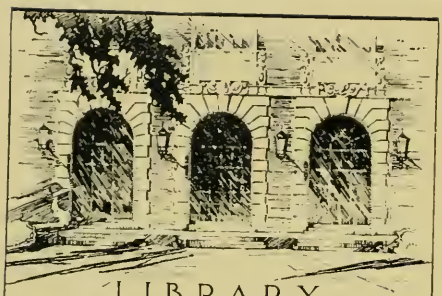

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ARCHAEOLOGICAL WORK IN THE ACKMEN-LOWRY AREA

SOUTHWESTERN COLORADO, 1937

BY

PAUL S. MARTIN

CHIEF CURATOR, DEPARTMENT OF ANTHROPOLOGY

WITH REPORTS

BY

CARL LLOYD AND ALEXANDER SPOEHR

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PREFACE

This publication includes the results of archaeological research made at four small sites in Township 38 N., Range 18 W., Montezuma County, southwestern Colorado, in 1937 by the Field Museum Archaeological Expedition to the Southwest. These small sites were chosen in that area because no similar work had ever been done there.

The Expedition, with myself as leader, was financed from a fund generously provided by Mr. Stanley Field, President of the Board of Trustees of Field Museum. I am very grateful to him. I should like also to express my gratitude to the late Stephen C. Simms, former Director of the Museum, who encouraged and helped me greatly. To Mr. Clifford C. Gregg, Director of the Museum, I also owe a great debt for his enthusiastic aid and for his sympathetic attitude. His visit to my camp climaxed the work of the summer and gave me the opportunity to show him how I conduct my field operations.

Without the help of my two able assistant-associates, Mr. Carl Lloyd, now of Harvard University, and Mr. Alexander Spoehr, now of the University of Chicago, the Expedition would have lacked the great success it achieved. Mr. Lloyd conceived, planned, and carried out the archaeological survey of the Ackmen-Lowry region. He also had charge of photography and helped me with administrative work. Mr. Spoehr served as cartographer, and supervised the actual excavations in a most thorough manner. The reports of Messrs. Lloyd and Spoehr are included in this publication.

I wish also to acknowledge my indebtedness to Mr. Charles Di Peso, Mr. Frank C. Gregg, and Mr. John Harpham, all of whom contributed to the success of the Expedition by helping with the digging. They generously paid their own expenses.

Miss Elizabeth McM. Hambleton, volunteer research assistant at the Museum, classified, tabulated, and ran percentages on the potsherds recovered from the various sites. She has done this work painstakingly and cheerfully. Without her aid, this report would not have been finished for another six months.

Line drawings signed C.F.G. in this report were done by Mr. Carl F. Gronemann, Illustrator on the Museum staff. The maps made by Mr. Spoehr were traced and arranged by Mr. Robert L. Yule, Assistant in the Department of Anthropology. This opportunity is taken to express my appreciation of their efforts.

To Mr. and Mrs. Clyde D. Long I am again greatly indebted for permitting us to make their ranch our camp headquarters.

For their interest and careful technique in digging I wish to thank Messrs. S. T. Bangs, Hugh Pigg, Richard Shrader, Luke Lancaster, and Charles Bangs.

Before he joined the Peabody Museum Expedition at Jeddito, Arizona, Mr. Al Lancaster greatly expedited the archaeological survey work by his intimate knowledge of the area and by his tireless efforts. I am grateful to him.

Mr. Ben Williford, on whose land lie the ruins which we excavated, is particularly to be thanked. Mr. Williford helped us build a road to the ruins, gave protection to the excavations and our tools, and was helpful and kindly in many different ways.

The general reader will find Chapter I, the Introduction, and Chapter VI, the Synthesis, more enjoyable than the other sections.

PAUL S. MARTIN

ARCHAEOLOGICAL WORK IN ACKMEN-LOWRY AREA, SOUTHWESTERN COLORADO, 1937

I. INTRODUCTION

History of the Southwest: a Summary

The following brief résumé of man and his culture in this area is given in order that the general reader, unfamiliar with the history of the Southwest, may more fully understand this report.

How long has man been in the Southwest, or, to be more general, how long has he been in the New World? This is a question which has interested scientists for some time. There is no way of placing an exact date on his migration to the New World, but it is possible to make a reasonable estimate of the length of time he has been here.

Recent work in Nevada (Harrington, 1933), in New Mexico (Howard, 1935), and in southern Arizona (Antevs, Gladwin; MacCurdy, 1937) has shown that man, in the New World, was contemporaneous with certain types of animals, now extinct, such as the giant sloth, the camel (akin to the llama of modern Peru), a type of bison, and the original American horse.[1]

It is difficult to date such early animal and human remains. To geologists, who are consulted in dating these finds, ten thousand years one way or the other is not very important; but archaeologists have to deal with human development which has been going on for a short time, as compared to the age of the earth, and it is necessary for them to be fairly precise in their estimates of time.

We must accept what information the most competent geologists can give us concerning the length of time man has inhabited the New World. All evidence seems to show that he had not arrived in North America before the last glaciation, the Wisconsin. All possible routes through western Canada were probably blocked during the period of time from 65,000 to 20,000 years ago. However, there was one exception—a corridor, or break in the ice, which occurred about 40,000 years ago. At that time it would have been possible for man to travel from Bering Strait through Alaska, down the Mackenzie River, and along the eastern part of the Rocky Moun-

[1] It is interesting to note that horses originated in America, spread to the Old World, where they were domesticated, became extinct in their original home land, and were reintroduced into the New World by the Spaniards after 1492.

tains, or along the plateau between the Rockies and the Coast Range, although there is no conclusive evidence that this occurred.

For the past 20,000 years, however, there has been an open route from Alaska southward. Careful investigations conducted by the staff of Gila Pueblo, Globe, Arizona (MacCurdy, 1937), show that there were people living on the beaches of now dry lakes, which were formed during the rainy periods that were synchronous with glaciations. It is difficult to date the stone implements found along the shores of these vanished lakes, but these artifacts must be more than 10,000 years old, as the lakes were probably in existence from 30,000 to 10,000 years ago.

It might be well to explain at this point what we mean by the term "man" as it is applied in the New World. Generally speaking, anthropologists refer to all peoples who migrated from Asia to the New World by way of Bering Strait before 1492 as "Indians." In other words, the ancestors of the present-day Indians are also called "Indians."

The American Indians do not constitute a homogeneous, "pure" race. The New World was probably peopled by many different waves of migrants from Asia. These migrants were already "mixed-bloods"; that is, they represented mixtures of racial strains which fused together before the invaders left Asia. (For further discussion see Hooton, 1930, pp. 355–363, and 1937, pp. 155–186.)

The next trace of man in the Southwest dates from about the beginning of the Christian era. Skipping over the long period of at least 10,000 years, which still remains a mystery, we come to that period in Southwestern history about which a great deal is known. I refer to the Basket-Maker–Pueblo culture period dating from about A.D. 500 to about A.D. 1700, at the latter part of which period the Spaniards were arriving in large numbers.

Archaeologists have divided up the Basket-Maker–Pueblo time unit into several arbitrary periods. Listing the oldest first, they are as follows: Basket Maker, Modified Basket Maker, and Pueblo I, II, III, IV, and V. It is customary now to use the newer, more inclusive term "Anasazi" for the older subdivision, Basket-Maker–Pueblo. Anasazi is the Anglicized form of a Navaho Indian word which is supposed to mean the "old peoples" who formerly inhabited the houses which are now ruins.

The classification of the Anasazi, i.e. the Basket-Maker–Pueblo groups, into periods as listed above is not entirely satisfactory. In

the first place, this division leads a person to believe that it is possible to draw a sharp line, for example, between Pueblo I period and Pueblo II period. However, some elements of the Pueblo I culture persisted through into the Pueblo II period. Only where we can see that several new elements merged with older features of Pueblo I culture and can recognize a marked change in the total cultural complex can we label the culture Pueblo II.

The second objection to the I, II, III classification is that it implies a synchronous development. For example, one might logically infer that the Pueblo I period, wherever found, would always date from about A.D. 700 to A.D. 900. It is quite possible, however, to find a Pueblo I village which was in existence after A.D. 900, while at the same time another village, two hundred miles away, was enjoying the advances represented by the Pueblo II culture. In other words, there were peripheral communities in which culture stood still, or lagged. One may observe the same phenomenon today in our culture. In large cities most people light their houses by means of electricity, while in isolated farmhouses they still use kerosene lamps.

Thus, it is plain that cultural statuses overlapped. Village A might have been carrying on in the tradition of its forefathers fifty years after village B had adopted technological advances and had generally modified its existence.

From this classification one might also think that cultural development was continuous; that is, that a single village might have been occupied continuously from the Basket Maker period to the Pueblo V period.

Actually, this was never the case. Archaeologists have discovered a few large pueblos whose activity spanned two periods, or, occasionally, three. Sometimes the Basket Maker stage of culture continued at a particular village until Pueblo II ideas seeped in; thus, this village, which never adopted Pueblo I styles, would not show a continuous development from Basket Maker to Pueblo II, and Pueblo I would be lacking. Very often a village was inhabited for a few years only—perhaps twenty—and partook of only a portion of any one cultural stage.

Any system of classifying the various stages of development of the Anasazi culture has certain disadvantages. Keeping in mind these drawbacks, one will find that this systematic classification of cultures is useful for reducing to a common denominator a great mass of information, and for interpreting the significance and

Period	Head Form	Houses	Pottery	Sandals	Basketry	Textiles	Weapons
MODIFIED BASKET MAKER A.D. 400–700	Undeformed, long and round.	Circular, oval or rectangular; floor 2 to 4 ft. below ground surface. Sides of pit lined with stone slabs. Information very scarce.	Plain gray jars; gray bowls decorated on interior only with black designs; orange pottery with black designs.	Scalloped toe, woven of yucca; colored design on upper side.	Coiled rod-and-bundle.	Twine-woven bags; coiled-netted weave of coarse fiber.	Atlatl; grooved clubs; bow and arrow.
DEVELOPMENTAL PUEBLO (Pueblo I) A.D. 700–900	Deformed, long and round.	Rectangular; slightly depressed floor; pole and mud-plaster walls and roof; roof supported by posts; sides of pit sometimes lined with slabs. Pit houses deepened and used for ceremonies (kivas).	Same as above, with a slip applied to non-culinary wares before decorating. Cooking pottery with flat bands or plain corrugations on neck, and smooth bottoms.	Uncertain; toe probably rounded. Woven of fine string or yucca leaves.	Uncertain; probably the same as above; twilled-ring baskets also.	Probably cotton cloth.	Bow and arrow.

CULTURE PERIODS OF SOUTHWESTERN COLORADO—*Continued*

Period	Head Form	Houses	Pottery	Sandals	Basketry	Textiles	Weapons
DEVELOPMENTAL PUEBLO (Pueblo II) A.D. 900–1100	Mostly deformed, round.	Unit-type: six to fourteen contiguous rooms; entirely above ground; walls built of coursed masonry (stone). Kivas always associated; located to south or southeast of house.	Painted (black-on-white); more abundant and better made. Cooking pottery with indented corrugated necks and smooth bottoms; or indented coarse corrugations over all or most of exterior surface. Type of corrugations varied.	?	?	Probably cotton cloth.	Bow and arrow.
GREAT PUEBLO (Pueblo III) A.D. 1100–1275	Deformed, round.	Large, terraced communal houses with 50 to 500 rooms; walls of excellent coursed masonry (stone); built in the open or in large caves (cliff-houses).	Well-made, black-on-white pottery; some red pottery decorated with black paint. Painted pottery best and last ever produced in southwestern Colorado. Cooking pottery with delicate indented corrugations over entire exterior of vessel.	Rounded end with notch in little toe position; of string and yucca leaf.	Coiled rod-and-bundle, tightly woven; twilled-ring baskets also.	Cotton cloth with coiled-netted and plain loom weave.	Bow and arrow.

interrelationship of disconnected facts. It is especially convenient for general readers because it introduces some logic into what otherwise would be a bewildering, indigestible set of facts.

The Anasazi culture flourished in what today is known as northern Arizona, southern Utah, eastern Nevada, southwestern Colorado, and the western two-thirds of New Mexico. The present classification for this cultural unit[1] is as follows:

Older Term	New Term	Approximate dates (A.D.)
Basket Maker I	This stage hypothetical; term no more used	...
Basket Maker II	Basket Maker	?–400
Basket Maker III	Modified Basket Maker	400–700
Pueblo I	Developmental Pueblo	700–900
Pueblo II		900–1100
Pueblo III	Great Pueblo	1100–1275
Pueblo IV	Regressive	1275–1700
Pueblo V	Historic	1700–

Of these culture periods the following have been recognized in southwestern Colorado: Modified Basket Maker, Developmental Pueblo, and Great Pueblo, or from about A.D. 650 to 1150, these approximate dates applying only to southwestern Colorado (Haury and Flora, 1937).

I have presented briefly in tabular form some of the diagnostic traits for these last-mentioned periods for the southwestern Colorado area. Comparatively little work has been done in the Ackmen-Lowry region (southwestern Colorado). It is, therefore, impossible to do more than sketch its history briefly. Future information may cause the traits in the table (pp. 232–233) to be shifted about, and will probably necessitate the addition of new ones.

A few of the terms may best be explained here. A "slip" is potter's clay in a liquid state applied to the surface of a vessel before decoration. A "corrugated" pot is one which shows the unobliterated junctions between the structural coils of clay with which the vessel was made (Plate CLXXVI). "Indented corrugations" are those which have been dented with the thumb nail, fingers, or some tool (Plate CLXXVII). A "kiva" (in ancient pueblos) is a more or less circular, underground chamber which served as a men's clubhouse and as a place for celebrating ceremonies.

[1] The other large and important classification in the Southwest deals with the Hohokam culture which flourished in the desert area of southern Arizona. Since this report deals only with villages belonging to the Anasazi unit, I will not attempt to describe the Hohokam culture. For the only available synthesis of this latter culture, I refer the reader to a report published by Gladwin, Haury, Sayles, and Gladwin (1937).

FIG. 55. The Ackmen-Lowry area.

In addition to the diagnostic traits given on pages 232–233, I am calling attention to the various types of metates (the basic part of the Pueblo Indian corn-grinder). During the Modified Basket Maker period and the Pueblo I period the typical metate consisted of a grooved stone (about 17 inches long, 14 inches wide, and 5 inches thick) which was troughed, with only one end of the trough open. In Pueblo II period, the metate was a trough which was open at both ends. In Pueblo III the metate was a flat stone (about the same dimensions as those given above) with no trough.

I hope that this brief explanation will aid the general reader to obtain a somewhat clearer picture of Southwestern history, to understand the importance of the excavations about to be described, and to fit into the Anasazi classification the particular elements of Pueblo culture to be set forth. When more work has been done in southwestern Colorado, it will be possible to fill in many of the existing gaps.

LOCATION OF SITES

The four sites which were excavated in 1937 are located on a ridge, in Long. 108° 50′ W., Lat. 37° 34′ N., about thirty miles northwest of the town of Cortez and five miles west of old Ackmen Post Office, in the Southeast Quarter of Section 8, Township 38 North, Range 18 West, N.M.P.M., Montezuma County, Colorado. The altitude is approximately 6,900 feet above sea level. Lowry ruin is situated about six miles northwest of these sites. The land on which these ruins lie belongs to Mr. Ben Williford.

PHYSIOGRAPHIC AND BIOTIC CONDITIONS

The physiographic and biotic conditions for the area worked are the same as those given for the Lowry ruin (Martin, 1936).

PROBLEMS[1]

During the summer of 1937, I shall conduct archaeological investigations near Lowry ruin in Township 38 N., Ranges 17, 18, and 19 W. My work this summer will be confined to various small ruins, since many important clues concerning the earlier history of that region may best be derived from them. The reason for this is not far to seek. Most archaeologists who have worked in the Southwest believe that the majority of prehistoric pueblos were but briefly inhabited, perhaps from twenty to forty years. As a

[1] Written in February, 1937, at the suggestion of Dr. A. V. Kidder and before field work had commenced.

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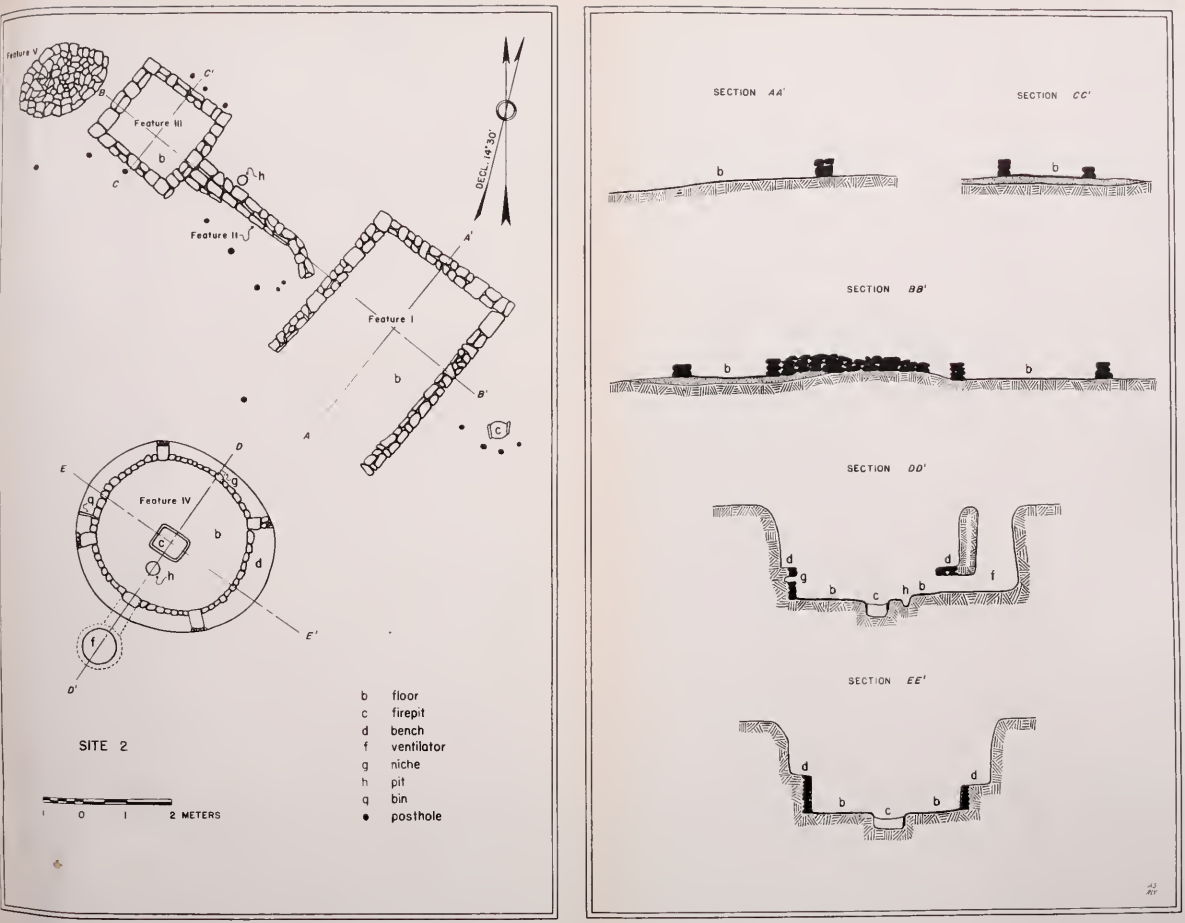


Map 7. GROUND PLAN AND SECTIONS OF SITE 2

may have been a house or a granary. The lean-to, or shed (Feature II), just north of the slab house was possibly for summer use only. The semi-subterranean feature (Feature IV) may have been a house.

The roofs of the house-kiva (Feature I) and the slab house (Feature III), and the wall-posts in the lean-to (Feature II) had burned.

SITE 2

(Plates CXXI–CXXVI and Map 7)

Site 2 consisted of five features: two rooms, a connecting stone wall, a room, the walls of which had collapsed, a house-kiva, and an outside firepit.

ROOMS WITH STONE WALLS (FEATURES I AND III)

The fill was artificial and contained some charcoal and a few sherds. Because the house had not burned, the fill resembled the undisturbed, red-brown soil of that area. Four large juniper trees which were growing on the site were removed.

Walls in Feature I lay without special foundation upon undisturbed soil; in Feature III upon shallow fill. Stones in wall of undressed sandstone, varying tremendously in size. Large stones, where used, ran through from outside of wall to inside. Crude coursing. Number of stones in present height of wall ranged from one to four. Slabs occasionally used in lower portions of wall. Joints broken. A few wedge-shaped spalls, 2 to 4 cm. thick and 3 to 6 cm. wide. Mud mortar untempered; varied in thickness from 1 to 7 cm. No plaster on walls.

Floor poorly defined. Fill rested upon red-brown, undisturbed soil which was taken as floor.

Roof.—Nature and manner of support unknown; no exterior or interior posts; no burned logs or adobe. Walls might have been high enough to support the horizontal roof beams.

General Comments.—The following details were missing: doorways, posts, firepits, banded corners, abutments.

The south wall of Feature I was lacking. It is possible that this wall slid into the house-kiva (Feature IV), for numerous stones were found in the upper part of the kiva fill.

A few sherds were found in the fill. From Feature I, two manos were recovered (see "Objects of Stone").

STONE WALL(?) (FEATURE II)

This feature consisted of the remains of a very crude wall running east and west between the houses (Features I and III). The west end was roughly tied into east wall of Feature III; the east end lacked about 40 cm. of abutting west wall of Feature I.

Stones in wall unworked. The number of stones in wall as found ranged from two to three large slabs. Dimensions of one of the slabs, 53 by 25 by 10 cm. Small slabs rare.

Masonry apparently not coursed; mortar untempered mud; thickness of mortar varying from 2 to 6 cm.

The purpose of this wall is unknown. A vain search was made for another parallel wall either of stone or posts.

COLLAPSED HOUSE (FEATURE V)

Feature V, located just west of Feature III, comprised a more or less circular pile of rocks. One wall in particular looked like a giant stack of cards which had slid inward. Reconstruction showed that this pile of rocks had at one time made up the walls of a room similar in size to Feature III.

HOUSE-KIVA (FEATURE IV)

Nature of Fill.—Fill consisted of dark soil containing much charcoal and rocks deposited by water. Lowest layer (next to floor) made up of roof debris; fill above was blown and washed in.

Walls, above banquette, of earth.

Bench of masonry.

Four pilasters, each composed of three or four unworked sandstone slabs, laid one upon another. Average slab measured 30 by 23 by 8 cm. Back of slabs, next to earth wall, many small stones resembling spalls. These were set in mud mortar. Pilasters wider at back than in front.

Roof.—Character and height unknown.

Firepit more or less rectangular; lined with slabs (some apparently missing) standing more or less vertically; joints had been filled with mortar; bed of ashes 18 cm. thick.

Deflector not found.

Ventilator.—Lateral type (opening in banquette wall). Ventilator shaft bell-shaped and formerly lined with masonry.

Niches.—One found in banquette at north. Dimensions: depth, 27 cm.; width, 14 cm.; height, 10 cm.

Masonry of undressed sandstone; more or less coursed; joints not broken; height of masonry in banquettes, seven to ten courses. Slabs varied in size from 48 by 27 by 8 cm. to 14 by 14 by 4 cm. Masonry but one stone thick, merely a facing. Mortar, untempered mud, varying in thickness from 1 to 7 cm. Wedge-shaped spalls, averaging about 4 cm. wide and 3 cm. thick. Appearance of masonry crude, but better than for rest of site.

Pit found in floor between firepit and ventilator opening; stone slab in bottom; no ashes.

Bin on banquette, one side formed by southwest pilaster and upright slab. Width of bin at front, 29 cm.; at back, 41 cm. Slab measured 23 by 36 by 3 cm.

Artifacts.—On banquette, one metate, troughed, trough open at both ends; in bottom of ventilator shaft, piece of metate, troughed, trough closed at one end; on floor, fragment of metate, type unknown.

Rock Pile on Floor.—Lying upon floor, over firepit and place where deflector should be, was large pile of rocks. It seems likely that these slabs were originally on the roof, that the roof beams collapsed when the roof burned, and that the rocks then slid along and down the beams on to the central portion of floor.

The following details were absent in kiva: southern recess, sipapu, and plaster (on walls).

EXTERIOR FIREPIT

About one meter east of Feature I was a small firepit composed of two stone slabs between which was a shallow deposit of ash. Dimensions: 65 by 45 by 9 cm. Slabs somewhat smoked.

Just to south of firepit were three post-holes. The purpose of the posts which had formerly stood in them is unknown, although they probably pertained to the firepit.

GENERAL COMMENTS

The house-kiva was, at this site, the only structure which had burned.

It is impossible to decide whether or not the above-ground rooms (Features I, III, and V) were used for habitation. Certainly they were large enough. The presence of metates in the kiva may indicate that it was a place both for holding ceremonies and for living quarters.

SITE 3

(Plates CXXVII–CXXX and Map 8)

Site 3, situated on top of a sage-covered ridge, comprised a small pueblo (perhaps five or six rooms), two(?) kivas, and a refuse mound. Two rooms, one cist, and one kiva were completely excavated, and parts of two other rooms were cleared.

Three trenches, which extended fan-wise from north to south, were excavated in the refuse deposit. The refuse was removed by 20-cm. levels.

PUEBLO DETAILS

Fill composed of wind-blown dirt and rocks from walls.

Walls, without foundations. Sandstone used throughout. A few through-stones in Room 2, but many small ones (averaging 6 by 13 cm.) employed merely as facing on a mud core. Stones mostly undressed, although the edges of some of the slabs were chipped or flaked. Through-stones used entirely in Room 3. Wedge- and irregularly shaped spalls present; also indented-corrugated potsherds used as spalls. Mortar of brown mud, untempered, ranging from 2 to 7 cm. thick. Coursing fairly good, but not pronounced. Appearance of the masonry in these houses crude and uneven, but on the whole better than that of Sites 1, 2, or 4.

Recessed Posts, six in number, in walls of Room 3. Also one in northeast corner and one in southwest corner of room. Average diameter of posts, 10 cm. (although post in northeast corner of room was 24 cm. in diameter); depth ranged from 13 to 34 cm. Only rotted fragments of these posts found.

Floor of smoothed adobe.

Cist, with slab walls, containing burial (p. 259) found in floor of Room 2; and another one, 47 cm. deep, with earth walls, in northwest corner of Room 3.

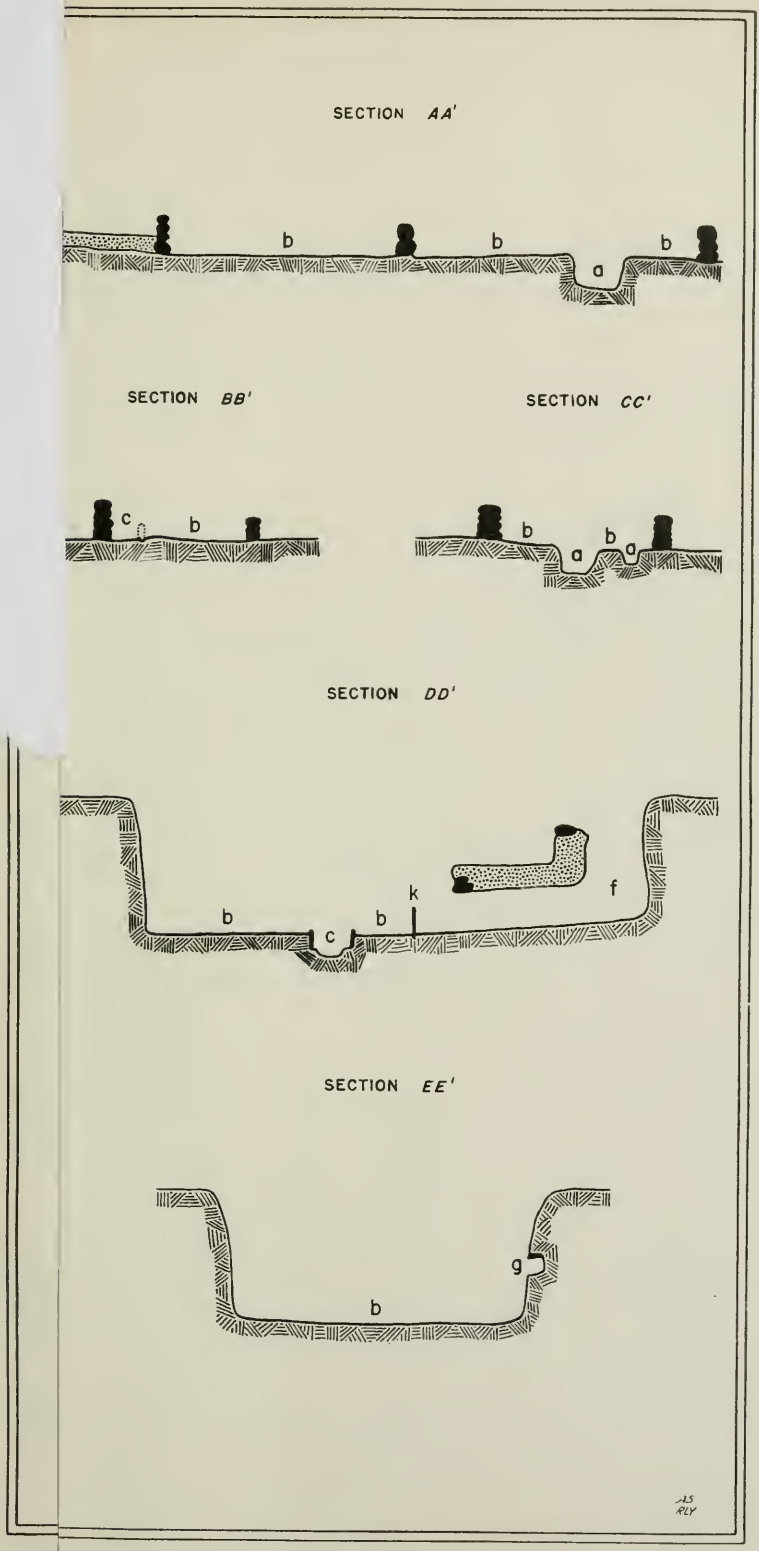
Firepit, rectangular, one side formed by walls of room and other sides by mud ridge, found against north wall of Room 3.

Roof, character unknown. Probably supported in Room 3, by means of recessed posts.

The following details were lacking: plaster, doorways, niches.

KIVA DETAILS

Fill in Kiva 1 was wind- and water-deposited dirt and was but slightly darker than natural earth. No evidence of any conflagration.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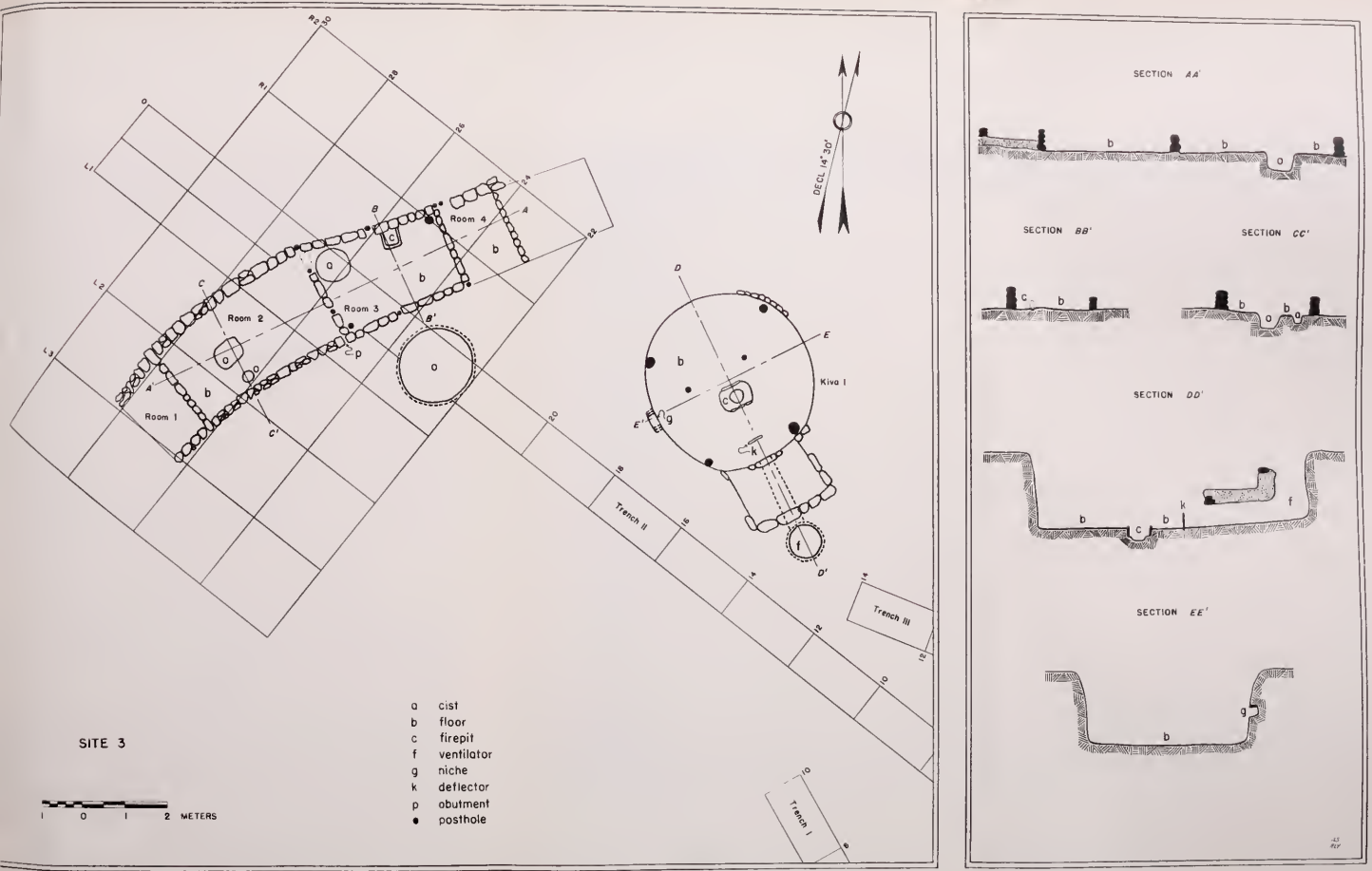

Map 8. GROUND PLAN AND SECTIONS OF SITE 3

Walls of earth; in northwest zone, a single course of six slabs. In northeast zone, a patch of masonry, of unworked stones laid very crudely. No spalls.

Southern Recess present; course of slabs (10 to 17 cm. thick) 35 cm. above floor of recess on face of south wall and at south ends of east and west walls.

Post-holes, six in number, in kiva floor. The four closer to the walls ranged in diameter from 20 to 32 cm., and in depth from 18 to 30 cm. The other two were 15 cm. in diameter and 8 cm. deep.

Roof.—Character unknown; probably supported by the six posts.

Floor of adobe.

Firepit, approximately rectangular, with slab walls on north and south sides, adobe walls on east and west sides. In floor of this pit, a circular basin.

Rim at edges of firepit formed on the north and south by the slabs which projected 7 cm. above floor, and by adobe plaster on east and west sides.

Deflector consisted of single slab set in floor.

Ventilator.—Lateral type (opening in wall). Masonry around mouth of tunnel only.

Niches.—One, in west zone; walls and roof of slabs, 5 cm. thick; floor of earth.

Plaster.—Two or three coats; extended upward from floor, 38 to 50 cm.; 5 to 10 cm. thick; dark brown color.

Artifacts.—Two Mancos black-on-white bowls recovered from the floor.

The following features were missing: banquette and sipapu.

EXTERIOR CIST

In Trench II, just outside the south wall of Room 3, a cist was discovered. The depth was 1.8 meters. The walls were of red-brown earth. The fill contained many sherds and pieces of charcoal.

BURIALS

A burial pit containing several(?) disturbed burials was encountered in the south end of Trench III. How these burials came to be disturbed is not known, as the location was covered with living sagebrush.

It is probable that these bones belonged to two or three individuals: two adults and one infant. The state of preservation was very poor.

A second burial lay in a pit sunk in the floor of Room 2. The walls of the pit were of earth, although slabs were set on edge around the upper margins of the walls. Rocks were laid over the burial. It was not possible to decide whether the burial was intrusive (made after the room was deserted) or inclusive. If the burial was made while the site was still occupied, it is probable that that particular room (2) was not used for long, because the burial and rocks occupied the major part of the floor space. The bones were in a fragile condition. It is probable that the individual was an adult male. The body had been placed on its back with the knees drawn up.

GENERAL COMMENTS

None of the roofs of any of the buildings in this Site (2) had burned. It is possible that Rooms 1 to 4 were used as living quarters. Room 2 was added to Room 3, as shown by abutments. Kiva I possessed features of both early and late kivas. The early features were posts instead of pilasters for roof support, lack of banquette(?), earth walls; the late ones were a southern recess, a niche, and a small ventilator opening.

SITE 4

(Plates CXXXI–CXXXVI and Map 9)

Site 4, consisting of a low mound and a kiva-like depression to the south, was covered with sagebrush. A considerable quantity of burned adobe was found on the surface. Excavations showed that there had been two pole-and-brush, or jacal, houses, one house-kiva, three cists, and one exterior firepit.

POLE-AND-BRUSH HOUSE (FEATURE I)

Fill.—Large pieces of burned adobe, charcoal, charred corn, and corncobs. The heat was so great that some of the mud had become vitrified and resembled slag.

Walls.—Of mud and posts; 16 post-holes discovered, some of which had been supported by collars of mud into which small stones had been pressed. These collars ranged in height from 17 to 40 cm. The diameters of the post-holes varied from 9 to 15 cm.; the depth varied from 15 to 28 cm., although one hole was 35 cm. deep and another 52 cm. The tops of the only two posts found were charred; the buried portions, rotted.

The spaces between the posts were plugged with puddled(?) mud sections, which were strengthened by small stones rather than by small wall-poles. A portion of such a wall (about 2 meters

long, 18 to 23 cm. high, 10 to 15 cm. thick) was preserved by the fire which had consumed posts and roof beams.

Floor.—Of earth; uneven and bumpy; baked hard in places by fire.

Roof.—Character unknown. Probably supported by posts (the upper ends of which may have been crotched), and covered by small poles, twigs, and mud.

Cist.—Walls vertical and of earth; depth 50 cm.

POLE-AND-BRUSH HOUSE (FEATURE III)

Fill.—Little organic material present; color similar to that of natural earth.

Walls.—Of slabs(?) and posts; 7 post-holes located, one of which had collar of mud and small spalls. The diameter of the post-holes varied from 10 to 18 cm., and the depths from 9 to 34 cm. Only one post was recovered, the top charred. The lower portions of the spaces between the posts were probably closed by means of sandstone slabs, four of which were discovered *in situ*. Those in the south wall measured 31 by 35 by 3 cm., and 30 by 30 by 4 cm. Those in the east wall measured 60 by 45 by 5 cm., and 52 by 43 by 6 cm. These were standing to a height of about 30 cm. above the present ground level. What the upper portions of the walls (above the slabs) consisted of is not known.

Floor.—Of earth; uneven and not very well defined.

Firepit.—Slab-lined(?); depth 8 cm. May have been outside of wall.

Roof.—Character unknown. Probably supported by posts (the upper ends of which may have been crotched) and covered by small poles, twigs, and adobe.

HOUSE-KIVA (FEATURE II)

This house-kiva, or pit house(?), was twice used. The earlier occupation will be first described.

Before Remodeling

Walls.—Of earth, with no masonry.

Bench.—Found only in southwest and northwest quadrants; height, 25 cm. above floor.

Post-holes.—Five in number; diameter varied from 8 to 20 cm.; depth ranged from 13 to 27 cm.

Floor.—Of natural earth; uneven.

Firepit.—The firepit found might have been the same one as was used by the later occupants, but since it is impossible to make any statement on this point, description of this feature will be given with the details for the second occupation.

Ventilator.—Lateral type; width of tunnel opening at end of kiva is 55 cm.

Plaster.—One layer (found back of later banquette), 1 mm. thick, brownish in color.

Roof.—Character unknown. Probably supported by the posts.

AFTER REMODELING

Fill.—Upper portion (1 meter thick), very dark soil containing much charcoal; next 25 cm., water-deposited light brown soil; last 75 cm., brown soil, containing large chunks of charcoal.

Walls.—Of earth (above banquette).

Bench.—Of gypsum and dirt, except between southeast and southwest pilasters, where it was of masonry.

Pilasters.—Six in number; built of masonry, which did not rest upon banquette, but upon solid gypsum which formed the lower part of banquette; plastered below level of banquette. Masonry of unworked stones; very crude coursing attempted. Potsherds and small wedge-shaped stones used as spalls.

Post-hole.—One found in banquette, immediately south of northwest pilaster; depth, 65 cm., diameter 15 cm.

Roof.—Type unknown; probably supported by means of the six masonry pilasters.

Floor.—Of adobe.

Firepit.—Squarish with rounded corners; formerly lined with stone slabs, two of which were found *in situ.* Filled with ash to floor level.

Ventilator.—Lateral type; width of opening (at kiva end of tunnel) reduced, by means of masonry, from 55 cm. (of first occupation) to 30 cm.

Cists.—Four, in banquette: (1) north of southeast pilaster, 33 cm. deep, three sides formed by slabs set horizontally; (2) south of southeast pilaster, 27 cm. deep, contained stone ax and two grinding stones; (3) south of southwest pilaster, 19 cm. deep; (4) south of west pilaster, 30 cm. deep. Two cists also in floor: (1) in front of southwest pilaster, 25 cm. deep; (2) south of northeast pilaster, 40 cm. deep. Both of these floor cists slanted under banquette.

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b floo
c fire
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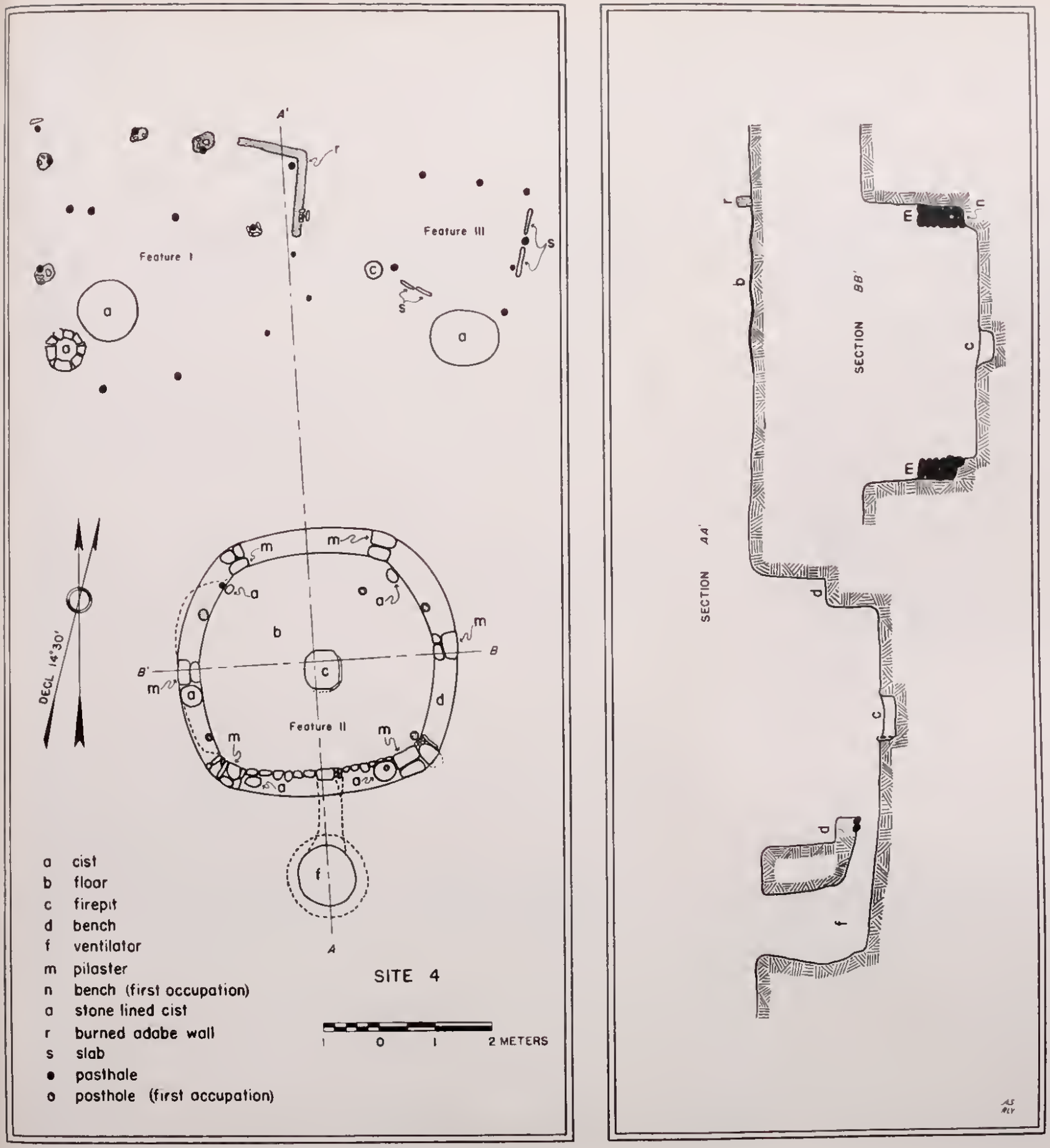

MAP 9. GROUND PLAN AND SECTIONS OF SITE 4

Plaster.—Three coats, at intersection of banquette and kiva wall; brown in color; no decoration; two coats on banquette.

Masonry.—In pilasters and in face of banquette between southeast and southwest pilasters. For description of masonry of pilasters, see *Pilasters.* Banquette masonry of undressed sandstone slabs, applied as facing; single thickness of stones; very crude in appearance; rough attempt at coursing; height about 5 to 7 courses (35–50 cm.). Stones varied in size from 32 by 28 by 7 cm., to 10 by 7 by 3 cm. Pottery and wedge-shaped stone spalls used, stone spalls averaging about 5 by 4 by 2 cm. Masonry covered by two coats of plaster.

Artifacts.—One stone grooved-ax in bin; two broken bowls on floor; and one metate (troughed, with one end of trough closed) used as one of the stones in pilaster.

The following features were lacking in this house-kiva: niches in face of banquette wall, southern recess, deflector, and sipapu.

EXTERIOR DETAILS

Cists.—Two in number: (1) one immediately outside of the south wall of Feature III, post house; 38 cm. deep, walls of earth. In it were found many sherds (see under Pottery of Site 4). (2) Circular, lined with seven sandstone slabs which slanted outward; average dimension of slab, 32 by 28 by 4 cm.; depth of cist, 20 cm. Probably outside of wall of Feature I.

GENERAL COMMENTS

Feature I might have been one large room, with a row of roof-supporting posts running east and west in the center, or it might have been two rooms. The northeast corner of this room had been used for storing a large quantity of corn, which later burned with great intensity.

The house-kiva was once modified. Before remodeling, the floor space was comparatively small, the roof was probably supported by six wooden posts, and the ventilator was fairly large and wide. After remodeling, the floor space was considerably enlarged, the ventilator tunnel opening was reduced in size, a higher bench of dirt (evidently scraped up from some refuse mound) was constructed, some crude masonry in the south zone was inserted, and stone pilasters were laid up. The kiva was probably continuously occupied.

III. ARTIFACTS

Summary of Stone Objects

The microscopic examination of the stone objects was made by Mr. Sharat K. Roy, Curator of Geology at Field Museum.

On pages 257 to 265, the details of the stone implements are given in tabular form. For convenience, these implements (except metates and manos) have been grouped in two ways, as follows:

Object	Total for all sites
Chipped artifacts	2
Axes	10
Mauls	2
Rubbing stones	8
Hammer stones	21
Rectangular objects	1
Total	44

Object	Number	Number of site
Knife	1	1
Projectile point	1	1
Axes	2	1
	1	2
	1	3
	6	4
Mauls	2	2
Rubbing stones	4	1
	3	3
	1	4
Hammer stones	9	1
	2	2
	5	3
	5	4
Rectangular object	1	1
Total	44	

(1) Very few projectile points were recovered. This may indicate that the Indians, who inhabited the sites which we excavated, farmed more than they hunted.

(2) The axes were crude and battered. Only ten were found. Of these, one is completely grooved; another is grooved on both sides and on one face only; and the remaining eight are notched on the edges but ungrooved. Attention should be called to one ax (Plate CXXXVIII, Fig. 1), which is notched not only on the sides but also on the poll and on the edge. Mera (1938, Plate 9) illustrates this type from northern New Mexico, and Roberts (1930, Plate 47) shows a similar one from the Piedra region, southern Colorado. Two of the axes from Site 1 and one from Site 4 are chipped more

than pecked and rubbed. It is possible that these served as hoes rather than as axes.

(3) The rubbing stones may conceivably have been used as one-hand manos since a few of them show the kind of wear which would come from grinding grain.

(4) Twenty-one hammer stones were found, a number which is almost equivalent to the total of all other types of stone implements (excluding manos and metates) which were found.

Five of the thirty manos were associated with kivas, three at Site 1, and two at Site 2. Four of the six metates were associated likewise with kivas, one at Site 1, and three at Site 2.

SUMMARY OF TYPES OF MANOS

Manos with single grinding surfaces:
- (a) Flat grinding surfaces, both surfaces parallel 8
  - From Site 1 2
  - From Site 2 1
  - From Site 3 2
  - From Site 4 3
- (b) Flat grinding surfaces, wedge-shaped 2
  - From Site 2 1
  - From Site 3 1
- (c) Convex grinding surfaces, upper surfaces concave 2
  - From Site 2 2
- (d) Convex grinding surface, wedge-shaped 3
  - From Site 3 3
  - Total 15

Manos with two grinding surfaces:
- (a) Flat grinding surfaces, surfaces parallel 5
  - From Site 2 1
  - From Site 3 2
  - From Site 4 2
- (b) Flat grinding surfaces, wedge-shaped 3
  - From Site 1 1
  - From Site 3 2
- (c) Convex grinding surfaces, wedge-shaped 2
  - From Site 3 1
  - From Site 4 1
- (d) Convex grinding surface, one flat (plano-convex) 5
  - From Site 3 3
  - From Site 4 2
  - Total 15

SUMMARY OF TYPES OF METATES

Metates, troughed, trough open at one end only 5
- From Site 1 1
- From Site 2 2
- From Site 3 1
- From Site 4 1

Metate troughed, trough open at both ends 1
- From Site 2 1
- Total 6

SUMMARY OF BONE OBJECTS

The bone implements were examined by Mr. Edmond N. Gueret, Curator of Vertebrate Skeletons at Field Museum.

A total of twenty-seven bone objects was recovered. Of these, twenty-three are awls and four are end scrapers, or fleshers. In most cases, it is impossible to identify exactly the animals from which these bones came. Two awls were made from moose bones, two from deer, and two from carnivore (probably coyote). The other bones could merely be identified as mammal leg bones.

The bone objects may be grouped as follows:

Object	Number	Number of Site
Awls (head of bone intact)	3	2
	2	3
	2	4
Awls (head of bone partly worked down)	2	2
	1	3
	1	4
Awls (head of bone wholly removed)	2	1
	3	2
	4	3
	3	4
End scrapers	1	1
	3	2
Total	27	

ARTIFACTS

(Measurements in Centimeters)

Objects of Stone

STONE IMPLEMENTS WITH SECONDARY CHIPPING ON ALL MAJOR FACES

Artifact	Location	Material	Dimensions	Description	Plate and Figure Nos.
Knife without stem	Level 8 of house-kiva, Feature I, Site 1.	Chert	L. 4.5	Leaf-shaped; ends: one square, one pointed.	
Projectile point(?)	Floor of house-kiva, Feature I, Site 1.		Present L. 5.4	Pointed at one end; base missing.	

GROUND OR PECKED STONE OBJECTS

Ax	Outside of slab house, Feature III, Site 1.	Felsite	L. 16.5 Gr. T. 4	Notch on one side; faces unchanneled, rough; edge dull.	CXXXVII, 4
	Floor of antechamber, Feature IV, Site 1.		L. 17 Gr. W. 9.5	Notched sides; faces unchanneled; crudely chipped; unpolished; edge dull.	CXXXVIII, 5
	Level 5 of fill of house-kiva, Feature IV, Site 2.	Quartzite	L. 10.7 Gr. W. 6	Notched sides; faces unchanneled; crudely chipped; unpolished; edge fairly sharp.	CXXXVIII, 3
	Floor of Room 4, Site 3.		L. 10 Gr. W. 6.2	Grooved sides; faces unchanneled; crudely chipped; faces polished near edge; edge sharp.	CXXXVII, 3
	Floor of house, Feature I, Site 4.	Diorite	L. 19.4 Gr. W. 11.5	Grooved sides; faces unchanneled; crudely chipped; unpolished; edge dull; unusually crude implement.	CXXXVIII, 4
	Floor of house-kiva, Feature II, Site 4.	Quartzite	L. 12.4 Gr. W. 7.	Grooved: sides and faces; crudely fashioned; faces near edge polished; edge sharp.	CXXXVII, 1

ARTIFACTS—*Continued*

GROUND OR PECKED STONE OBJECTS—*Continued*

Artifact	Location	Material	Dimensions	Description	Plate and Figure Nos.
Ax	Between Features I and III, Site 4.	Basalt	L. 14 Gr. W. 8.2	Notched sides; faces unchanneled; well made; smooth, unpolished; edge sharp; one face flat, other face convex; poll and edge slightly notched.	CXXXVIII, 1
	Floor of house, Feature I, Site 4.	Amphibolite	L. 16 Gr. W. 10.5	Notched sides; faces unchanneled; well made; surfaces polished; one face flat, other, pronounced bevel running 6 cm. back from edge; edge medium sharp.	
		Quartzite	L. 15.3 Gr. W. 10.5	Notched sides; faces unchanneled; unpolished except near edge; edge fairly sharp.	CXXXVIII, 2
	Level 8 of fill of house-kiva, Feature II, Site 4.	Sandstone	L. 12.5 Gr. W. 6.6	Notched sides and one grooved face; crudely fashioned; poll battered; edge shattered; unpolished.	CXXXVII, 2
Maul	On surface near wall which stood between rooms, Feature II, Site 2.		L. 11.3 Gr. W. 7.2	Groove on one side and slight groove on one face; unpolished; ends blunt.	CXXXIX, 3
	Level 5 of fill of house-kiva, Feature IV, Site 2.	Gray granite	L. 12.2 Gr. W. 8.4	Notched sides; smooth but unpolished; ends blunt.	CXXXIX, 2
Rubbing Stone	Storage pit, Feature II, Site 1.	Calcareous sandstone	L. 12.5 W. 9.5	Ovaloid; faces smooth and flat; edges dressed with pecking hammer.	CXL, 4
	Level 2 of fill of house-kiva, Feature I, Site 1.		D. 8.5	Round; one face smooth but unpolished, other face rough; edges rough.	CXLI, 2

ARTIFACTS—*Continued*

GROUND OR PECKED STONE OBJECTS—*Continued*

Artifact	Location	Material	Dimensions	Description	Plate and Figure Nos.
Rubbing Stone	Storage pit, Feature II, Site 1.	Quartzite	L. 13.7 W. 6.8	Rectangular; one face smooth, other face rough.	CXLI, 3
	Level 4 of fill on west side of ventilator shaft of house-kiva, Feature I, Site 1.	Felsite	L. 17 W. 8.5	Ellipsoidal; one face slightly convex, other face more convex; faces smooth and polished; ends pecked.	CXLI, 4
	Level 4 of fill of house-kiva, Feature I, Site 3.	Quartzite	L. 10.2 W. 9.2	Approximately paraboloidal; faces smooth.	CXL, 1
	Floor of Room 2, Site 3.	Gneiss	L. 12.7 W. 8.7	Ovaloid; both faces very smooth; ends somewhat pecked; edges squared.	CXL, 3
	Level 4 of fill of house-kiva, Feature I, Site 3.	Sandstone	L. 10 W. 8	Ovaloid; both faces smooth; ends pecked; faces slightly convex.	CXLI, 1
	Floor of Feature I, Site 4.		L. 10.8 W. 8.3		CXL, 2

ARTIFACTS—*Continued*

GROUND OR PECKED STONE OBJECTS—*Continued*

Artifact	Location	Material	Dimensions	Description	Plate and Figure Nos.
6 Hammer stones	Storage pit in pole house, Feature II, Site 1.	Quartzite, felsite, and diorite	D. 4.5 to 11	Irregular rounded forms.	CXXXIX, 5
3 Hammer stones	Floor of house-kiva, Feature I, Site 1.				
2 Hammer stones	Fill outside of Feature I, Site 2.				
2 Hammer stones	Southern recess of house-kiva, Feature I, Site 3.				
3 Hammer stones	Cist in Trench II, Site 3.				
3 Hammer stones	Floor of post house, Feature I, Site 4.				
2 Hammer stones	Floor of post house, Feature III, Site 4.				
Rectangular object	Level 8 of fill of house-kiva, Feature I, Site 1.	Felsite	L. 17.5 W. 6 T. 2	Faces unpolished, in natural condition; edges battered (chipped); ends blunt.	CXXXIX, 4
Pot cover	Level 7 of fill of house-kiva, Feature I, Site 3.	Sandstone	D. 10		CXXXIX, 1

ARTIFACTS—*Continued*

MANOS WITH SINGLE GRINDING SURFACES

Artifact	Location	Material	Dimensions	Description	Plate and Figure Nos.
Mano	Floor of house-kiva, Feature I, Site 1.	Sandstone	L. 21 W. 9.3 T. 4	Single, flat grinding surface; upper surface rough; both surfaces parallel; ends rounded.	
	Floor of house-kiva, Feature I, Site 1.		L. 16 W. 11 T. 5	Single, flat grinding surface; upper surface rough; one end broken off, other end rounded; both surfaces parallel.	CXLII, 1
	Floor of storehouse, Feature III, Site 2.		L. 22 W. 17 T. 4	Single, flat grinding surface; upper surface rough; both surfaces parallel; ends rounded.	CXLIII, 3
	Fill of house-kiva, Feature I, Site 3.	Conglomerate	L. 22 W. 12 T. 8.5	Single, flat grinding surface; upper surface rough; both surfaces roughly parallel; ends squarish.	
	Level 1, Trench II, Site 3.		L. 22 W. 10 T. 2.5	Single, flat grinding surface; upper surface rough; both surfaces parallel; ends rounded.	CXLIV, 1
	Floor of house, Feature I, Site 4.	Sandstone	L. 21 W. 13 T. 4		CXLV, 3
	Fill of house-kiva, Feature II, Site 4.		L. 12 W. 7 T. 5.5	Broken fragment; single, flat grinding surface; surfaces parallel.	

ARTIFACTS—*Continued*

MANOS WITH SINGLE GRINDING SURFACES—*Continued*

Artifact	Location	Material	Dimensions	Description	Plate and Figure Nos.
Mano		Conglomerate	L. 13 W. 10 T. 4	Fragment; single, flat grinding surface; upper surface rough; both surfaces parallel; end rounded.	
	Banquette of house-kiva, Feature IV, Site 2.	Sandstone	L. 19 W. 11.5 T. 2	Single, flat grinding surface; wedge-shaped; ends rounded.	
	Trench II, Site 3.		L. 22 W. 11 T. 3		CXLIV, 3
	Floor of house, Feature I, Site 2.	Conglomerate	L. 26 W. 15 T. 5.5	Single, convex grinding surface and concave upper surface; ends rounded.	CXLII, 2
		Sandstone	L. 23 W. 12 T. 3.4		CXLII, 3
	Trench II, Site 3.		L. 19 W. 12 T. 3	Single, convex grinding surface; upper surface rough; wedge-shaped; ends rounded.	CXLIV, 4
			L. 21 W. 12 T. 2		CXLIV, 5
	Fill of house-kiva, Feature I, Site 3.		L. 12 W. 10 T. 2		

ARTIFACTS—*Continued*

MANOS WITH TWO GRINDING SURFACES

Artifact	Location	Material	Dimensions	Description	Plate and Figure Nos.
Mano	Floor of house, Feature I, Site 2.	Sandstone	L. 22.5 W. 13 T. 5	Double, flat grinding surface; surfaces parrallel; ends rounded.	CXLIV, 2
	Trench II, Site 3.		L. 8 W. 12 T. 2	Double, flat grinding surface; surfaces parallel; ends rounded. Broken; only one end present.	
			L. 17 W. 12 T. 6	Double, flat grinding surface; surfaces parallel; one surface has longitudinal groove for sharpening objects.	
	Fill of house-kiva, Feature II, Site 4.		L. 13.5 W. 8 T. 3	Double, flat grinding surface; surfaces parallel; end rounded. Fragment with one end only.	
	Fill of house-kiva, Feature II, Site 4.		L. 13 W. 11 T. 5.5	Broken fragment with one end only; has double, flat, parallel grinding surface; end squarish.	
	Near firepit in house-kiva, Feature I, Site 1.		L. 10 W. 11 T. 4	Broken fragment, one end only; has double, flat grinding surface; wedge-shaped; end rounded.	CXLV, 1
	Floor of Room 2, Site 3.		L. 15 W. 12 T. 3		
		Conglomerate	L. 21 W. 11 T. 3.5	Double, flat grinding surface; surfaces smooth; wedge-shaped; ends rounded.	CXLV, 2

ARTIFACTS—*Continued*

MANOS WITH TWO GRINDING SURFACES—*Continued*

Artifact	Location	Material	Dimensions	Description	Plate and Figure Nos.
Mano	Trench II, Site 3.	Sandstone	L. 21 W. 13 T. 4	Double, convex grinding surface; wedge-shaped; ends rounded.	
	Fill of house-kiva, Feature II, Site 4.		L. 11 W. 10 T. 3	Double, convex grinding surface; wedge-shaped; well made; fragment with one end only; end rounded.	
	Trench II, Site 3.	Conglomerate	L. 20 W. 12 T. 5	Double grinding surface; plano-convex; wedge-shaped; ends rounded.	CXLV, 5
		Sandstone	L. 20 W. 10 T. 3	Plano-convex; double grinding surface; ends rounded.	CXLIV, 3
			L. 18 W. 12 T. 3	Double grinding surface; plano-convex; one end rounded, the other broken off.	
	Floor of house, Feature I, Site 4.		L. 21 W. 10.5 T. 4	Plano-convex with double grinding surface; ends rounded and carefully ground. An excellent specimen. Shows evidence of fire.	CXLV, 4
	Fill of house-kiva, Feature II, Site 4.		L. 17 W. 9.5 T. 3	Plano-convex; double grinding surface; wedge-shaped; ends rounded.	
METATES, TROUGHED; TROUGHS OPEN AT ONE END ONLY					
Metate	Floor of house-kiva, Feature I, Site 1.		L. 28 W. 20 T. 7	Part of end of trough; trough, one end closed.	

ARTIFACTS—*Continued*

METATES, TROUGHED; TROUGHS OPEN AT ONE END ONLY—*Continued*

Artifact	Location	Material	Dimensions	Description	Plate and Figure Nos.
Metate (Fragments)	Floor of house-kiva, Feature IV, Site 2.	Sandstone	L. 35 W. 23 T. 14	One side and part of one end of trough.	
	Ventilator shaft of house-kiva, Feature		L. 35 W. 29 T. 10	One end only.	
	Fill of house-kiva, Feature I, Site 3.		L. 35 W. 18 T. 13	Consists of end and part of side only; trough closed at end.	
	Formed part of southeast pilaster (of second occupation), of proto-kiva, Feature II, Site 4.		L. 45 W. 33 T. 12	About one half of trough, including one end; the end closed.	
METATE, TROUGHED; TROUGH OPEN AT BOTH ENDS					
Metate	Banquette of house-kiva, Feature IV, Site 2.	Sandstone	L. 42 W. 28 T. 9	Complete metate; open at both ends.	
MISCELLANEOUS					
Problematical	Banquette fill of house-kiva, Feature II, Site 4.	Petrified wood	L. 4 W. 2.5 T. 0.4	Smooth; unworked.	
	Floor of house-kiva, Feature II, Site 4.	Bituminous coal		Small fragment.	
OBJECT OF CLAY					
Pendant	Pit in Trench II, Site 3.	Pottery	L. 1.9	Pear-shaped; with hole for suspension.	

ARTIFACTS—*Continued*

OBJECTS OF BONE

MAMMAL LEG BONE: HEAD OF BONE INTACT

Artifact	Location	Material	Dimensions
Awl	Outside of house, Feature I, Site 2.	Metatarsal of mammal leg bone	L. 14
	Level 7 of house-kiva, Feature IV, Site 2.	Tibia of carnivore	L. 16.8
	Banquette of house-kiva, Feature IV, Site 2.	Metacarpal of moose	L. 8.5
	Ventilator shaft, house-kiva, Feature I, Site 3.	Metacarpal of deer	L. 6.5
	Southern recess of house-kiva, Feature I, Site 3.	Leg bone of rodent	L. 7
	Banquette fill of house-kiva, Feature II, Site 4.	Ulna of carnivore	L. 11.7
	Floor of house-kiva, Feature II, Site 4.	Metacarpal of moose	L. 14.8
MAMMAL LEG BONE: HEAD OF BONE PARTLY WORKED DOWN			
Awl	Level 5 of house-kiva, Feature IV, Site 2.	Leg bone of mammal	L. 13.1
			L. 8.6
	Level 2 of Trench III, Site 3.		L. 14.5
	Floor of house, Feature I, Site 4.		L. 18.3
MAMMAL LEG BONE: HEAD OF BONE WHOLLY REMOVED			
	Level 6 of house-kiva, Feature I, Site 1.		L. 13.5
	Floor of house-kiva, Feature I, Site 1.		L. 8.3
	Outside of collapsed house, Feature V, Site 2.		L. 9

MAMMAL LEG BONE: HEAD OF BONE WHOLLY REMOVED—*Continued*

Artifact	Location	Material	Dimensions
Awl	Fill of house-kiva, Feature IV, Site 2.	Leg bone of mammal	L. 16.9
	Level 5 of house-kiva Feature IV, Site 2.		L. 13
	Levels 3 and 4 of pit associated with Burial 1, Trench II, Site 3.		L. 9
	Level 4 of Trench II, Site 3.		L. 6.8
	Southern recess of house-kiva, Feature I, Site 3.		L. 15
	Level 7 of house-kiva, Feature I, Site 3.		L. 10
	Banquette of house-kiva, Feature II, Site 4.		L. 8.7
	Banquette fill of house-kiva, Feature II, Site 4.	Ulna of rodent	L. 6.8
	Outside of slab house, Feature III, Site 1.	Tibia of rodent	L. 6.6
MADE FROM PORTIONS OF MAMMAL LEG BONES			
End scraper or flesher	Floor of house-kiva, Feature I, Site 1.	Leg bone of mammal	L. 11.3
	Surface, Site 2.		L. 13
	Level 5 of house-kiva, Feature IV, Site 2.		L. 7
MADE FROM LEFT SIDE OF LOWER JAW BONE OF DEER, THE CONDYLE PROCESS AND EVERYTHING IN FRONT OF THE GRINDING TEETH CUT OFF TO MAKE THE IMPLEMENT			
End scraper or flesher	Outside of stone house, Feature I, Site 2.		L. 13.2

IV. POTTERY

Painted Pottery

In my report on the Lowry ruin (Martin, 1936, pp. 110–112) a detailed description of Mancos black-on-white pottery is given. It is only necessary, therefore, to restate this definition briefly.

The term Mancos black-on-white pottery is applied to a Chaco-like ware found in southeastern Utah and southwestern Colorado. It manifests the same general treatment, appearance, and elements of design as early Chaco pottery. These design elements are: squiggly, diagonal hatch; diagonal hatch; checker-boards, with solid or hatched squares; pendent or opposed triangles, solid or hatched; terraces, or stepped elements; panels of oblique or vertical lines, bordered by ticked lines, opposed triangles, or other solid elements; quartered patterns; cross or diamond hatch polka dots; solid elements bordered by parallel lines; plain stripes; ticked and double ticked lines; scrolls; allover patterns consisting of sets of oblique parallel lines set nearly at right angles to other sets; chevrons; and combinations of two or more of these elements (Plates CXLVI–CLXXV).

The paint, so far as can be told by macroscopic examination, is mineral.

The following graph (Fig. 56) shows all the design elements and the relative frequency of each by sites. These percentages are based only on the total number of painted black-on-white sherds for each site.

Culinary Pottery

The culinary pottery was sorted and classified solely on the basis of surface appearance. The classification differentiated several types of plain corrugated pottery and nine types of indented-corrugated ware. This minute subdivision was purposely undertaken to see whether significant cultural or chronological data could be extracted from such manipulations. However, no data were obtained, and this subdividing served only to bring out the great diversity in types.

To avoid possible confusion, I shall explain briefly the terms used herein. Plain corrugated pottery, or "clapboard corrugated," as it is called by Kidder (1936, p. 304), is corrugated pottery without indentations. The strips which make up the corrugations overlap as do the boards of a clapboard house.

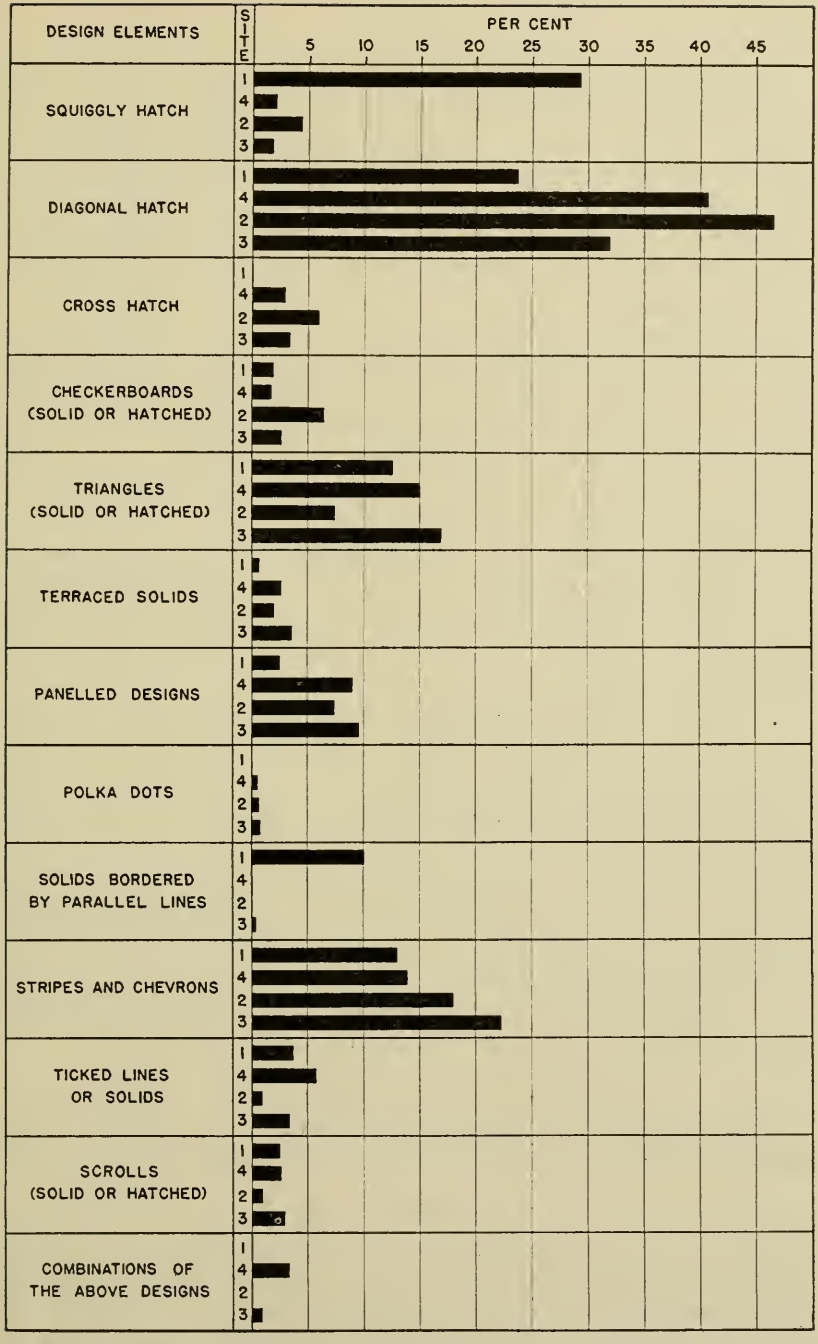

FIG. 56. Graph representing distribution (in percentages) of design elements according to sites; sites arranged chronologically.

Banded pottery is a type of ware showing flat, wide bands which do not overlap. This term implies that such pottery was ring-built; that is, that it was built up by laying on top of one another a series of rings of clay long enough to go around the circumference of the vessel just once. This method is opposed to that of spiral coiling, in which a pot is constructed from a long strand of clay which starts at the bottom of the vessel and coils spirally toward the top.

It is generally conceded that one cannot tell positively from a sherd whether a pot was constructed by means of rings or spiral coils. In this paper, the term "plain corrugated" is applied to any pottery showing overlapping strips or corrugations. It is also understood that plain corrugations may be confined to the neck region of a pot, or that they may extend over most or all of the surface.

The term "smooth culinary" is applied to pottery, the upper portion of which was probably corrugated or banded and the lower part smooth. Such pottery may come from Basket Maker III, Pueblo I, or Pueblo II horizons and therefore is not very useful as a time criterion.

The nine indented-corrugated types are: flat-wavy; medium-wavy; deep-wavy; square; incised; exterior corrugated, interior painted; sawtooth; painted; and washboard. These purely descriptive names need no explanation, since the types are illustrated in Plates CLXXVI–CLXXVIII.

The most common type at all sites was flat-wavy indented-corrugated; the next common type was medium-wavy indented-corrugated. Plain corrugated-neck pottery was found in significant quantity only at Site 1.

As stated before, the only significant result of this classification was to bring out the diversity of indented-corrugated types.

DESCRIPTION OF POTTERY DATA[1]

The pottery from each site was classified, counted, the results tabulated, and averages made for each level (20 cm. thick).

SITE 1

There was no significant or consistent variation in pottery types in any parts of Features II to IV. The comparison of pottery types, level by level, for the house-kiva (Feature I) likewise did not

[1] Prepared in collaboration with Miss Elizabeth Hambleton and Mr. Alexander Spoehr.

show any important differences. The frequencies of wares were either erratic or fairly constant, and, when plotted, either by actual number of sherds or by percentages, did not approach a normal frequency curve. Furthermore, level by level, there was a constant and important association of Lino gray pottery and the various indented-corrugated wares.

From this evidence it is safe to conclude that the pottery, found in the various levels in the house-kiva, at one time lay scattered on the surface of the ground, and, as shown by soil profiles, was washed in by rains after the site was deserted. It seems fairly certain that the site was occupied but once and for only a short time.

SITE 2

Careful analysis of the pottery types from all parts of the site demonstrated that there was no significant variation in pottery types. The relationship between the various types, level by level, remained uniform throughout. As shown by the soil profiles, the sherds in the kiva fill were washed in.

It is probable that this site represents the remains of a village occupied only for one brief period, and that the rooms above ground and the kiva were contemporaneous.

SITE 3

The relationship of associated pottery types, level by level, from the rooms, the kiva, and the trenches showed no significant or consistent variations. As shown by soil profiles, the sherds in the kiva fill were washed in.

The chronological sequence, or coevality, of any of the rooms and the kiva cannot be established. My guess is that they were all used contemporaneously and for only a short period of time.

SITE 4

Tabulation and comparison of the various pottery types from the two pole-and-brush houses (Feature I and Feature III) and from the house-kiva produced no variations or important differences in associations.

In all levels of the house-kiva and in the pole-and-brush rooms, there was a constant association of Lino gray and indented-corrugated wares. This association is not usual, but the fact that it exists at this site (and to a lesser extent at Site 1) cannot be questioned.

As stated in Chapter II (Site 4) the pole-and-brush house (Feature I) was destroyed in early times by fire. Directly underneath

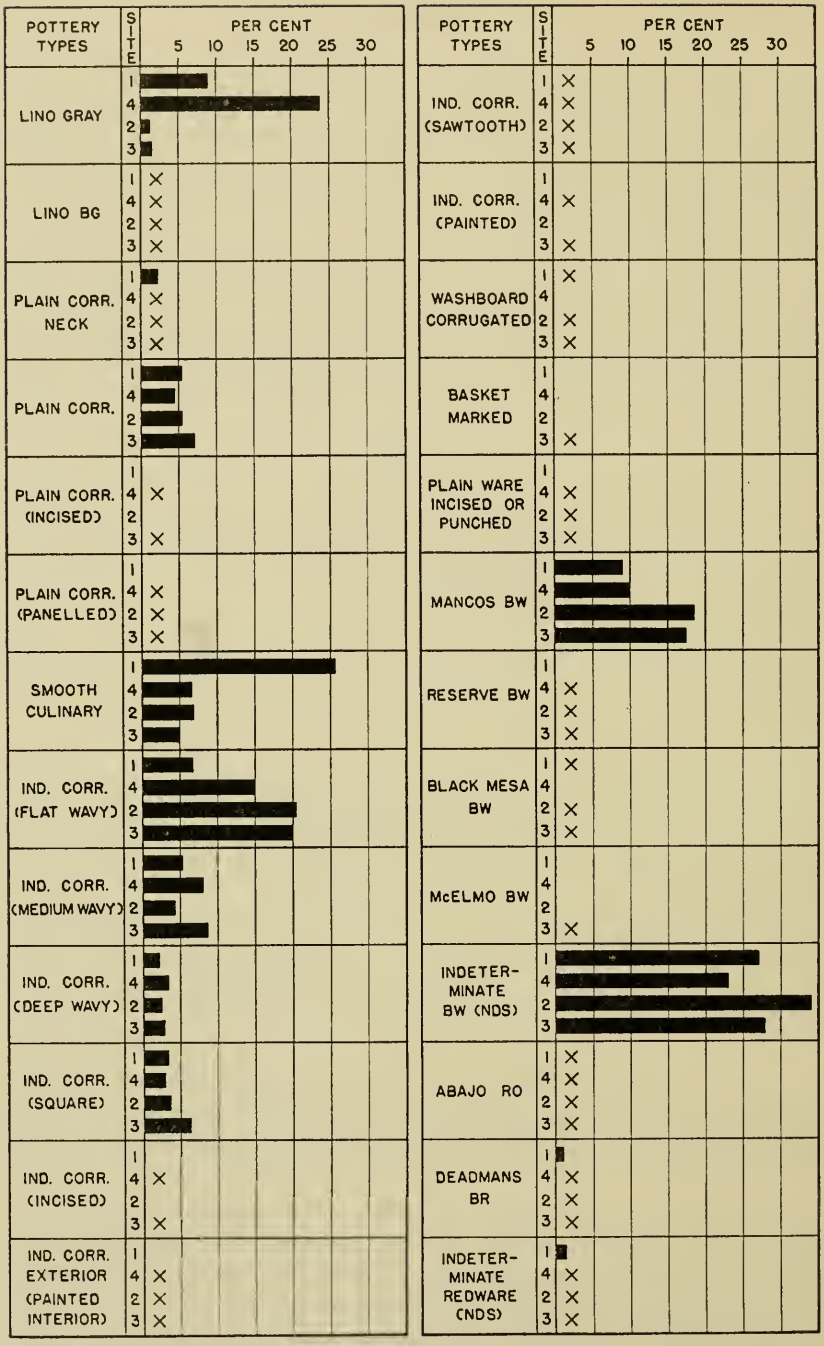

FIG. 57. Graph representing distribution (in percentages) of pottery types for each site; sites arranged chronologically.

NUMBER AND APPROXIMATE PERCENTAGES OF SHERDS FROM ALL FEATURES FOR SITES 1 TO 4

WARES	SITE 1		SITE 2		SITE 3		SITE 4	
	No.	%	No.	%	No.	%	No.	%
Lino gray	234	9	21	1	91	2	1127	24
Lino BG	14	..	1	..	2	..	10	..
Plain corrugated-neck	59	2	3	..	1	..	2	..
Plain corrugated	142	6	91	6	427	8	211	5
Plain corrugated (incised)	0	..	0	..	9	..	6	..
Plain corrugated (paneled)	0	..	1	..	8	..	5	..
Smooth culinary	672	26	118	7	287	5	312	7
Indented-corrugated (flat-wavy)	176	7	352	21	1187	20	705	15
Indented-corrugated (medium-wavy)	139	5	74	5	517	9	379	8
Indented-corrugated (deep-wavy)	57	2	43	3	171	3	165	4
Indented-corrugated (square)	91	4	63	4	379	7	139	3
Indented-corrugated (incised)	0	..	0	..	4	..	4	..
Indented-corrugated exterior (painted interior)	0	..	3	..	24	..	3	..
Indented-corrugated (sawtooth)	2	..	9	..	25	..	6	..
Indented-corrugated (painted)	0	..	0	..	6	..	1	..
Indented-corrugated (washboard)	9	..	1	..	2	..	0	..
Basket marked	0	..	0	..	2	..	0	..
Plain ware, incised or punched	0	..	2	..	3	..	2	..
Mancos BW	233	9	321	19	1042	18	472	10
Reserve BW	0	..	4	..	13	..	2	..
Black Mesa BW	3	..	1	..	7	..	0	..
McElmo BW	0	..	0	..	9	..	0	..
Indeterminate BW (NDS)	710	27	588	34	1668	28	1093	24
Abajo RO	8	..	1	..	6	..	44	..
Deadmans BR	27	1	12	..	25	..	6	..
Indeterminate redware (NDS)	36	2	15	..	41	..	35	..
Total	2612		1724		5956		4729	
Total indented-corrugated	474		545		2315		1402	

the debris of large, baked chunks of adobe (from the roof) and burned roof-timbers, were found complete necks, handles, and large portions of the sides of Lino gray jars (enough to restore several pots). Associated with these were sherds of indented-corrugated pottery (enough to restore several jars), of Mancos black-and-white ware, and of Abajo red-on-orange ware. I cannot emphasize too much that these were not miscellaneous sherds, but were parts of vessels which were whole at the time the house burned. Most of these sherds are highly discolored by the fire which consumed this house. It is likely that these whole vessels were shattered either by the heat of the fire or by the falling roof-beams.

In the fill of the house-kiva, the two wares, Lino gray and indented-corrugated, had generally similar distributions. Presumably, therefore, as in the kivas at Sites 1, 2, and 3, all the sherds in the fill of the kiva were deposited at the same time. Judging from the soil profiles, the most probable agent of deposition was water.

NUMBER AND KINDS OF SHERDS AND APPROXIMATE PERCENTAGES

KIVA, SITE 1

WARES	LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4		LEVEL 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
Lino gray	23	16	25	16	12	7	24	16	16	10
Lino BG	1	..	1	..	1	..	..	..	3	2
Plain corrugated-neck	3	2	3	2	4	2	6	4	6	4
Plain corrugated	11	8	2	1	8	4	11	7	2	1
Plain corrugated (incised)	..	..	..	..	..	..	..	..	..	..
Plain corrugated (paneled)	..	..	..	..	..	..	..	..	..	..
Smooth culinary	44	30	28	18	52	29	40	26	44	28
Indented-corrugated (flat-wavy)	18	12	17	11	12	7	14	9	4	3
Indented-corrugated (medium-wavy)	5	4	8	5	8	4	3	2	3	2
Indented-corrugated (deep-wavy)	1	..	5	3	5	3	..	..	2	1
Indented-corrugated (square)	4	3	7	5	3	2	4	3	5	3
Indented-corrugated (incised)	..	..	..	..	..	..	..	..	..	..
Indented-corrugated exterior (painted interior)	..	..	..	..	..	..	..	..	..	..
Indented-corrugated (saw-tooth)	..	..	..	..	..	..	..	..	..	..
Indented-corrugated (painted)	..	..	..	..	..	..	..	..	..	..
Washboard-corrugated	1	..	2	1	1	..	..	..	2	1
Basket marked	..	..	..	..	..	..	..	..	..	..
Plain ware, incised or punched	..	..	..	..	..	..	..	..	..	..
Mancos BW	7	5	23	15	25	14	14	9	19	12
Reserve BW	..	..	..	..	..	..	..	..	..	..
Black Mesa BW	..	..	..	..	..	..	..	..	..	..
McElmo BW	..	..	..	..	..	..	..	..	..	..
Indeterminate BW (NDS)	29	20	33	21	46	26	28	19	46	29
Abajo RO	..	..	..	..	..	..	1	..	..	..
Deadmans BR	..	..	..	..	4	2	4	3	3	2
Indeterminate redware (NDS)	1	..	3	2	1	..	3	2	3	2
Total	148		157		182		152		158	
Total indented-corrugated	29	19	39	25	29	16	21	14	16	10

Therefore we conclude that the sherds in the various levels of the kiva-fill were washed in, as in the kivas at Sites 1, 2, and 3.

If this assumption be correct, it is reasonable to conclude that these wares had been mixed before being washed in. Since the cultural deposits around the rooms above ground were very shallow (10–15 cm. deep), it is likewise fair to conclude that these wares were probably mixed because they were of contemporaneous manufacture and use.

To strengthen further the argument for the association of Lino gray and indented-corrugated wares, it should be pointed out that

NUMBER AND KINDS OF SHERDS AND APPROXIMATE PERCENTAGES

KIVA, SITE 1—*Continued*

WARES	LEVEL 6		LEVEL 7		LEVEL 8		LEVEL 9		TOTAL SHERDS
	No.	%	No.	%	No.	%	No.	%	
Lino gray	19	14	13	8	18	15	20	14	170
Lino BG	..	..	1	..	1	1	..	..	8
Plain corrugated-neck	6	4	5	3	3	3	3	2	39
Plain corrugated	6	4	15	9	10	9	6	4	71
Plain corrugated (incised)	..	..	..	..	..	..	..	..	...
Plain corrugated (paneled)	..	..	..	..	..	..	..	..	...
Smooth culinary	39	29	65	41	45	38	40	27	397
Indented-corrugated (flat-wavy)	4	3	5	3	2	2	1	1	77
Indented-corrugated (medium-wavy)	5	4	6	4	2	2	8	5	48
Indented-corrugated (deep-wavy)	1	1	2	1	1	1	4	3	21
Indented-corrugated (square)	6	4	5	3	..	..	4	3	38
Indented-corrugated (incised)	..	..	..	..	..	..	..	..	..
Indented-corrugated exterior (painted interior)	..	..	..	..	..	..	..	..	...
Indented-corrugated (sawtooth)	..	..	1	..	..	..	..	..	1
Indented-corrugated (painted)	..	..	..	..	..	..	..	..	...
Washboard-corrugated	..	..	..	..	..	..	..	..	6
Basket marked	..	..	..	..	..	..	..	..	...
Plain ware, incised or punched	..	..	..	..	..	..	..	..	...
Mancos BW	6	4	8	5	3	3	14	9	119
Reserve BW	..	..	..	..	..	..	..	..	...
Black Mesa BW	..	..	3	2	..	..	..	..	3
McElmo BW	..	..	..	..	..	..	..	..	...
Indeterminate BW (NDS)	39	29	26	16	26	22	34	23	307
Abajo RO	..	..	..	..	..	..	4	3	5
Deadmans BR	1	1	4	3	1	1	3	2	20
Indeterminate redware (NDS)	4	3	3	2	4	3	6	4	28
Total	136		161		117		147		1358
Total indented-corrugated	16	12	19	11	5	5	17	12	191

the same association of these two wares was found in the refuse at Lowry ruin and also as a result of the archaeological reconnaissance of 1937 (Chapter VII).

There is no doubt, therefore, that in southwestern Colorado, Lino gray ware and indented-corrugated wares were used simultaneously.

TRADE WARES

The following wares were probably obtained through trade: Alma Plain ware (Mogollon series; found only at Site 4); Reserve(?)

NUMBER AND KINDS OF SHERDS AND APPROXIMATE PERCENTAGES

KIVA, SITE 2

WARES	LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4	
	No.	%	No.	%	No.	%	No.	%
Lino gray	4	3	..	..	3	3	2	2
Lino BG	..	..	..	..	..	..	..	..
Plain corrugated-neck	..	..	..	..	..	..	..	..
Plain corrugated	11	8	9	10	5	5	4	4
Plain corrugated (incised)	..	..	..	..	..	..	..	..
Plain corrugated (paneled)	..	..	..	..	..	..	..	..
Smooth culinary	16	11	4	4	10	10	6	6
Indented-corrugated (flat-wavy)	34	23	20	20	23	23	35	33
Indented-corrugated (medium-wavy)	2	1	2	2	4	4	4	4
Indented-corrugated (deep-wavy)	1	..	2	2	..	..	2	2
Indented-corrugated (square)	5	4	1	1	2	2	1	1
Indented-corrugated (incised)	..	..	..	..	..	..	..	..
Indented-corrugated exterior (painted interior)	..	..	2	2	1	1	..	..
Indented-corrugated (sawtooth)	1	..	2	2	1	1	1	1
Indented-corrugated (painted)	..	..	..	..	..	..	..	..
Washboard corrugated	..	..	..	..	..	..	..	..
Basket marked	..	..	..	..	..	..	..	..
Plain ware, incised or punched	..	..	..	..	..	..	1	1
Mancos BW	27	18	21	22	16	16	18	17
Reserve BW	..	..	..	..	..	..	1	1
Black Mesa BW	..	..	..	..	1	1	..	..
McElmo BW	..	..	..	..	..	..	..	..
Indeterminate BW (NDS)	45	30	32	33	33	34	26	25
Abajo RO	..	..	..	..	..	..	..	..
Deadmans BR	1	..	..	..	..	..	2	2
Indeterminate redware (NDS)	3	2	2	2	..	..	1	1
Total	150		97		99		104	
Total indented-corrugated	43	28	29	29	31	31	43	41

black-on-white; Black Mesa black-on-white; and black-on-red pottery from the Kayenta region (probably Deadmans black-on-red).

SUMMARY

A statistical study of the pottery types, level by level, at each site, indicated no consistent variations or periodic fluctuations. Therefore, the bar graph (Fig. 57, p. 272) has been included, showing all pottery types in percentages for each site as a whole; that is, all sherds of one type from every level within a site, including the levels in a kiva, have been lumped together. (Abbreviations used on the graph and in the tables are explained on pp. 280–281.) The sites are arranged in chronological order, Site 1 being the earliest. In addition, tables are given, one showing the number and approximate percentages of all sherds from all features (except kivas) for each site; and another, showing the number and approximate percentages of all sherds by levels from the kivas.

NUMBER AND KINDS OF SHERDS AND APPROXIMATE PERCENTAGES

KIVA, SITE 2—*Continued*

WARES	LEVEL 5		LEVEL 6		LEVEL 7		LEVEL 8		TOTAL
	No.	%	No.	%	No.	%	No.	%	SHERDS
Lino gray	..	..	..	..	1	2	1	1	11
Lino BG	..	..	..	..	..	..	..	..	..
Plain corrugated-neck	..	..	..	..	..	..	..	..	...
Plain corrugated	4	12	4	6	..	..	1	1	38
Plain corrugated (incised)	..	..	..	..	..	..	..	..	...
Plain corrugated (paneled)	..	..	..	..	..	..	..	..	...
Smooth culinary	3	10	4	6	1	2	..	..	44
Indented-corrugated (flat-wavy)	7	22	16	25	14	27	26	32	175
Indented-corrugated (medium-wavy)	4	12	10	16	..	..	3	4	29
Indented-corrugated (deep-wavy)	..	..	1	2	1	2	2	2	9
Indented-corrugated (square)	1	3	2	3	2	4	3	4	17
Indented-corrugated (incised)	..	..	..	..	..	..	..	..	...
Indented-corrugated exterior (painted interior)	..	..	..	..	..	..	..	..	3
Indented-corrugated (sawtooth)	..	..	..	..	1	2	..	..	6
Indented-corrugated (painted)	..	..	..	..	..	..	..	..	...
Washboard corrugated	..	..	1	2	..	..	..	..	1
Basket marked	..	..	..	..	..	..	..	..	...
Plain ware, incised or punched	..	..	..	..	..	..	..	..	1
Mancos BW	3	10	11	17	16	30	20	25	132
Reserve BW	..	..	..	..	..	..	..	..	1
Black Mesa BW	..	..	..	..	..	..	..	..	1
McElmo BW	..	..	..	..	..	..	..	..	...
Indeterminate BW (NDS)	9	28	15	23	13	25	24	30	197
Abajo RO	..	..	..	..	..	..	..	..	...
Deadmans BR	1	3	..	..	3	6	..	..	7
Indeterminate redware (NDS)	..	..	..	..	..	..	1	1	7
Total	32		64		52		81		679
Total indented-corrugated	12	37	30	48	18	35	34	42	240

The bar graph demonstrates that:

(1) Lino gray is most abundant at Sites 1 and 4, whereas Mancos black-on-white (a later ware) is most abundant at Sites 2 and 3.

(2) Lino black-on-gray (although it is not evident from the graph) was most frequent at Site 1.

(3) Plain corrugated-neck and smooth culinary (lower portion of corrugated-neck vessels) pottery are most abundant at Site 1.

(4) Indented-corrugated (flat-wavy) and Mancos black-on-white occur with greatest frequency at Sites 2 and 3 and, conversely, with least frequency at Sites 1 and 4.

(5) Mancos black-on-white and Indeterminate black-on-white (little or no design showing) have similar frequencies at Sites 2 and 3. If the Indeterminate class represents portions of Mancos black-on-white vessels, which is a reasonable supposition, this similarity in frequencies would be natural.

NUMBER AND KINDS OF SHERDS AND APPROXIMATE PERCENTAGES

KIVA, SITE 3

WARES	LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4	
	No.	%	No.	%	No.	%	No.	%
Lino gray	..	..	1	1	1	1	1	1
Lino BG	..	..	..	..	..	..	..	..
Plain corrugated-neck	..	..	..	..	..	..	..	..
Plain corrugated	..	..	3	3	4	4	3	2
Plain corrugated (incised)	..	..	..	..	..	..	..	..
Plain corrugated (paneled)	..	..	..	..	..	..	..	..
Smooth culinary	..	..	6	5	6	6	1	1
Indented-corrugated (flat-wavy)	9	29	27	24	24	26	34	28
Indented-corrugated (medium-wavy)	2	7	11	10	12	13	14	12
Indented-corrugated (deep-wavy)	..	..	4	4	..	..	5	4
Indented-corrugated (square)	1	3	2	2	9	10	2	2
Indented-corrugated (incised)	..	..	1	1	..	..	..	..
Indented-corrugated exterior (painted interior)	..	..	..	..	..	..	..	..
Indented-corrugated (sawtooth)	..	..	..	..	..	..	..	..
Indented-corrugated (painted)	..	..	..	..	..	..	..	..
Washboard corrugated	..	..	..	..	..	..	..	..
Basket marked	..	..	..	..	..	..	..	..
Plain ware, incised or punched	..	..	..	..	..	..	..	..
Mancos BW	6	19	21	18	10	11	16	13
Reserve BW	..	..	..	..	..	..	..	..
Black Mesa BW	..	..	..	..	..	..	..	..
McElmo BW	..	..	..	..	..	..	..	..
Indeterminate BW (NDS)	11	35	34	30	26	28	43	35
Abajo RO	..	..	..	..	..	..	..	..
Deadmans BR	2	7	..	..	..	..	..	..
Indeterminate redware (NDS)	..	..	2	2	1	1	3	2
Total	31		112		93		122	
Total indented-corrugated	12	39	45	41	45	49	55	46

(6) Flat-wavy indented-corrugated, Mancos black-on-white, and Indeterminate black-on-white have similar distributions at Sites 2 and 3.

(7) McElmo black-on-white was present only at Site 3, although in small quantities.

(8) Experimentation in various exterior treatments of the culinary pottery (incised, paneled, painted, basket-marked, punched) is most frequent at Sites 2, 3, and 4.

Therefore, on a typological basis only, these sites can be ranked chronologically as follows:

Site 1: earliest (Lino gray, Lino BG, plain corrugated-neck, smooth culinary).

Site 4: (Lino gray, indented-corrugated, more Mancos than at Site 1).

Site 2: (indented-corrugated, Mancos BW).

NUMBER AND KINDS OF SHERDS AND APPROXIMATE PERCENTAGES

KIVA, SITE 3—*Continued*

WARES	LEVEL 5 No.	LEVEL 5 %	LEVEL 6 No.	LEVEL 6 %	LEVEL 7 No.	LEVEL 7 %	TOTAL SHERDS
Lino gray	..	..	4	2	9	3	16
Lino BG	..	..	..	..	..	..	..
Plain corrugated-neck	..	..	..	..	..	..	..
Plain corrugated	6	5	7	3	12	4	35
Plain corrugated (incised)	..	..	..	..	..	..	...
Plain corrugated (paneled)	..	..	..	..	1	..	1
Smooth culinary	9	7	7	3	22	7	51
Indented-corrugated (flat-wavy)	28	21	49	24	111	36	282
Indented-corrugated (medium-wavy)	17	13	30	15	22	7	108
Indented-corrugated (deep-wavy)	4	3	4	2	5	2	22
Indented-corrugated (square)	22	16	22	11	6	2	64
Indented-corrugated (incised)	..	..	..	..	1	..	2
Indented-corrugated exterior (painted interior)	..	..	..	..	2	1	2
Indented-corrugated (sawtooth)	..	..	..	..	..	..	..
Indented-corrugated (painted)	..	..	..	..	..	..	..
Washboard corrugated	..	..	..	..	..	..	..
Basket marked	..	..	..	..	..	..	..
Plain ware, incised or punched	..	..	..	..	..	..	...
Mancos BW	12	9	20	10	42	14	127
Reserve BW	..	..	..	..	..	..	...
Black Mesa BW	..	..	..	..	..	..	...
McElmo BW	..	..	..	..	..	..	...
Indeterminate BW (NDS)	33	24	60	30	76	24	283
Abajo RO	1	1	1	..	..	..	2
Deadmans BR	1	1	..	..	..	..	3
Indeterminate redware (NDS)	..	..	1	..	1	..	8
Total	133		205		310		1006
Total indented-corrugated	71	53	105	52	147	48	480

Site 3: latest (indented-corrugated, Mancos BW, McElmo BW).

If this relative chronology is correct, the following observations concerning the sequence of pottery designs at these four sites may be made (Fig. 56, p. 269, graph of pottery designs):

(1) Those which were most important early and which later died out or declined: squiggly hatch, solids bordered by parallel lines.

(2) Those most important in early periods: diagonal hatch, cross hatch, checkerboard.

(3) Those showing continual rise from early to late and which can be classified as late: terraced solids, panels, polka dots, stripes.

(4) No definite conclusions could be made about the other types; however, they were mostly early, each showing a decline in Sites 2 and 4, and a rise in Site 3: scrolls, triangles, ticked lines, or solids.

NUMBER AND KINDS OF SHERDS AND APPROXIMATE PERCENTAGES

KIVA, SITE 4

WARES	LEVEL 1		LEVEL 2		LEVEL 3		LEVEL 4		LEVEL 5		LEVEL 6	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Lino gray	4	20	29	18	34	20	57	15	69	20	61	18
Lino BG	..	..	1	..	..	..	..	..	1	..	..	..
Plain corrugated-neck	..	..	..	..	..	..	..	..	..	..	..	..
Plain corrugated	2	10	3	2	5	3	16	4	11	3	5	2
Plain corrugated (incised)	..	..	..	..	..	..	..	..	1	..	2	1
Plain corrugated (paneled)	..	..	..	..	..	..	..	..	..	..	..	..
Smooth culinary	..	..	12	8	4	3	12	3	14	4	30	9
Indented-corrugated (flat-wavy)	2	10	14	9	27	17	62	17	50	14	44	13
Indented-corrugated (medium-wavy)	3	15	10	6	18	11	26	7	28	8	28	8
Indented-corrugated (deep-wavy)	..	..	4	2	6	4	14	4	25	7	11	3
Indented-corrugated (square)	..	..	4	2	4	3	16	4	12	3	5	2
Indented-corrugated (incised)	1	5	1	..	..	..	..	..	1	..	..	..
Indented-corrugated exterior (painted interior)	..	..	..	..	1	..	..	..	..	..	..	..
Indented-corrugated (sawtooth)	..	..	..	..	..	..	..	..	..	..	2	1
Indented-corrugated (painted)	..	..	..	..	..	..	..	..	..	..	..	..
Washboard corrugated	..	..	..	..	..	..	..	..	..	..	..	..
Basket marked	..	..	..	..	..	..	..	..	..	..	..	..
Plain ware, incised or punched	..	..	..	..	1	..	..	..	1	..	..	..
Mancos BW	..	..	15	9	23	14	47	13	55	16	54	16
Reserve BW	..	..	..	..	..	..	..	..	..	..	..	..
Black Mesa BW	..	..	..	..	..	..	..	..	..	..	..	..
McElmo BW	..	..	..	..	..	..	..	..	..	..	..	..
Indeterminate BW (NDS)	8	40	69	42	41	25	116	31	83	23	83	25
Abajo RO	..	..	1	..	..	..	5	1	2	1	4	1
Deadmans BR	..	..	..	..	..	..	1	..	..	..	1	..
Indeterminate redware (NDS)	..	..	3	2	..	..	4	1	5	1	2	1
Total	20		166		164		376		358		332	
Total indented-corrugated	6	30	33	19	56	35	118	32	116	32	90	27

No banded-neck pottery was found in any of the sites.

The abbreviations, which have been used in the graphs and in the tables, may be explained as follows:

BG–black-on-gray.

BW–black-on-white.

NUMBER AND KINDS OF SHERDS AND APPROXIMATE PERCENTAGES

KIVA, SITE 4—*Continued*

WARES	LEVEL 7		LEVEL 8		LEVEL 9		LEVEL 10		LEVEL 11		TOTAL
	No.	%	No.	%	No.	%	No.	%	No.	%	SHERDS
Lino gray	107	34	104	21	32	26	39	19	43	8	579
Lino BG	1	..	1	..	..	..	..	..	..	..	4
Plain corrugated-neck	..	..	..	..	..	..	..	..	..	..	...
Plain corrugated	7	2	11	2	6	5	4	2	104	20	174
Plain corrugated (incised)	1	..	..	..	..	..	..	..	1	..	5
Plain corrugated (paneled)	..	..	..	..	..	..	..	..	..	..	...
Smooth culinary	3	1	31	7	7	6	12	6	18	3	143
Indented-corrugated (flat-wavy)	26	8	50	10	7	6	22	11	210	39	514
Indented-corrugated (medium-wavy)	31	10	49	10	11	9	21	10	37	7	262
Indented-corrugated (deep-wavy)	13	4	14	3	2	2	10	5	7	1	106
Indented-corrugated (square)	6	2	11	2	..	..	6	3	30	6	94
Indented-corrugated (incised)	..	..	..	..	..	..	..	..	1	..	4
Indented-corrugated exterior (painted interior)	..	..	..	..	..	..	..	..	..	..	1
Indented-corrugated (sawtooth)	2	1	1	..	..	..	..	..	..	..	5
Indented-corrugated (painted)	1	..	..	..	..	..	..	..	..	..	1
Washboard corrugated	..	..	..	..	..	..	..	..	..	..	...
Basket marked	..	..	..	..	..	..	..	..	..	..	...
Plain ware, incised or punched	..	..	..	..	..	..	..	..	..	..	2
Mancos BW	43	14	62	13	16	13	20	10	21	4	356
Reserve BW	1	..	1	..	..	..	..	..	..	..	2
Black Mesa BW	..	..	..	..	..	..	..	..	..	..	...
McElmo BW	..	..	..	..	..	..	..	..	..	..	...
Indeterminate BW (NDS)	71	23	148	30	41	33	60	30	61	12	781
Abajo RO	3	1	5	1	..	..	6	3	2	..	28
Deadmans BR	..	..	..	..	..	..	1	..	1	..	4
Indeterminate red-ware (NDS)	..	..	6	1	..	..	2	1	..	..	22
Total	316		494		122		203		536		3087
Total indented-corrugated	79	25	125	25	20	17	59	29	285	53	987

Indeterminate BW (NDS)–white-slipped pottery, probably part of a black-on-white vessel, but showing no design or too little to permit classification.

BR–black-on-red.

RO–red-on-orange.

X–less than 1 per cent.

V. THE ARCHAEOLOGICAL SURVEY IN THE ACKMEN-LOWRY REGION

BY
CARL LLOYD

In accordance with the plans of the Field Museum of Natural History Expedition, I was instructed to conduct an archaeological survey in the Ackmen-Lowry region, where the Museum has sponsored excavations for five seasons. This large area is little understood archaeologically. Probably there are many important cultural affiliations to be found within it. Already, work of the past seasons has given indications of migrations and intermixture in this region.

Unfortunately, no thorough survey of this area has been made. Such a survey is essential to a knowledge and understanding of the various cultures which have existed there in the prehistoric past. It would also be of value as a supplement to the work that has been done farther to the south.

The following question was formulated: Given a discontinuous intensive archaeological survey of a region, what contributions can be made to the archaeology of that region by means of an analysis of the data thus obtained? A discontinuous intensive survey is an intensive survey of smaller areas, equal in size, but not necessarily contiguous, within a larger given area. A reconnaissance survey is a random(?) sampling of sites in an area, as opposed to an intensive survey, which stresses a thorough examination of an area (J. C. Harrington).

It has been said that reconnaissance is a cheap substitute for excavation (Kidder-Shepard, 1936, p. xxvi). This is quite true, but the question is: Is it not only a cheap substitute, but also a means of preventing useless reduplication of effort? It seems to me that an intelligent survey method, by extracting as much information as possible from an area, would aid us immeasurably in understanding that area within a reasonable length of time. It would also prevent us from excavating sites which were adequately covered by the survey.

These are practical considerations. A survey also provides us with data which are not obtainable from a single excavation, the distribution of sites within a unit area, and the number of sites per unit area.

I sank no test pits on this survey because time and money were limited; but I see no reason why this procedure should not be added, as it has been in other areas, to supplement excavation further. We are interested in learning as much as we can with a minimum of effort.

The material will be more easily understood if first I present the theoretical aspects, this theory being an offspring of the actual survey data, which will be discussed later. It is understood that this was an attempt to solve a local problem and that my speculation does not necessarily have universal applicability.

We were dealing with conglomerations of traits of material culture (such as pottery types, bone and stone implements, and architecture) which were observed by surface inspection and collection at many sites. It should be noted that a conglomeration of culture traits has only spatial adjacency as a bond of union. This presumably is no accidental relation, but I am unable to hazard a guess as to the significance of it (whether it is causal, functional, or logical). The assumption was made that the assemblage discovered upon the surface of a site was representative of the site, if it were a homogeneous occupation, or of the last occupation if there were more than one.

To make this assumption valid it was necessary to form an arbitrary rule concerning the handling of the data. It is a fact that there is a natural mixing of artifacts within a site. It is possible to find upon the surface of a site, or at any level, all of the pottery types that occur at that particular site, although it may have had several separate and distinct occupations.

Yet it is also a fact that only a small proportion of the artifacts will be mixed naturally. Therefore this aberration could be removed through quantitative considerations. Those types of artifacts falling below ten per cent of the total number of artifacts were considered as naturally mixed, those above, as representative of the surface level, or latest occupation.[1]

The representative artifacts were not quantitatively differentiated from each other. To make such a differentiation, an analysis of sherds per unit volume of refuse (horizontal and vertical control) would be required.[2] This procedure is impossible when surface material is used, since the surface of a site is but two dimensional.

[1] This same limiting percentage was used at Snaketown. See Gladwin, Haury, Sayles, and Gladwin. 1937, pp. 19–35.

[2] Hawley (1934, pp. 47–57) has done this at Chetro Ketl and has published an excellent section on the statistical significance of potsherd data.

The sites studied were drawn from areas of unit size, in which all sites had been observed. In this way a quantitative datum (number of sites per unit area) was obtained.

It was also possible to determine different types of assemblage as these were found at one or more sites. Such a type of assemblage, consisting of a particular combination of pottery types, was termed a phase. The phase refers merely to a particular combination of types. The combination may be found at one or at several sites, but the concept of phase has reference only to their typological similarity and not to their temporal relations. Its use enabled me to classify the sites within a given area and to determine the number of phases which were represented.

However, for chronological reference, it was necessary to correlate the survey evidence with that from excavation. The survey, without test pitting, yielded no chronological evidence.

FIELD TECHNIQUE

A discontinuous intensive survey of quarter sections (a quarter of a mile square). Observers, 100 feet apart on a half-mile front, work directly across the quarter. No portion of any quarter escapes investigation.

On discovering a site, the observer enters geographical data (terrain, vegetation, etc.) and archaeological data (dimensions of site, condition of standing walls, and description of masonry, etc.) on a tag. This tag is attached to a sherd bag and a sherd collection from this site is made. The collecting is conducted indiscriminately. All surface sherds are collected regardless of quantity. A photograph is taken of the site. The observer assigns a number to the site, estimates his position in the quarter (triangulation of the sites in the region was impossible, owing to the nature of the country) and enters it on the field map. The numbering system was designed to facilitate locating the site geographically; thus, a number reading

$$\frac{15\text{–}8}{38\text{–}18}$$

indicates the fifteenth site in Section 8 of Township 38 North, Range 18 West of the N.M.P.M.

At camp, the data on the tag are entered on a detail sheet, the sherds are washed and counted, and an analysis of the data is made. The sherds are then shipped to the Museum either for reference or for further study.

POTTERY TYPE ANALYSIS

Within sixteen and a half square miles in the Ackmen-Lowry region and a quarter of a square mile at Hovenweep National Monument, located in southeastern Utah, 180 sites were discovered, but only 80 offered enough sherd material to be included in this analysis. An arbitrary minimum of 50 sherds per site was required.

Seven representative pottery classifications were determined: (1) Smooth culinary ware: considered to be bottom sections of jars that were probably corrugated- or banded-neck. (2) Indeterminate black-on-white ware with no design showing (slipped pottery with either no design element showing, or having too little remaining to warrant a definite classification), which was probably either Mancos black-on-white or McElmo black-on-white. The other classifications were of single pottery types and need no special discussion: (3) Lino gray; (4) indented-corrugated; (5) Lino black-on-gray; (6) Mancos black-on-white; (7) McElmo black-on-white.

Four numerically predominant phases were recognized out of eighteen variations (see Fig. 58).

	Number of sites
Lino gray	10
Lino gray, Mancos black-on-white, indented-corrugated, Indeterminate	5
Mancos black-on-white, indented-corrugated, Indeterminate	22
McElmo black-on-white, indented-corrugated, Indeterminate	8

There were five other phases, represented by ten sites, all similar to the second in that they contained Lino gray and black-on-white pottery.

This analysis demonstrated eighteen phases in eighty sites. Three of these phases were numerically predominant and a fourth presumably so. These four phases accounted for forty-five sites, or more than half of the total number.

If it were possible to break down the smooth culinary ware and Indeterminate black-on-white ware classifications into definite pottery types, it is probable that these major phases would be increased in numerical significance. It is possible, however, to assume that there were four numerically predominant phases in the surveyed area, which probably represent four stages within a homogeneous culture. I say homogeneous culture because there is an interlocking of pottery types within the various phases, and no pottery type occurs without at least an indirect association with every other pottery type. The other phases, not included within these four types, were possibly transitional or aberrant.

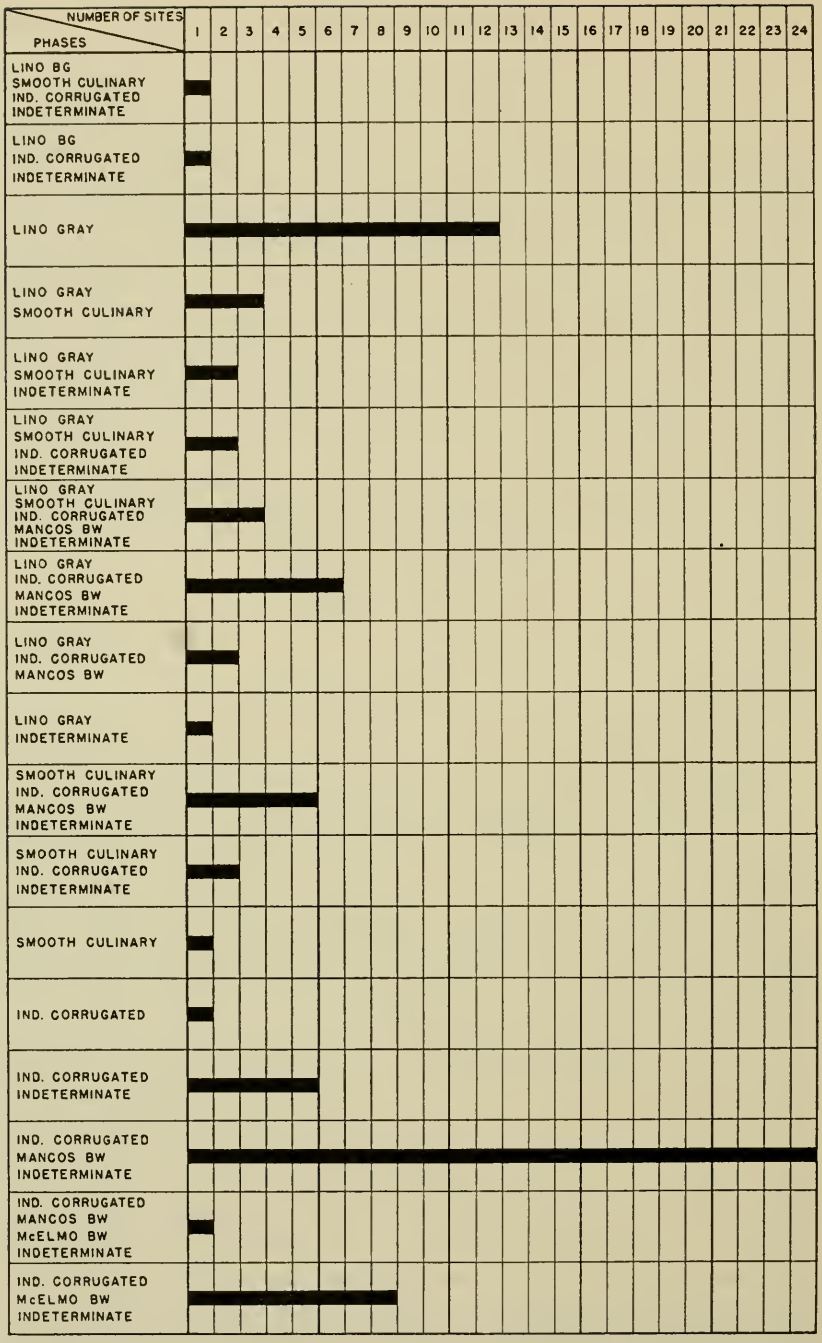

FIG. 58. Graph representing number of sites in which given pottery associations were found; data from survey.

ASSOCIATION OF TRAITS

The only trait that occurred abundantly enough to be associated with pottery types was house types. The four predominant phases, recognized in the pottery analysis, had the following house type association:

Pottery phases	House types I	II	III	IV
Lino gray	6	4	..	..
Lino gray, indented-corrugated, Indeterminate black-on-white ware, Mancos black-on-white	..	4	1	..
Indented-corrugated, Mancos black-on-white	..	7	15	..
Indented-corrugated, McElmo black-on-white	..	..	..	8

House type I.—Slab-villages with depressions that were presumably pit-houses.

House type II.—"Small" sites; probably houses with slab-and-rubble or pole-and-brush walls and kiva-like depressions; or crude horizontal masonry houses and kiva-depressions.

House type III.—Unit-type houses (since a unit-type is defined as a developmental pueblo containing a passageway between the kiva, and a tower or a house, it was impossible to be certain of a unit-type without excavation. However, surface indications led us to this choice).

House type IV.—Buildings characterized by the Mesa Verde masonry technique, namely dimpled, block-like stones, irregular spalls.

It is significant that no slab-villages were found outside of the Lino gray phase, that no buildings illustrating the Mesa Verde technique of masonry were found outside of the indented-corrugated–McElmo black-on-white phase. The small houses must be excavated before a closer correlation may be reached. The unit-type houses seem to be characteristic of the indented-corrugated–Mancos black-on-white phase.

The evidence illustrates a correlation between pottery phases and house types and strengthens the assumption made upon the basis of the pottery type analysis, that there were four stages of a homogeneous culture in this surveyed area.

INDIRECT ASPECTS OF THE SURVEY

To place these four stages in chronological order, I used the stratigraphic evidence from Lowry ruin (Martin, 1936, Figs. 43–45). The following sequence was apparent:

(1) Lino gray phase (earliest).

(2) Lino gray, Mancos black-on-white, Indeterminate black-on-white, indented-corrugated phase.

(3) Mancos black-on-white, indented-corrugated phase.

(4) McElmo black-on-white, indented-corrugated phase (latest).

With this combined evidence of survey and excavation, I could postulate the following historical sequence for the surveyed area. Presumably the same group of people occupied this area for a considerable length of time. Originally they used slab-village–pit-house complexes and manufactured only Lino gray ware.

When they abandoned these slab-house–pit-house complexes for small masonry houses–kiva complexes, they began to manufacture indented-corrugated ware and Mancos black-on-white ware. They continued to make Lino gray ware. There was not a great deal of unity, however, and the predominating phase was represented by but five sites. There were a number of other quite similar phases, presumably of the same time, which make this stage as predominate as the others, but not as cohesive.

The third stage, in which these people lived in unit-type houses and made Mancos black-on-white pottery and indented-corrugated ware, represented a unified group.

The fourth stage was quite similar to the preceding one, and was characterized by large pueblos and indented-corrugated and McElmo black-on-white pottery.

EVIDENCE FOR A HYPOTHESIS CONCERNING THE DEVELOPMENT OF MCELMO BLACK-ON-WHITE FROM MANCOS BLACK-ON-WHITE

The survey data, when given time significance, afford evidence for speculation concerning a specific problem: the origin of McElmo black-on-white ware.

It is first necessary to consider the associations of Lino gray ware with Mancos black-on-white within the phases. Lino gray is not at all similar to Mancos black-on-white, typologically. Lino gray occurred by itself in ten sites, and in association with Mancos black-on-white in eleven sites. Lino gray and Mancos black-on-white occurred in more separate phases than did any other two pottery types. I know that Lino gray preceded Mancos black-on-white chronologically, and it is presumable that sites containing both were transitional from the Lino gray stage to the Mancos stage. Since we have no evidence to indicate outside influence in the production of Mancos, probably Lino gray and Mancos originated from the same cultural trend. Yet they were structurally too different to permit the consideration of a technological development from Lino

gray to Mancos. Perhaps there were several linking pottery types now missing in the surveyed area. In any event, I can assume that the Lino gray—Mancos association in eleven sites is an example of the type of change when a new pottery technique is introduced.

On the other hand, only one site contained McElmo black-on-white and Mancos black-on-white in association. It is possible to assume from this evidence that Mancos could not have been generally associated with McElmo simply because Mancos had become McElmo. The evidence does not show that McElmo and Mancos were not being manufactured at the same time, but it does show that the majority of those villages which manufactured Mancos did not produce McElmo, and vice versa. Though the survey data do not prove that McElmo grew out of Mancos, they suggest this development.

SUMMARY

A discontinuous intensive survey of 16½ square miles was conducted in the Ackmen-Lowry region and is assumed to be representative of at least a 33 square mile area, since two diagonal quarter-sections were surveyed within each section.

The survey dealt primarily with phases, the phase being defined as a particular combination of pottery types present at one or more sites. Temporal considerations do not affect this definition.

Within the surveyed area 180 sites were observed, 80 offering enough sherd material to make a pottery type analysis feasible.

A pottery type analysis demonstrated that six pottery types were common within this area, that there were eighteen phases, and that four of these probably represented stages in the historical development of culture in this area.

The pottery phases were associated with house types.

Chronological sequence was given to these associations by an analysis of the stratigraphy at Lowry ruin.

Evidence was brought forth to show that McElmo black-on-white may have developed from Mancos black-on-white.

NUMBER AND APPROXIMATE PERCENTAGES OF SHERDS FROM SURVEY

(Sites 1 to 4 here listed are not to be confused with those which were excavated, since they are not the same)

WARES	SITE 1		SITE 2		SITE 3		SITE 4		SITE 5		SITE 6	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Lino gray	48	98	60	96	49	96	115	100	114	96	45	98
Lino BG	..	..	1	2	..	..	...	...	...	..	..	..
Indented-corrugated	..	..	..	..	1	2	...	...	1	1	..	..
Indeterminate BW (NDS)	1	2	..	..	..	..	...	...	...	..	..	..
Abajo RO	..	..	1	2	1	2	...	...	...	..	1	2
Indeterminate BR (NDS)	..	..	..	..	..	..	...	...	3	3	..	..
Totals	49	100	62	100	51	100	115	100	118	100	46	100

WARES	SITE 7		SITE 8		SITE 9		SITE 10		SITE 11		SITE 12	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Lino gray	55	100	48	80	46	100	50	100	24	22	39	50
Lino BG	..	...	5	8	..	...	..	...	1	1	..	..
Smooth culinary	..	...	5	8	..	...	..	...	80	73	30	38
Indented-corrugated	..	...	2	4	..	...	..	...	..	..	..	..
Mancos BW	..	...	..	..	..	...	..	...	..	..	1	1
Indeterminate BW (NDS)	..	...	..	..	..	...	..	...	..	..	4	5
Abajo RO	..	...	..	..	..	...	..	..	4	4	5	6
Totals	55	100	60	100	46	100	50	100	109	100	79	100

WARES	SITE 13		SITE 14		SITE 15		SITE 16		SITE 17		SITE 18	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Lino gray	50	66	14	16	21	41	18	16	39	34	18	35
Lino BG	2	3	1	1	..	..	..	..	..	..	..	..
Smooth culinary	17	23	42	47	15	29	27	23	19	17	7	14
Indented-corrugated	..	..	7	8	4	8	31	27	32	28	6	12
Mancos BW	..	..	1	1	3	6	9	8	5	4	14	27
Orangeware (Abajo ?)	6	8	2	2	..	..	..	..	..	..	..	..
Indeterminate BW (NDS)	..	..	22	25	8	16	29	25	19	17	6	12
Indeterminate BR (NDS)	..	..	..	..	..	..	1	1	..	..	..	..
Totals	75	100	89	100	51	100	115	100	114	100	51	100

WARES	SITE 19		SITE 20		SITE 21		SITE 22		SITE 23		SITE 24	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Lino gray	11	17	9	16	9	15	26	16	7	14	28	44
Lino BG	3	5	..	..	..	..	8	5	..	..	..	..
Smooth culinary	8	12	5	9	..	..	..	..	..	..	3	5
Indented-corrugated	12	19	12	22	34	57	60	37	21	42	19	30
Mancos BW	16	25	11	20	11	18	26	16	12	24	13	20
McElmo BW	2	3	..	..	..	..	..	..	..	..	..	..
Indeterminate BW (NDS)	12	19	16	29	6	10	40	24	10	20	1	1
Orangeware (Abajo ?)	..	..	..	..	..	..	3	2	..	..	..	..
Indeterminate BR (NDS)	..	..	2	4	..	..	..	..	..	..	..	..
Totals	64	100	55	100	60	100	163	100	50	100	64	100

WARES	SITE 25		SITE 26		SITE 27		SITE 28		SITE 29		SITE 30	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Lino gray	14	21	34	27	13	26	..	..	..	..	6	6
Lino BG	..	..	3	2	1	2	..	..	..	..	..	..
Smooth culinary	1	2	..	..	..	..	13	19	9	19	14	13
Punched culinary	..	..	..	..	..	..	..	..	..	..	2	2
Grooved culinary	..	..	..	..	..	..	..	..	..	..	1	1
Indented-corrugated	15	22	27	21	12	23	33	49	14	30	37	35
Mancos BW	26	38	42	33	25	49	8	12	6	13	9	9
Black Mesa BW	..	..	1	1	..	..	..	..	..	..	..	..
McElmo BW	..	..	..	..	..	..	..	..	2	4	..	..
Indeterminate BW (NDS)	7	11	13	10	..	..	12	18	16	34	35	33
Indeterminate BR (NDS)	4	6	..	..	..	..	1	2	..	..	1	1
Tusayan BR	..	..	7	6	..	..	..	..	..	..	..	..
Totals	67	100	127	100	51	100	67	100	47	100	105	100

NUMBER AND APPROXIMATE PERCENTAGES OF SHERDS FROM SURVEY—*Continued*

WARES	SITE 31		SITE 32		SITE 33		SITE 34		SITE 35		SITE 36	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Lino gray	..	..	..	..	6	7	9	6	..	..	..	..
Lino BG	..	..	..	..	8	10	..	..	..	..	6	13
Smooth culinary	20	37	18	21	12	15	136	85	..	..	2	4
Indented-corrugated	19	35	24	28	12	15	..	..	48	96	9	20
Mancos BW	2	4	9	10	7	9	..	..	2	4	3	6
McElmo BW	..	..	..	..	5	6	..	..	..	..	..	..
Indeterminate BW (NDS)	13	24	34	40	30	37	..	..	..	..	25	55
Abajo RO	..	..	1	1	1	1	14	9	..	..	..	..
Indeterminate BR (NDS)	..	..	..	..	..	..	..	..	..	..	1	2
Totals	54	100	86	100	81	100	159	100	50	100	46	100

WARES	SITE 37		SITE 38		SITE 39		SITE 40		SITE 41		SITE 42	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Lino gray	..	..	..	..	1	2	..	..	7	4	6	6
Lino BG	..	..	..	..	..	..	..	..	..	..	2	2
Smooth culinary	8	7	2	3	1	2	6	7	7	3	..	..
Indented-corrugated	46	41	36	53	26	41	46	54	104	51	54	48
Mancos BW	7	6	7	10	6	9	7	9	22	10	11	9
Indeterminate BW (NDS)	51	46	19	28	29	46	25	30	62	30	35	31
Indeterminate BR (NDS)	..	..	4	6	..	..	..	..	4	2	5	4
Totals	112	100	68	100	63	100	84	100	206	100	113	100

WARES	SITE 43		SITE 44		SITE 45		SITE 46		SITE 47		SITE 48	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Lino gray	..	..	1	1	3	4	1	1	3	4	1	1
Lino BG	..	..	..	..	2	3	..	..	1	1	..	..
Smooth culinary	2	4	2	3	5	6	2	2	2	3	4	5
Indented-corrugated	17	32	27	46	17	21	27	31	28	40	33	43
Mancos BW	4	8	10	18	12	15	20	23	15	22	12	15
McElmo BW	4	8	..	..	..	..	..	..	..	..	..	..
Indeterminate BW (NDS)	24	46	19	32	41	51	37	43	21	30	25	32
Abajo RO	..	..	..	..	..	..	..	..	..	..	3	4
Indeterminate BR (NDS)	1	2	..	..	..	..	..	..	..	..	..	..
Totals	52	100	59	100	80	100	87	100	70	100	78	100

WARES	SITE 49		SITE 50		SITE 51		SITE 52		SITE 53		SITE 54	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Lino gray	1	1	5	8	..	..	1	1	1	1	1	1
Lino BG	..	..	..	..	..	..	..	..	1	1	1	1
Smooth culinary	..	..	..	..	..	..	..	..	..	..	3	2
Incised culinary	..	..	1	2	..	..	..	..	..	..	..	..
Indented-corrugated	30	41	28	45	33	56	23	32	41	34	43	31
Mancos BW	12	16	16	26	14	24	23	32	24	20	36	25
Indeterminate BW (NDS)	31	42	12	19	12	20	23	32	51	42	55	40
Abajo RO	..	..	..	..	..	..	2	3	2	2	..	..
Totals	74	100	62	100	59	100	72	100	120	100	139	100

WARES	SITE 55		SITE 56		SITE 57		SITE 58		SITE 59		SITE 60	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Lino gray	7	8	..	..	..	..	3	4	4	7	..	..
Lino BG	..	..	2	1	..	..	2	2	..	..	..	..
Smooth culinary	8	9	5	3	..	..	4	5	3	5	10	12
Indented-corrugated	27	29	67	40	19	30	40	49	12	20	33	38
Mancos BW	12	13	39	23	19	30	17	21	17	27	20	22
McElmo BW	..	..	..	..	4	6	..	..	6	9	2	2
Mesa Verde BW	..	..	..	..	4	6	..	..	..	..	..	..
Indeterminate BW (NDS)	37	40	49	29	18	28	15	18	20	32	22	25
Abajo RO	1	1	..	..	..	..	..	..	..	..	..	..
Indeterminate BR (NDS)	..	..	6	4	..	..	1	1	..	..	1	1
Totals	92	100	168	100	64	100	82	100	62	100	88	100

NUMBER AND APPROXIMATE PERCENTAGES OF SHERDS FROM SURVEY—*Continued*

WARES	SITE 61		SITE 62		SITE 63		SITE 64		SITE 65		SITE 66	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Lino gray	2	4	3	4	10	9	..	..	4	4	13	9
Lino BG	..	..	..	..	5	5	..	..	..	..	..	..
Smooth culinary	3	6	7	10	5	5	1	1	..	..	..	..
Indented-corrugated	13	25	15	23	25	23	25	29	28	30	75	48
Mancos BW	13	26	13	20	38	35	25	29	28	31	32	20
McElmo BW	4	8	4	6	5	5	6	7	..	..	..	..
Indeterminate BW (NDS)	13	25	23	35	18	17	30	34	32	35	30	19
Abajo RO	..	..	1	2	..	..	..	..	..	..	6	4
Indeterminate BR (NDS)	3	6	..	..	1	1	..	..	..	..	..	..
Totals	51	100	66	100	107	100	87	100	92	100	156	100

WARES	SITE 67		SITE 68		SITE 69		SITE 70		SITE 71		SITE 72	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Indented-corrugated	13	29	59	41	12	22	21	38	28	30	49	51
Mancos BW	13	29	3	2	4	7	..	..	..	..	..	..
McElmo BW	5	11	39	27	21	39	12	22	16	17	12	12
Mesa Verde BW	..	..	5	3	..	..	..	..	..	..	..	..
Indeterminate BW (NDS)	14	31	38	26	17	32	22	40	50	53	36	37
Indeterminate BR (NDS)	..	..	1	1	..	..	..	..	..	..	..	..
Totals	45	100	145	100	54	100	55	100	94	100	97	100

WARES	SITE 73		SITE 74		SITE 75		SITE 76		SITE 77		SITE 78	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Lino gray	..	..	..	..	..	..	41	67	11	21	3	5
Smooth culinary	..	..	..	..	..	..	1	2	8	16	..	..
Incised culinary	1	1	..	..	..	..	..	..	..	..	..	..
Indented-corrugated	41	24	23	19	28	47	1	2	19	37	13	24
Mancos BW	5	3	..	..	..	..	5	8	6	12	17	31
McElmo BW	25	15	18	15	8	14	..	..	..	..	..	..
Mesa Verde BW	3	2	6	5	..	..	..	..	..	..	..	..
Indeterminate BW (NDS)	95	55	74	61	22	37	9	15	7	14	22	40
Abajo RO	..	..	..	..	..	..	2	3	..	..	..	..
Indeterminate BR (NDS)	..	..	..	..	..	..	2	3	..	..	..	..
Neck-banded	..	..	..	..	1	2	..	..	..	..	..	..
Totals	170	100	121	100	59	100	61	100	51	100	55	100

NOTE: Site 79 yielded 104 sherds of Lino gray (100%); and Site 80 yielded 86 Lino gray sherds (100%).

VI. SYNTHESIS

Summary

Four small ruins in the Ackmen-Lowry region were excavated. At Site 1 the walls of the surface rooms formerly consisted of slabs topped by masonry; at Site 4 they were made of poles and mud (wattle-and-daub), while at Sites 2 and 3 they were of coursed masonry. Associated with each of the four houses was an underground chamber which may have fulfilled the functions of both dwelling and kiva (ceremonial room). Only one refuse heap (at Site 3) was discovered.

Stone and bone artifacts were scarce. Eighty stone artifacts (axes, projectiles, hammer stones, rubbing stones, mauls, metates, and manos) and twenty-seven bone tools were recovered during the entire season.

The pottery consisted mainly of Lino gray, Mancos black-on-white, and various kinds of indented-corrugated wares. A statistical study of the pottery types, level by level, at each site, indicated no significant variations within any site. It was therefore assumed that each site had been inhabited but once and for only a short time. Lino gray and indented-corrugated pottery were found in unquestionable association at two sites. This association also occurred at Lowry ruin and was further noted in the 1937 reconnaissance.

While the digging proceeded, an intensive archaeological survey of the Ackmen-Lowry area was being conducted. An area of 16½ square miles was carefully covered on foot. A total of 180 sites were thus discovered and recorded. The data obtained were treated quantitatively, and, as a result, four pottery phases were established and a correlation between these phases and house types was obtained. From this, a theory concerning the stability of cultures was evolved.

Conclusions

It seems evident from the data obtained that Sites 1, 2, and 4 were inhabited by one or two families for a very short period—perhaps five to fifteen years. This conclusion was based on the following facts: villages (if they may be dignified by this term) consisting of one or two rooms and a house-kiva, absence of refuse mounds and burials (except the infant burial in the kiva at Site 1), scarcity of pottery and of bone and stone artifacts, shallowness of fill in the houses. Site 3 was somewhat larger and included four or

five surface rooms with fairly good masonry walls, two kivas, and a refuse mound. Site 3 may have been occupied for twenty or twenty-five years.

Since the logs sent to Dr. Emil Haury for study yielded no information, it is impossible to assign an exact date to any of the four sites. However, using the stratigraphic data from Lowry ruin, and on the basis of a typological study of pottery and architecture, coordinated with the table given in Part I of the Introduction, I have ranked the four sites according to time sequence as follows:

Site 1: early Pueblo I period (about A.D. 800).

Site 4: late Pueblo I period (about A.D. 850).

Site 2: early Pueblo II period (about A.D. 900).

Site 3: late Pueblo II period (about A.D. 1000).

As stated before, it is impossible to say whether the surface rooms at Sites 1 and 4 were used as houses or storage places, and whether the subterranean chambers served as kivas, or dwellings, or both. My guess is that the surface rooms at Sites 1 and 4 were merely granaries, and that the people carried on their secular and ceremonial activities in the underground rooms.

The surface rooms at Sites 2 and 3 probably served as dwellings.

Conclusions concerning pottery, derived from the archaeological survey, checked perfectly with those derived from the work at Lowry ruin and from the actual excavations of 1937.

Certain problems were discussed in the Introduction. It was there stated that small sites—although but briefly inhabited—were important because there would be fewer cultural factors to obscure the problems to be studied. A query was raised as to the influence of the Mogollon and Hohokam cultures on the Anasazi culture. A question concerning the antiquity of Chacoan influence in the Lowry area was raised. To what extent were these problems solved?

There is no doubt in my mind that the study of many small, briefly inhabited, early sites will contribute more to the interpretation and significance of the history of the Southwest than a study of large, late sites. Investigation of one small ruined village may be likened to the microscopic examination of pottery or of a rock. Such minute examination yields information otherwise unsuspected and obtainable in no other way. The four small villages excavated in 1937 represented small stations of progress in Puebloan history and, as such, produced valuable information. This information could be more generally applied if more sites had been excavated, but

the facts obtained and herein recorded can be fused with future data and thus become even more useful. Even so, these data concerning changes in the fashions of pottery designs, kiva-construction, wall-building, and associations of various types of pottery are extremely interesting and valuable.

No very definite information was obtained concerning the question of the contribution of the Mogollon and Hohokam cultural complexes to the Anasazi. But a few pieces of Mogollon pottery were found at Site 1, showing that at least trade relations existed between these villages and those in the Mogollon area (western New Mexico). How important this connection was cannot be estimated.

Mancos black-on-white (Chacoan pottery) was present at Site 1. It was more frequent at Site 4 and was even more abundant at Site 2. It had begun to decline somewhat at Site 3, and, simultaneously, McElmo black-on-white (a later pottery which grew out of Mancos) appeared. Thus, it would appear that a Chacoan trait had penetrated to the Ackmen-Lowry area in the Pueblo I period, perhaps about A.D. 800. I did not observe any Chacoan influence in kivas, houses, or stone and bone artifacts. It is impossible to say at this time whether this Chacoan influence, as reflected in the pottery, was due to trade contacts or to migrations of Chacoan people.

More research needs to be done in the Ackmen-Lowry area, not only in the Pueblo I and early Pueblo II periods, but also in the Basket Maker period. Several Basket Maker sites, discovered as a result of the archaeological survey, need to be investigated.

CONJECTURES[1]

What conjectures and interpretations may be safely made from our archaeological work of 1937? I have shown that the relative proportions of pottery types varied from site to site, that some design elements were more popular in one site than another, and that certain architectural variations in houses and kivas occurred. What is the significance of all of these minutiae? Is it possible to make from them any conjectural reconstruction of cultural variations? I believe it is.

On page 278, the four sites were ranked in relative chronological order. Such a chronology was possible because an intensive study of the typological variations in all the artifacts (pottery, stone, and bone) and houses had been made. These typological variations

[1] Prepared in collaboration with Elizabeth McM. Hambleton, Carl Lloyd, and Alexander Spoehr.

through time suggest that there may have been recurring periods of stability and change, and these, in turn, imply social change, or breakdown, and re-organization. In order to test the validity of such conjectures, it is necessary to put forth three fundamental queries and answers concerning culture, artifacts, and change. These are:

(1) What is the relation between culture and artifact? To answer this question, a concept of culture must first be given.

(2) From typological variation in artifacts through time, can one infer a correlated variation in culture?

(3) Does this variation refer to the whole of the content of culture, or only to that part directly connected with the artifacts?

We may consider the questions in the order stated:

Culture may be defined as any system of conventional or traditional ideas as expressed in ways of doing and making things. An individual is not necessarily conscious of his culture; nevertheless all of his acts and the objects of his culture have meaning to him. An individual's behavior, to the extent that it is prompted and limited by his culture, may be directed toward material objects, which thus become artifacts (pottery, baskets, projectile points); but culture is not the physical object or artifact, nor the resemblance between physical objects, but is the pattern of meanings or the significance with respect to the physical objects. Artifacts, then, are the results of behavior and attitudes directed toward material objects.

For example, to us a fountain pen has a very definite meaning—it is an instrument for writing. To a "primitive man" who does not know how to write, the fountain pen could not possibly have the same meaning as it does for us.

Culture, therefore, refers to patterns of social behavior based upon an inter-related body of meanings held in common by a group. These patterns of behavior are, further (1) transmitted by tradition, and (2) are variable from group to group. Thus "a culture" is an "integrated body of behaviour patterns . . . that provide for and describe all the activities, individual and collective, enabling a group to meet all the demands of life, and which are specially characteristic of that group as opposed to all others."[1]

Culture, as thus defined, does not include the physical objects turned up by the archaeologist's spade. Nor does it include the generalized resemblances existing among a set of such physical

[1] Robert Redfield, unpublished manuscript on "Science and Culture."

objects. Culture is neither of these, as stated before, but includes rather the patterns of social behavior with respect to them; such patterns are expressive of the meanings which artifacts have for their makers and users. Now, the peoples in which the archaeologist is interested are dead and gone. Any meaning which he attributes to the artifacts he has uncovered can be done only by analogy from the cultures of living groups; those with which he is concerned have vanished forever.

With this definition of culture and of its relation to artifacts, we may pass to the second question stated above. From typological variation in artifacts can one infer a corresponding variation in culture? From observation of anthropological phenomena, I think one can. This conviction is obviously based on the proposition that, in a primitive society (a small, isolated, non-literate group with fairly conventionalized ideas and an organization of meanings which makes acts and artifacts consistent with the conventional understandings of the group), for every variation in style of artifacts there is, within limits, a corresponding variation in the meanings which they have to their makers. If the proposition is true, it further follows that, subject to the same limits, the degree of variation in artifacts through time is indicative of a corresponding degree of variation in that part of the culture to which they pertain. However, no inference is made here as to the *content* of the culture; merely that it is, or was changing. Furthermore, and this is in answer to the last question, it cannot be inferred that the whole of the culture was changing, but only that part directly connected with the material remains comprised by the artifacts.

Now, applying these ideas concerning culture, artifacts, and change, we may make a few guesses about the data obtained from the 1937 archaeological work.

The archaeological survey data suggested that trends within the cultures investigated tended to be cyclical, and that certain combinations of characters within them moved from a stable status through a time of transition back to a stable status. A stable phase, or combination of characters, may be defined as one which is represented by many sites, all sharing identical association of particular artifacts (such as types of pottery and architecture). A less stable phase is one which is represented by fewer sites and by different associations.

For the survey data, the following pottery phases were established:

A. Lino gray.

B. Lino gray, Mancos black-on-white, indented-corrugated, Indeterminate.

C. Mancos black-on-white, indented-corrugated.

D. McElmo black-on-white, indented-corrugated.

Applying this cyclical theory to these phases, we may consider A and C stable, as they were represented by a large number of sites; B and D unstable or transitional, because represented by few sites.

The house types recognized from the survey data and correlated with the pottery phases help to substantiate this theory of stability. Phase A was represented only by slab-villages. The fact that these villages were always alike, and that the association was constant, serves to strengthen the idea that this was a stable phase. The house types corresponding to those of Phase B were two: houses with slab-and-rubble or pole-and-brush walls, associated with kiva-like depressions, or crude horizontal masonry houses with kiva-depressions. The correlation of these two dissimilar types of buildings with the corresponding pottery phase may be considered as evidence for a transitory period. Phase C was represented by a few of the small houses with masonry walls which belonged to the preceding period, but mostly by unit-type houses. The buildings associated with Phase D were of only one type, characterized by the Mesa Verde masonry technique. This again was definitely a stable phase.

Correlating the data from the 1937 excavations with the above table, we find that: Site 1 falls between A and B, and may therefore be considered as semi-transitional. Sites 4 and 2 both come under group B, which is transitional, though Site 4 comes in the middle of the phase and Site 2 at the end of it; Site 3 represents group C and may be called stable. Phase D was not represented in the excavations of 1937.

Thus, since the artifacts and houses of Sites 1, 2, and 4 do not fit exactly into the "norm" for either the Basket Maker III, the Pueblo I, or Pueblo II period, and since they were apparently undergoing changes, may we infer that the culture and the degree of "folkness" was also changing? Perhaps, then, these variations in artifacts may be interpreted as indicating that the inhabitants of Sites 1 and 4 had abandoned the comfortable, stable status of a folk-culture (ideally, a homogeneous society which has recourse to a fixed traditional pattern when problems arise, and which shows a tendency toward rigidity, or doing things in a prescribed way), and were going through a period of transition. It seems evident

from our information that various "conservative" and "liberal" forces were reacting on the people who occupied these sites. In a stable culture, there is only one way to build a socially acceptable house, there are but two or three kinds of pottery which are "good." But when new ideas seep in from the outer world, the younger people are apt to accept them and to introduce the new modes to their culture. Thus, we might account for the subterranean chambers which are neither kivas nor pit houses, for the substitution of crude stone pilasters for wooden roof supports (at Site 4), for several kinds of pottery in unusual association, and for experimentation in various kinds of punched, incised, and indented corrugations on cooking pottery. Sites 1 and 4 represent, perhaps, the handiwork of a group of people who had lost some of their folk-traits (due, maybe, to trade or contacts with "foreigners"), and who had put aside some of their antagonism for new things. It was probably an uncomfortable time for the traditionalists who preferred a rigid, inflexible mode of existence.

Site 2 may represent the end of the transition period just described. The kiva is more like the later standard kivas, the surface rooms are larger, and coursed masonry, although crude, is extensively used. The ground plan of the rooms and the kiva resembles the later, conventionalized, unit-type villages. In other words the "new dealers" are on their way out. The pendulum is swinging away from changes in material culture and, perhaps, away from any changes in the social, economic, and religious patterns.

Site 3, the latest site excavated during the 1937 season, probably represents another period of near tranquillity and stabilization. This village is almost an exact duplicate of all villages of this period—Pueblo II. The various details in the kiva are not yet perfectly crystallized, but the village as a whole seems to show fewer variations from the "normal" unit-type villages. The occupants seem more truly to belong to a folk-society. Reformers and reconstructionists must have had little chance in this village.

Thus, by conjecture, a portion of a cultural cycle has been traced: from semi-transition (Site 1) through transition periods (Sites 4 and 2), back to stability (Site 3). If excavations had been carried on in Basket Maker villages (which would probably represent a stable phase), we might have been able to show (by conjecture) a complete cycle—from absolute stability through transition, back to another period of stability.

The four sites at Ackmen have been shown to fit into the line-up of pottery phases as established by the survey data. The phases at Lowry also correspond to those established by these data. Thus, there are both a horizontal and a vertical linking of phases. The Lowry phases showed a physical stratigraphy, one lying on top of another. The four sites at Ackmen were scattered horizontally over an area, but each represented a phase which fitted into the scheme. If, hypothetically, these four sites had lain one on top of another, in chronological order, a physical stratigraphy, such as that at Lowry, would have occurred. In this way, sites showing long occupation in one spot, or short occupations in different areas, can both reflect this theory of stable and transitional cycles. This is possible only in so far as phases can be established from survey data, and in so far as the phases, as recognized in the sites, can be related to them. In order to place the survey phases in chronological order, and, if possible, to date them, excavation is necessary, whether of various sites with a single short occupancy, or of one site which has been inhabited over a long period of time and which represents many phases.

The application of this theory has proved successful in the Ackmen-Lowry region, which, however, is a local region of the whole Southwest. Through future surveys and related excavations it can be applied possibly to the Southwest as a whole. In fact, it might be applied to any area where stratigraphy of cultural development is present.

Further, from the intimate relationship between culture and artifact, I have tried to show that changes in artifacts through time suggested a correlated variation in that part of the culture to which the artifacts pertain. I have conjectured that Site 3 was occupied by more "folk-minded" people than the others because the artifacts and houses were identical with many others of the same period. I have also tried to point out that Sites 2 and 4 were less orthodox, less "normal" because the groups occupying them were less "folk-minded," and because the changes, as reflected in the heterogeneous house types and mixture of pottery types, might have been the result of a breakdown of the conventionalized ideas of the group. I have been very careful, however, not to give any "meaning" to the culture, because I do not know what the culture was. It vanished with the people who lived it.

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SITE 1

Looking southeast, before clearing

SITE 1

Preliminary stages of excavation in east trench; trench, 2 meters wide; levels 20 cm. thick

SITE 1

Slab house before excavation; looking south. Meter stick in background

SITE 1

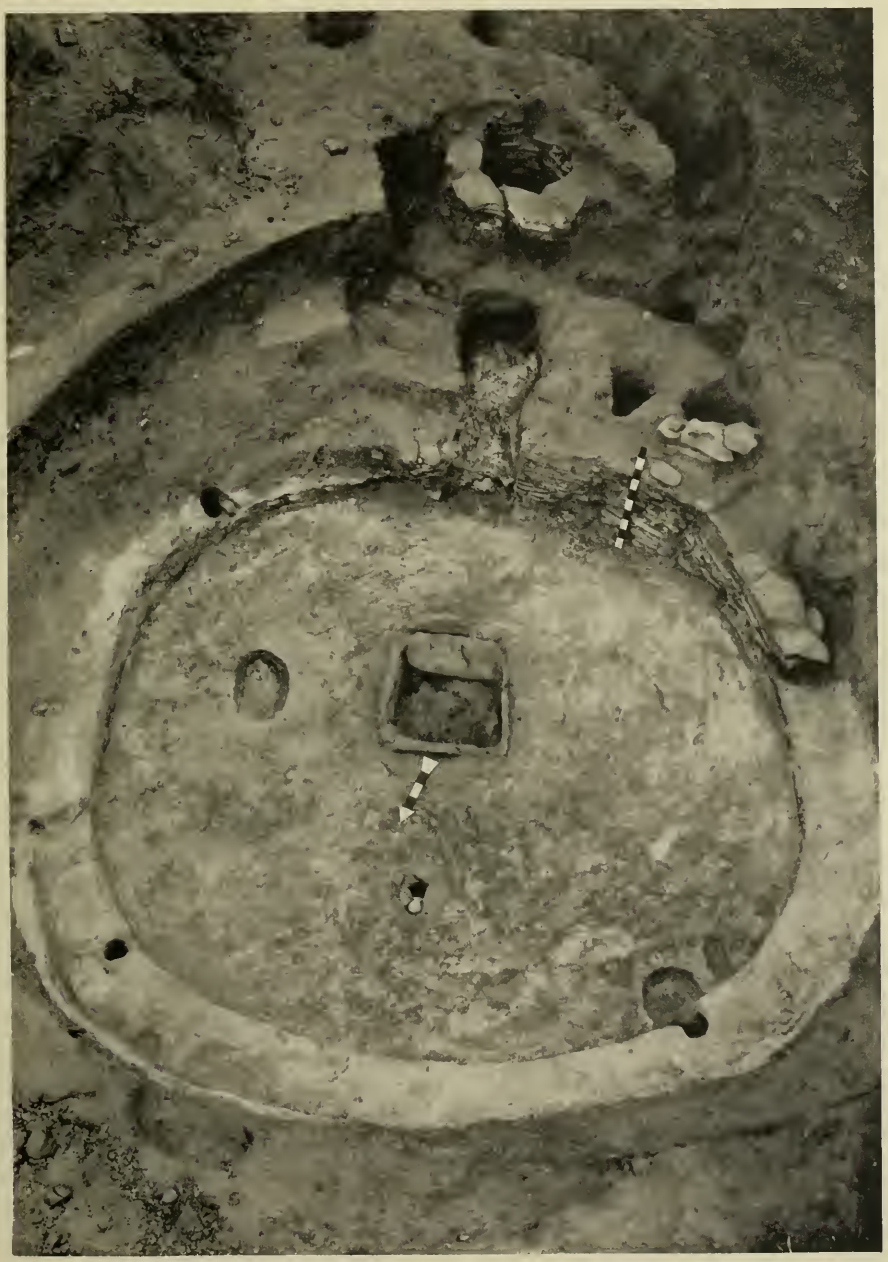
Slab house (Feature III) completely excavated; looking east. Meter stick in background

SITE 1

East wall of slab house (Feature III); slabs supporting rubble wall of small stones. Length of wall shown, 1.4 meters

SITE 1

Pit house (Feature IV); looking southwest. Meter stick in background



SITE 1

View of complete excavation of house-kiva (Feature 1) from 18-foot photographic tower. Arrow (50 cm. long) points north. Meter stick in background

SITE 1

Masonry in southwest quadrant of house-kiva (Feature I); looking south. Unworked stones; no spalls; untempered mud-mortar; single stone thickness. Meter stick on right

SITE 2

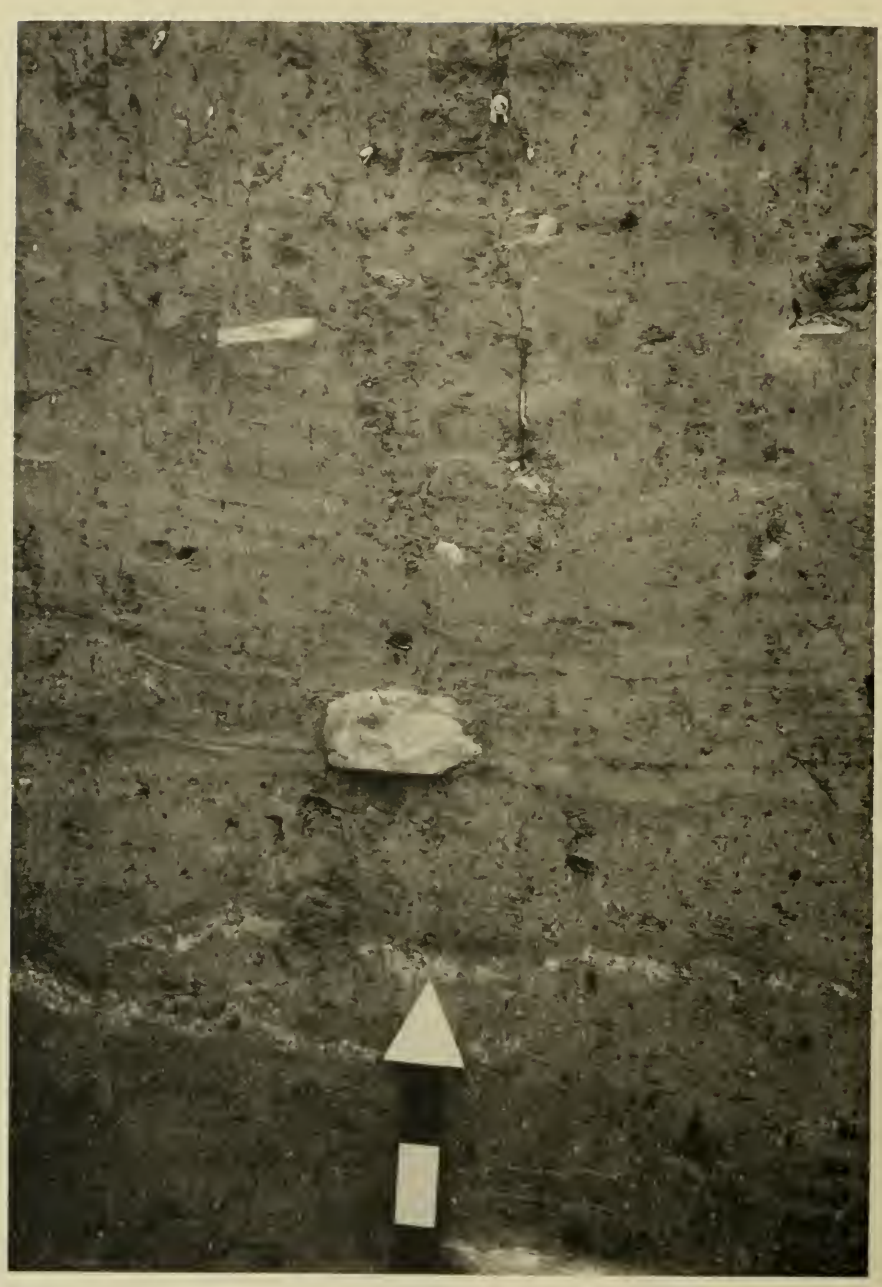
View of entire site from 18-foot photographic tower; looking south. Three-meter rod on center wall

SITE 2

Interior of west wall of stone house (Feature II). Walls of large stones and adobe mortar; some spalls. Meter stick on wall

SITE 2

Looking north into house-kiva (Feature IV); showing south half completely excavated. Banquette of stone; two stone pilasters; firepit slab-lined. Meter stick on floor

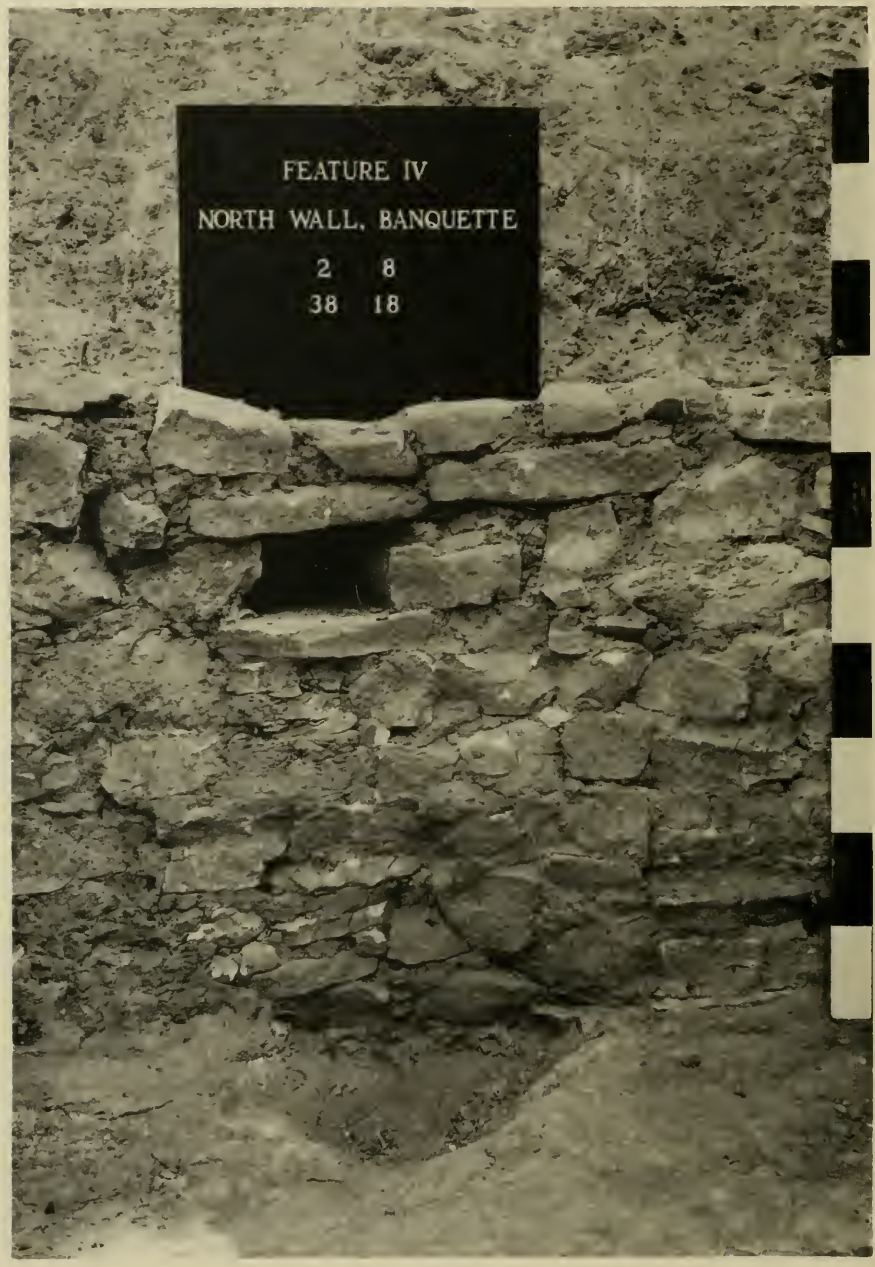


SITE 2

Close-up of soil profile of fill in house-kiva (Feature IV); looking north. Fill composed of dark soil containing charcoal and organic matter deposited by wind and water. Arrow points upward

SITE 2

House-kiva (Feature IV); showing slab-lined firepit, extra pit, and ventilator opening. Arrow (50 cm. long) points north



SITE 2

House-kiva (Feature IV); masonry; north wall of banquette. Meter stick at right

SITE 3

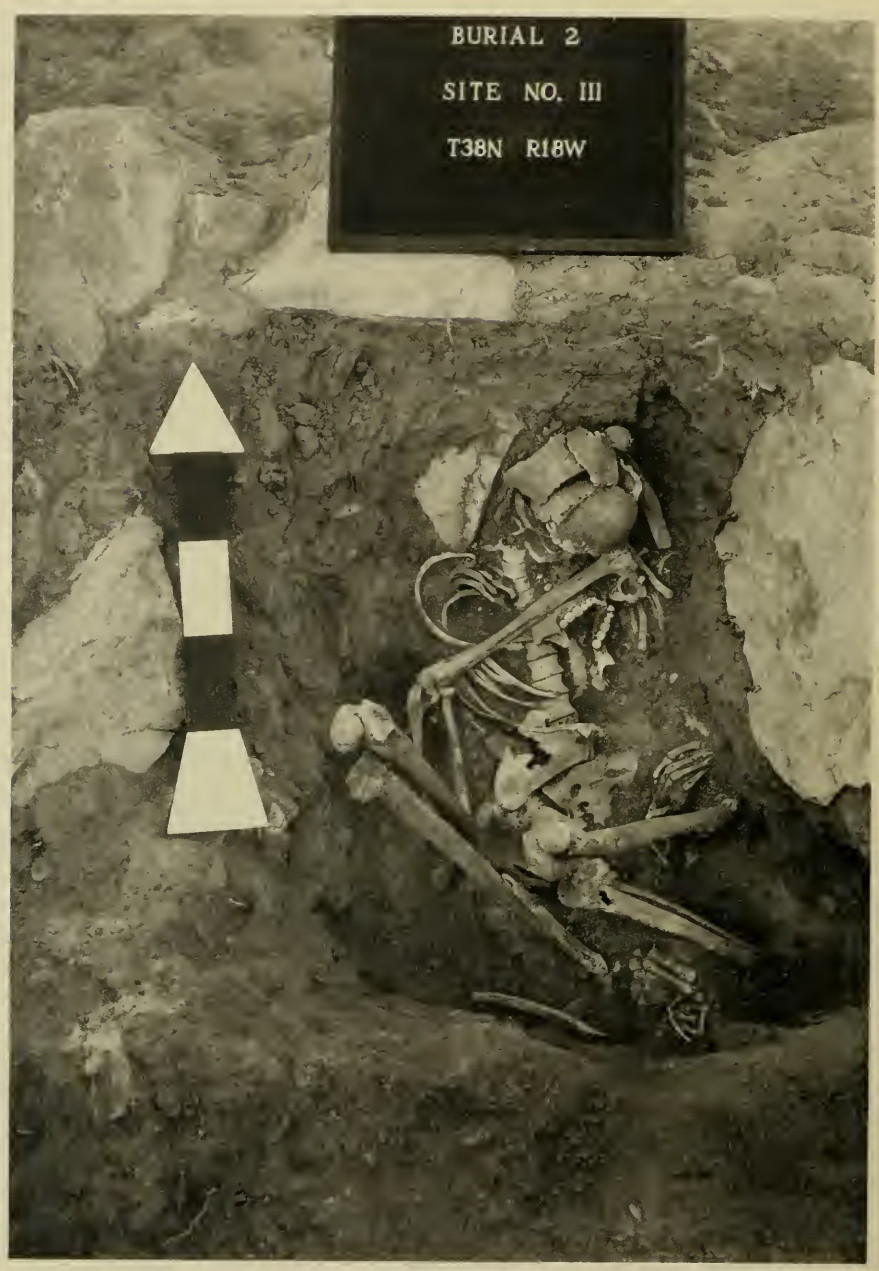
Trench I; looking southeast. Rodent holes visible in floor of trench

SITE 3

Masonry; north wall of Room 3. Meter stick on wall

SITE 3

Kiva I, completely excavated; showing post-holes for roof support, firepit, deflector, ventilator opening, and southern recess. Arrow (50 cm. long) points north. Meter stick in background



SITE 3

Flexed burial in floor of Room 2. Arrow (50 cm. long) points northeast

SITE 4

Post-house (Feature I); looking northeast at burned adobe wall of post-house. Meter stick in background

SITE 4

Post-hole No. 1 in floor of house (Feature I); showing collar of mud and stones

SITE 4

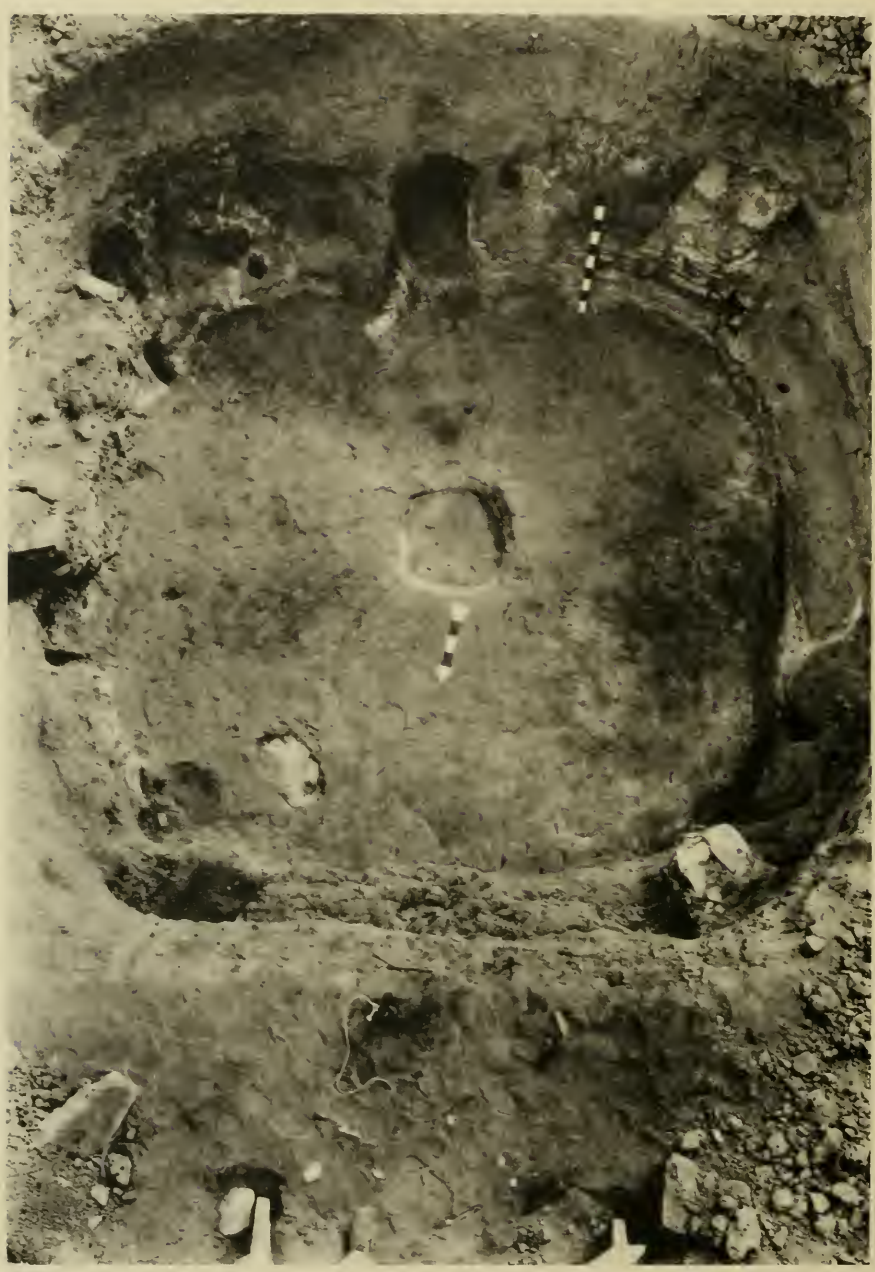
Post-house (Feature III); looking east at wall slabs and post-holes. Meter stick in foreground

SITE 4

House-kiva (Feature II); showing secondary additions (stone pilasters, banquette, and cists in banquette) and firepit, ventilator opening and shaft. Arrow (50 cm. long) points north. Meter stick in background

SITE 4

House-kiva (Feature II); showing southwest pilaster and western extremity of masonry which formed the banquette between the southwest and southeast pilasters. Meter stick at right

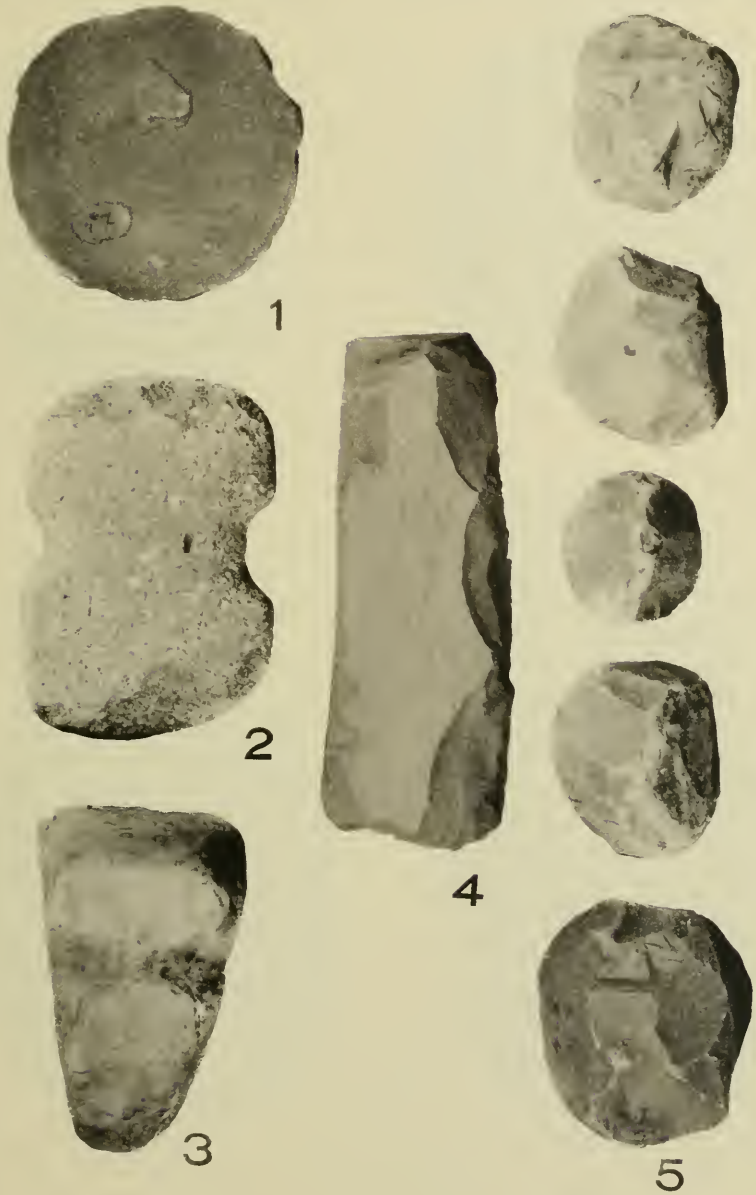


SITE 4

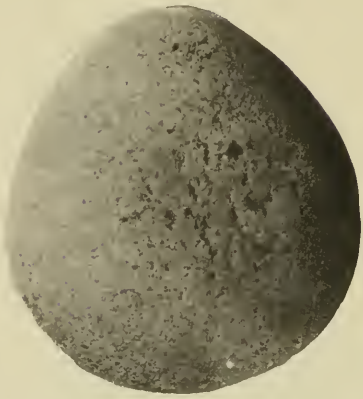
House-kiva (Feature 11); showing two post-holes (in banquette) and a section of the first wall. Arrow (50 cm. long) points north. Meter stick in background

STONE AXES
Length of Fig. 1, 12.4 cm.

GROOVED OBJECTS OF STONE
Length of Fig. 1, 14 cm.



MISCELLANEOUS OBJECTS OF STONE
Length of Fig. 4, 17.5 cm.



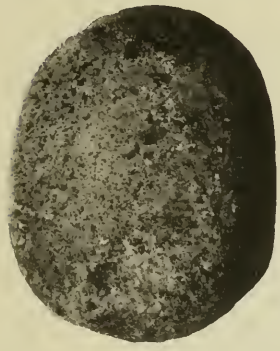
1

2

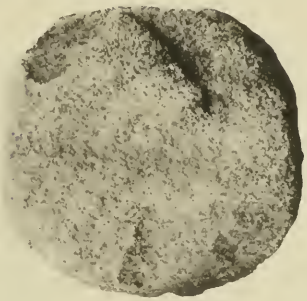
3

4

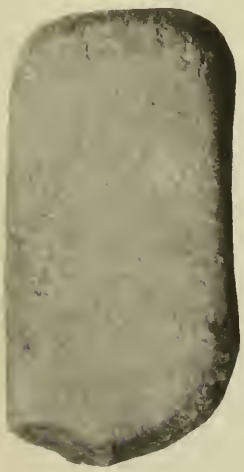
RUBBING STONES
Length of Fig. 3, 12.7 cm.



1



2

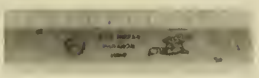


3

4

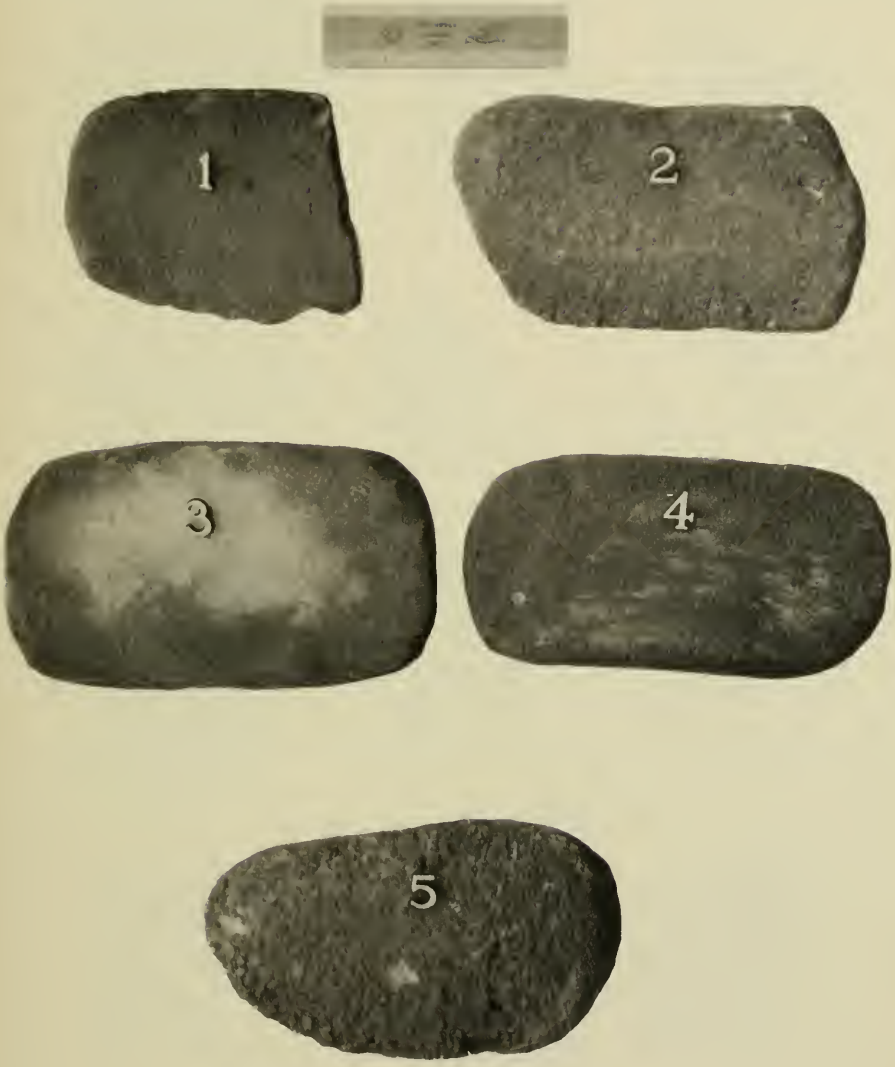
RUBBING STONES
Length of Fig. 3, 13.7 cm.

MANOS
Ten cm. scale at top



MANOS
Ten cm. scale at top

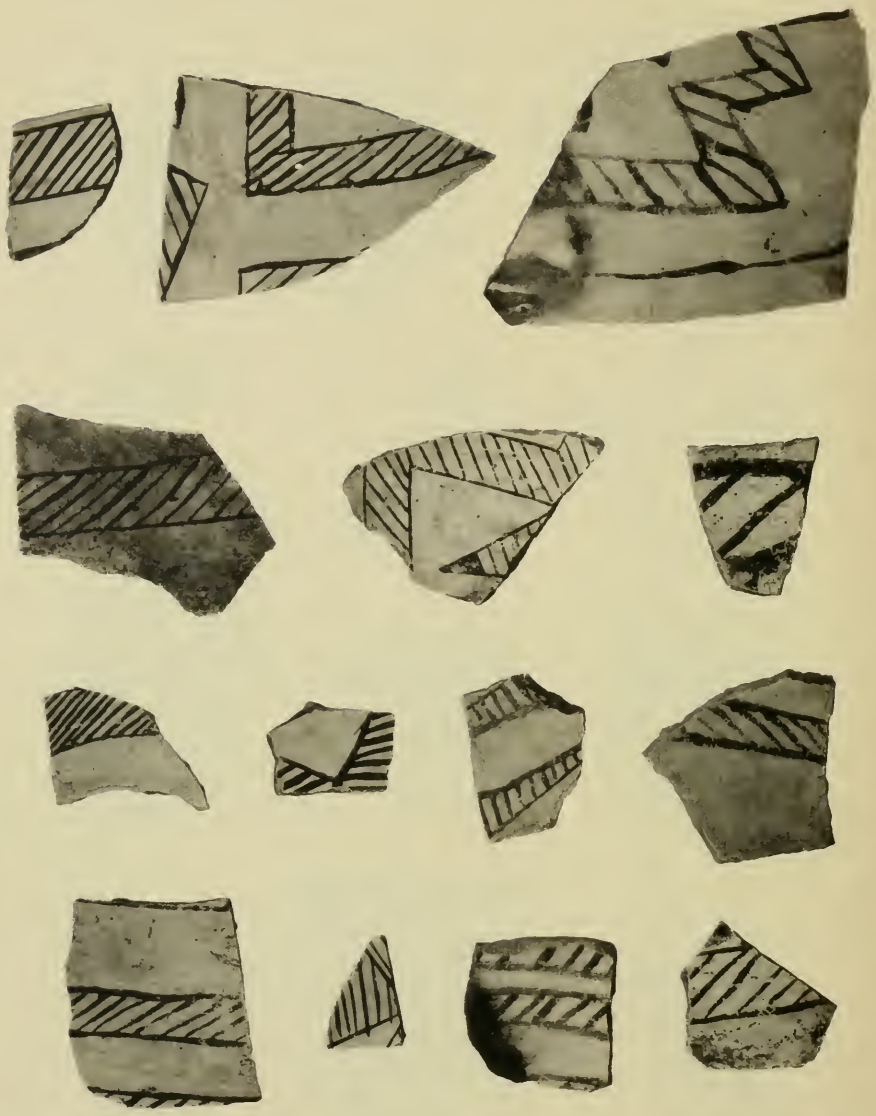
MANOS
Ten cm. scale at top



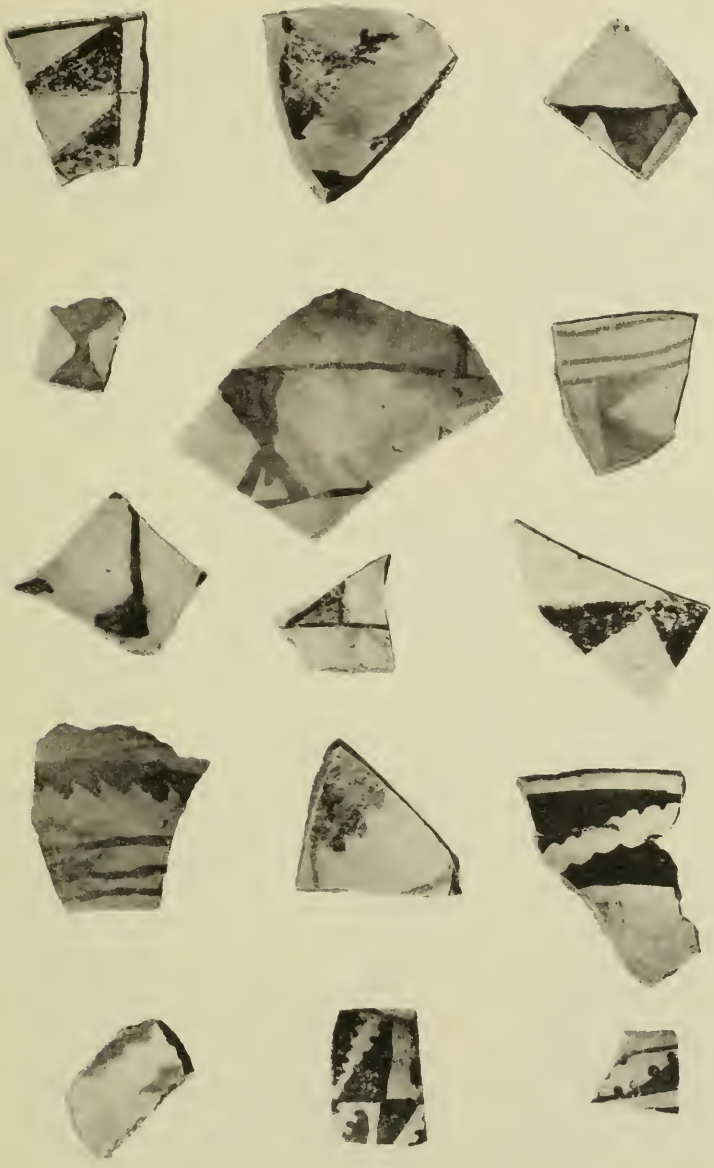
MANOS
Ten cm. scale at top

LINO BLACK-ON-GRAY POTSHERDS, SITE 1

MANCOS BLACK-ON-WHITE POTSHERDS, SITE 1
Designs showing squiggly hatch

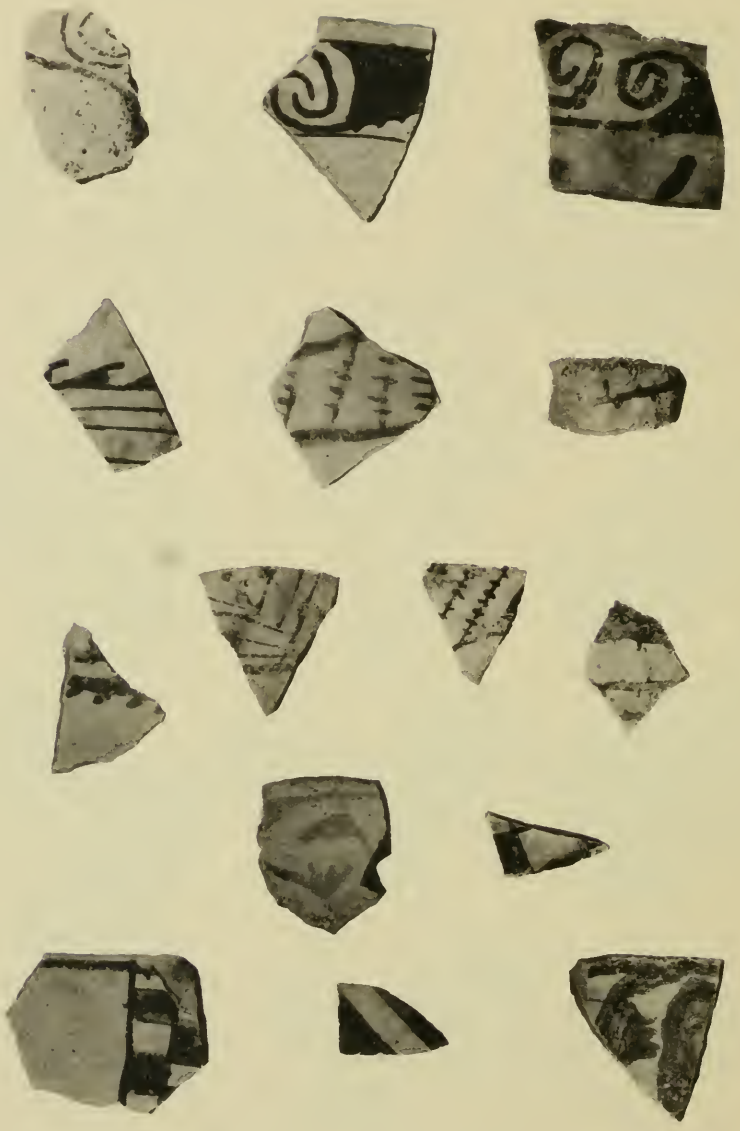


MANCOS BLACK-ON-WHITE POTSHERDS, SITE 1
Designs showing diagonal hatch



MANCOS BLACK-ON-WHITE POTSHERDS, SITE 1

Designs showing pendent and opposed triangles, ticked lines and solids

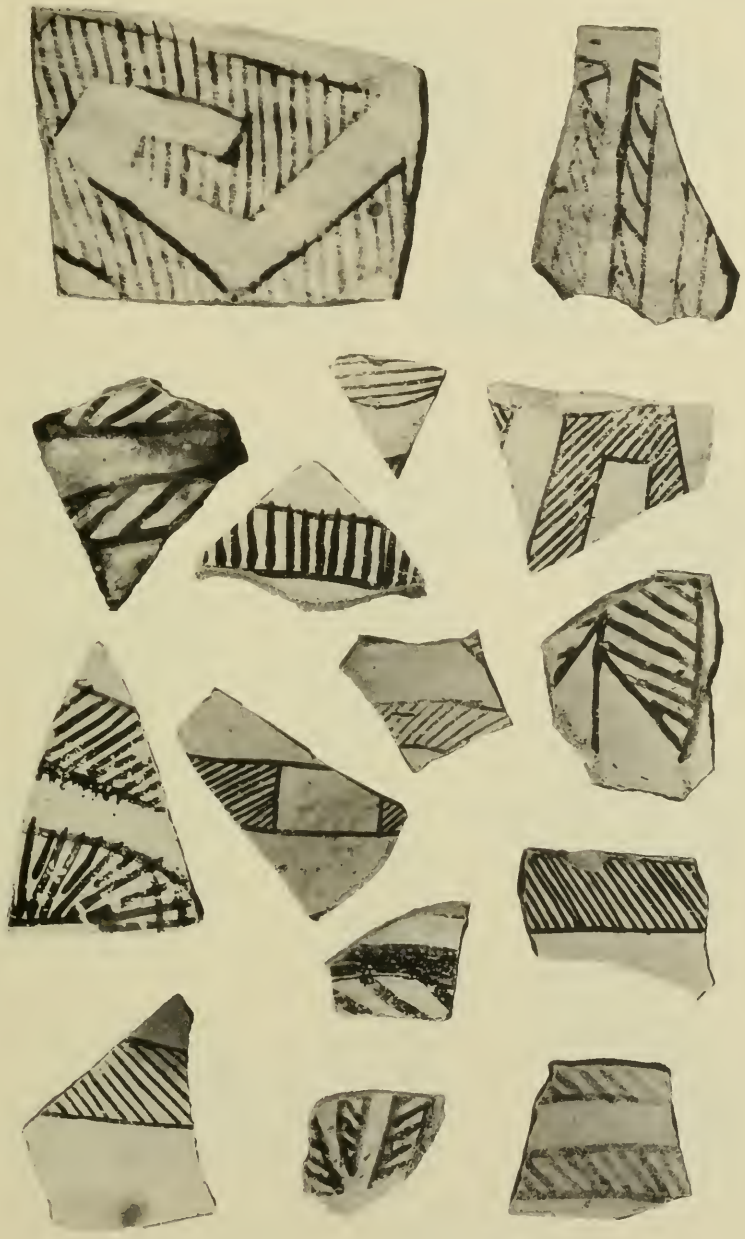


MANCOS BLACK-ON-WHITE POTSHERDS, SITE 1
Designs showing scrolls, ticked lines and solids, and checkerboards

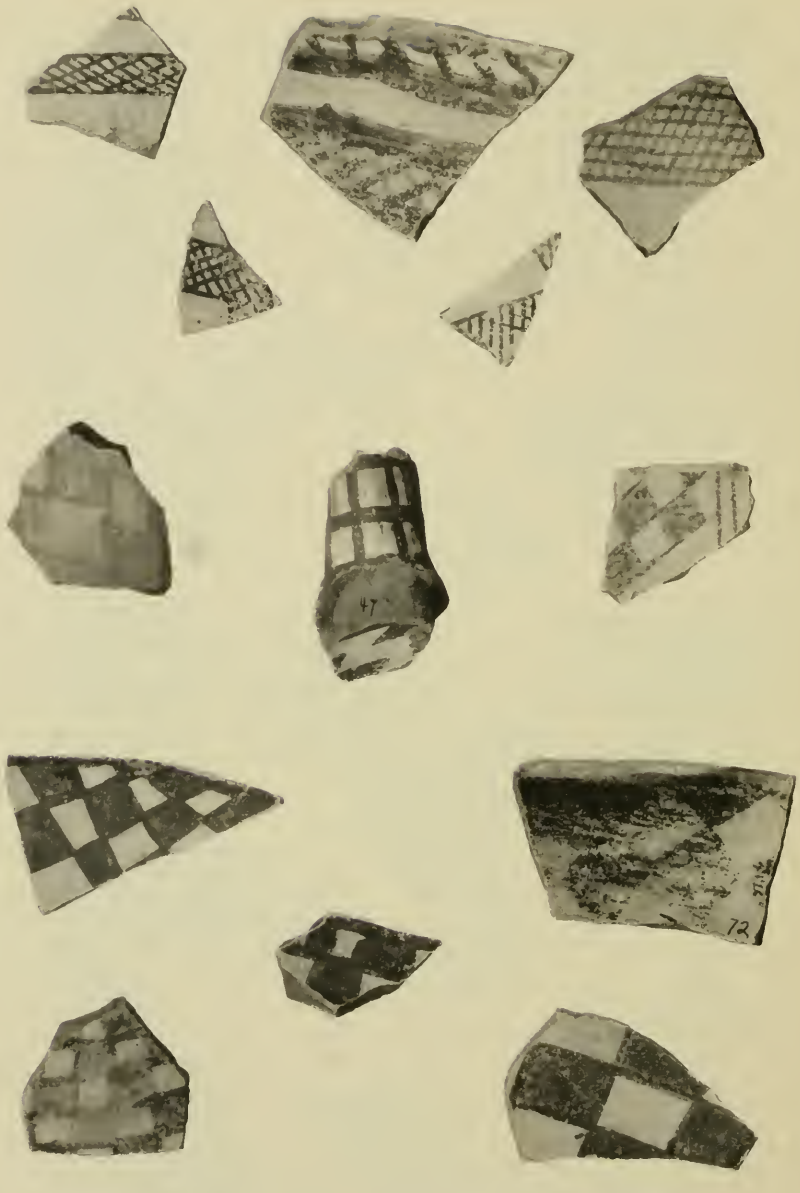
MANCOS BLACK-ON-WHITE POTSHERDS, SITE 1

Designs showing combinations of various elements, solids bordered by parallel lines, and stripes

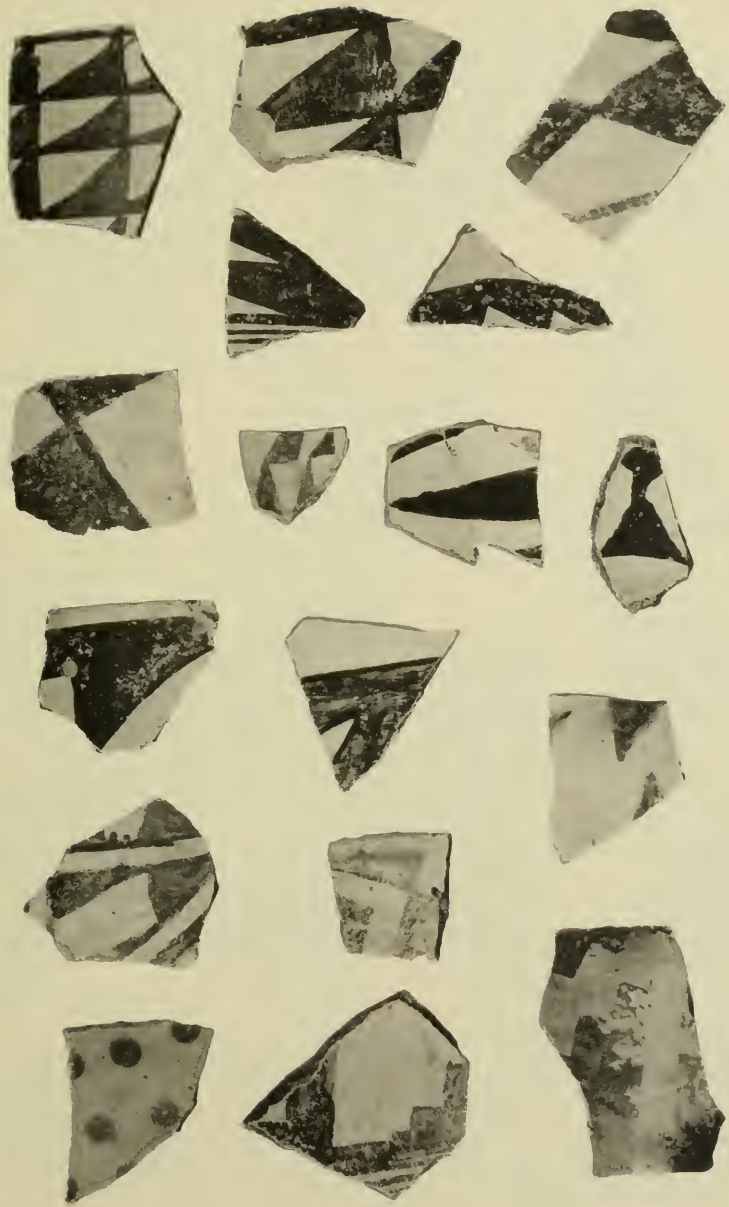
MANCOS BLACK-ON-WHITE POTSHERDS, SITE 2
Designs showing diagonal and squiggly hatch, and stripes



MANCOS BLACK-ON-WHITE POTSHERDS, SITE 2
Designs showing diagonal hatch

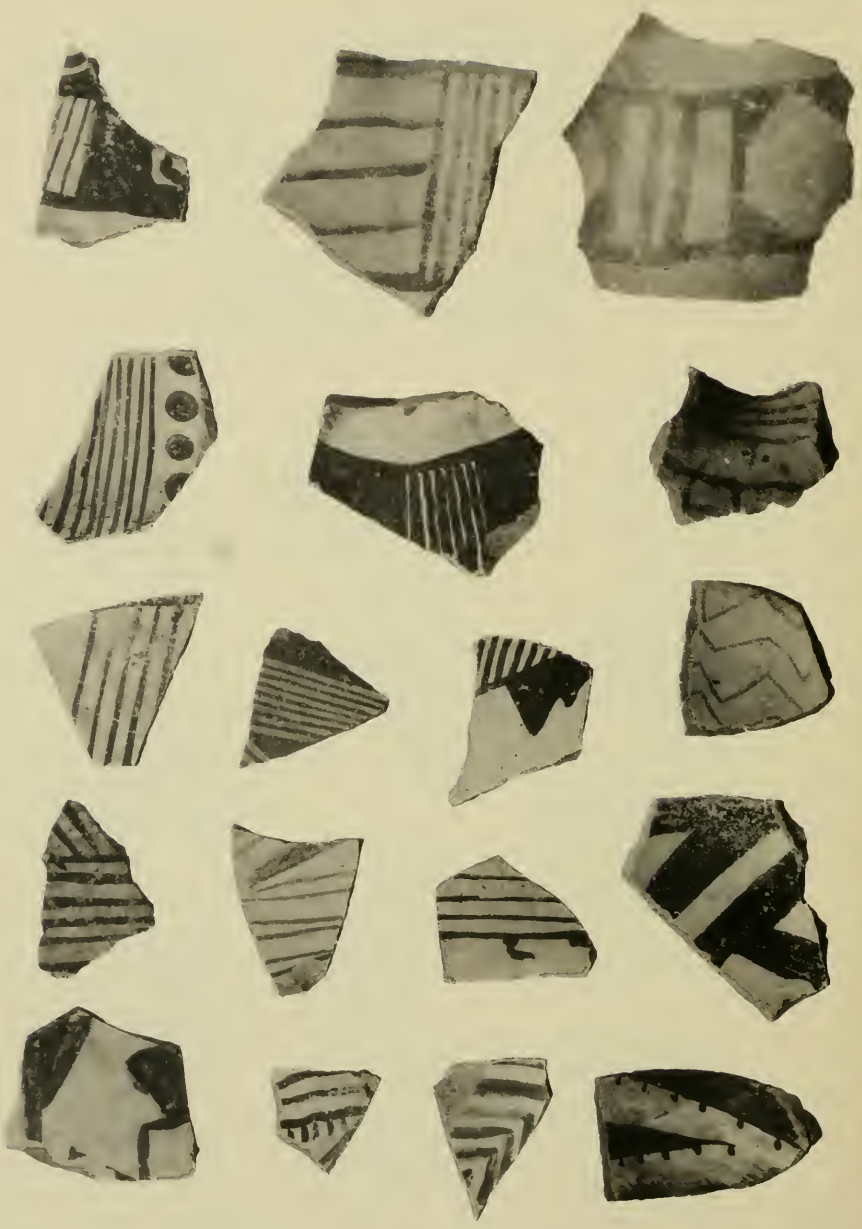


MANCOS BLACK-ON-WHITE POTSHERDS, SITE 2
Designs showing cross hatch and checkerboards



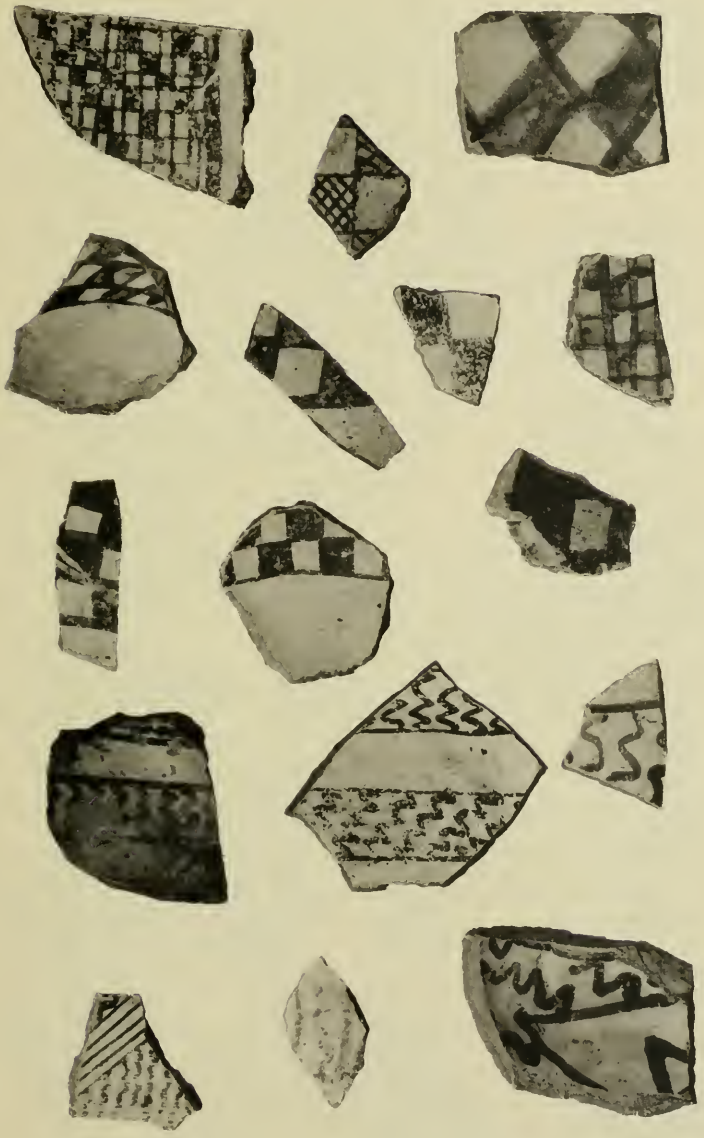
MANCOS BLACK-ON-WHITE POTSHERDS, SITE 2

Designs showing pendent and opposed triangles, polka dots, and terraced solids

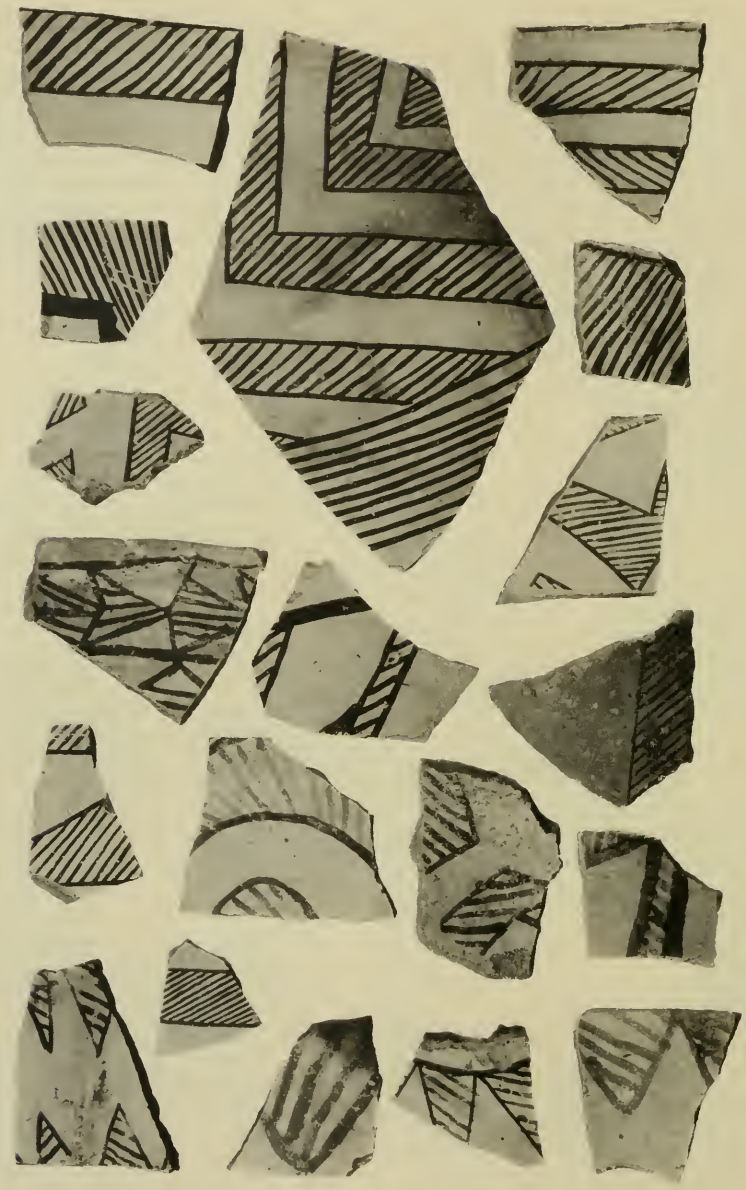


MANCOS BLACK-ON-WHITE POTSHERDS, SITE 2

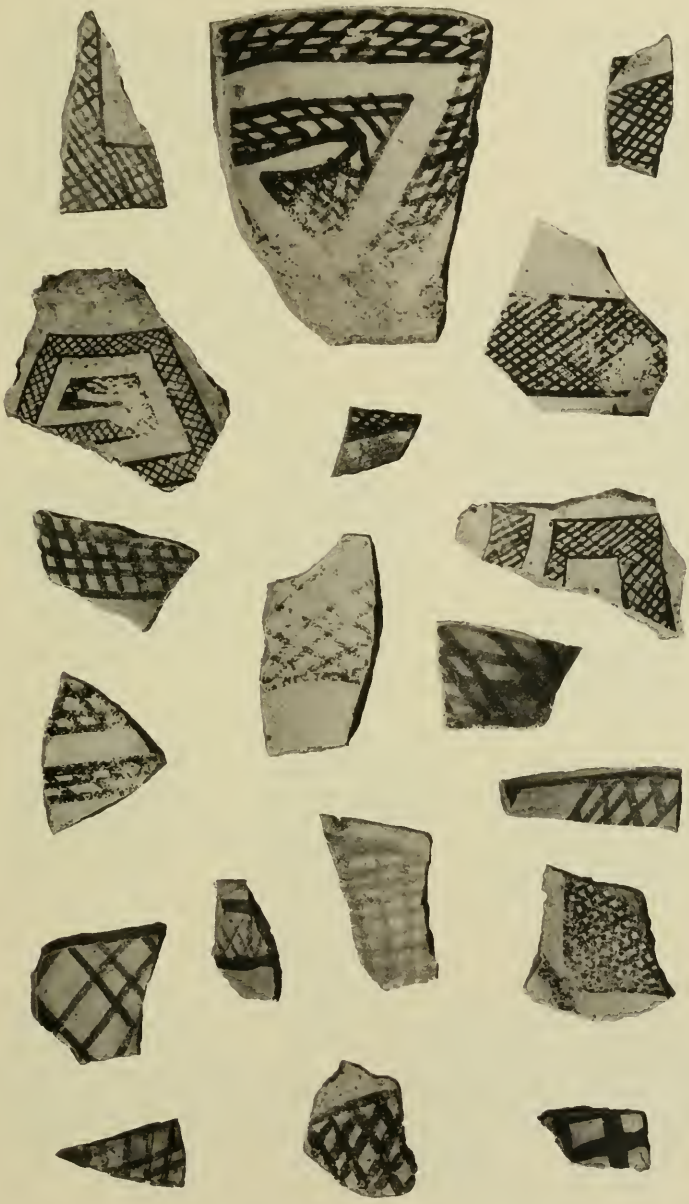
Designs showing panels, stripes, chevrons, and ticked lines and solids



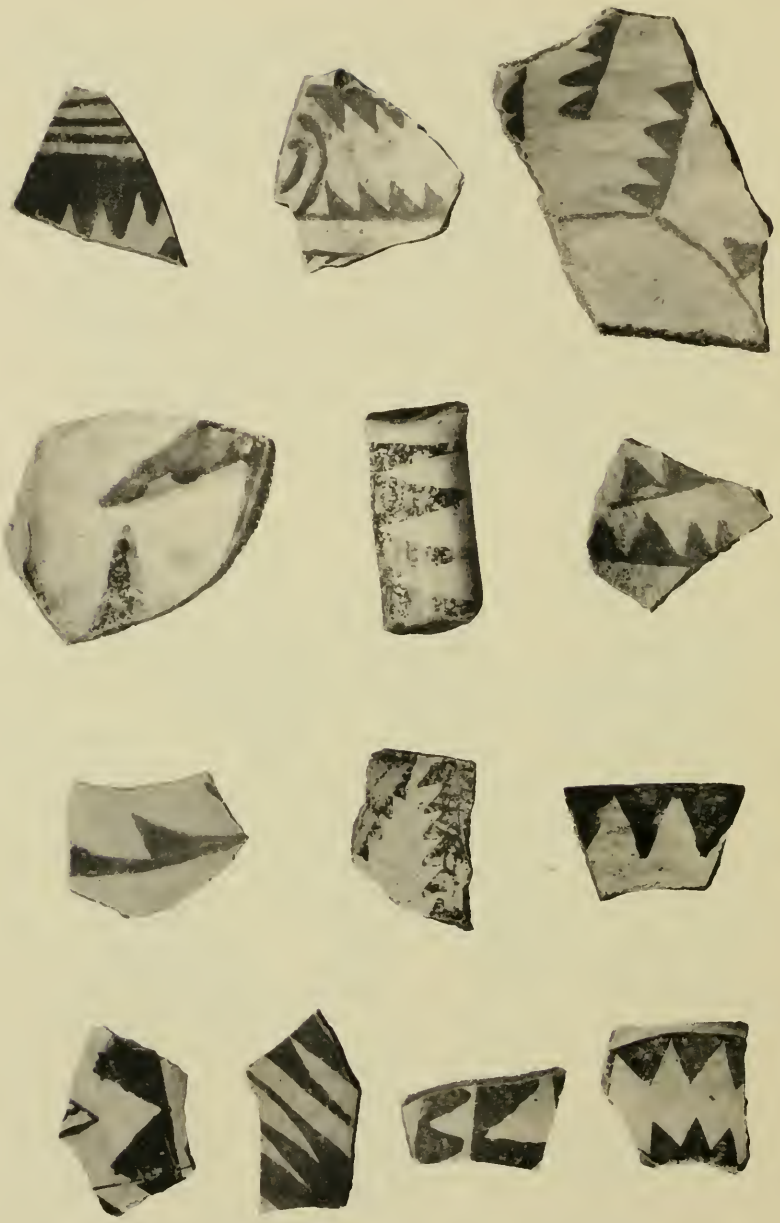
MANCOS BLACK-ON-WHITE POTSHERDS, SITE 3
Designs showing checkerboards and squiggly hatch



MANCOS BLACK-ON-WHITE POTSHERDS, SITE 3
Designs showing diagonal hatch



MANCOS BLACK-ON-WHITE POTSHERDS, SITE 3
Designs showing cross hatch

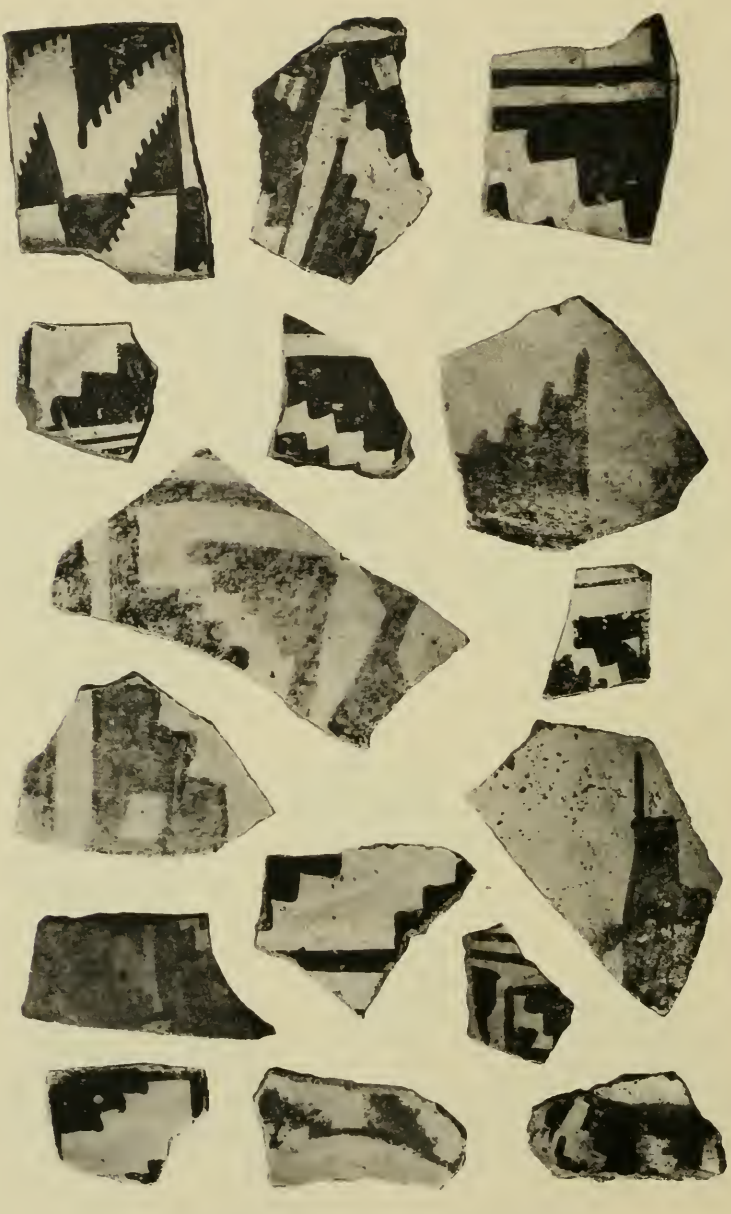


MANCOS BLACK-ON-WHITE POTSHERDS, SITE 3

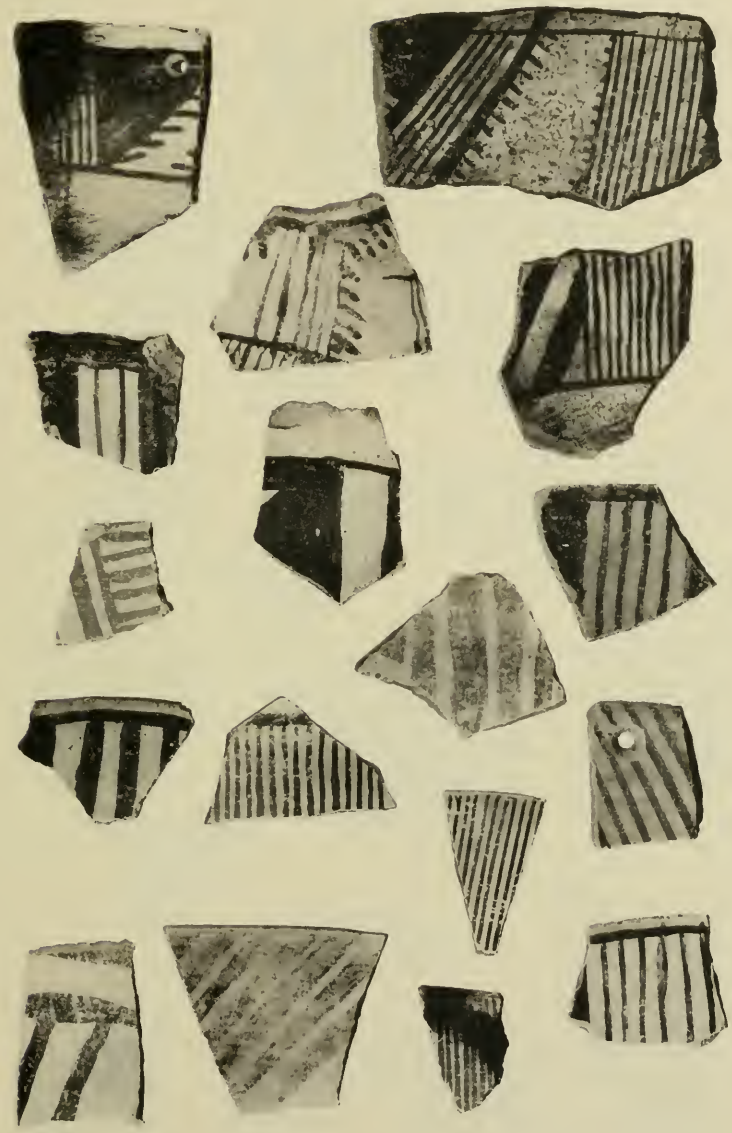
Designs showing pendent triangles

MANCOS BLACK-ON-WHITE POTSHERDS, SITE 3

Designs showing pendent and opposed triangles

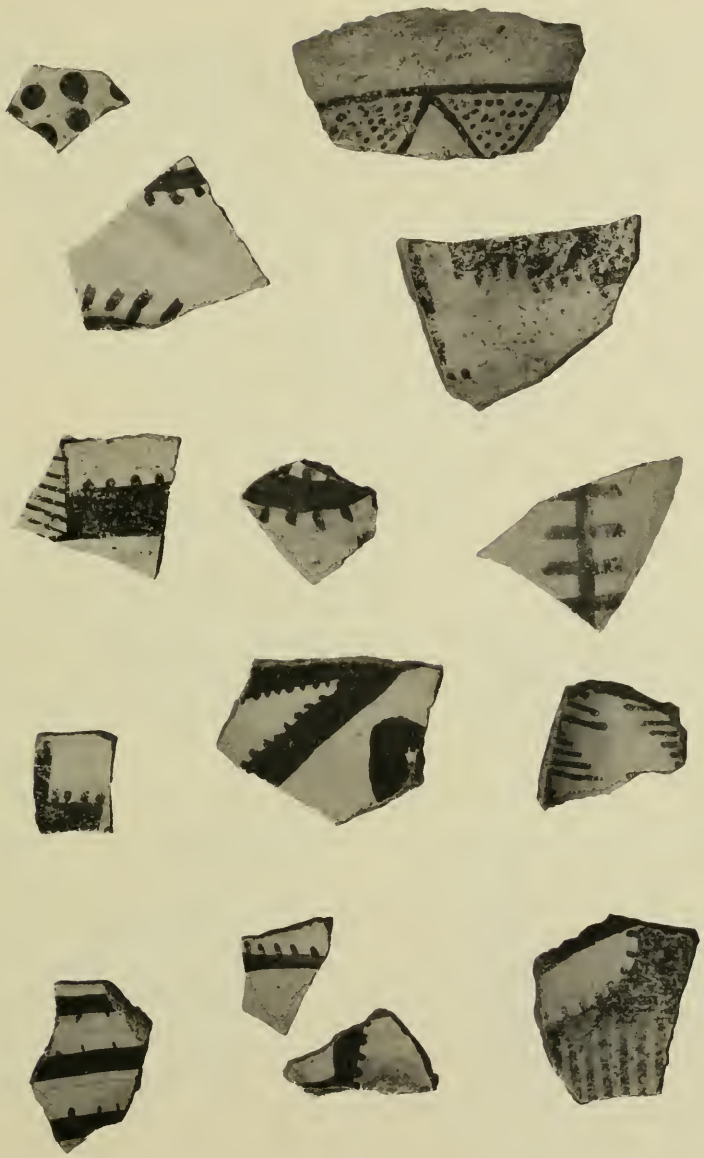


MANCOS BLACK-ON-WHITE POTSHERDS, SITE 3
Designs showing terraced solids



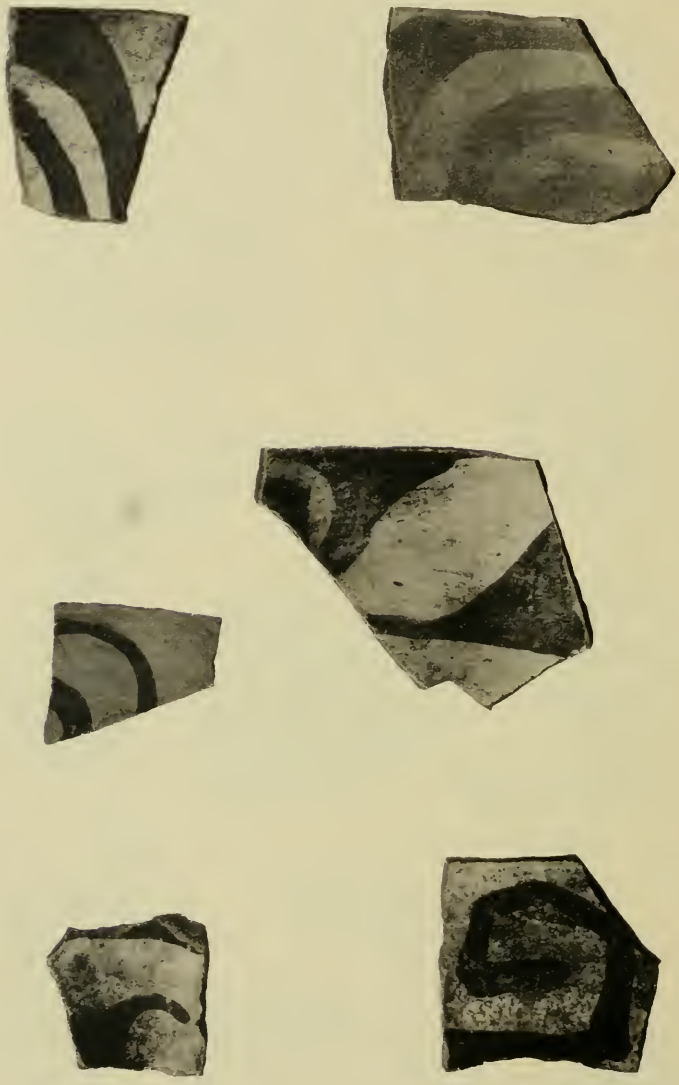
MANCOS BLACK-ON-WHITE POTSHERDS, SITE 3
Designs showing panels and stripes

MANCOS BLACK-ON-WHITE POTSHERDS, SITE 3
Designs showing chevrons and stripes



MANCOS BLACK-ON-WHITE POTSHERDS, SITE 3

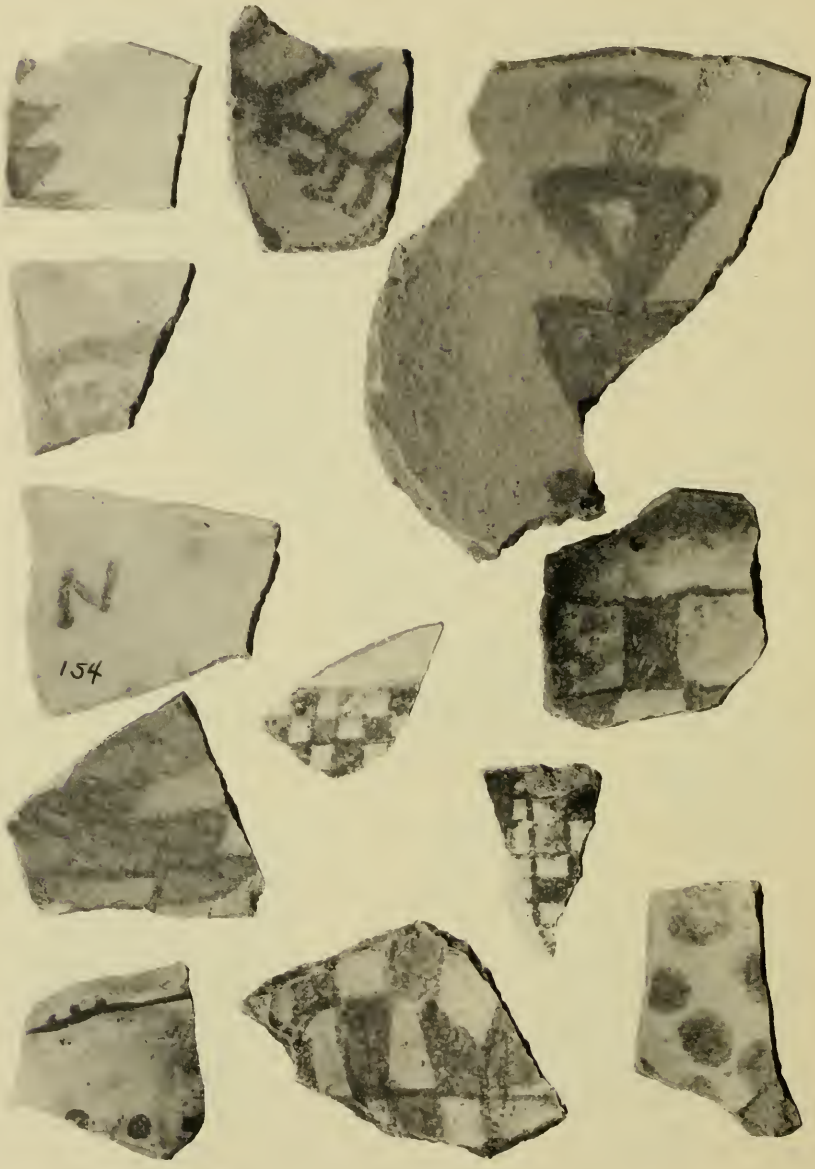
Designs showing polka dots and ticked lines



MANCOS BLACK-ON-WHITE POTSHERDS, SITE 3
Designs showing scrolls

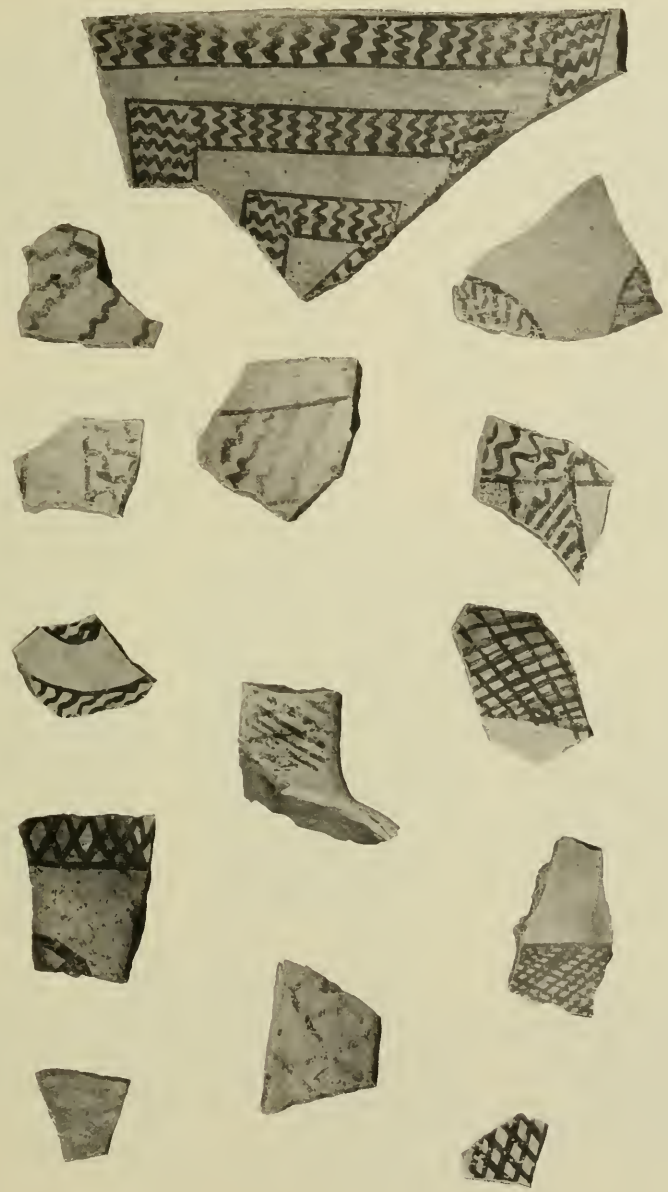
POTSHERDS, SITE 3

Large sherd, Reserve (?) black-on-white; other sherds, Mancos black-on-white.
Designs showing combinations of various elements

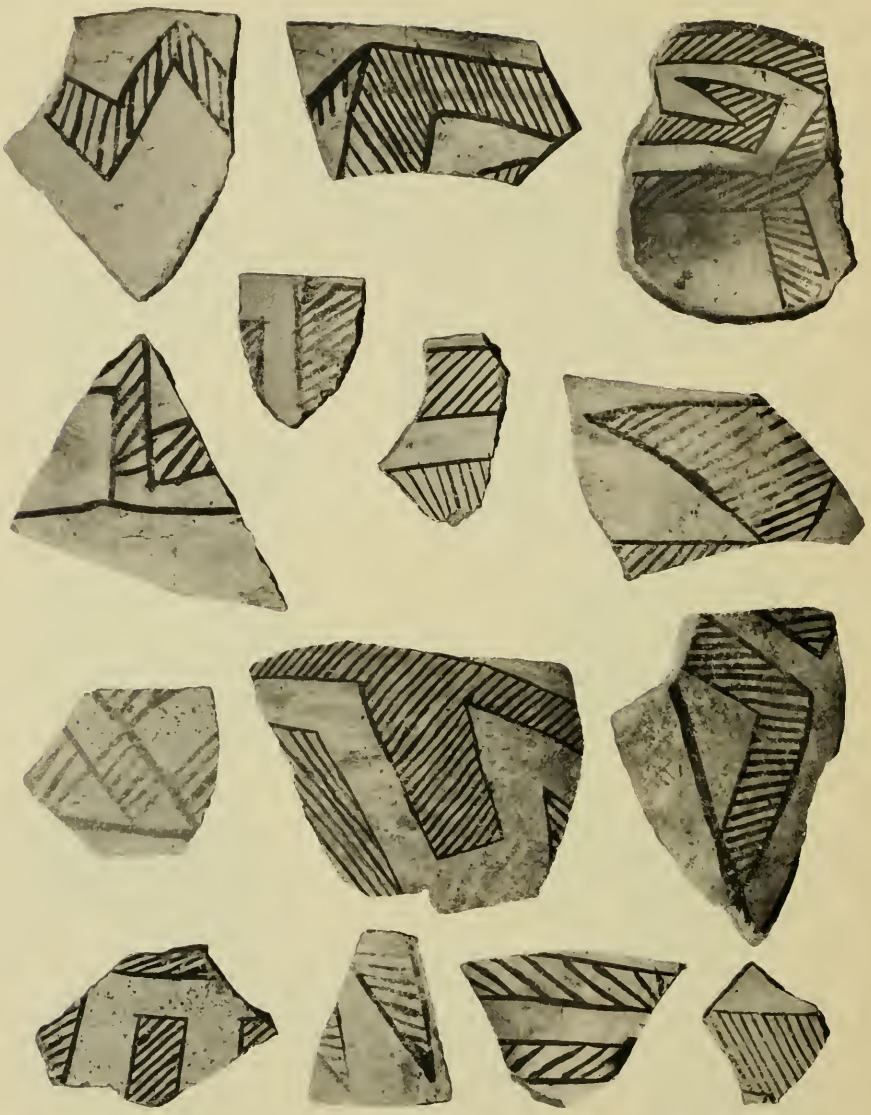


POTSHERDS, SITE 4

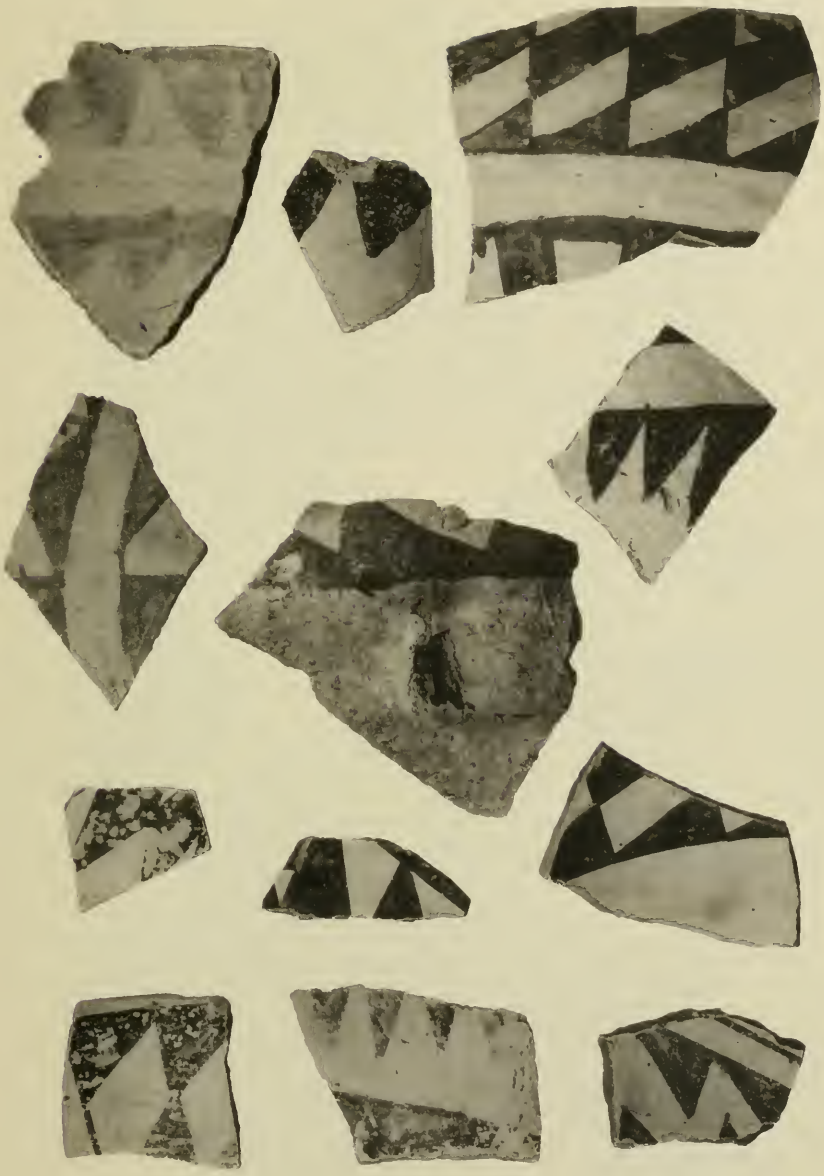
Upper rows: Lino black-on-gray. Lower rows: Mancos black-on-white.
Designs showing checkerboards and polka dots



MANCOS BLACK-ON-WHITE POTSHERDS, SITE 4
Designs showing squiggly and cross hatch

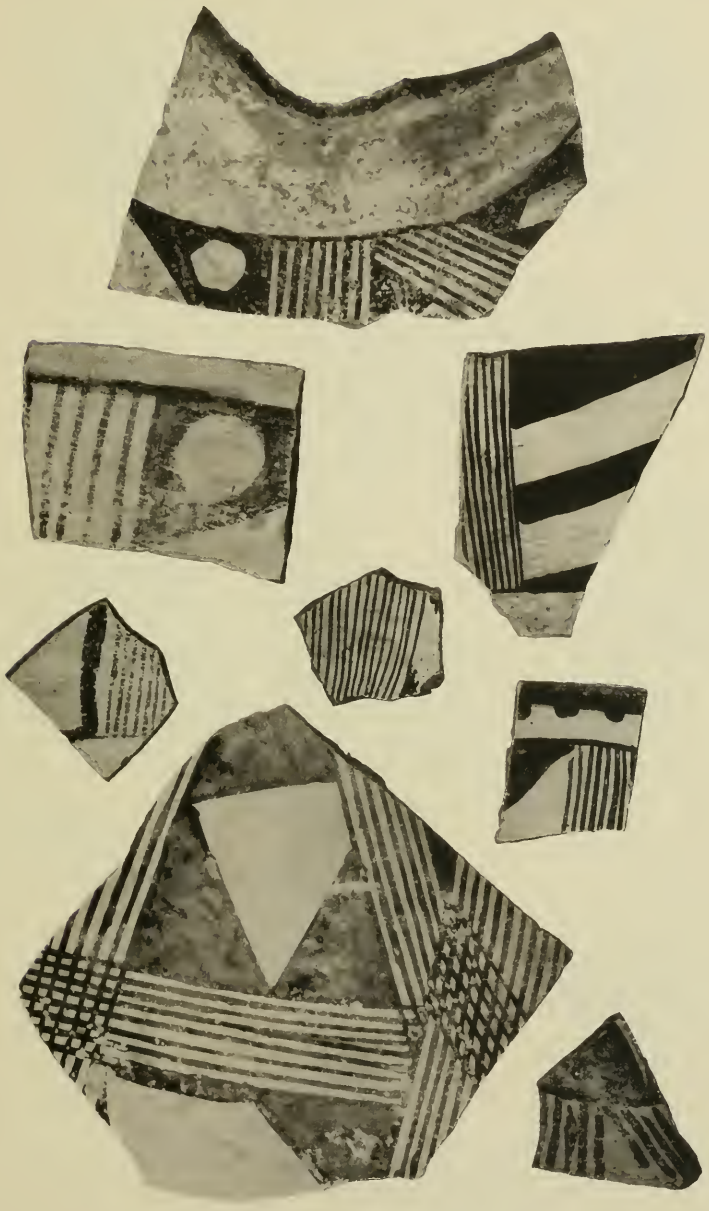


MANCOS BLACK-ON-WHITE POTSHERDS, SITE 4
Designs showing diagonal hatch



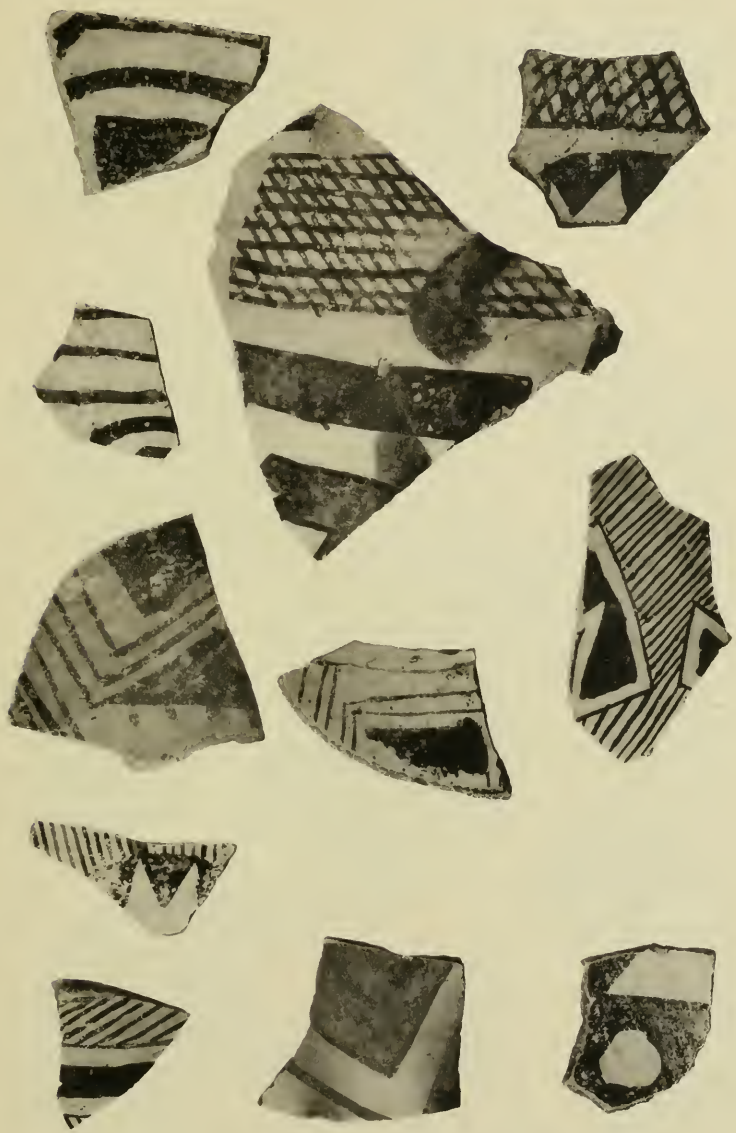
MANCOS BLACK-ON-WHITE POTSHERDS, SITE 4
Designs showing pendent and opposed triangles

MANCOS BLACK-ON-WHITE POTSHERDS, SITE 4
Designs showing terraced solids, ticked lines and solids, and scrolls



MANCOS BLACK-ON-WHITE POTSHERDS, SITE 4
Designs showing panels and combinations of various elements

MANCOS BLACK-ON-WHITE POTSHERDS, SITE 4
Designs showing stripes and chevrons

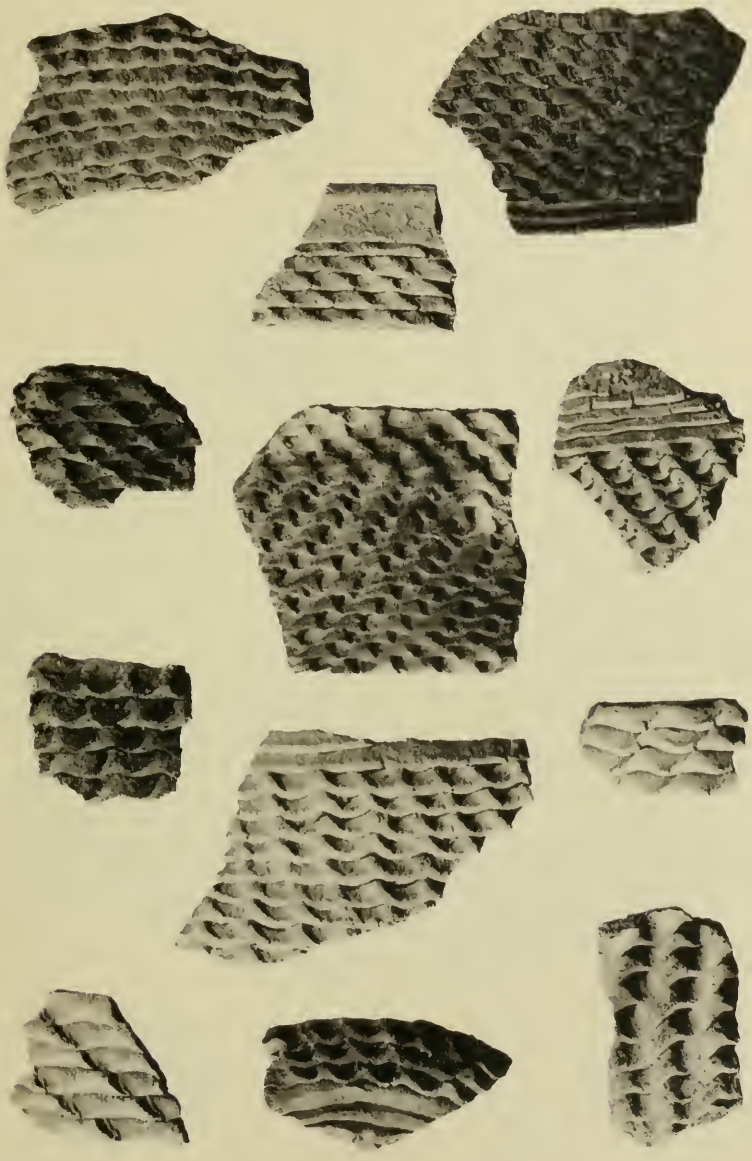


MANCOS BLACK-ON-WHITE POTSHERDS, SITE 4

Designs showing combinations of various elements

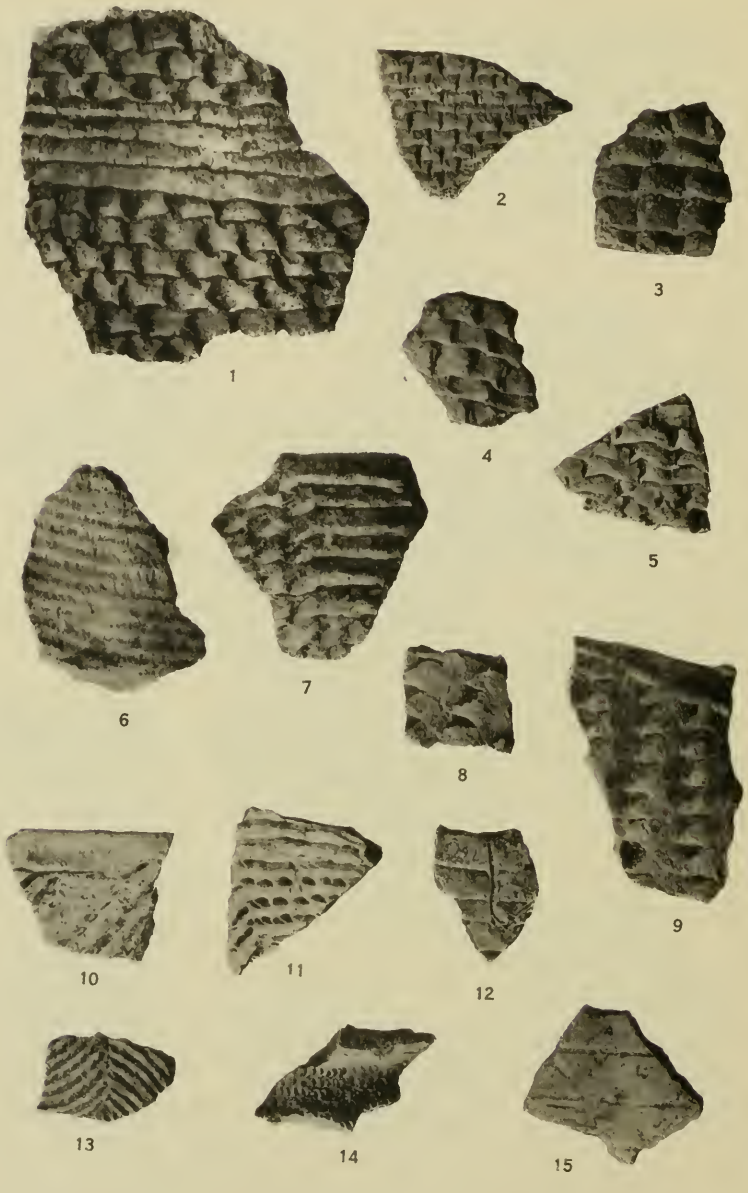
CULINARY WARE POTSHERDS FROM ALL SITES

Upper rows: plain corrugated. Lower rows: plain corrugated-neck and washboard corrugated



CULINARY WARE POTSHERDS FROM ALL SITES

Upper row: flat-wavy indented-corrugated. Middle row: medium-wavy indented-corrugated.
Lower rows: deep-wavy indented-corrugated



CULINARY WARE POTSHERDS FROM ALL SITES

Figs. 1–5. Square indented-corrugated. Fig. 6. Basket impression. Fig. 7. Combination of plain corrugated and medium-wavy indented-corrugated. Figs. 8–9. Sawtooth indented-corrugated. Figs. 10, 11, 13–15. Incised and punched plain-ware. Fig. 12. Incised plain corrugated.

ABAJO RED-ON-ORANGE JAR(?). SITE 4 (FEATURE I)

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