitting but it is not the deep squarish notch characteristic of the typical Mogollon notched awl (cf. Martin, 1943, fig. 84; Wheat, 1954, fig. 58).

BAKED CLAY OBJECTS

The baked clay objects are miniature ladle fragments and worked sherds. The miniature ladles were made of the same materials as the Alma Plain pottery and in the same way (see pp. 95-98). The worked sherds were made of fragments of different types of pottery, probably by rubbing the edge of one sherd against another. There was nothing to indicate how the various shapes of worked sherds were used. Perforated and unperforated discs seem to be the most common shapes and these have been called "spindle whorls" and "gaming counters." However, there is no definite evidence, as far as is known, that they were used as such anywhere in the Southwest. They have a very wide distribution throughout the Southwest and beyond into the Mississippi Valley (Smith, 1952, pp. 149-153; Kent, 1957, p. 473).

AFFILIATIONS OF THE ARTIFACTS

The characteristics of the pottery and the architecture seem to indicate that the cultural position of Site 30 and Site 31 was in a sense marginal to the center of development of the Mogollon culture; nevertheless, the culture of these sites is more Mogollon in flavor than Anasazi. However, an accurate appraisal cannot be made on the basis of the artifacts alone because so many of the traits are either intermediate in character or are numerically of minor importance. Moreover, many of the artifacts are things like utilized pebbles and flakes and are of a simple "homespun" nature. Consequently they lack attributes which would readily tie them in to any particular one of the Southwestern cultures.

The metates from Site 30 might be taken as artifacts which are of intermediate character. Two of the twelve examples have a shelf at the closed end of the trough, and this feature might compare with the adequate shelf of the typical Basket Maker III and Pueblo I scoop type metate. In this attribute, the majority of the specimens compare more closely with Mogollon metates of this type than with Anasazi metates. However, in the conformations of the trough they are more like Anasazi metates (see p. 64).

A large proportion of the handstones were ovoid or unshaped except by use. This trait appears to be characteristic of Mogollon sites, but the lack of comparable quantitative data from many Anasazi sites renders its cultural status doubtful.

There are a number of types of artifacts which are considered to be typically Mogollon, but which are represented by only a few specimens at these sites. In general, these types have only an infrequent or sporadic distribution on northern or Anasazi sites. This group includes mortars and pestles, the tubular pipe, chipped stone saws, miniature ladles with rod-like handles, and possibly cylindrical grooved mauls and a notched awl. Finally, the types of pottery from which the worked sherds were manufactured are certainly Mogollon.

If it were not for the general Mogollon "flavor" of the sites it might be conjectured that these typical Mogollon artifacts were trade objects. However, in this respect it should be noted that distinctive Anasazi traits are lacking. There are no notched or grooved axes, conical cloud-blower pipes, clay funnel-shaped objects, or the like, although there is some intrusive Lino Gray pottery. The presence of a few choppers may explain the absence of the hafted forms of axes but it does not explain the absence of other Anasazi trade items.

In summary, in the forms of milling stones, the type of maul, the saws, the single large mortar, two pestles, two fragmentary miniature ladles, the tubular pipe, and a doubtful notched awl, there are certain nuances which as far as the artifacts are concerned give the culture of these sites a Mogollon character. There is nothing typically Anasazi and there are a number of traits which might fit equally well into either pattern. Thus the artifacts manifest in a rather colorless fashion the more or less marginal position of the culture, which is more clearly evident in the pottery and architecture.

GROUND AND PECKED STONE ARTIFACTS

MANOS

Single Grinding Surface

CLASS I A

Description: Round in outline, surfaces parallel, grinding surface convex. Total 2.

Occurrence: Pit-houses C, D, floor.

Dimensions: Diameter, 13.5, 11.0 cm.; thickness, 5.2, 2.5 cm.

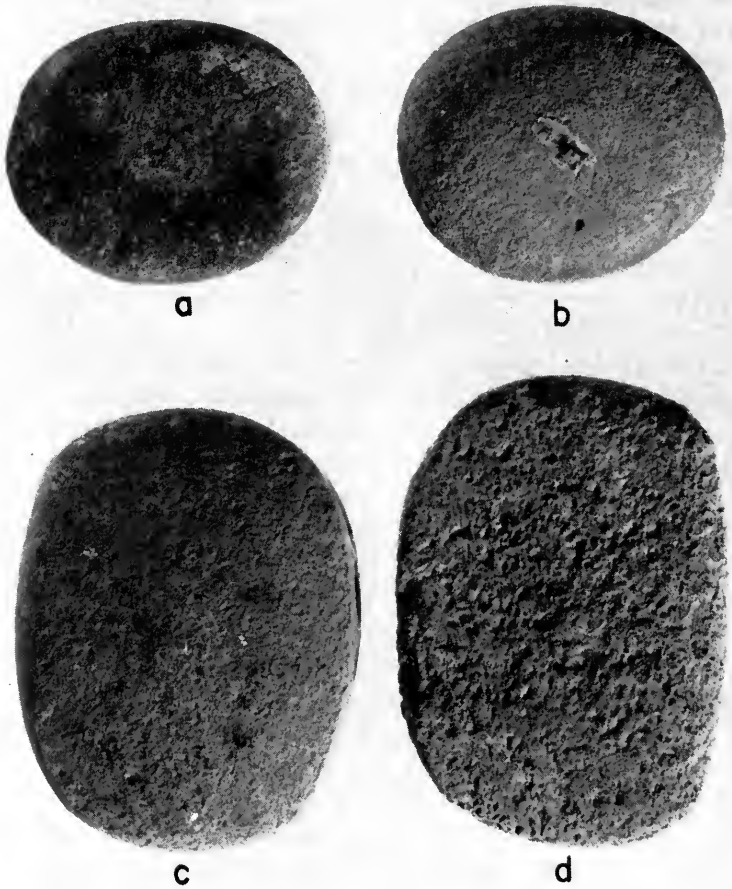


FIG. 39. Manos from Site 30. Length of *d*, 16.9 cm.

CLASS I B

Description: Oval in outline, grinding surface convex, two specimens wedge-shaped in cross section, remainder with surfaces parallel (fig. 39, *c*). Total 4.

Occurrence: Pit-house D, floor; Pit-house F, entrance; Pit-house C, fill; Pit-house H, trench.

Dimensions: Length, 17.5, 15.2, 11.4, 17.8 cm.; width, 11.3, 12.6, 9.4, 16.3 cm.; thickness, 6.6, 5.0, 3.6, 7.8 cm.

Material: Granite.

CLASS I C

Description: Oval in outline, surfaces parallel, grinding surface convex (fig. 39, *a, b*). Total 5.

Occurrence: Pit-house A, fill; Pit-house F, entrance; Pit-houses D, F, G, floors.

Dimensions: Length, 12.6, (fragment), 11.5, 11.8, 17.1 cm.; width, (fragment), 12.7, 9.6, 10.1, 8.7 cm.; thickness, 4.5, 4.9, 5.6, 5.4, 5.3 cm.

Material: Sandstone.

CLASS I D

Description: Oval in outline, surfaces parallel, grinding surface flat (fig. 39, *d*). Total 5.

Occurrence: Pit-houses A, C, fill; Pit-houses C, F, floor.

Dimensions: Length, 16.9, 10.1, 16.0 cm., (fragments); width, 11.8, 6.1 cm., (fragments); thickness, 4.8, 7.5, 4.4, 2.6, 3.5 cm.

CLASS I E

Description: Oval in outline, surfaces parallel, grinding surface convex lengthwise, bluntly convex crosswise. Total 2.

Occurrence: Pit-house A, fill; Pit-house H, floor.

Dimensions: Length, 16.1 cm., (fragment); width, 9.4, 10.9 cm.; thickness, 3.9, 4.8 cm.

CLASS I F

Description: Rectangular in outline, one specimen with wedge-shaped cross section, the remainder with surfaces parallel, grinding surface convex. Total 6.

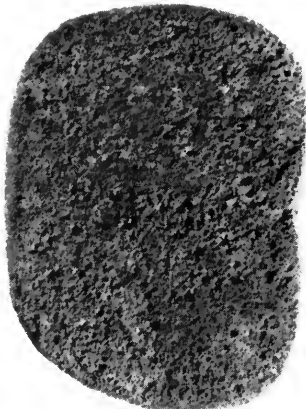
Occurrence: Pit-house H, fill; Pit-houses C, D, F, G, H, floors.

Dimensions: Length, 16.5, 18.0, 16.6, 14.5, 18.5 cm., (fragment); width, 9.1, 12.5, 12.1, 9.4, 9.5, 11.1 cm.; thickness, 4.1, 4.3, 4.1, 4.8, 4.1, 5.5 cm.

CLASS I G

Description: Rectangular in outline, two specimens wedge-shaped in cross section, the remainder with surfaces parallel, grinding surface bluntly convex (fig. 40, *c, d*). Total 9.

Occurrence: Pit-houses B, D, F, H, floors (Site 30); Room 1, trench (Site 31).



a



b



c



d

FIG. 40. Rectangular manos from Site 30. Length of *d*, 21.6 cm.

Dimensions: Length, 21.6, 20.0, 11.2, 15.4, 17.7, 17.1, 20.0 cm., (fragments); width, 12.3, 11.8, 12.2, 9.2, 11.6, 12.2, 11.1, 10.8, 11.0 cm.; thickness, 4.5, 5.8, 4.5, 6.2, 4.4, 7.0, 5.0, 5.7, 3.9 cm.

CLASS I H

Description: Oblong in outline, surfaces parallel, grinding surface flat. Total 1.

Occurrence: Pit-house D, floor.

Dimensions: Length, (fragment); width, 8.2 cm.; thickness, 3.6 cm.

CLASS I I

Description: Rectangular in outline, surfaces parallel, grinding surface convex lengthwise, bluntly convex crosswise (fig. 40, *a, b*). Total 4.

Occurrence: Pit-house H, trench; Pit-houses C, F, G, floors.

Dimensions: Length, 15.4, 16.2, 16.1 cm., (fragment); width, 10.8, 10.0, 11.4, 11.6 cm.; thickness, 3.1, 4.4, 3.3, 5.2 cm.

Material: Granite, diorite.

Two Grinding Surfaces

CLASS II A

Description: Oval in outline, surfaces parallel, grinding surfaces convex. Total 6.

Occurrence: Pit-houses B, E, fill; Pit-houses F, G, floors.

Dimensions: Length, 14.7, 13.3 cm., (fragments); width, 12.3, 10.2, 11.1, 9.1 cm., (fragments); thickness, 6.0, 6.8, 8.4, 9.1, 7.5, 7.5 cm.

RUBBING STONES

Single Rubbing Surface, Surfaces Parallel

CLASS A

Description: Roughly circular in outline, rubbing surface convex (fig. 41, *b*). Total 1.

Occurrence: Pit G, fill.

Dimensions: Length, 9.3 cm.; width, 8.6 cm.; thickness, 3.2 cm.

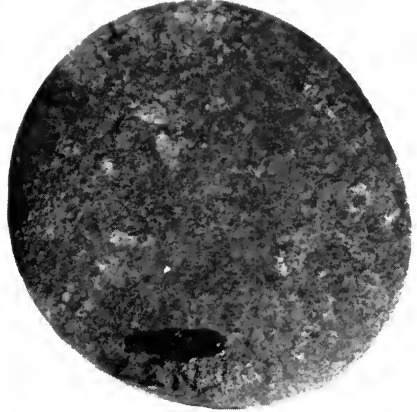
Material: Sandstone.

CLASS B

Description: Oval in outline, rubbing surface convex, smooth (fig. 41, *c*). Total 1.



a



b



c



d

FIG. 41. Rubbing stones from Site 30. Length of *d*, 8.5 cm.

Occurrence: Pit-house H, fill.

Dimensions: Length, 8.4 cm.; width, 7.0 cm.; thickness, 4.1 cm.

Material: Chert.

CLASS C

Description: Oval in outline, rubbing surface bluntly convex (fig. 41, *d*). Total 2.

Occurrence: Pit-house F, fill; Pit-house H, floor.

Dimensions: Length, 8.3, 8.5 cm.; width, 5.9, 7.3 cm.; thickness, 2.1, 3.8 cm.

Material: Quartz, sandstone.

CLASS D

Description: Oblong in outline; rubbing surface smooth, convex (fig. 41, *a*). Total 1.

Occurrence: Pit-house G, trench.

Dimensions: Length, 8.1 cm.; width, 6.5 cm.; thickness, 4.3 cm.

Material: Quartzite.

PESTLES

Description: Multifaced type; roughly oblong in outline, rectangular in cross section with round or battered ends and three or more working surfaces which have been pecked; one specimen a re-used mano (fig. 46, lower). Total 2.

Occurrence: Pit-houses C, D, floors.

Dimensions: Length, 13.2, 11.7 cm.; width, 9.8, 8.2 cm.; thickness, 8.1, 6.9 cm.

Material: Quartzite.

METATES

(Figure 42)

CLASS A

Description: Scoop type; made from large, generally oblong slabs; trough open at one end only, shelf for mano at closed end, sides of trough curve only slightly, bottom and sides of slab unworked, grinding surface pecked, one specimen with groove for mano rest pecked in shelf. Total 12.

Occurrence: Pit-houses A, B, C, fill; Pit-houses C, D, G, floor.

Dimensions: Length, 35.0–62.0 cm., average, 46.0 cm.; width, 32.0–50.0 cm., average, 38.5 cm.; thickness, 7.0–20.0 cm., average, 12.0 cm.; length of trough, 28.0–40.0 cm., average, 34.0 cm.; width of trough, 20.0–25.0 cm., average, 21.7 cm.; depth of trough, 0.8–8.5 cm., average, 3.3 cm.

CLASS B

Description: Fragments of trough type metates; bottom and sides of slab unworked, trough pitted from pecking and with some polished surfaces from grinding. Total 19.

Occurrence: Pit-houses A, B, F, fill; Pit-houses C, F, G, floors; Pit-house D below floor (Site 30). Rooms 1, 2, 3, fill (Site 31).

Dimensions: All fragments, maximum length, 43 cm.; maximum width, 25 cm.; thickness, 4.5–17.0 cm., average, 10.0 cm.; depth of trough, 0.5–9.0 cm., average, 3.9 cm.

MORTARS

CLASS A

Description: Small squarish stone with shallow saucer-shaped depression pecked in one face. Total 1.

Occurrence: Pit-house C, floor near entrance.

Dimensions: Length, 21 cm.; width, 20 cm.; thickness, 13.9 cm.; length of cup, 13.8 cm.; width of cup, 16.5 cm.; depth of cup, 2.6 cm.

CLASS B

Description: Boulder mortar type; unshaped block of stone, roughly circular in outline with cup-shaped depression ground and pecked in center, cup broken through (fig. 43). Total 1.

Occurrence: Pit-house E, lower fill and surface.

Dimensions: Diameter, 35 cm.; thickness, 18 cm.; cup diameter, 15 cm.; cup depth, 16 cm.

WORKED SLABS

Description: Thin stone slabs, rectangular with rounded corners in outline, surfaces rough, one specimen with some edges chipped (fig. 44). Total 4.

Occurrence: Pit-houses A, H, roof fill; Pit-houses B, C, floor.

Dimensions: Length, 39.5, 50.0, 39.0, 43.0 cm.; width, 37.0, 48.0 cm., (fragments); thickness, 3.0, 6.0, 5.0, 2.8 cm.

MAULS

CLASS A

Description: Full grooved type; an elongated oval tending towards sub-rectangular in outline; striking surfaces tending to be flat; a rounded rectangle in cross section, wider than thick, pecked on all major surfaces



FIG. 42. Metate from Site 30, floor of Pit-house C. Trough open at one end only.



FIG. 43. Boulder mortar from Site 30, Pit-house E; diameter, 35 cm.



FIG. 44. Worked slab from Site 30.

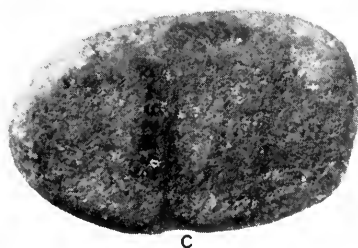
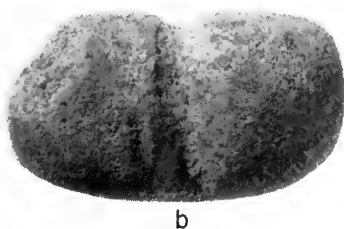
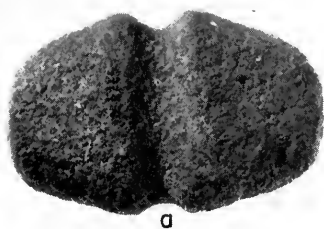


FIG. 45. Mauls from Site 30.
Length of *c*, 16.8 cm.



FIG. 46. Lower, pestle from Site 30; upper, discoidal from Site 31; diameter of discoidal, 12.2 cm.

and with both ends battered, deep full groove around middle, low ridge or lip bordering groove (fig. 45, *a*). Total 1.

Occurrence: Pit-house F, floor.

Dimensions: Length, 15.3 cm.; width, 9.8 cm.; thickness, 5.4 cm.; groove width, 3.0 cm.; depth, 1.0 cm.

Material: Diorite.

CLASS B

Description: Three quarters grooved type; roughly oval in outline with some tendency towards sub-rectangular, oval to sub-rectangular in

cross section; pecked on all major surfaces, wide shallow groove across middle of one edge and both surfaces; one specimen made from mano with single bluntly convex grinding surface (fig. 45, *b, c*). Total 2.

Occurrence: Pit-houses E, G, floor.

Dimensions: Length, 16.4, 16.8 cm.; width, 9.2, 10.5 cm.; thickness, 6.2, 7.4 cm.; groove width, 2.5, 1.5 cm.; depth, 0.5, 0.2 cm.

Material: Granite.

DISCOIDAL

Description: Coarse-grained block of sandstone, circular in outline, surfaces parallel, slightly concave, surfaces and edges worked smooth, regular in outline (fig. 46, upper). Total 1.

Occurrence: Room 4, trench (Site 31).

Dimensions: Diameter, 12.2 cm.; thickness, 4.2 cm.

Material: Sandstone.

STONE PIPES

FINISHED SPECIMEN

Description: Tubular type; cylindrical in shape, outside surface fluted, bore at both bowl and stem ends; tapers to small hole 0.5 cm. diameter about 4.8 cm. from stem end; bore hourglass shape (fig. 47, left). Total 1.

Occurrence: Pit-house E, floor.

Dimensions: Length, (fragment 6.5 cm.); diameter, 2.9 cm.

Material: Gypsum.

UNFINISHED SPECIMEN

Description: Ovoid object with conical depression in one end, surfaces smooth (fig. 47, right). Total 1.

Occurrence: Pit-house G, trench.

Dimensions: Length, 8.0 cm.; width, 7.6 cm.; thickness, 6.8 cm.; cup diameter, 3.8 cm.; depth, 3.3 cm.

Material: Tuff.

CHIPPED STONE ARTIFACTS

PROJECTILE POINTS

CLASS A

Description: Lateral notched, expanding stem narrower than shoulder, slightly convex base, triangular blade with slightly convex edges, lenticular cross section (fig. 48, *a-c*). Total 3.

Occurrence: Pit-house A, fill; Pit-house C, trench and floor.

Dimensions: Length, 3.5, 3.2, 3.6 cm.; width, 1.6, 1.6, 1.5 cm.; thickness, 0.6, 0.5, 0.4 cm.

Material: Chert.

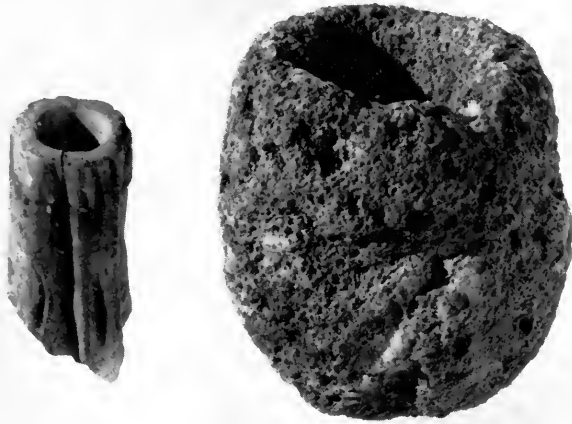


FIG. 47. Fragmentary and unfinished pipes from Site 30. Length of right specimen, 8.0 cm.

CLASS B

Description: Lateral notched, expanding stem narrower than shoulder, broad triangular blade with convex edges, straight base, lenticular cross section (fig. 48, *d*). Total 1.

Occurrence: Pit-house B, fill.

Dimensions: Length, 3.1 cm.; width, 2.2 cm.; thickness, 0.5 cm.

Material: Jasper and chert.

CLASS C

Description: Very small points, diagonal notched, expanding stem narrower than shoulder, down-raking barbs, triangular blade with in-curving edges, lenticular cross section (fig. 48, *e, f*). Total 2.

Occurrence: Pit-house G, trench; Pit-house C, floor.

Dimensions: Length, 1.9, 1.6 cm.; width, 0.9, 1.0 cm.; thickness, 0.3, 0.4 cm.

Material: Obsidian.

CLASS D

Description: Small shallow lateral notched, straight base narrower than shoulder, triangular blade with convex edges, lenticular cross section (fig. 48, *h*). Total 1.

Occurrence: Pit-house D, trench.

Dimensions: Length, 1.9 cm.; width, 1.9 cm.; thickness, 0.5 cm.

Material: Obsidian.

CLASS E

Description: Shallow lateral notched, expanding stem narrower than shoulder, base slightly convex, triangular blade with convex edges (fig. 48, *l*). Total 1.

Occurrence: Pit-house B, fill.

Dimensions: Length, 5.3 cm.; width, 2.0 cm.; thickness, 0.7 cm.

Material: Chalcedony.

CLASS F

Description: Small triangular point, lateral notched, expanding stem wider than shoulder, straight base, triangular blade with straight edges, lenticular cross section (fig. 48, *g*). Total 1.

Occurrence: Room 4, surface (Site 31).

Dimensions: Length, 1.2 cm.; width, 1.0 cm.; thickness, 0.2 cm.

Material: Chert.

CLASS G

Description: Lateral notched, expanding stem narrower than shoulder, blade with incurving edges and a slender tip, channeled base on one face, lenticular cross section (fig. 48, *k*). Total 1.

Occurrence: Room 2, floor (Site 31).

Dimensions: Length, 4.0 cm.; width, 2.3 cm.; thickness, 0.5 cm.

Material: Chert.

TIP AND BASE FRAGMENTS

Description: Projectile point tips and one unmodified base; two specimens with serrate edges. Total 10.

Occurrence: Pit-houses A, H, fill; Pit-house G, trench; Pit-house H, floor (Site 30); Room 1, trench, Room 2, floor, surface (Site 31).

Dimensions: Length, 1.4–4.0 cm.; width, 1.4–2.5 cm.; thickness, 0.2–0.9 cm., average, 0.5 cm.

Material: Chert, chalcedony.

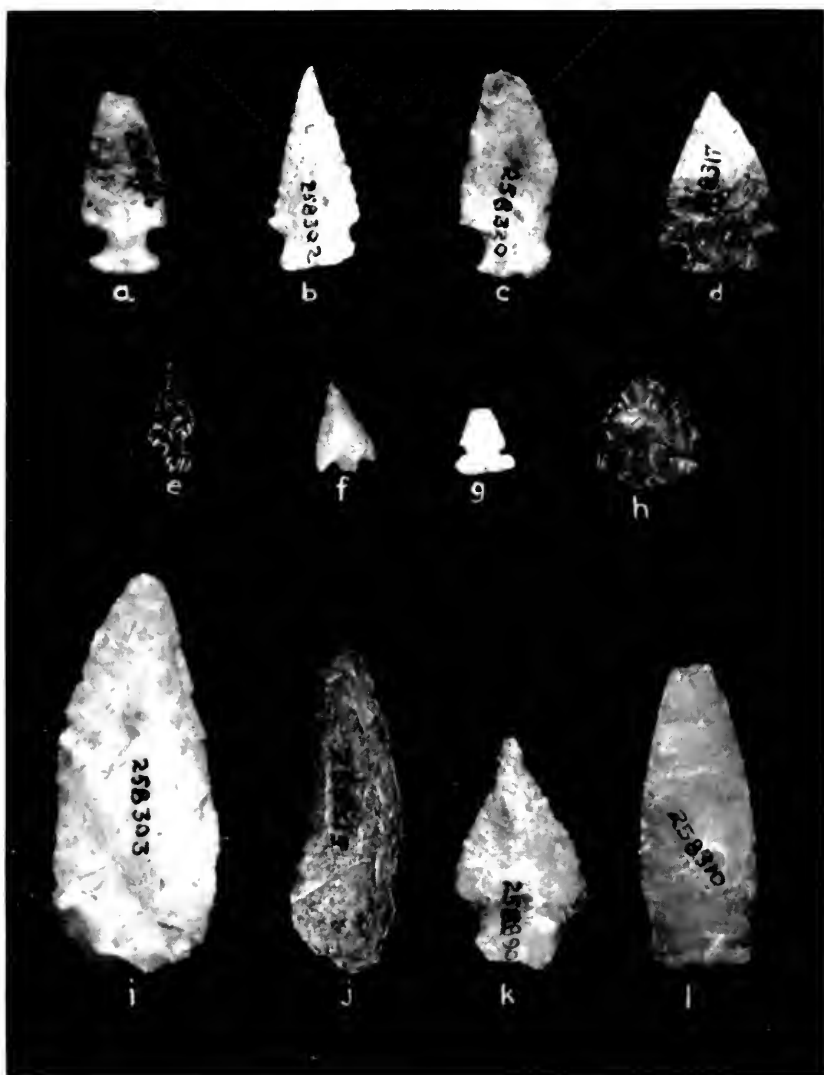


FIG. 48. Projectile points and blades from Sites 30 and 31. Length of *l*, 5.3 cm.

BLADES

CLASS A

Description: Leaf-shaped blades with convex bases, lenticular in cross section (fig. 48, *i, j*). Total 5.

Occurrence: Pit-houses C, G, trench; Pit-house A, fill; Site 31, surface.

Dimensions: Length, 6.9, 6.3, 3.3, 4.1 cm., (fragment); width, 2.2, 2.9, 4.9, 2.1, 2.6 cm.; thickness, 0.4, 0.7, 0.6, 0.7, 0.8 cm.

Material: Chert, chalcedony.

CLASS B

Description: Fragment of leaf-shaped blade with straight base, lenticular in cross section. Total 1.

Occurrence: Pit-house C, trench.

Dimensions: Length, (fragment 3.4 cm.); width, 3.6 cm.; thickness, 0.8 cm.

Material: Fine-grained basalt.

KNIVES

(Figure 49)

Description: Random thin flakes with some minute chipping along one or more edges, generally through use, many oblong in shape, but no regularity of outline. Total 30.

Occurrence: Pit-houses B, C, E, F, trench; Pit-houses A, B, C, fill; Pit-houses, B, C, F, floor; Pit-house E, offset (Site 30); Rooms 1, 2, 3, 4, trench; Room 2, floor (Site 31).

Dimensions: Length, 1.7–6.4 cm., average, 3.2 cm.; width, 0.7–4.5 cm., average, 2.0 cm.; thickness, 0.2–1.2 cm., average, 0.5 cm.

Material: Chalcedony, chert, jasper.

SCRAPERS

(Figure 50)

Description: Thick flakes, generally oblong or semicircular in outline, plano-convex in cross section, percussion chipping generally on the convex surface, occasionally on both surfaces, and secondary chipping at a steep angle along one or more edges. Total 24.

Occurrence: Pit-houses D, G, H, trench; Pit-houses A, C, H, fill; Pit-houses B, C, E, F, floor (Site 30); Room 2, trench, floor; Room 1, fill (Site 31).

Dimensions: Length, 1.8–6.7 cm., average, 4.1 cm.; width, 1.5–4.8 cm., average, 2.9 cm.; thickness, 0.7–2.4 cm., average, 1.2 cm.

Material: Chalcedony, chert, jasper.

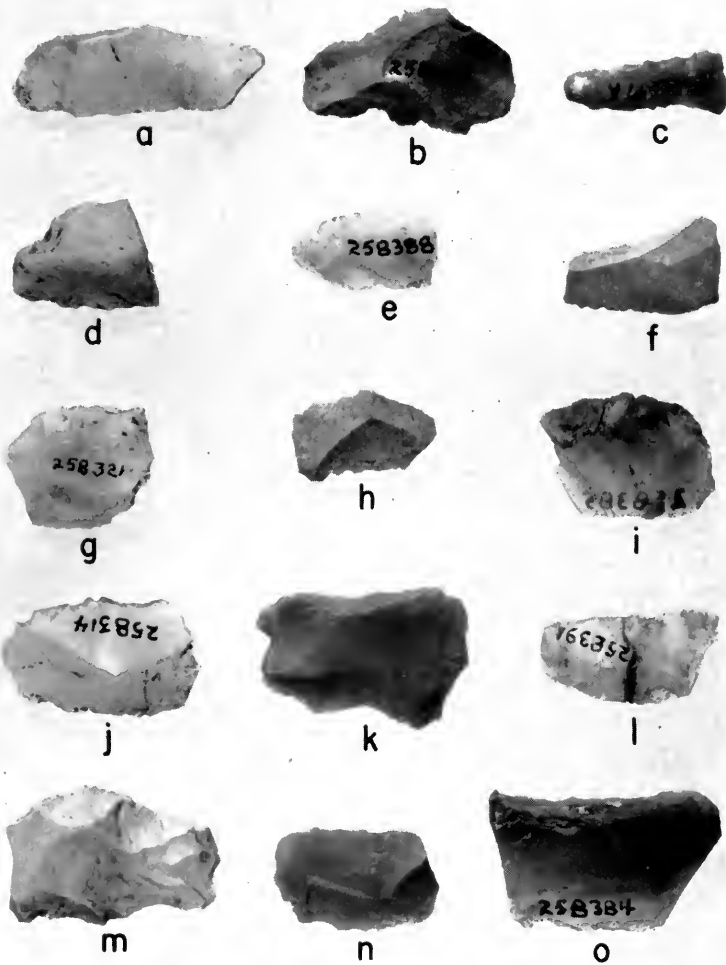
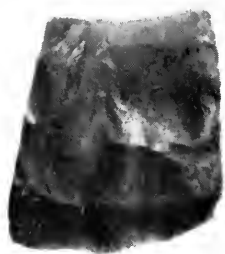
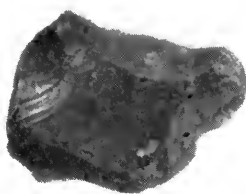


FIG. 49. Flake knives from Sites 30 and 31. Length of o, 4.0 cm.



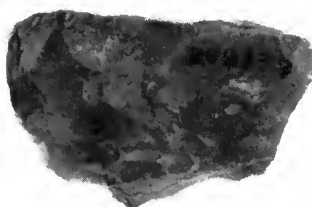
a



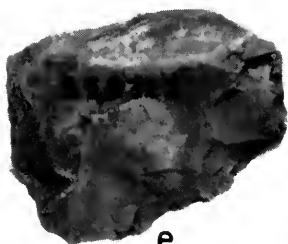
b



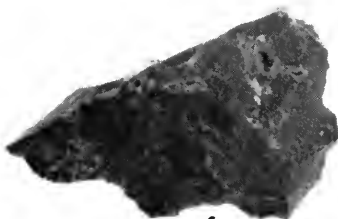
c



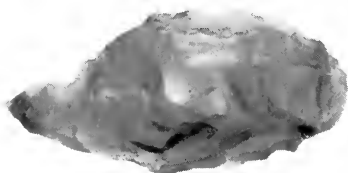
d



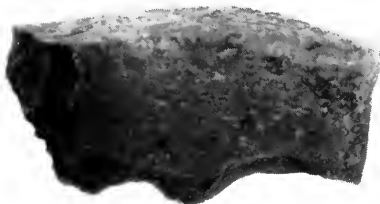
e



f



g



h

FIG. 50. Scrapers from Site 30. Length of *h*, 5.5 cm.

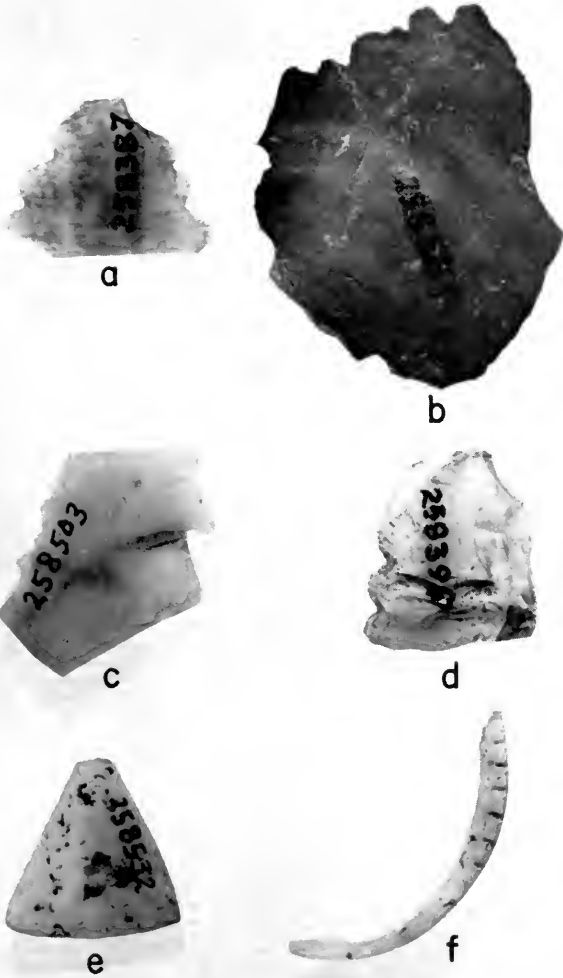


FIG. 51. Saws and shell objects from Sites 30 and 31. Length of *f*, 4.3 cm.

SAWS

Description: Thin flakes, elongate in outline and plano-convex in cross section, secondary chipping on convex surface and one edge, chipped edge deeply notched, serrate (fig. 51, *a, b, d*). Total 3.

Occurrence: Room 4, trench; Room 1, floor (Site 31).

Dimensions: Length, 2.2, 2.7, 5.3 cm.; width, 2.7, 2.3, 4.2 cm.; thickness, 0.3, 0.4, 0.6 cm.

Material: Chalcedony, jasper.

BONE TOOLS

AWLS

CLASS A

Description: Head of bone intact, other end cut, ground and polished to a point (fig. 52, *d, e*). Total 2.

Occurrence: Pit-houses A, C, fill.

Dimensions: Length, 9.7, 11.0 cm.; width, 4.3, 2.9 cm.; thickness, 2.4, 1.6 cm.

Material: Deer (*Odocoileus*) metacarpal; prongbuck (*Antilocapra americana*) ulna.

CLASS B

Description: Head of bone intact except for splitting, other end cut, ground and polished to a sharp point; made from long bones split in half (fig. 52, *a-c, f*). Total 4.

Occurrence: Pit-house C, trench; Pit-house E, fill; Pit-houses B and C, floor.

Dimensions: Length, 7.4, 17.6, 18.4, 14.0 cm.; width, 1.1, 2.0, 1.7, 2.3 cm.; thickness, 0.8, 1.0, 1.2, 1.6 cm.

Material: Deer (*Odocoileus*) metacarpals.

CLASS C

Description: Head of bone wholly removed; one end ground to flat spatula shape; other end ground and polished to a point, spatula end broad, rounded (fig. 52, *i*). Total 1.

Occurrence: Pit-house C, floor.

Dimensions: Length, 12.7 cm.; width, 1.9 cm.; thickness, 0.5 cm.



FIG. 52. Bone awls, miscellaneous types, and bodkin, from Sites 30 and 31. Length of *j*, 13.6 cm.

CLASS D

Description: Splinters of bone with one end ground and polished to a point (fig. 52, *h*). Total 2.

Occurrence: Pit-house C, floor (Site 30); Room 1, trench (Site 31).

Dimensions: Length, 11.8, 5.9 cm.; width, 1.4, 1.0 cm.; thickness, 0.7, 0.5 cm.

CLASS E

Description: Tips of bone awls, ground and polished to a point (fig. 52, *g*). Total 1.

Occurrence: Pit-house F, floor.

Dimensions: Length, (fragment, 3.5 cm.); width, 1.1 cm.; thickness, 0.4 cm.

BODKIN

Description: Flattish section of split long bone with one rounded blunt end, polished smooth, other end broken off (fig. 52, *j*). Total 1.

Occurrence: Pit-house B, floor.

Dimensions: Length, 13.6 cm.; width, 1.8 cm.; thickness, 0.2 cm.

SHELL OBJECTS

BRACELET

Description: Thin curved cut section of bivalve (fig. 51, *f*). Total 1.

Occurrence: Pit-house F, floor.

Dimensions: Length, (fragment, 4.3 cm.); width, 0.4 cm.; thickness, 0.2 cm.

Material: *Glycymeris (Glycymeris) maculata* Broderip.

UNFINISHED PENDANT

Description: Flat piece of shell, roughly triangular in outline, one surface scored, edges smooth (fig. 51, *e*). Total 1.

Occurrence: Room 1, floor (Site 31).

Dimensions: Length, 2.5 cm.; width, 2.3 cm.; thickness, 0.4 cm.

Material: Marine shell, species unknown.

DISC BEAD

Description: Flat circular disc with hole drilled through center. Total 1.

Occurrence: Surface, east end of pueblo.

Dimensions: Diameter, 0.4 cm.; thickness, 0.2 cm.

BAKED CLAY OBJECTS

WORKED SHERDS

CLASS A

Description: Small pottery discs with edges ground smooth. One specimen with pattern incised on concave face (fig. 53, *f*). Total 2.

Occurrence: Pit-house F, fill (Site 30); Pit 2 (Site 31).

Dimensions: Diameter, 4.7 cm., (fragment); thickness, 0.4, 0.6 cm.

Material: Alma Plain Forestdale var.; Woodruff Smudged.

CLASS B

Description: Small pottery discs perforated through center, edges ground smooth (fig. 53, *c*). Total 5.

Occurrence: Pit-house F, fill; Pit-house G, trench; Pit-houses B, C, F, floor.

Dimensions: Diameter, 4.4, 4.2, 6.3 cm., (fragments); thickness, 0.6, 0.6, 0.5, 0.6, 0.4 cm.

Material: Alma Plain, Forestdale var., San Francisco Red, Vernon var.

CLASS C

Description: Small pieces of pottery, roughly oval in form with edges ground smooth (fig. 53, *g, h*). Total 2.

Occurrence: Pit-house B, trench (Site 30); Room 4, trench (Site 31).

Dimensions: Length, 7.3 cm., (fragment); width, 6.8, 6.5 cm.; thickness, 0.5, 0.5 cm.

Material: Alma Plain, Forestdale var.; Snowflake Black-on-White.

CLASS D

Description: Long oval sherd with edges ground smooth (fig. 53, *e*). Total 1.

Occurrence: Pit-house C, floor.

Dimensions: Length, 5.9 cm.; width, 3.5 cm.; thickness, 0.5 cm.

Material: Woodruff Smudged.

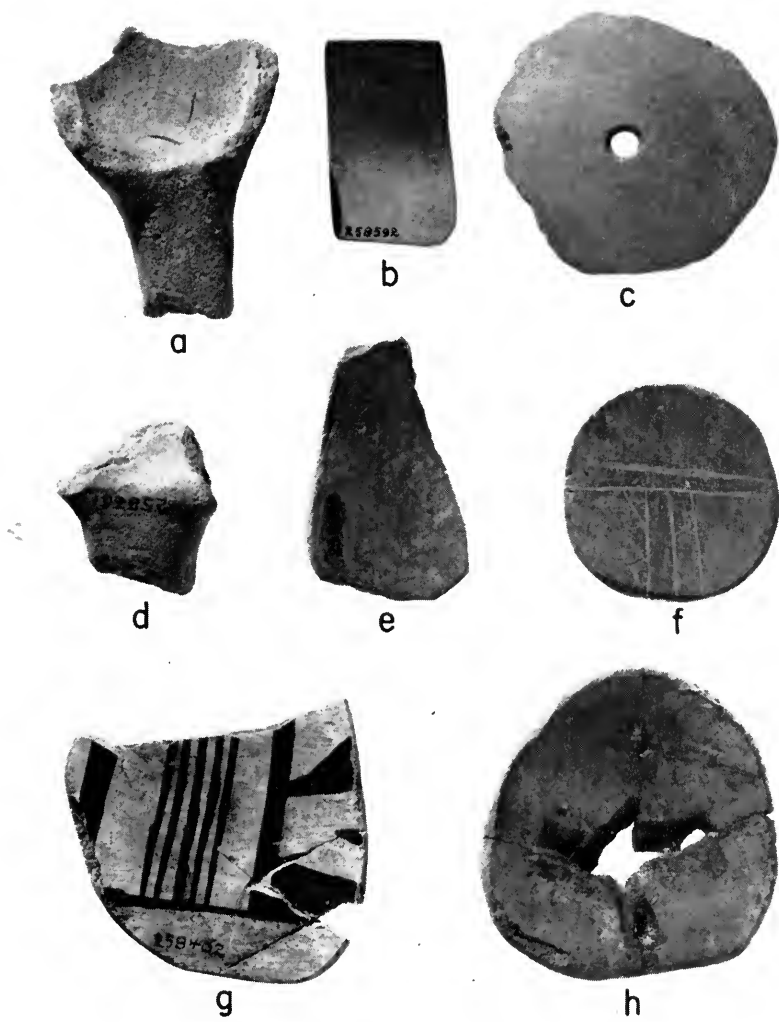


FIG. 53. Worked sherds and miniature ladles from Sites 30 and 31. Length of *h*, 7.3 cm.

CLASS E

Description: Worked rim sherd in form of long rectangle, edges ground smooth (fig. 53, *b*). Total 1.

Occurrence: Pit-house A, trench.

Dimensions: Length, 4.5 cm.; width, 2.6 cm.; thickness, 0.4 cm.

Material: Woodruff Smudged.

MINIATURE LADLES

Description: Fragments of bowls and handles of miniature ladles, bowl portion generally shallow; handles solid, rod-like (fig. 53, *a, d*). Total 2.

Occurrence: Pit-houses C, G, trench.

Dimensions: Length, (fragments, 6.3, 2.0 cm.); width, (fragments, 4.9, 1.7 cm.); thickness, 3.6, 1.2 cm.

Material: Alma Plain, Forestdale var.

DATA ON IDENTIFIABLE UNWORKED BONE FRAGMENTS

Laguna Salada:

Astragalus of white-tailed deer (*Odocoileus* sp.). Locus A, Trench C.

Rib fragment, probably bison. Locus B, Trench A.

Distal end of tibia of turkey (*Meleagris gallopavo*). Locus A, Trench D.

Site 30:

Pelves, scapula, leg bones, mandibles, sacrum of cotton-tail (*Sylvilagus* sp.).

Pelvis, femur of pack-rat (*Neotoma* sp.).

Metatarsal of large bird.

Skull and mandibles of prairie dog (*Cynomys* sp.).

Site 31:

Turkey, wood rat, jack rabbit, cotton-tail.

IV. Pottery

More than 8300 sherds and 10 whole or restorable vessels were recovered from the excavations in the pit-houses, surface rooms and trash of the sites described above. As the pottery was excavated the sherds were classified according to the established types and such additional types as were indicated by the archaeological survey, and a rough count was made of these types. After excavations had been completed the pottery was shipped to the Museum laboratories where the classifications and computations were reviewed and a more detailed study was made of the attributes of the various types such as rim forms, vessel shapes, handles, paste and surface characteristics.

The majority of the pottery conforms to the published descriptions of the types established in neighboring areas and a repetition of these descriptions does not seem to be required. However, a few of the categories constitute what appear to be significant varieties of the established types and these are described and illustrated more fully.

The general scheme of taxonomy used is the classification worked out by the University of Arizona, the Laboratory of Anthropology in Santa Fe, the Museum of Northern Arizona, and this Museum. In using this taxonomy the cultural and chronological implications inherent in the established types are accepted.

Pottery from the excavation of the dwellings was classified according to the "fill" and "floor" levels. Floor levels ordinarily comprised all material resting directly on the floor and 20 cm. above it. Soil profiles were made and recorded in the fill of pit-houses at Site 30, and these profiles indicated that an arbitrary stratum of 20 cm. thickness would include all the material below the lowest portions of the collapsed roofs as well as material resting on or against thicker artifacts such as metates. In short, it is believed that 20 cm. would include everything which might accumulate during the occupation of the house, but would exclude most materials which might have collected subsequent to the abandonment of the dwelling and the collapse of the roof.

The pottery from the sites is described in a sequence corresponding to the chronological order of the sites, proceeding from early to late.

THE POTTERY FROM SITE 30

Over 7000 sherds and two restorable vessels were collected from the pit-house village. The vast majority of these were plain wares. Moreover, most of the pottery is not only plain, it is not well finished; the surfaces were scraped and smoothed but poorly polished, and a mottled appearance rather than uniform color is a predominant characteristic. However, there is some evidence that the potters were not novices at their art in spite of the lack of finish on most of the product. The plain red wares and those with polished black interiors are generally superior. These are well-polished vessels of hard pottery with a uniform color on the interior surfaces, and some have quite thin walls. It seems apparent that the ordinary appearance of much of the pottery was due not so much to lack of skill as to a low value placed on the outward aspects of utilitarian objects.

A very small quantity of the pottery was decorated with incised designs, modeled appliqué features and painted motifs (figs. 54, 55). These sherds were recovered primarily from the fill levels of the houses and it is assumed that most of them are intrusive.

All the pottery appears to have been made by the coil-scrape method. Some interiors exhibit the rough ridges and furrows which result from the scraping process while coils are indicated by evenly spaced undulations in vessel surfaces and by fractures along horizontal lines. The prevalence of mottled surfaces seems to indicate a lack of controlled firing. Gray to black interiors of varying intensity show that vessels were fired upside down.

In paste, form, and surface characteristics most of the pottery conforms to the types found by Haury and Sayles at Forestdale or by Mera and Wendorf in the Petrified Forest area, and the types defined by these investigators have been used as guides to the description of the pottery from Site 30. The San Francisco Red has been described more completely because it constitutes a distinct variety. The other native types—Alma Plain, Forestdale variety, and Woodruff Smudged—are also commented on in greater detail because of their importance at the site and because they exhibit certain minor differences which may eventually prove significant in the study of the geographical or chronological distribution of pottery attributes, even though these differences are not great enough to give these types the status of varieties.

POTTERY TYPES MADE AT SITE 30

Alma Plain, Forestdale Variety (Haury, 1940, pp. 69-72; Haury and Sayles, 1947, pp. 50-51).

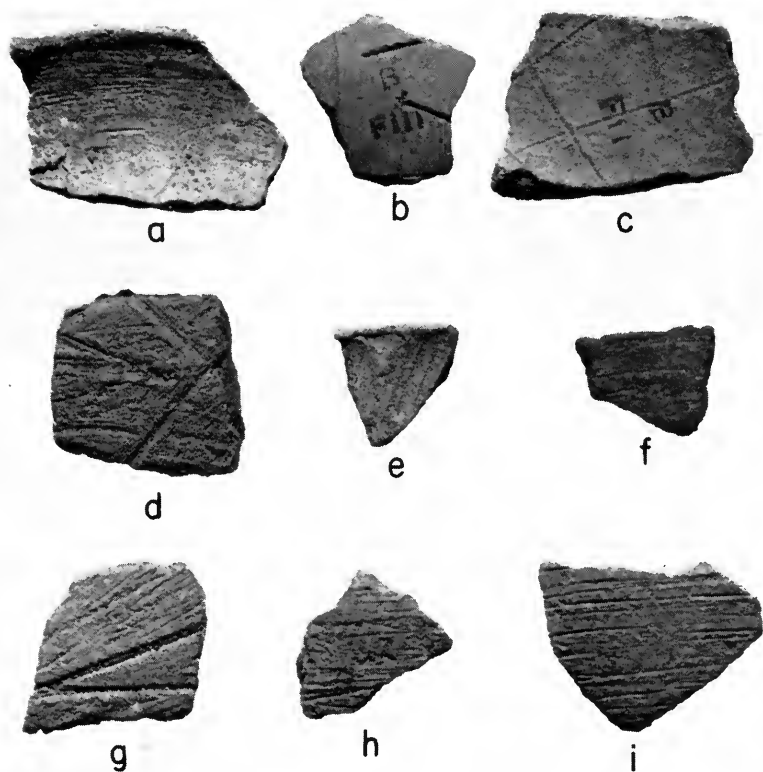


FIG. 54. Upper row, Alma Incised; lower two rows, Alma Scored; Site 30.

This pottery type was most frequent in the pit-house village. It occurred in at least four different firing variants: (1) brown exterior and interior; (2) brown with a gray interior; (3) dark gray interior and exterior; (4) light gray throughout. At first we classified these firing variants separately, and then we found that the categories with gray interiors were more prevalent than the single category with brown interiors. However, a closer study of the larger sherds indicated that a number of these categories often occurred on one vessel and that they should be combined. A comparison of the combined group with the published description and sherds from Forestdale showed clearly that this group was the Forestdale variety of Alma Plain.

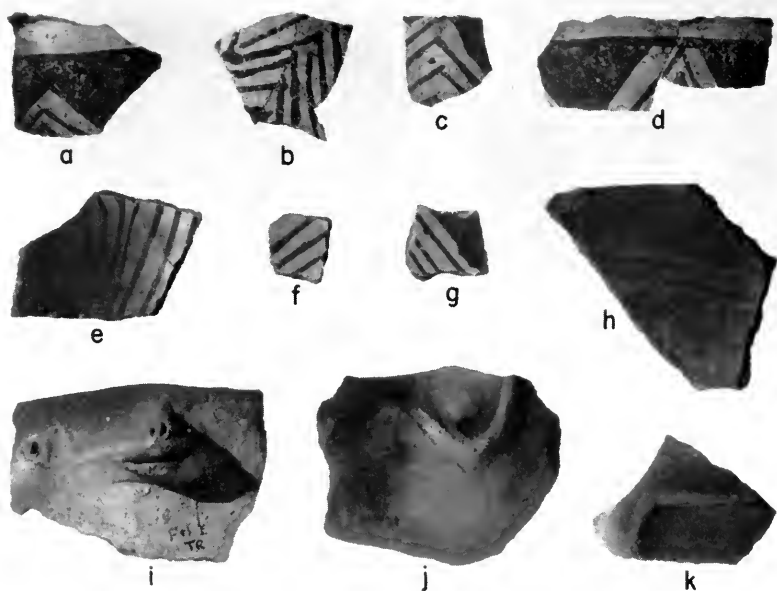


FIG. 55. Top row, White Mound Black-on-White; middle row, Mimbres Bold Face Black-on-White (*g*), and Three Circle Red-on-White variants; bottom row, effigy (*i*) and appliqué variants of Alma Plain; Site 30.

An examination of the rim sherds and jar shoulder sherds showed that simple bowls, double flare bowls and several forms of jars were made. Bowl rims account for approximately 11 per cent of the rim sherds recovered. This contrasts with Forestdale, where apparently bowls were more rare (Haury, 1940, p. 70). Two forms were recovered which are not reported from Forestdale: (1) the double flare bowl, and (2) jars with vertical necks. Only the latter form was common. Other shapes indicated by the rims and larger sherds are seed jars, jars with short necks, a form with spittoon-like rim, a jar with a constricted neck, and vessels with flaring rims. One specialized form, the neck shoulder, which appeared at Forestdale, was not found at Vernon.

Some points of comparison with the established type of Alma Plain were observed, in addition to those noted by Haury (1940, p. 72). At Vernon the Forestdale variety was thinner (range, 2.0–7.0 mm.), both in the extremes and on the average (average thickness, 4.0 mm.). Gray or black interiors were more common than on the Alma Plain in the Pine Lawn Valley, although about one third of the Alma Plain from Site 30 had brown or tan interiors. Apparently fewer handles and lugs were col-



FIG. 56. Left, Woodruff Smudged bowl from Pit-house C, Pit 1, Site 30. Right, San Francisco Red, Vernon variety, bowl from Burial 1; diameter, 19.2 cm.

lected at Site 30 than from the Bear Ruin. The two lugs are of tab type and perforated vertically. They both come from the floor of Pit-house C and appear to have been parts of the same vessel. One handle is of rod type, one of strap type and one of three rods welded together.

Altogether 5474 sherds of Alma Plain, Forestdale variety, were recovered from Site 30 and it constitutes about three fourths of the pottery found at the site.

San Francisco Red, Vernon Variety (fig. 56, right).

Paste:

Color: Vessel walls in cross section frequently show zoning. Inner core, dark gray or Pewter (47A5 or 48A3 Maerz and Paul), changes sharply to a Mindoro or a Sonora Red (13A8 or 13A10) about 1.0 mm. from surface. Sometimes it is Mindoro Red or Pewter throughout.

Inclusions: Fine to medium size (0.10–0.50 mm. diam.), occasionally over 1.0 mm. in length, angular fragments generally light gray or white in color and opaque. Some finer particles round.

Texture: Granular and friable, moderately tempered (15–30 per cent by volume).

Fracture: Irregular, sometimes diagonal to vessel's surface.

Surface Features:

Color: Typical color a red between rose and Burnt Sienna such as Aragon (5F12, 6F10) and ranging from Sonora (13A10) to Hampstead Brown (7E9).

Hardness: 3.0–4.5 Mohs scale.

Evenness: Bowl interiors smooth, exteriors smooth to gently undulating; jar interiors show scraping marks, exteriors smooth; polishing streaks occasional, more frequent on bowl interiors.

Texture: Smooth but not highly polished; both surfaces of bowls and exterior surfaces of jars covered with a water-soluble red wash. Polishing streaks parallel to rim of vessel, or at less than 45° angle to rim.

Luster: Dull; rarely reflects light.

Slip: None; wash streaked by polishing; surface beneath wash smooth, but not lustrous.

Thickness of vessel walls: 2.0–5.0 mm., average 4.0 mm.

Forms: Bowls, both deep and shallow (one restored bowl and large sherds). Jars with relatively short vertical necks rising either gradually or sharply from shoulder; also jars with flaring spittoon-like rims; seed jars. Rims direct, rounded or flat on top.

Comparisons: This variety is normally not as highly polished as the varieties of San Francisco Red or Forestdale Red, nor does it have a slip; in extreme examples it is thinner than either San Francisco Red, Saliz variety, or Forestdale Red. The zoned gray paste corresponds more closely to that of Forestdale Red, but a number of sherds with red paste throughout the core resemble San Francisco Red; it is to be distinguished from either primarily by the “fugitive” red wash on its surface, and by the lack of a slip.

At Site 30, 783 sherds and one restorable bowl were found of this type. The bowl accompanied Burial 1 in a pit near Pit-house C.

Woodruff Smudged (fig. 56, left; Mera, 1934, p. 6; Hawley, 1936, p. 25).

This pottery category from the pit-house village is virtually identical with the Woodruff Smudged from the Bear Ruin. It differs from Forestdale Smudged in only minor respects and appears to be a variety of this type, or possibly synonymous with it, as Colton (1955, p. 5) classifies it. The Woodruff Smudged from the Vernon site is not as well polished or as lustrous as the Forestdale Smudged and the exteriors are not as red. Over half the smudged polished sherds from Site 30 had dark gray or fire-clouded exteriors, and in this respect the Vernon variant of the Woodruff Smudged is more like Reserve Smudged than like Forestdale Smudged. It is thinner than Reserve Smudged, but does not have as smooth exteriors or as well-polished interiors. The bowl exteriors of this Woodruff Smudged have undulating surfaces, and often scraping marks were not removed by polishing. Where surfaces were not blackened by fire clouds, brown is a more typical color than red.

An examination of rim sherds and larger body sherds of this type indicates that the shallow bowl was the predominant form of vessel made with smudged interior. However, 14 out of 83 pieces were jar sherds.

Woodruff Smudged is one of the three types thought to have been locally made. At Site 30, 772 sherds and one restorable bowl of this type were recovered. The bowl was from the large bell-shaped storage pit in

Pit-house C. It was beneath a large stone slab, which had apparently served as a cover for the pit.

TRADE OR INTRUSIVE TYPES

Forestdale Smudged (Haury, 1940, pp. 73-75).

Vessel forms at Site 30: bowls only.

Comments: This type was distinguished from Woodruff Smudged by the red exteriors, finer paste and higher degree of polish.

Number of sherds recovered: 97.

Lino Gray (Colton and Hargrave, 1937, pp. 191-192).

Vessel forms at Site 30: bowls and jars.

Number of sherds recovered: 95.

Alma Incised (fig. 54, *a-c*; Haury, 1936b, p. 40, 1940, p. 70).

Vessel forms at Site 30: jar only.

Design: Cross hatch.

Comments: This pottery appears to be the Forestdale variant of Alma Plain. It is thinner and not as well polished as the Alma Incised from the Reserve area.

Number of sherds recovered: 10.

Alma Neck Banded (Haury, 1936b, p. 35).

Comments: Nine out of the ten sherds recovered appear to have come from the same vessel and are of the variant in which the neck bands have been polished. The exceptional tenth sherd has a poorly polished surface like that of Alma Plain, Forestdale variety, and the direct trace of the coils is distinct.

Alma Scored (fig. 54, *d-i*; Haury, 1936b, p. 38).

Comments: One of the elements of the brush or bundle of twigs with which some of these sherds were scored was much larger than the other elements and produced the effect of a design made over the other scoring. Unfortunately none of the sherds is large enough to delineate a complete design element, so we cannot determine whether a design was intended or whether the effect was accidental. This effect was not observed in the Reserve area.

Number of sherds recovered: 9.

Alma Rough (Martin and Rinaldo, 1940, pp. 78-80).

Number of sherds recovered: 18.

Fine Paste Brown (Haury and Sayles, 1947, pp. 52-53).

Number of sherds recovered: 3.

Lino Smudged (Haury, 1940, pp. 84-85).

Number of sherds recovered: 1.

Reserve Indented Corrugated (Rinaldo and Bluhm, 1956, pp. 159-160).

Comments: These sherds are all from one jar and were found close together in the upper fill level of Pit-house F. They are the only sherds on this site which possibly might have come from the later component of the neighboring Site 31.

Number of sherds recovered: 6.

Kiatuthlanna Black-on-White (Roberts, 1931, pp. 130-149; Gladwin, 1945, pp. 41-42).

Number of sherds recovered: 6 (from fill levels only).

White Mound Black-on-White (fig. 55, *a-d*; Hawley, 1936, p. 23; Gladwin, 1945, pp. 22-23).

Comments: 40 out of 44 sherds recovered were from what appears to be a single vessel and were scattered through the fill and into the floor level of the southwest quadrant of Pit-house F.

Mimbres Bold Face Black-on-White (fig. 55, *f, g*; Haury, 1936b, pp. 22-27; Cosgrove, 1932, p. 76).

Number of sherds recovered: 5.

Three Circle Red-on-White Variety (fig. 55, *e, h*; undescribed).

Comments: The designs on these sherds differ from those previously described for Three Circle Red-on-White, although they appear to be in the Mogollon tradition; in other characteristics this pottery is Three Circle Red-on-White.

THE POTTERY FROM SITE 31

Approximately 1000 sherds and 8 restorable vessels were recovered from Site 31. The majority of this pottery has painted decorated or corrugated surfaces, but large amounts of plain ware pottery, almost identical with the pottery from the pit-house village, were also recovered. Enough large sherds were found with both plain and corrugated surfaces to indicate that some of the plain ware sherds were body sherds of neck corrugated vessels. On the other hand, the proportion of plain wares is great enough so that it seems probable that all-over plain ware vessels were made and used at Site 31. Although no whole vessels of plain ware were recovered the presence of some plain ware rims seems to furnish additional basis for this assumption.

Both the plain and the corrugated types stem from the native Mogollon tradition. Both brown and gray wares were recovered, as they were in the pit-house village. Those with brown or mottled brown and gray surfaces predominate, and even the pure gray sherds are ordinarily quite a dark gray in contrast to the light gray or almost white corrugated sherds recovered during the survey from the sites north and east of St. Johns. A certain number of corrugated sherds with smudged interiors and a single whole vessel of MacDonald Painted Corrugated seem to corroborate this Mogollon relationship (Haury, 1940, pp. 87 ff.). The same may be true of the Tularosa Patterned Corrugated, for although the technique of producing patterns by the combination of plain and indented corrugations was found in the north it reached its apogee in the south.

The sorting out of the corrugated and plain wares proceeded easily, but the black-on-white types presented some difficulties in their classification. The difficulty of distinguishing the late Pueblo II black-on-white types from each other has been noted by Gladwin (1945, p. 118), and this difficulty is reflected in a statement made by Colton (1941, p. 59) in his description of Puerco Black-on-White, where he compares it with Escavada Black-on-White and states: "The only describable difference seems to be in temper." Consequently in the final analysis we abstracted from the standard descriptions certain characteristics which seemed particularly helpful in separating the various types. Those characteristics which were most useful are noted below for their possible bearing on such problems as the ways in which the different styles of pottery developed and spread.

Balanced solid and hatched designs, a greater than average degree of surface polish (for Pueblo II) and a light gray rather than a white paste were taken as the chief distinguishing characteristics of Reserve Black-on-White in most instances. Massed black areas of solid elements such as large triangles, ribbon designs and bold barbed lines, a very white slip, a dense black paint, and a surface which is smooth to polished are typical of Snowflake Black-on-White. Puerco Black-on-White was characterized as being unpolished, or poorly polished; frequent design elements are lozenge-shaped negative figures, bands of vertical or horizontal parallel lines separating panels of solid black patterns such as solid triangles, pennants, and "negative lightning." Checkerboard design is also typical of Puerco Black-on-White. The paint is heavy and black. On the other hand, although these characteristics were stressed in the process of classification they were not used to the arbitrary exclusion of others in the established descriptions.

The pottery types found at Site 31, references to the descriptions and illustrations used in their classification, and comments on their occurrence



FIG. 57. Large sherd of Snowflake Black-on-White from floor, Room 4, Site 31.

are grouped as follows: (1) types probably made locally during the main occupation of Site 31; (2) types traded in during an earlier period of occupation or possibly kept as heirlooms; (3) types traded in to the site during the main occupation.

NATIVE TYPES

Snowflake Black-on-White (figs. 57, 58, left row; Colton, 1941, p. 62; Martin and Willis, 1940, pp. 260–263).

Number of sherds found: 136.

Restorable vessels: 1 bowl from Room 4 near west wall.

Alma Plain, Forestdale Variety (Haury, 1940, pp. 69–72).

Number of sherds found: 357.

San Francisco Red, Vernon Variety (fig. 59).

Number of sherds found: 10.

Restorable vessels: 1 bowl from Room 1 associated with Burial 2.

Woodruff Smudged (fig. 56, left; Mera, 1934, p. 6; Hawley, 1936, p. 25).

Number of sherds found: 104.

Reserve Plain Corrugated (Rinaldo and Bluhm, 1956, pp. 155–158).

Number of sherds found: 57.



FIG. 58. Left row, Snowflake Black-on-White; middle row, Reserve Black-on-White; right row, Wingate Black-on-Red.

FIG. 59. San Francisco Red, Vernon variety, bowl from Burial 2, floor, Room 1, Site 31; diameter, 22.2 cm.



FIG. 60. Left, MacDonal Painted Corrugated Bowl, Burial 3, Room 2, Site 31. Right, Reserve Indented Corrugated bowl, floor, Room 1, Site 31; diameter, 24.8 cm.



FIG. 61. Puerco Black-on-White. Bowl, Burial 2, Room 1, Site 31; pitcher, floor, Room 1, Site 31. Height of pitcher, 12.2 cm.

Reserve Indented Corrugated (fig. 60, right; Rinaldo and Bluhm, 1956, pp. 159-162).

Number of sherds found: 245.

Restorable vessels: 2 bowls, one from Room 1 with Burial 2 and the other from Room 4, floor near west wall.

Reserve Incised Corrugated (Rinaldo and Bluhm, 1956, pp. 164-168).

Number of sherds found: 4.

Tularosa Patterned Corrugated (Rinaldo and Bluhm, 1956, pp. 169-171).

Number of sherds found: 18.

MacDonald Painted Corrugated (fig. 60, left; Colton and Hargrave, 1937, p. 61).

Restorable vessels: 1 bowl from Room 2 with Burial 3.

TRADE TYPES OF EARLIER PHASES

Kiatuthlanna Black-on-White (Gladwin, 1945, pp. 41-42; Hawley, 1936, p. 27; Roberts, 1931, pp. 130-149).

Number of sherds found: 6.

Red Mesa Black-on-White (Gladwin, 1945, p. 56).

Number of sherds found: 22.

Alma Neck Banded (Haury, 1936b, p. 35).

Number of sherds found: 2.

Alma Punched (Haury, 1936b, p. 39; Nesbitt, 1938, p. 138).

Number of sherds found: 2.

Lino Smudged (Haury, 1940, pp. 84-85).

Number of sherds found: 1.

Forestdale Smudged (Haury, 1940, pp. 73-75).

Number of sherds found: 2.

TRADE TYPES OF LATER PHASES

Reserve Black-on-White (fig. 58, middle row; Nesbitt, 1938, p. 138; Martin and Rinaldo, 1950b, pp. 502-503).

Number of sherds found: 48.

Tularosa Black-on-White (Gladwin, 1931, pp. 32-35; Hawley, 1936, pp. 46-47; Rinaldo and Bluhm, 1956, pp. 177-185).

Number of sherds found: 25.

Comment: All from a large jar fragment on floor near west wall, Room 4.

Puerco Black-on-White (fig. 61; Gladwin, 1931, pp. 24–26; Hawley, 1936, p. 34; Colton, 1941, pp. 58–59; Olson and Wasley, 1956, pp. 369–370).

Number of sherds found: 28.

Restorable vessels: 2. Pitcher from Room 1, floor near north wall; bowl from Room 1, associated with Burial 2.

Escavada Black-on-White (Hawley, 1936, pp. 32–33).

Number of sherds found: 8.

Wingate Black-on-Red (fig. 58, right row; Gladwin, 1931, pp. 29–31; Colton and Hargrave, 1937, p. 118).

Number of sherds found: 6.

TECHNOLOGY

The pottery vessels from Sites 30 and 31 were probably made from the local clays. In the banks of Vernon Creek about one hundred yards from these villages, there are deposits of clay which could have been used for this purpose, and the bed of clay underneath the top soil, into which the pit-houses were excavated, might also have been the raw material for pottery. However, we did no research along this line beyond building up a few crude vessel walls of these clays. No attempt was made to locate the specific source of clay by mineralogical analysis, or to determine which minerals are present naturally in the clay and which were mixed in as temper.

In the plain wares there was evidence that the coil-scraper method of building up vessel walls had been used, for there were uniformly spaced slight undulations in the vessel surfaces and fracture along horizontal lines, but more direct evidence was seen in the corrugated pottery. The cross sections, especially of the plain corrugated pottery, indicate that the vessel walls were built up by pinching the lower part of each successive coil against the upper part of the coil below it. The coils were pinched from the outside. The direct outlines of the beginning of the coiling on the bottoms of several corrugated vessels indicate that the work proceeded in a counter-clockwise direction.

While it was still in a plastic condition the pottery was scraped to smooth it and to make it thin. The interior surfaces of some sherds show the characteristic ridges and furrows which result from this process. Apparently these sherds are from vessels such as narrow mouth jars which were scraped on the interior to thin the wall but not to smooth it where it wouldn't show.

These potters were not diligent users of the polishing stone. Most of the pottery has a dull finish, although it is evident from definite polishing streaks on the San Francisco Red that the polishing stone was used, and the interiors of some of the Woodruff Smudged bowls are highly polished and lustrous. Even Snowflake Black-on-White was not highly polished. Polishing stones with definite facets were relatively rare.

The majority of the pottery is brown or red and was probably fired in an oxidizing atmosphere. The gray interiors of some corrugated vessels seem to indicate that they, too, must have been fired upside down, like the Alma Plain and the Smudged types. On the other hand, the black-on-white pottery was probably fired in a reducing atmosphere.

CULTURAL RELATIONSHIPS

Relationships with neighboring groups are indicated by the minor or less frequent types which we recognized as native in neighboring areas, and which must have come into the Vernon sites by trade, gift exchange, or some other means of contact. In another way and on a different level we sense that the similarities and differences between the major, most frequent or native types in the Vernon area and those from neighboring areas are somehow correlatives of at times more intimate or at other times more distant relationships between the Vernon area and the surrounding area. For example, one might conjecture that at the time Site 30 was occupied the people had closer relationships with those who lived to the west than with their neighbors in the other directions. This seems to be indicated by the fact that at Site 30 Forestdale Smudged, a type native to the Forestdale Branch to the west, appeared in greater quantities than any other trade type. Furthermore, the most frequent native type was the Forestdale variety of Alma Plain rather than the varieties of Alma Plain found most frequently on sites in the other directions.

During the occupation of Site 30 relationships were also probably extensive with other Mogollon peoples living to the southeast. However, we would guess that these were of a different order, because there are more types of trade pottery from that direction, but fewer sherds of each type. A number of textured varieties seem to have come from that direction—Alma Neck Banded, Alma Punched, Alma Scored and Alma Incised, as well as a few painted decorated sherds. Also, the type of red pottery made at Site 30 is a variety of San Francisco Red which is more like the San Francisco Red variety made by neighbors to the south and east than the Forestdale Red of their neighbors to the west or the Woodruff Red of the north. These differences and similarities in this broad cluster

of types and varieties are not clear cut and the characteristics of the Vernon variety, like the geographical position of the Vernon sites, are intermediate.

We surmise that relationships with the northern neighbors were more like those with the Forestdale Branch. Lino Gray, an Anasazi trade type, is second only to Forestdale Smudged in quantity, and in addition there are a few black-on-white sherds of probable northern derivation. Furthermore, the native smudged pottery is more like the northern smudged type, Woodruff Smudged, than it is like Reserve Smudged and Alma Smudged (Wheat, 1954, p. 88), the southern types, or like what one might term the "classical" Forestdale Smudged from Forestdale, although Colton (1955, p. 5) classifies Forestdale Smudged as synonymous with Woodruff Smudged.

On the later horizon of Site 31 there seems to have been a slight shift in relationships with the surrounding population, judging from the changes in the numbers, quantities and character of the trade types and from the attributes of the later native types. There is a degree of polishing on Snowflake Black-on-White which is rare or lacking on the Chaco type of this period; also, the pitcher shape of Snowflake Black-on-White is more like that of Reserve Black-on-White than that of Puerco Black-on-White or Escavada Black-on-White. Connections with the south may be indicated also by resemblances in the methods of surface treatment—the texturing—of the culinary types, such as incising, patterning and smudging, and the production of a brown or red pottery rather than a light gray one.

In as much as these techniques tend to have a southern distribution and a Mogollon derivation it is uncertain whether the presence of these traits at the Vernon sites may be due to their geographical situation in the south and the Mogollon antecedents of the culture, or whether they are in part due to an increase and a strengthening of cultural influence from the south. That it might be the latter is indicated by the greater number of trade types from the south represented in the later sites: Reserve and Tularosa Black-on-White sherds outnumber Red Mesa, Puerco and Escavada Black-on-Whites. Of course this greater number of southern trade types and attributes may be due not so much to a strengthening of relationships with the south as to a slight diminishing of trade and other contacts with the north.

SHERD ANALYSIS, SITE 30

	PIT-HOUSE A			PIT-HOUSE B			PIT-HOUSE C		
	No.	Fill %	Floor and features No. %	No.	Fill %	Floor and features No. %	No.	Fill %	Floor and features No. %
Alma Plain, Forestdale var.....	517	82.70	261 74.19	1211	75.74	171 68.4	560	76.62	250 73.22
Alma Rough.....	8	1.27	.. ..	2	.12	.. ..	..	.....	6 1.75
San Francisco Red, Vernon var. . .	50	7.95	34 9.65	148	9.58	18 7.2	110	14.96	29 8.46
Woodruff Smudged.....	28	4.45	24 6.81	155	9.72	49 19.6	53	7.20	57 16.57
White Mound B/W.....	1	0.15	.. ..	2	0.12	.. ..	..	.....	.. ..
Lino Gray.....	12	1.90	7 1.98	33	2.06	7 2.8	..	.....	.. ..
Fine Paste Brown.....	..	.....	.. ..	..	.....	.. ..	2	0.27	.. ..
Kiatuhlanna B/W.....	..	.....	.. ..	3	0.18	.. ..	..	.....	.. ..
Mimbres Bold Face B/W.....	..	.....	1 0.28	2	0.12	.. ..	..	.....	.. ..
Alma Neck Banded.....	1	0.15	9 2.55	..	.....	.. ..	..	.....	.. ..
Forestdale Smudged.....	9	1.43	16 4.54	17	1.06	3 1.2	7	0.95	.. ..
Lino Smudged.....	..	.....	.. ..	1	0.06	.. ..	..	.....	.. ..
Pinch Pot.....	..	.....	.. ..	8	0.50	1 0.4	..	.....	.. ..
Alma Incised.....	..	.....	.. ..	6	0.37	.. ..	..	.....	.. ..
Alma Scored.....	..	.....	.. ..	6	0.37	1 0.4	..	.....	.. ..
Total.....	626	100.00	352 100.00	1594	100.00	250 100.00	732	100.00	342 100.00

SHERD ANALYSIS, SITE 30 (continued)

	PIT-HOUSE D			PIT-HOUSE E			PIT-HOUSE F			
	Fill		Floor and features	Fill		Floor and features	Fill		Floor and features	
	No.	%	No.	%	No.	%	No.	%	No.	%
Alma Plain, Forestdale var.....	126	73.45	14	93.34	519	80.95	88	84.61	596	76.99
San Francisco Red, Vernon var. . .	7	4.06	..	.....	70	10.85	9	8.65	78	10.67
Woodruff Smudged.....	34	19.76	..	.....	47	7.28	7	6.74	51	6.57
Forestdale Smudged.....	4	2.32	..	.....	1	0.15	..	.....	14	1.80
Limo Gray.....	1	0.41	1	6.66	4	0.62	..	.....	15	1.93
Fine Paste Brown.....	..	.....	..	.....	1	0.15	..	.....	..	.....
Mimbres Bold Face B/W.....	..	.....	..	.....	..	.....	..	.....	2	0.25
Indeterminate B/W (NDS.).....	..	.....	..	.....	..	.....	..	.....	..	.....
White Mound B/W.....	..	.....	..	.....	..	.....	..	.....	7	0.90
Alma Incised.....	..	.....	..	.....	..	.....	..	.....	1	0.12
Reserve Ind. Corr.....	..	.....	..	.....	..	.....	..	.....	6	0.77
Total.....	172	100.00	15	100.00	642	100.00	104	100.00	770	100.00
									391	100.00

SHERD ANALYSIS, SITE 30 (continued)

	PIT-HOUSE G				PIT-HOUSE H			
	No.	Fill %	No.	Floor and features %	No.	Fill %	No.	Floor and features %
Alma Plain, Forestdale var.....	170	66.46	37	64.95	254	59.63	50	64.16
Alma Rough.....	1	0.39	..	.....	1	0.23	..	.....
San Francisco Red, Vernon var.....	30	11.70	6	10.55	86	20.27	13	16.64
Woodruff Smudged.....	48	18.72	10	17.50	69	16.14	14	17.92
Forestdale Smudged.....	3	1.17	2	3.50	11	2.57	..	.....
Three Circle R/W var.....	..	.....	2	3.50	1	0.23	..	.....
Lino Gray.....	2	0.78	..	.....	3	0.70	1	1.28
White Mound B/W.....	1	0.39	..	.....	..	.....	..	.....
Alma Incised.....	1	0.39	..	.....	..	.....	..	.....
Alma Scored.....	..	.....	..	.....	1	0.23	..	.....
Total.....	256	100.00	57	100.00	426	100.00	78	100.00

SHERD ANALYSIS, SITE 31

	ROOM 1			ROOM 2			ROOM 3			ROOM 4		
	Fill	%	Floor %	Fill	%	Floor %	Fill	%	Floor %	Fill	%	Floor %
Alma Plain, Forestdale var.	145	28.89	28	26.56	21	22.89	15	22.06	10	20.88	..	..
San Francisco Red, Ver. var.	4	0.78	..	..	3	3.24	..	..	..	..	..	..
Woodruff Smudged	30	5.91	10	9.43	3	3.24	5	7.35	2	4.16	..	..
Reserve B/W	22	4.33	4	3.77	2	2.16	3	4.41	..	..	..	..
Snowflake B/W	58	11.52	3	2.82	9	9.72	11	16.17	6	12.48	..	..
Cibola Red Ware (NDS)	2	0.39	..	..	..	..	..	..	..	..	..	..
Kiatuthlanna B/W	5	0.98	1	0.94	..	..	..	..	..	..	..	..
Puero B/W	12	2.36	1	0.94	2	2.16	1	1.47	..	..	..	..
Red Mesa B/W	8	1.57	3	2.82	..	..	2	2.94	..	..	..	..
Wingate B/R	2	0.39	..	..	..	..	..	..	3	6.24	..	..
Indeterminate B/W (NDS)	62	12.21	11	10.37	17	18.57	9	13.26	6	12.48	..	..
Escavada B/W	1	0.19	4	3.77	..	..	1	1.47	..	..	..	..
Indeterminate Red on Black	1	0.19	..	..	1	1.08	..	..	..	..	..	..
Reserve Incised Corr.	2	0.39	..	..	1	1.08	..	..	..	..	..	..
Tularosa Pat. Corr.	6	1.18	1	0.94	3	3.24	2	2.94	..	..	..	..
Reserve Plain Corr.	17	3.34	6	5.65	7	7.56	1	1.47	..	..	..	..
Reserve Ind. Corr.	109	21.47	30	28.23	22	23.98	17	24.99	20	41.68	..	..
Forestdale Smudged	2	0.39	..	..	..	..	..	..	..	..	..	..
Jar rims and handles	15	2.95	3	2.82	1	1.08	..	..	1	2.08	..	..
Lino Smudged	1	0.19	..	..	..	..	..	..	..	..	..	..
Pinch Pot	1	0.19	..	..	..	..	..	..	..	..	..	..
Alma Neck Banded	1	0.19	..	..	..	..	..	..	..	..	..	..
MacDonald Painted Corr.	..	..	..	..	..	..	1	1.47	..	..	..	..
Tularosa B/W	..	..	..	..	..	..	..	..	..	..	..	..
Alma Punched	..	..	1	0.94	..	..	..	..	..	..	..	..
Total	506	100.00	106	100.00	92	100.00	68	100.00	48	100.00	..	..
											224	100.00
											24	100.00

V. Summary

Four sites are reported herein. Two were pre-pottery sites situated on ancient beaches; one was a pit-house village (Site 30); and one was a small, surface-room village.

PRE-POTTERY SITES ON OLD BEACHES

Artifacts were recovered from the beaches of Little Ortega Lake and from Laguna Salada, two small and now nearly dry basins near Concho, Arizona. In the near distant past these lakes may have been larger than they are now. Some of the artifacts were found on the surface and some in trenches. Ten hearth areas were discovered at Laguna Salada, most of which contained many small rocks. Near the hearths were whole metates and parts of metates and manos.

There were differences between the two sites. The beach site at Little Ortega Lake yielded about twice as many artifacts of chipped stone as the site at Laguna Salada; conversely, more milling stones and manos turned up at Laguna Salada than at Little Ortega. Hearths were found only on the beach of Laguna Salada.

In spite of these statistical differences, the types of tools used at both sites were generally similar, and they correspond approximately to those that have been described for the Concho Complex (Wendorf and Thomas, 1951) and to a lesser extent to those associated with the San José Complex.

The areas investigated have been designated as "camp areas," as no evidence of a permanent or semi-permanent house was found.

The artifacts found include one hand manos, flat or shallow basin type metates, projectile points, blades, scrapers, knives, choppers, and a fragment of a drill. Three biface choppers were found at Laguna Salada and three hammerstones at Little Ortega Lake.

The tools that we gathered and excavated include many grinding tools—manos and metates. These were proportionally as abundant (in relation to chipped and percussion-flaked tools) on these beach sites as they were on Cochise sites in Wet Leggett Canyon in New Mexico. The configurations of the grinding surfaces of these tools are similar to those of Cochise types of the Chiricahua stage found in southeastern Arizona,

and some levels at Ventana Cave. The chipped implements, however, are more closely allied to types assigned to the San José and Concho complexes. Thus, one guesses that there are affiliations with the types of stone tools found at our beach sites and with those described for the San José, Concho, and Cochise industries. Probably, all three of these industries may be assigned to the Desert Culture (Jennings, 1957).

The dating of the materials from the beaches of the two lakes is difficult. After we had studied the location of the sites and the materials we guessed that these camp sites might have been occupied about 2000 to 3000 B.C. or roughly 4000 to 5000 years ago.

Charcoal from Locus A at Laguna Salada from a matrix of sand and clay, 2 to 8 inches below the surface, and directly below a hearth and in association with artifacts of the Concho Complex, was sent to the Nuclear Science and Engineering Corporation of Pittsburgh, Pennsylvania, for dating. The charcoal was relayed by this firm to the Groningen Laboratory in Holland. The date received from that laboratory is 3280 ± 60 years before the present (Gro 1614). Assuming that there is no error in our radiocarbon date other than the statistical error due to the radioactive process, I have tripled the error given in order to obtain the virtual certainty that the true age of the sample lies within the range of this error. The date for the camp site at Laguna Salada probably lies between 1503 B.C. and 1143 B.C., or roughly 3400 and 3100 years ago. This is a somewhat later date than we had guessed.

SITES 30 AND 31, EARL THODE RANCH

PIT-HOUSES: SITE 30

The pit-house village is located about three miles south of Vernon (Sec. 27, Twp. 10 N., R. 25 E.) The elevation is about 7000 feet above sea level. The average annual rainfall was probably between 12 and 17 inches. Vernon Creek (mostly dry now) lies several hundred yards to the east.

Eight dwellings were excavated. More may be present on the ridge, but we did not have time to put down test trenches in order to check this impression. It is impossible to characterize the houses concisely because each differs from the others. They are irregular in shape, neither round nor square. The greatest diameters vary from 2.65 meters to 5.3 meters, and the depth of the floor below the surface varies from 45 cm. to 1.95 meters.

Some houses had been provided with prepared firepits, while others lacked these entirely. If the house has no firepit one finds a "fire-area" or a small space showing traces of ashes and fire-hardened clay. Three of the eight houses contained one or more storage pits, but five lacked these. Three and possibly four of the houses had been provided with lateral entrances, but four or five evidently got along with only a hatchway.

Most of the houses had burned or been burned (six or seven out of the eight). This is the one thing they had in common! When we first noticed the traces of conflagration (dark earth, burned adobe, charcoal) we had high hopes of finding the contents of the rooms intact. We were doomed to disappointment. The houses had been stripped of almost everything useful and valuable (except metates and manos) before being fired. Rinaldo had the impression that they had been deliberately fired by the occupants before they moved to a new location. If this impression is wrong, one can only conjecture that the occupants deserted the village taking along their possessions and that later some other group fired the houses.

This is the first experience of this kind that we have encountered; that is, of houses that were cleaned out and then burned. We have never thought for a moment that the burning of the houses was due to enemy action, for there is no evidence to warrant such an assumption. At the pit-house villages that we dug in New Mexico we encountered burned houses, but it seemed clear that the fires that destroyed these houses were accidental. At near-by Forestdale Village, excavated by Haury (Haury, 1940) a few of the pit-houses had been destroyed by fire, but Haury apparently did not think that these houses had been deliberately fired. The meaning of the conflagrations at Site 30 is not known at present.

The lack of a typical house form suggests several possibilities. Perhaps the art of house-building had not crystallized. Or there may have been other interests and activities more important to the occupants of Site 30 than building a neat, more or less standardized type of house.

In general, I would say that the house-forms at Site 30 are Mogollon. Roughly speaking, they resemble pit-houses from the Pine Lawn and San Francisco Phases in the Pine Lawn area. Lateral entrances, absent from some of the houses at Site 30, were also lacking in several of the Mogollon pit-houses in the Pine Lawn area. No ventilators and no benches were located.

Absent, too, was any kiva-like structure. True, Pit-house E was an oddity with a "shelf" extending across half the surface of the structure; but of a certainty it was not a kiva. It is possible that a kiva exists and that we missed it, but I hardly think this possible.

The houses at Site 30 are in general dissimilar to those at Forestdale, the nearest excavated pit-house village (about 30 miles southwest).

POTTERY: SITE 30, PIT-HOUSE VILLAGE

From the pit-houses, some 7000 sherds and 2 restorable vessels were recovered. This number is somewhat smaller than we had expected.

Fifteen types were found. The most popular were plain wares: Alma Plain, Forestdale variety; San Francisco Red, Vernon variety; and Woodruff Smudged. These three types are believed to have been indigenous or locally made. Most of the sherds of these types were not well finished, although the plain red and the smudged wares were fair. Rinaldo feels that the poor quality of plain types may indicate a lack of interest in well-finished plain vessels rather than a lack of skill.

The few incised and painted sherds may be intrusive.

Alma Plain, Forestdale variety, constituted about three fourths of all the pottery found at the site (over 5000 sherds). Several shades of browns, grays, and brown-grays were found—variations possibly due to firing. Close study showed that several of these variants might occur on a single vessel. Shapes consisted of bowls, double-flare bowls, and jars. Comparison of our sherds with the published description (Haury, 1940) of this type and with actual sherds from the Forestdale site confirms the correctness of the classification. It is interesting to note that about 75 per cent of all the indigenous sherds from Site 30 were Alma Plain, and that 78 per cent of all the sherds from the Forestdale site were also Alma Plain—and this despite the fact that the house types of the two sites were not similar.

The second local favorite type at Site 30 was San Francisco Red and it made up almost 10 per cent (783 sherds) of the total. The Vernon variety lacked red slip and the high polish of other varieties of San Francisco Red. The color was apparently lent to the pottery by means of a "fugitive" red wash. One whole vessel was recovered. Bowls and jars were the common shapes.

The third local type, Woodruff Smudged, was almost as popular as San Francisco Red, since 772 sherds and one whole bowl were assigned to this category. This type may be a variety of Forestdale Smudged. Bowls were the most popular of the shapes, although a few jar sherds were noted.

The remaining twelve types were probably trade wares. These are Alma Incised; Alma Neck Banded; Alma Rough; Alma Scored; Forestdale Smudged; Kiatuthlanna Black-on-White; Lino Gray; Lino

Smudged; Mimbres Bold Face Black-on-White; Reserve Indented Corrugated; Three Circle Red-on-White, variety; and White Mound Black-on-White. Each of these occurs in very small amounts (about 300 sherds or about 0.4 per cent).

SURFACE HOUSES: SITE 31

The surface rooms of the incipient pueblo are located just south of Vernon (Sec. 27, Twp. 10 N., R. 25 E.). The elevation and rainfall are the same as those given for Site 30. In fact, these surface rooms were just a few hundred yards south of the pit-house village (Site 30) and a bit closer to Vernon Creek bed.

Four rooms out of a possible 5 or 6 were excavated. The rooms were adjacent but not contiguous; that is, none of them had common walls. Each room was a separate unit, separated from the others by a span of land. The walls were composed of river cobbles and boulders, all unshaped. How such a wall could stand is a mystery. The floors were somewhat lower than the present or former ground level. The masonry reminded us of the walls that we had excavated in early pueblos near Reserve, New Mexico, but there was one difference in the architectural details. The earliest surface rooms in the Reserve area were all contiguous, whereas the rooms at the Vernon site were not.

Whether the people who dwelt in the pit-houses built and lived in the surface rooms at Site 31 is not known. It is possible but not probable.

Where the idea of masonry and surface rooms came from is not known with certainty. It is unlikely that they were conceived of locally. In all probability, this new house type was the result of borrowing from the Anasazi.

POTTERY: SITE 31, SURFACE HOUSES

Fewer rooms were excavated at this site and fewer sherds were recovered (1068). Eight restorable vessels were also found. An abundance of plain ware was found, but the majority of the sherds bore painted or textured surfaces. The plain and textured types are Mogollon in origin.

The chapter on pottery lists the pottery types by (1) types probably made locally; (2) types that are present as the result of trade in earlier times(?); and (3) types that were brought to the village during the occupation. Snowflake Black-on-White was one important type that was probably made locally.

During the occupation of the pit-house village (Site 30), the link with villages to the west and north of Vernon was strong and resulted in considerable trading of pottery and perhaps of other materials. At the same

time, the bond with other Mogollon people to the east and south was also fairly well established. Hence, while Site 30 is basically Mogollon, trade contacts with other Mogollon and Anasazi communities were frequent.

During the occupation of Site 31 (slightly later than Site 30) the evidence from the pottery suggests that trade relationships were more with southern towns than with Anasazi or northern ones.

ARTIFACTS: SITES 30 AND 31

Altogether, 204 artifacts were recovered from both villages; 177 were of stone; 11 were of bone; and 16 were miscellaneous pieces (bracelet, bead, worked sherds and pottery ladles) of shell, stone, and fired clay.

Broadly speaking, the artifacts are neither strongly Mogollon nor boldly Anasazi. Their characteristics are betwixt and between—in short, they are not especially distinctive as a whole. There are certain aspects in the forms of the milling stones, the type of maul, the mortar and pestles, and the tubular pipe that may be called Mogollon. None of the artifacts is characteristically Anasazi and there are several that might be either Mogollon or Anasazi.

Rinaldo is of the opinion that the artifacts reflect the marginal or intermediate position of the culture of the two villages. The pottery and the architecture do lend some Mogollon flavor to these villages but even these influences are not so marked as in the earlier villages in the Pine Lawn and Reserve areas.

SUBSISTENCE: SITES 30 AND 31

It is assumed that the peoples of both Sites 30 and 31 farmed extensively and hunted a little. If agriculture was practiced, we assume that corn, beans and squash were raised. No actual evidence of crops was found. Deer, rabbits, and turkeys were probably secured by means of bow and arrow, snares, and clubs, although none of these weapons was recovered.

DATING OF SITES 30 AND 31

Since the pottery types and percentages at Site 30 and the Forestdale site (Hauray, 1940) were similar, we had thought that the houses at Site 30 would be approximately the same age as those at Forestdale, dated by dendrochronology and other indirect evidences as lying between A.D. 600 and 800. We had, therefore, dated Site 30 at A.D. 600–800.

To check our guesses, we sent three samples of charred roof beams from the pit-houses to the Groningen Laboratory in Holland via the Nuclear Science and Engineering Corporation of Pittsburgh. Two of these were from Pit-house B.

The results for Site 30 are:

Gro 1613: Pit-house B; 850 ± 55 years before present.

Gro 1689: Pit-house A; 960 ± 55 years before present.

Gro 1690: Pit-house B; 940 ± 50 years before present.

Again assuming, as before, that there is no error in these radiocarbon dates, other than the statistical error due to the radioactive process, the probability is that the true ages of these samples lie within three times the error quoted. The dates for the two pit-houses at Site 30 would then probably be:

Pit-house B: A.D. 942 or A.D. 1272 (A.D. 1957—850 years $\pm 3 \times 55$).

Pit-house B: A.D. 867 or A.D. 1167 (A.D. 1957—940 years $\pm 3 \times 50$).

Pit-house A: A.D. 832 or A.D. 1162 (A.D. 1957—960 years $\pm 3 \times 55$).

A date for these pit-houses in the 1100's or 1200's is not acceptable because it conflicts with the archaeological evidence. A date of A.D. 842 or 867 for any one of the pit-houses is more nearly acceptable and is not too far removed from the cross-cultural conjectured dates of A.D. 600—800. The date of A.D. 942 is out of line with the evidence from Forestdale and is not acceptable. We date the houses at Site 30 then as falling some time between A.D. 600 and 800.

Site 31 can only be dated by intrusive pottery types and by inferential evidence; on this basis we guess that it was occupied between A.D. 900 and 1100.

Bibliography

- AGOGINO, GEORGE, and HESTER, JIM
1956. Reevaluation of the San José non-ceramic cultures. *El Palacio*, vol. 63, no. 1, pp. 6-21. Santa Fe, New Mexico.
- AMSDEN, CHARLES A.
1935. The Pinto Basin artifacts. In E.W.C. and W. H. CAMPBELL, *The Pinto Basin Site*. Southwest Museum Papers, no. 9, pp. 33-51.
- ANTEVS, ERNST
1941. See SAYLES, E. B., and ANTEVS, ERNST.
- BRADFIELD, WESLEY
1931. Cameron Creek Village, a site in the Mimbres area in Grant County, New Mexico. *Monographs of the School of American Research*, no. 1. Santa Fe, New Mexico.
- BREW, J. O.
1946. Archaeology of Alkali Ridge, southwestern Utah. *Papers, Peabody Museum of American Archaeology and Ethnology*, vol. 21.
- BRYAN, KIRK, and TOULOUSE, JOSEPH H., JR.
1943. The San José non-ceramic Culture and its relation to a Puebloan Culture in New Mexico. *American Antiquity*, vol. 8, no. 3, pp. 269-280.
- CAMPBELL, JOHN M., and ELLIS, FLORENCE H.
1952. The Atrisco sites. Cochise manifestations in the middle Rio Grande Valley. *American Antiquity*, vol. 17, no. 3, pp. 211-221.
- COLTON, HAROLD S.
1941. Winona and Ridge Ruin. Notes on the technology and taxonomy of the pottery. *Museum of Northern Arizona, Bull.* 19.
1955. Check list of southwestern pottery types. *Museum of Northern Arizona, Ceramic Series*, no. 2.
- COLTON, H. S., and HARGRAVE, L. L.
1937. Handbook of northern Arizona pottery wares. *Museum of Northern Arizona, Bull.* 11.
- COSGROVE, H. S. and C. B.
1932. The Swarts Ruin. *Papers, Peabody Museum of American Archaeology and Ethnology*, vol. 15, no. 1.
- DANSON, EDWARD B.
1957. An archaeological survey of west central New Mexico and east central Arizona. *Papers, Peabody Museum of American Archaeology and Ethnology*, vol. 44, no. 1.
- DI PESO, CHARLES C.
1951. The Babocomari Village site on the Babocomari River, southeastern Arizona. *The Amerind Foundation*, no. 5. Dragoon, Arizona.

DRIVER, HAROLD E., and MASSEY, WILLIAM C.

1957. Comparative studies of North American Indians. Transactions of the American Philosophical Society, new ser., vol. 47, pt. 2.

GLADWIN, HAROLD S.

1945. The Chaco Branch. Excavations at White Mound and in the Red Mesa Valley. Gila Pueblo, Medallion Papers, no. 33. Globe, Arizona.

GLADWIN, H. S., HAURY, E. W., SAYLES, E. B., and GLADWIN, N.

1937. Excavations at Snaketown. Gila Pueblo, Medallion Papers, no. 25. Globe, Arizona.

GLADWIN, W. and H. S.

1931. Some Southwestern pottery types, Series II. Gila Pueblo, Medallion Papers, no. 10. Globe, Arizona.

GUERNSEY, SAMUEL J.

1931. Explorations in northeastern Arizona: Report on the archaeological field work of 1920-1923. Papers, Peabody Museum of American Archaeology and Ethnology, vol. 12, no. 1.

HARRELL, MARSHALL, and ECKEL, EDWIN B.

1939. Ground water resources of the Holbrook region, Arizona. Water supply paper 836B. United States Department of the Interior, Geological Survey.

HAURY, EMIL W.

1936a. The Mogollon Culture of southwestern New Mexico. Gila Pueblo, Medallion Papers, no. 20. Globe, Arizona.

1936b. Some Southwestern pottery types, Series IV. Gila Pueblo, Medallion Papers, no. 19. Globe, Arizona.

1940. Excavations in the Forestdale Valley, east-central Arizona. University of Arizona Bulletin, vol. 11, no. 4 (Social Science Bulletin, no. 12).

1950. The stratigraphy and archaeology of Ventana Cave, Arizona. University of Arizona, Tucson; University of New Mexico, Albuquerque.

HAURY, E. W., and SAYLES, E. B.

1947. An early pit house village of the Mogollon Culture. University of Arizona Bulletin, vol. 18, no. 4 (Social Science Bulletin, no. 16).

HAWLEY, FLORENCE M.

1936. Field manual of prehistoric Southwestern pottery types. University of New Mexico, Bulletin, Anthr. Ser., vol. 1, no. 4.

HOUGH, WALTER

1907. Antiquities of the Upper Gila and Salt River valleys in Arizona and New Mexico. Bureau of American Ethnology, Bull. 35.

HURT, WESLEY R., JR., and McKNIGHT, DANIEL

1949. Archaeology of the San Augustin Plains, a preliminary report. American Antiquity, vol. 14, no. 3, pp. 172-194.

JENNINGS, JESSE D.

1957. Danger Cave. Memoirs of the Society for American Archaeology, no. 14.

KENT, KATE P.

1957. The cultivation and weaving of cotton in the prehistoric Southwestern United States. Transactions of the American Philosophical Society, new ser., vol. 47, pt. 3.

KIDDER, ALFRED V.

1932. The artifacts of Pecos. Papers of the Southwestern Expedition, no. 6. Phillips Academy, Andover, Massachusetts.

LEHMER, DONALD J.

1948. The Jornada Branch of the Mogollon. University of Arizona Bulletin, vol. 19, no. 2 (Social Science Bulletin, no. 17).

LOCKETT, H. CLAIBORNE, and HARGRAVE, LYNDON L.

1953. Woodchuck Cave, a Basketmaker II Site in Tsegi Canyon, Arizona. Museum of Northern Arizona, Bull. 26.

MAERZ, M. A., and PAUL, M. R.

1930. A dictionary of color. New York.

MARTIN, PAUL S.

1943. The SU Site. Excavations at a Mogollon village, western New Mexico, 1941. Field Museum of Natural History, Anthr. Ser., vol. 32, no. 2.

MARTIN, P. S., and RINALDO, JOHN B.

1940. The SU Site. Excavations at a Mogollon village, western New Mexico, 1939. Field Museum of Natural History, Anthr. Ser., vol. 32, no. 1.

1947. The SU Site. Excavations at a Mogollon village, western New Mexico, 1946. Field Museum of Natural History, Anthr. Ser., vol. 32, no. 3.

- 1950a. Turkey Foot Ridge Site. A Mogollon village, Pine Lawn Valley, western New Mexico. Fieldiana: Anthropology, vol. 38, no. 2.

- 1950b. Sites of the Reserve Phase, Pine Lawn Valley, western New Mexico. Fieldiana: Anthropology, vol. 38, no. 3.

MARTIN, P. S., RINALDO, J. B., and ANTEVS, ERNST

1949. Cochise and Mogollon sites, Pine Lawn Valley, western New Mexico. Fieldiana: Anthropology, vol. 38, no. 1.

MARTIN, P. S., RINALDO, J. B., and BLUHM, ELAINE

1954. Caves of the Reserve area. Fieldiana: Anthropology, vol. 42.

1956. Higgins Flat Pueblo, western New Mexico. Fieldiana: Anthropology, vol. 45.

MARTIN, P. S., RINALDO, J. B., BLUHM, E., CUTLER, H., and GRANGE, R., JR.

1952. Mogollon cultural continuity and change. Fieldiana: Anthropology, vol. 40.

MARTIN, P. S., and WILLIS, E. S.

1940. Anasazi painted pottery in Field Museum of Natural History. Field Museum of Natural History, Anthr. Mem., vol. 5.

MERA, H. P.

1934. Observations on the archaeology of the Petrified Forest National Monument. Laboratory of Anthropology, Technical Series, Bulletin no. 7, Archaeological Survey. Santa Fe, New Mexico.

MUNSELL COLOR COMPANY, INC.

1948. Soil color charts, special form for use of soil scientists, geologists, archaeologists. Baltimore.

NESBITT, PAUL H.

1938. Starkweather Ruin. Logan Museum Publications in Anthropology, Bull. no. 6, Beloit College, Beloit, Wisconsin.

OLSON, ALAN P., and WASLEY, WILLIAM W.

1956. An archaeological traverse survey in west-central New Mexico. *In* Pipeline archaeology (FRED WENDORF, NANCY FOX and ORIAN L. LEWIS, *Editors*). The Laboratory of Anthropology, Santa Fe, New Mexico, and the Museum of Northern Arizona.

RINALDO, J. B., and BLUHM, ELAINE

1956. Late Mogollon pottery types of the Reserve area. *Fieldiana: Anthropology*, vol. 36, no. 7.

ROBERTS, FRANK H. H.

1931. Ruins at Kiatuthlanna, eastern Arizona. *Bureau of American Ethnology, Bull.* 100.
 1940. Archaeological remains in the Whitewater district, eastern Arizona. Part II: Artifacts and burials. *Bureau of American Ethnology, Bull.* 126.

SAYLES, E. B.

1945. The San Simon Branch. Excavations at Cave Creek and in the San Simon Valley. I. Material culture. *Gila Pueblo, Medallion Papers*, no. 34. Globe, Arizona.

SAYLES, E. B., and ANTEVS, ERNST

1941. The Cochise Culture. *Gila Pueblo, Medallion Papers*, no. 29. Globe, Arizona.

SMITH, WATSON

1952. Excavations in Big Hawk Valley, Wupathi National Monument. *Museum of Northern Arizona, Bull.* 24.

THOMAS, TULLY H.

1952. The Concho Complex: A popular report. *Plateau*, vol. 25, no. 1, pp. 1-10. *Museum of Northern Arizona*.

TOULOUSE, JOSEPH H., JR.

1943. See BRYAN, K., and TOULOUSE, J. H., JR.

WENDORF, FRED, and THOMAS, TULLY H.

1951. Early man sites near Concho, Arizona. *American Antiquity*, vol. 17, no. 2, pp. 107-114.

WHEAT, JOE BEN

1954. Crooked Ridge Village (Ariz. W:10:15). *University of Arizona Bulletin*, vol. 25, no. 3 (*Social Science Bulletin*, no. 24).

WOODBURY, RICHARD

1939. Ground and pecked stone artifacts (other than arrow shaft tools). Section C in Preliminary report on the 1937 excavations, BC 50-51, Chaco Canyon, New Mexico (CLYDE KLUCKHOLM and PAUL REITER, *Editors*). *University of New Mexico, Bulletin, Anthr. Ser.*, vol. 3, no. 2, pp. 58-78.
 1954. Prehistoric stone implements of northeastern Arizona. *Papers, Peabody Museum of American Archaeology and Ethnology*, vol. 34 (*Reports of the Awatovi Expedition*, no. 6).

Index

- Albuquerque, 4, 16
Alma Incised, 100, 108
Alma Neck Banded, 100, 106, 108
Alma Plain, Forestdale variety, 91, 95-98, 103, 108, 117
Alma Punched, 106, 108
Alma Rough, 100
Alma Scored, 100, 108
Alma Smudged, 109
Anasazi, 68, 109; sites, 64, 69
Apaches, 66
Architecture, details (Site 31), 56-62
Arizona, University of, 94
Artifacts, chipped stone, 12, 14, 66; ground stone, 12; at pre-pottery sites, 114; from Sites 30 and 31, 119
Atmosphere, reducing, 108
Atrisco sites, 16, 17
Awl, bone, 67, 88; notched, 68; classification of, 88-90
Awatovi, 66
Axes, absent, 67, 69

Basket Maker II, 66
Basket Maker III, 63, 68
Beaches, old, 114
Bead, disc, 91
Bear Ruin, 98, 99
Bison, 93
Blades, 12, 14, 15, 29, 66, 83, 84
Bodkin, 67, 90
Bone, awls, 67, 68, 88-90; bodkin, 67, 90; needle, 67; unworked fragments, 93
Bowl shapes, 97, 99
Bracelet, 67, 90
Brady, Arden, 3
Burials, 44
Burials in pueblo (Site 31), 56, 58

Camp areas, 114
Chaco, pottery type, 109
Charcoal, 115
Chilcott, D., 4; ranch of, 9
Chiricahua stage, 16, 115
Choppers, 12, 14, 17, 34, 67, 69; biface, 14, 15
Christensen, Marvin, 3
Clay objects, 68, 91
Cochise Culture, 3, 16
Cochise sites, 16; in Wet Leggett Canyon, New Mexico, 115
Cochise tradition, 17

Cochise types of tools, 115
Coil scrape method for pottery, 95, 107
Colton, H. S., 99, 102
Concho, Arizona, 114
Concho Complex, 3, 14, 15, 16, 17, 114
Cordova Cave, 17
Core implements, 14
Cox, Tom, 3
Crooked Ridge Village, 66
Curtis, Mr. and Mrs. Lester, 4

Dates, from Groningen Laboratory, 120
Dating, of beach sites, 115; of Sites 30 and 31, 119-120
Deer, 88, 93; white-tailed, 93
Deflectors, 36, 40
Desert Culture, 3, 17, 115
Design, incised, 95
Discoidal, 80
Drills, 12, 14, 15, 17, 34
Dutch Mountain, 9
Dwellings, 115

Entrances to pueblo (Site 31), 56
Escavada Black-on-White, 102, 107, 109

Field, Stanley, 4
Fine Paste Brown, 100
Finger grips in pottery, 63
Fire clouds in pottery, 99
Firepits, 35, 36, 40, 44, 45, 50, 54, 116; in pueblo (Site 31), 56
Firing, pottery, 95
Flakes, utilized in artifacts, 68
Floor levels, 94
Floors, in pueblo (Site 31), 56
Floy, village of, 9
Forestdale, 96; Branch, 108, 109
Forestdale Smudged, 99, 100, 106, 108, 109
Forestdale Village, 116, 117, 119

Gaming counters, 68
Georgetown Phase, 66
Gillespie, Arnold, 3
Gillespie, Leon, 3
Gillespie, Mr. and Mrs. Charles, 3
Gillespie, Mr. and Mrs. Milton, 3
Gladwin, H. S., 102
Goodman, Mr. and Mrs. Don, 3
Gravers, 17
Gregg, Clifford C., 4

- Groningen Laboratory, Holland, 115; dates, 120
 Groove, in floor of pueblo (Site 31), 56
 Gurley, Clair E., 4
- Hammerstones, 14, 24
 Handstones, 69
 Hatchway, 116
 Haury, Emil W., 95, 116
 Hearths, 12
 Hearth areas, 114
 Hohokam Culture, 3
 House form, lack of, 116
 Houses, burned, 116; shape of, 115
- Jars, shape of, 97, 99
 Jeddito area, 66
- Kiatuthlanna Black-on-White, 101, 106
 Kivas, lack of, 116
 Knives, 14, 17, 32, 34, 66, 84; flake, 15, 17, 32, 34, 66, 67
- Laboratory of Anthropology, 94
 Ladle, miniature, 68, 69, 93
 Laguna Salada, 114; date of, 115
 Lateral entrances to pit-houses, 40, 45, 54, 116
 Lino Gray, 69, 100, 109
 Lino Smudged, 101, 106
 Little Bear Ruin, 65
 Little Ortega Lake, 114
- MacDonald Painted Corrugated, 102, 106
 Manos, 11, 12, 14, 16, 17, 63-66, 69; beveled, 64; classification of, 17-22, 69-73; one hand, 14, 16, 63, 64
 Masonry, details of (Site 31), 56
 Mauls, 65, 66, 69, 76, 79, 80; full grooved, 65, 66, 76; three-quarters grooved, 65, 79, 80
 Mera, H. P., 95
 Metates, 11, 12, 17, 22, 24, 63-66, 68, 75, 76, 114; basin type, 14, 16, 22, 24, 64; classification of, 22, 24, 75, 76; flat type, 14; scoop type, 63, 64, 68, 75; trough, 63, 76; Utah type, 64
 Milling pit, 65, 66
 Milling process, 64, 66
 Milling stones, 9, 12, 69
 Mimbres Bold Face Black-on-White, 101
 Mississippi Valley, 68
 Mogollon, period 1, 63; Culture, 68; sites, 64, 68, 69; tradition, 102
 Morris, Elizabeth, 3
 Mortars, 64, 65, 69, 76; boulder type, 65, 66, 76
 Mulford, Emerson, 3
 Museum of Northern Arizona, 94
- Navahos, 66
 Neck Corrugated Vessels, 101
- Needle, bone, 67
 New Mexico, 4
 Northwest Coast, 66
 Notched awl, 68
 Nuarez, Genaro, 3
 Nuclear Science and Engineering Corporation of Pittsburgh, Pennsylvania, 115
- O Block Cave, 17
- Pack rat, 93
 Padilla, Alfred, 3
 Padilla, Eddie, 3
 Padilla, Gilbert, 3
 Pebbles, utilized, 68
 Pecking stone, 66
 Pendant, unfinished, 90
 Penrod, Floyd, 3
 Penrod, Mr. and Mrs. Leonard, 3
 Percussion-flaking, 12
 Pestles, 64, 65, 66, 69, 75; multiface type, 64, 75
 Petrified Forest, 95
 Phipps, Mr. and Mrs. Claude, 4
 Pine Lawn Valley, 97
 Pipe, 66, 80; tubular, 69
 Pit-houses (Site 30), 35, 36, 40, 44, 45, 50, 54, 115-117; shape of, 35, 36, 40, 44, 45, 50, 54
 Pits, 42, 44, 46
 Pits, in floor of pueblo (Site 31), 56; storage, 99
 Plain corrugated, 107
 Plain wares, 95, 101, 102, 107
 Plains, 66
 Plaster, 64
 Playas, 9
 Polishing stone, 108
 Postholes, 35, 38, 42, 44, 45, 46, 50, 54; in pueblo (Site 31), 62
 Pottery, from pueblo (Site 31), 118; from pit-house village (Site 30), 117; taxonomy, 94; technology, 107; types found in pit-houses, 35, 38, 44, 45, 48, 50, 56; types found in pueblo (Site 31), 62
 Pottery types, 94-113; Alma Incised, 100, 108; Alma Neck Banded, 100, 106, 108; Alma Plain, Forestdale variety, 91, 95-98, 103, 108, 117; Alma Punched, 106, 108; Alma Rough, 106; Alma Scored, 100, 108; Alma Smudged, 109; Chaco, 109; Fine Paste Brown, 100; Forestdale Smudged, 99, 100, 106, 108, 109; Lino Gray, 69, 100, 109; Lino Smudged, 101, 106; Mac Donald Painted Corrugated, 102, 106; Mimbres Bold Face Black-on-White, 101; plain corrugated, 107; plain wares, 95, 101, 102, 107; Puerco Black-on-White, 102, 107, 109; Red Mesa Black-on-White, 106, 109; Reserve Black-on-White, 102, 106, 109; Reserve Incised

- Corrugated, 106; Reserve Indented Corrugated, 101, 106; Reserve Plain Corrugated, 103; Reserve Smudged, 99, 109; San Francisco Red, 91, 95, 98, 99, 103, 108; Snowflake Black-on-White, 91, 102, 103, 109; Three Circle Red-on-White, 101; Tularosa Black-on-White, 106, 109; Tularosa Patterned Corrugated, 102, 106; White Mound Black-on-White, 101; Wingate Black-on-Red, 107; Woodruff Red, 108; Woodruff Smudged, 91, 95, 99, 103, 109
- Prairie dog, 93
- Pre-pottery sites, 114
- Pine Lawn Phase, 116
- Projectile points, 9, 12, 14, 15, 16, 24, 26, 29, 66, 80; Pinto, 15; San Jose, 15; classification of, 24, 26, 29, 80-82
- Prongbuck, 88
- Pueblo I, 63, 68; II, 102; Culture, 17
- Pueblo (Site 31), 118
- Puerco Black-on-White, 102, 107, 109
- Rabbit, cotton-tail, 93
- Radiocarbon dates, 120
- Rainfall, 115
- Rat, wood, 93; pack, 93
- Red Mesa Black-on-White, 106, 109
- Reserve area, 3, 64
- Reserve Black-on-White, 102, 106, 109
- Reserve Incised Corrugated, 106
- Reserve Indented Corrugated, 101, 106
- Reserve Plain Corrugated, 103
- Reserve Smudged, 99, 109
- Roof, pueblo (Site 31), 62
- Roofs, 35, 38, 42, 44, 48, 50, 56
- Rooms excavated in pueblo, 56
- Rubbing stones, 12, 22, 64, 73-75; classification of, 73-75
- San Augustin Plains sites, 17
- San Francisco Red, 91, 95, 98, 99, 103, 108, 117; Vernon variety, 103
- San Jose Complex, 14, 17, 114; projectile points, 15; sites, 16, 17
- Saws, chipped stone, 69, 88
- Sayles, E. B., 95
- Scrapers, 11, 12, 14, 15, 29, 66, 67, 84; biface, 15, 29; end, 15, 16, 17, 29; ground edge, 16; hollow edge, 32; serrate, 32; side, 15, 16, 17, 67; classification of, 29
- Scrapers, plane, 16
- Shell objects, 67, 90-91; cut shell, 67
- Sherds, worked, 68, 69, 91
- Show Low, 3
- Site 30, 115, 116; dating of, 119-120
- Site 31, 115; dating of, 119-120
- Sites, difference between, 114
- Slabs, worked stone, 76
- Snowflake Black-on-White, 91, 102, 103, 109, 118
- Springerville, 3
- St. Johns, 3
- Stradling, Frank, 4, 9
- Strassburger, Roland, 3
- Subsistence, 119
- SU Site, 66
- Thomas, T., 114
- Thode, Earl, ranch of, 4, 115
- Thomas, Mr. and Mrs. T. H., 15, 16
- Thomas, Tully, 15, 16
- Three Circle Red-on-White, 101
- Trade types, pottery, 100
- Trade wares, 118
- Tularosa Black-on-White, 106, 109
- Tularosa Cave, 17, 66
- Tularosa Patterned Corrugated, 102, 106
- Turkey, 93
- Turkey Foot Ridge, 66
- Turner, Frank, 4
- University of Arizona, 94
- Ventilators, lacking, 116
- Ventana Cave, Arizona, 16, 115
- Vernon Creek, 115
- Walls in pueblo (Site 31), height of, 56
- Weaving, 67
- Well, walk-in(?), 62
- Wendorf, Fred, 15, 16, 114
- Wet Leggett, 16
- White Mound Black-on-White, 101
- White Mountains, 9
- Whiting, Mr. and Mrs. Eben, 3
- Whorls, spindle, 68
- Wingate Black-on-Red, 107
- Woodchuck Cave, 66
- Woodruff Red, 108
- Woodruff Smudged, 91, 95, 99, 103, 109, 117





UNIVERSITY OF ILLINOIS-URBANA



3 0112 003457279