
PRELIMINARY ACCOUNT OF THE ANTIQUITIES
OF THE REGION BETWEEN THE MANCOS AND LA
PLATA RIVERS IN SOUTHWESTERN COLORADO

BY

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PREFACE

In the spring of 1913, at the suggestion of Dr. Edgar L. Hewett, director of the School of American Archæology, the Board of Regents of the University of Colorado placed in my hands the means with which to conduct excavations among the ruins in the region between the Mancos and La Plata Rivers. The permit from the Secretary of the Interior was obtained through the School of American Archæology, hence the work during the summer of 1913 is officially recorded as having been done in collaboration with that institution.¹

As a result of the first season's explorations, I was sent back to the same field, where I conducted excavations during part of the summer of 1914. In this research the School of American Archæology did not collaborate.

Because of limited means, the explorations were not so thorough nor so extended as it would be desirable to have made them. Time could not be spared to draw plans of all the ruins visited, and those which are given are compiled from measurements taken with a tape-line. In many places it has been necessary to use the terms "about," "roughly," and "approximately" where exact determinations could have been made only by the expenditure of considerable time and money.

Whatever of worth was accomplished depended largely upon those who assisted me, and I wish here to express my thanks to William E. Ross, E. K. Hill, and J. H. Lavery, all of Farmington, New Mexico, for their faithfulness to the work in hand under all circumstances. Mr. Ralph Linton, of Swarthmore, Pennsylvania, contributed his services during part of the summer of 1913. Mr. A. B. Hardin, of Denver, Colorado, directed me to several of the most important ruins and furnished valuable information as to the location of springs and trails.

¹ *Bulletin of the Archaeological Institute of America*, Vol. IV, Nos. II and III, p. 41.

I am especially indebted to Prof. Junius Henderson, curator of the Museum of the University of Colorado, for the use of his office and photographic equipment while preparing this report, as well as for many other services which he has rendered.

Since the excavations had to do with two very different types of ruins, I have treated each separately. By describing each type of building and the artifacts therefrom as a unit, a much better comparison of the culture of the ruins in the cliffs with that of the ruins on the mesas can be made than would otherwise have been possible.

E. H. M.

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DESCRIPTION OF THE REGION

The region here dealt with consists of a triangular plateau bounded on the west by the Mancos Canyon, on the east by the La Plata River, and on the south by the Colorado-New Mexico line. Its elevation varies from 6,000 to 7,000 feet above the sea. It is traversed from northeast to southwest by a low divide composed of a series of broken hills. The canyons which drain to the Mancos are exceedingly deep and rough, rivaling those on the opposite side of the river. The arroyos running to the La Plata are less precipitous and much of the country on that side of the divide is a rolling tableland.

An unusually dense forest of piñon and cedar covers much of the region, and the parts not covered by forests are overgrown with sagebrush. Along the watercourses are cottonwoods and willows, and in the canyons draining to the Mancos quaking aspens, wild gooseberries, and chokecherries are of common occurrence. A few rock pines stand at the heads of the canyons, and along the foot of cliffs and in the deep coves are numerous spruce trees, some of them of large size. It appears that the pines, spruces, and aspens, together with the other plants common to the associations in which these are predominant, are being slowly crowded out by more xerophytic forms, a condition indicating that there is a less abundant rainfall than there was in times past.

Until the coming of the whites, deer, elk, bear, and mountain lions, as well as smaller mammals, were plentiful, and even at present they are occasionally encountered in the fastnesses of the canyons.

The sagebrush glades interspersed through the heavy timber furnished the aboriginal inhabitants with abundant and fertile land for cultivation. In the summer of 1914 corn could have been grown successfully without irrigation upon these mesas. Thus it appears that the region offered all the conditions indispensable to primitive culture. To-day it is uninhabited except for a few "dry farmers," who are endeavoring to reclaim the lands west of Cherry Creek.

I. THE CLIFF-RUINS OF JOHNSON CANYON

Johnson Canyon is probably the largest of the eastern tributaries of the Mancos Canyon. It begins as a draw at the divide which forms the boundary between La Plata and Montezuma Counties, and 2 miles farther west drops down between perpendicular cliffs. From this point the bottom is a V-like gorge, often rendered impassable by great blocks of stone which have broken away from the rim rock and crashed into the watercourse below. Where such is the case the dim trail ascends the steep talus slope, winds along precarious ledges, and, as soon as there is an opportunity, descends to the canyon floor.

In describing the cliff-dwellings of Mancos Canyon neither Jackson¹ nor Holmes² mentions the ruins in this canyon. Nordenskiöld speaks of them as follows:³

The system of cañons southeast of this river [the Mancos] also contains numerous cliff-dwellings of considerable size. I did not carry out any excavations there but only photographed a number of the most important ruins, namely, those in Johnson Cañon.

Prudden does not refer directly to the Johnson Canyon ruins but locates several of them on his map of the prehistoric ruins of the San Juan watershed.⁴

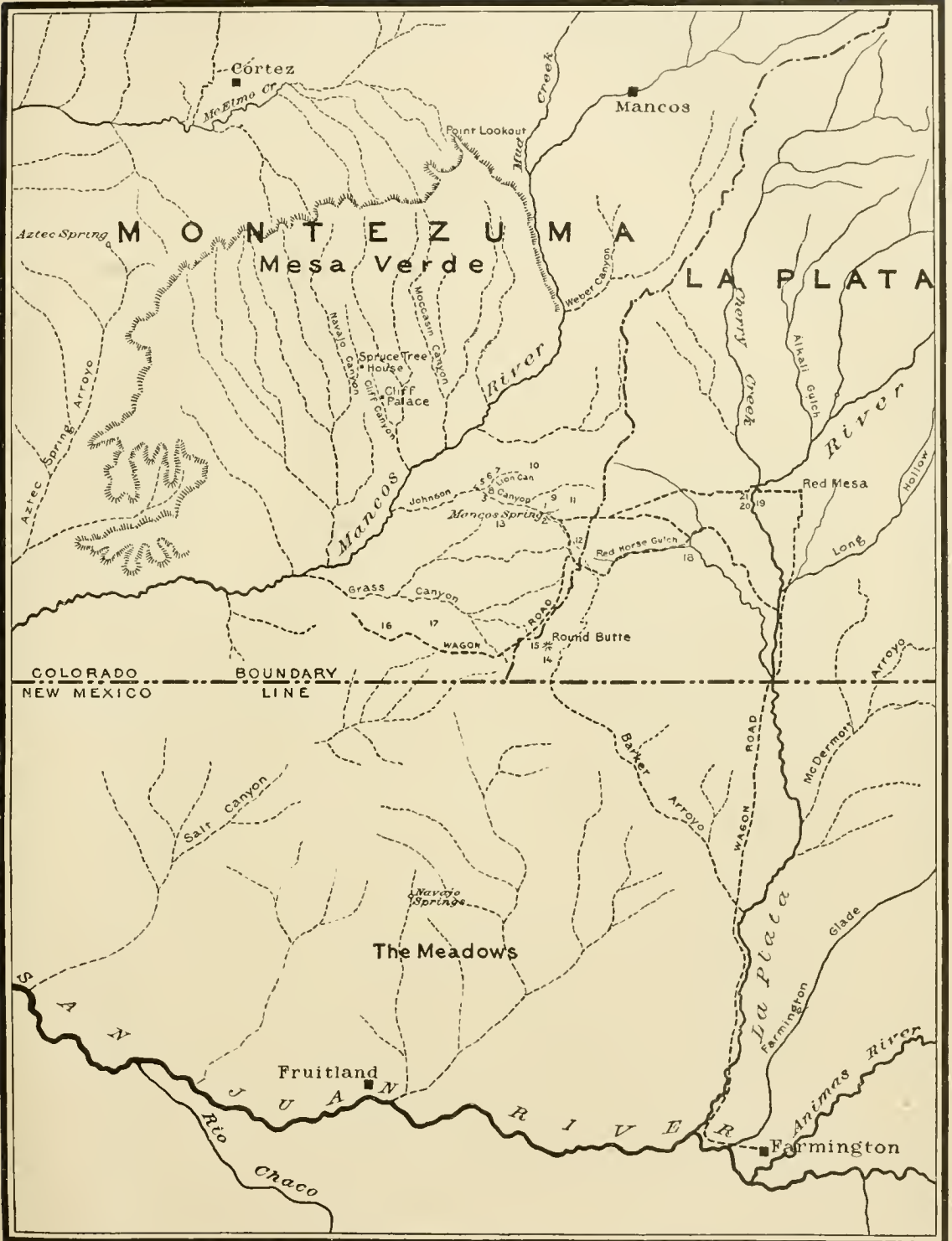
Possibly three-quarters of a mile from the beginning of the box canyon the first fork of any considerable size runs off to the north. In it is located Mancos Spring. We found no other permanent water supply between the La Plata and the Mancos which is accessible, and in consequence this spring served as a base for all our operations in the vicinity. There is a large spring some 3 miles down the canyon, but its water is green and unpleasant to the taste. There are also numerous small drips at the base of the rim rock, which doubtless were used by the aborigines.

¹ [Eighth] Ann. Rept. of the Hayden Surv. for 1874. p. 369, 1876.

² Tenth Ann. Rept. of the Hayden Surv. for 1876, p. 393, 1878.

³ The Cliff-dwellers of the Mesa Verde, p. 69.

⁴ The Prehistoric Ruins of the San Juan Watershed, pl. xvi.



MAP INDICATING SITES MENTIONED IN THE TEXT

BUILDINGS

1. IN JOHNSON CANYON

A short distance below the head of the box canyon an ancient trail scales the north wall. It consists of a number of steps or toe holds cut into the rock, which greatly facilitate the ascent of the sloping surface.

Under the first arch of considerable size, also on the northern side of the canyon, are two depressions, with a capacity of about 3 gallons each, pecked into the rock floor of the cave. They are arranged to catch the drip from the cliff, and a very inconsequential rain is sufficient to fill them.

Ruins at mouth of Spring Canyon.—At this place are the ruins marked Nos. 1 and 2 on the map (pl. 31). Both are in a poor state of preservation. The one on the southern side of Johnson Canyon consists of six rooms built in a crevice which can be entered from the east end. The walls are poorly constructed. In one place they are built entirely of mud into which have been thrust many small fragments of stone (pl. 34, *b*), and in another they contain no stone whatever, but are thickly chinked with broken pottery. They stand upon the edge of the cliff and reach to the roof of the cave. A passage runs the length of the crevice behind the apartments.

Below the mouth of Spring Canyon practically every available site contains the remains of a small building. Few of these could have been used as dwellings, the majority probably having served as storage places for the crops raised on the mesas. The finding in one of them of several bushels of corncobs strengthens this conclusion. In the first 5 miles below Spring Canyon the party counted 15 of these ledge houses, and it is probable that there are many more hidden by the line of spruces which skirts the rim rock and concealed in the numerous ramifications which branch off from the main gorge on both sides.

Ruin No. 3.—Under a high arch on the north side of the canyon are the remains of the first building of noteworthy size (No. 3 on the map, pl. 31). An ascent of 300 feet brings one to the level of the cave in which it stands. The débris and ruined walls extend along the cliff for 150 feet. Four kivas form the most conspicuous feature, three of them at the western end of the cave, the other well toward its eastern extremity. In the central part of the rear of the cave a crack was walled up, and the five rooms thus formed are intact. Upon a detached bowlder at the front and near the western end perches a tower 7 feet square and 6 feet in height. The features of the rest of the building can not be determined, since even the bases of the walls have been disturbed.

Several sandals, jar rests, and pieces of matting, besides the fragments of two pottery bowls (pl. 42, *a*, *c*) were gathered up among the fallen stones, a condition indicating that had there been previous visitors to the cave, they were not in search of relics. The red bowl (pl. 42, *a*) is of particular interest because it so closely resembles the one found by Nordenskiöld in Spring House.¹

At least four burials had been made beneath the shelving rocks which litter the floor of the cave.² These had been pawed out by animals, and whatever offerings had been placed with them were scattered and destroyed. In one was found the front of a feather-cloth jacket, part of which is shown in plate 49, *a*.

In the kiva, at the eastern end of the building, were the fragments of a strangely shaped vessel (pl. 41, *b*, *c*) and a small water bottle (pl. 40, *b*), as well as several bone implements. In a rat's nest, under a great slab of stone which had fallen from the cliff into the northern side of the kiva, were sections of rush matting evidently taken from a large mat cut to pieces by the rodents. (Pl. 49, *b*.)

The easternmost of the three kivas, at the western end of the cave, had been dismantled and used as a dumping place. The floor was covered to a depth of 18 inches with house sweepings, turkey droppings, innumerable bits of string, knotted strips of yucca leaves, feathers, and fragments of pottery. In one of the banquettes were a few fragments of the red bowl mentioned above. In the next kiva a beautiful bowl was found (pl. 42, *b*), but seepage had destroyed any perishable objects which the room may have contained. Because of dampness the fourth kiva was not disturbed.

The kivas present no unusual features, so I shall not describe them, letting the one in Eagle Nest House stand as a type for all those in Johnson Canyon.

2. IN LION CANYON

Eagle Nest House.—About three-quarters of a mile below Ruin No. 3 Johnson Canyon is joined from the north by a short and very rugged tributary known locally as Lion Canyon. At the junction the canyons are 500 feet deep. Where the west wall of Lion Canyon rounds off and merges into the north wall of Johnson Canyon the rim rock forms a high arch, which shelters a cave of considerable proportions. Some 60 feet from the bottom a shelf crosses the rear wall of the cave. It is 20 feet wide at the east end, becoming gradually narrower toward the west until it runs out against the perpendicular cliff. Upon the shelf stands Eagle Nest House. No ruin in the Mesa Verde presents a more picturesque and majestic

¹ The Cliff-dwellers of the Mesa Verde, pl. xxxiii and p. 84.

² Nordenskiöld mentions such burials (op. cit., pp. 46, 47).



EAGLE NEST HOUSE FROM MOUTH OF LION CANYON



EAGLE NEST HOUSE FROM FOOT OF CLIFF AT WEST END

appearance than does this building, when on rounding the bold promontory, at the fork of the canyons, it bursts upon the view, perched like the nest of a bird upon the precarious ledge. (Pl. 32.)

Nordenskiöld shows this structure, to which he refers thus: "A figure of one of them is given here (fig. 40) as an example of an inaccessible, or at least almost inaccessible, cliff dwelling."¹

So much was I impressed with the nestlike appearance of the ruin that I named it Eagle Nest House, and so refer to it in all my notes. I have found no mention of it except that made by Nordenskiöld, and I do not believe any name had been previously applied to it.

A hard but not dangerous climb of 400 feet brings one to the base of the cliff below the ruin. Here the observer is impressed with the force of Nordenskiöld's statement, for the ruin seems indeed inaccessible (pl. 33). The cliff overhangs above and below the shelf which supports it, and as the distance is too great to permit

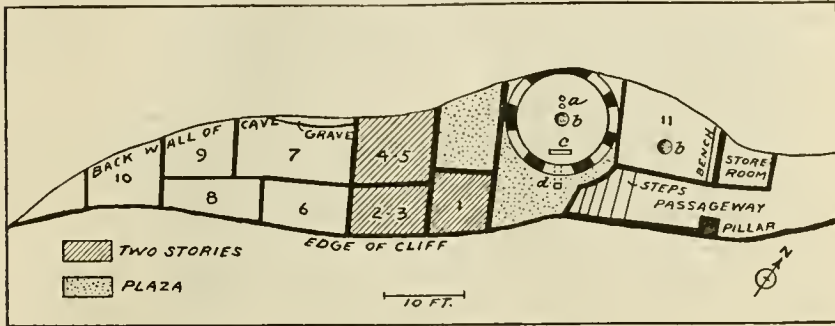


FIG. 1.—Ground plan of Eagle Nest House.

the casting of a rope over one of the protruding beams, direct access is impossible. However, from the east end of the ledge a crevice continues along the cliff for some distance. Near its end the wall below drops back to perpendicular. Here two large poles had been leaned against the cliff and fastened to the stump of a cedar which had grown conveniently at the bottom. I climbed to the end of these, pushing a pole ahead of me until only 3 feet of it overlapped the top of the first pair; after lashing this to them and binding another pole beside it I clambered up these and repeated the process. The top of the fourth pair of poles reached to the ledge. Even after they had been securely fastened at the top it was not until the next day that my workmen could be prevailed upon to attempt the ascent.

The ruin contains 12 rooms and a kiva (fig. 1). At the east end the outside wall of the house widens into a stout pillar built from

¹ Op. cit., p. 69.

the ledge to the rock above. Behind the pillar, inclosed by the outer wall of the house on the left and by the front wall of room 11 on the right, is a passage or entry which ends in a series of steps leading up to what was the level of the kiva roof. This and the space which is dotted in the plan constituted a plaza quite large and commodious in view of the small proportions of the building. It is probable that the roof of room 11 was part of the plaza also. The open side of the court is flanked by a parapet $2\frac{1}{2}$ feet high.

From the plaza a T-shaped doorway leads into room 1, which, being in as perfect a state of preservation as any room in the Mesa Verde, is worthy of description. Its inner dimensions are, parallel to the cliff, 5 feet 6 inches by 6 feet 6 inches in the opposite direction. The height to the ceiling is 5 feet 7 inches. The walls bear successive coats of brown plaster, a new coat having been added, seemingly, when the one beneath became covered with soot and dirt. The roof is supported by two comparatively heavy beams, which run the long way of the room and are set into the walls. Upon these at right angles rest four smaller poles, which are covered by a layer of closely placed split sticks, and above them is a layer of indurated mud.

In the southeast corner is a fire pit 18 inches in diameter. There is a smoke hole in the roof immediately above it, and the walls in that corner are black with smoke. Upon the roof is a flat slab, which was used to close the opening when there was no fire on the hearth.

In the south wall 1 foot 9 inches from the west wall and 2 feet 10 inches above the floor is a neatly plastered niche $3\frac{1}{2}$ inches in diameter and 4 inches deep. In the southwest corner near the top of the south wall is a somewhat larger niche, and there is still another in the north wall 1 foot 7 inches from the northeast corner and 1 foot 6 inches up from the floor.

In the northeast corner a small osier eyelet protruded from the wall through which was looped a long strand of yucca cord. Upon the floor were two bone needles.

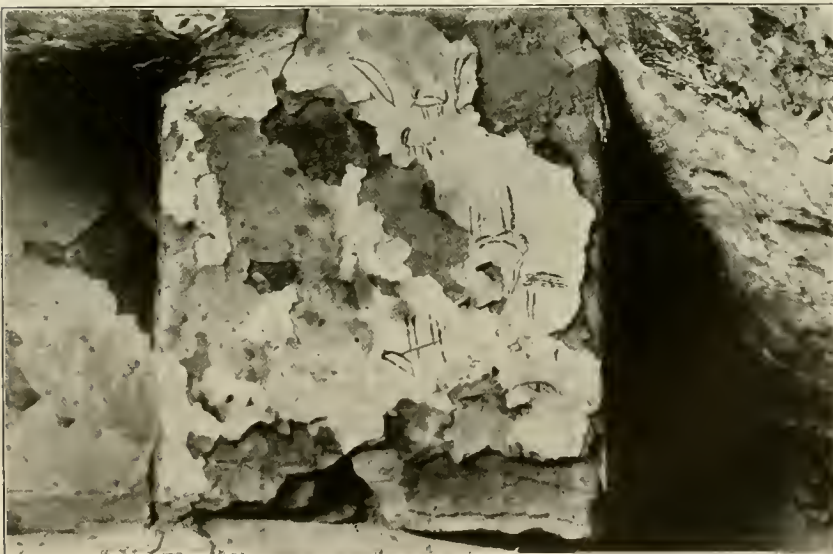
Between the rear wall of room 7 and the cliff were the remains of a burial, which had been disturbed by some agency. A few fragments of matting were with the bones. Rooms 8 and 9 contained grinding stones, fragments of pottery, bits of string, and a few bone implements. Room 11 seems to have been the kitchen. Upon the floor were three sets of millstones, and against the west wall were the remains of at least five coil-ware cooking pots, one of which is shown restored in plate 38, *b*. In the rubbish were the fragments of a baking slab.



a. STONE AX WITH HANDLE OF SKUNK BUSH



b. SECTION OF WALL FROM RUIN NO. 2



c. INCISED TRACINGS ON WALL OF KIVA IN EAGLE NEST HOUSE



a. KIVA IN EAGLE NEST HOUSE SHOWING POTTERY IN SITU



b. KIVA IN EAGLE NEST HOUSE

From the fire pit were taken a hairbrush (pl. 47, *b*) and three sandals. Behind the bench which crosses the east end of the chamber and beneath the southeast corner of the wall was a stone ax (pl. 34, *a*), with its skunk-bush (*Schmaltzia trilobata*) handle still attached.

The small room at the east end was a storehouse. The walls extend to the rock above, and so little light enters through the small door in the east end that the interior is always dark.

It appears that much labor was expended to retain the subterranean character of the kiva. As the presence of the ledge made excavation impossible, the space from the foot of the steps to the west wall of room 1 and back to the cliff was filled with loose rock and débris in order that the roof of the kiva might be on a level with the floors of the surrounding rooms. This does not apply to room 11, but doubtless there was a limit beyond which economy of space would not allow the builders to go, even though in consequence custom had to be somewhat violated.

The kiva was constructed as follows: Except on the north, where the cliff interfered, two walls were built, one within the other. The outer wall was carried up to the desired level of the plaza, while the other was brought up only 2½ feet. Upon it were erected the pedestals which separate the banquettes and serve to support the roof. The outer wall forms a back for the banquettes and functions as a brace for the pedestals. The roof had fallen, but the beams were sufficiently in place to show that it had been constructed in the same manner as the one figured by Dr. Fewkes,¹ so I shall not describe it here. Otherwise the kiva was in an almost perfect state of preservation.

In removing the débris three coil-ware jars (pls. 38, *a*; 40, *c*, *d*) were found against the west wall (pl. 35, *a*). The largest of these was in fragments, but the others were unbroken. With them were parts of two other large pots and toward the center of the room were two small dipper bowls.

The measurements of the kiva are: Height, 8 feet 3 inches; diameter, 12 feet 9 inches; height of floor to banquettes, 2 feet 6 inches; height to top of pedestals, 4 feet 8 inches; width of banquettes above horizontal passage, 4 feet 5 inches; width of other banquettes, 3 feet; depth of banquettes, 11½ inches; width of pedestals, 1 foot 8 inches; distance of deflector from wall, 2 feet 2 inches; height of deflector, 2 feet; length of deflector, 2 feet; thickness of deflector, 8 inches; distance of fire pit from inside of deflector, 2 feet; diameter of fire pit, 1 foot 10 inches; first sipapu, 9 inches from pit; second, 9 inches from first; height of horizontal passage, 1 foot 5 inches; width, 1

¹ Bull., 41, Bur. Amcr. Ethn., pl. 15.

foot 2 inches; bottom, 4 inches above floor; length of horizontal passage, 2 feet 3 inches; depth of ventilator shaft, 8 feet 3 inches.

Two sticks crossed at right angles are set into the masonry just below the top of the air shaft. Resting upon these was a block of stone which closed the opening and came almost flush with the level of the plaza.

In the east wall a few inches above the floor is a niche or "cubby-hole" large enough to contain a fair-sized jar (pl. 35, *b*). An unusual feature is the presence of a small niche in the fireward side of the deflector. I have found no mention of a niche similarly placed in any kiva in the Mesa Verde. The presence of the two sipapu seems to render the kiva rather unusual, as only one other instance of the kind is on record.¹ Somewhat more than a foot to the east of the first sipapu a mano was tightly plastered into the floor.

The floor and the first 17 inches of the walls are plastered with brown clay. Higher up the walls are white and show few evidences of smoke. At the junction of the two zones is a dado like the one figured by Dr. Fewkes from the third story of the square tower in Cliff Palace.² (See pl. 35.) Beneath each banquette three clay-colored triangles extend up into the white, and between the series of large triangles are 29 to 34 smaller figures, such as could be made by a single dab of a brush. Nordenskiöld shows practically the same decoration from a kiva in a ruin in Cliff Canyon and mentions having observed it also in two other ruins.³

There are numerous incised tracings in the white plaster of the upper walls. Those in the surface of a pedestal at the west side are shown in plate 34, *c*. In order to photograph these I traced them with charcoal, taking care not to add anything to the original.

The masonry of Eagle Nest House is in places good, in others mediocre. Some of the walls toward the western end give evidence of hasty or careless construction. However, room 1 is as well built as are the better parts of Cliff Palace. The T-shaped doorway in the east end excites one's admiration. The sides are so smooth and the angles so true that they might well be the work of a modern mason with his chisels and square. It appears that the stones were rubbed smooth after they were put in place.

It is doubtful whether there can be found in any of the subdivisions of Mancos Canyon a better example of a "unit-type" cliff-dwelling than is present by Eagle Nest House.⁴ The alignment

¹ Fewkes *Bull. 41, Bur. Amer. Ethn.*, p. 18.

² *Bull. 51, Bur. Amer. Ethn.*, pl. 13, *a*.

³ *Op. cit.*, p. 16.

⁴ A definition and explanation of this term may be found in Prudden, *Prehistoric Ruins of the San Juan Watershed*, p. 234.

of dwelling rooms, kiva, and refuse heap found in buildings in the open is not preserved here, since by force of necessity the builders were compelled to conform their plans to the site upon which they built. The ruin is a "unit-type" dwelling adapted to a special site.¹ It presents all the essential features: A kiva subterranean in significance if not in fact, and a series of chambers, part of them living rooms, and the rest used for storage purposes. It seems that the ratio here presented is: Living rooms, 11; storeroom, 1; kiva, 1. However, certain of the 11 rooms may have been, and probably were, used as storerooms. From the broken pottery strewn down the slope below, it appears that the refuse was cast over the cliff. It is impossible to say what disposition was made of the dead.

Ruin No. 5.—There are four other ruins in Lion Canyon worthy of mention. Following the base of the rim rock 10 minutes' walk from Eagle Nest House one arrives at the site of Ruin No. 5. This stands under a high but shallow arch, which does not protect all parts of it from the elements. Four rooms exhibiting very good masonry stand at the foot of the cliff, and the presence of large quantities of worked stone, as well as of roof beams and floor beams, scattered down the slope indicates that these rooms represent but a small part of the original building. The one kiva visible is at the northern end of the cave. Rains have beaten in upon it until the walls are denuded of plaster and mortar, and it is more than half full of débris from the walls and roofs of neighboring rooms. The parts which extend above the wreckage indicate that this kiva varies in no particular from the one just described.

Some 20 feet above the lower ruin a ledge extends around the entire arc of the cave. At the south end, where this is slightly broader than at any other part of its length, stands a cluster of 10 or 11 rooms. From these a rough, mortarless wall continues to the north end of the crevice. It is probable that the inhabitants of the lower dwelling intended to add to the house begun at the south end and hoisted the rack of loose stone to the ledge for that purpose.

Ruin No. 6.—This ruin (pl. 36), the largest cliff dwelling in Johnson Canyon or any of its tributaries, is on the same side of the canyon, a few hundred yards above Ruin No. 5. The loose and unstable condition of the detritus upon which it is built and the easy approach to the ruin account for its deplorable condition. It extends along the cliff for more than 200 feet and contains 6 traceable kivas and 31 rectangular rooms. The floor of the cave is very uneven and the walls have been built around and upon detached masses of stone, in many cases on sloping surfaces, with great care and considerable skill. In places they rise to a height of three stories, and marks on

¹ Fewkes, *Bull. 41, Amer. Ethn.*, p. 8.

the cliff above show that originally they were surmounted by a fourth story. The great piles of fallen masonry indicate that the entire building was two or more stories in height and probably contained as many as 80 rooms. Because of the great quantity of accumulated débris, the determination of the features of the building and the relation of its parts was too great a task for the expedition to undertake because of its limited funds.

The deflectors in two of the six kivas examined are constructed of poles 1 to 2 inches in diameter set into the floor and bound together with willows. These are heavily coated with plaster. Nordenskiöld writes as follows:¹

As far as I could ascertain by a hurried investigation, the ruins in Johnson Cañon differ in no essential respect from the other cliff dwellings on the Mesa Verde. Estufas are present in all the larger ruins and preserve in all respects the ordinary type. I observed one single exception which affected only an unimportant detail. In one estufa the low wall . . . consisted not of stone, as is usually the case, but of thick stakes driven into the ground close to each other and fastened at the top with osiers. On the side nearest to the hearth this wooden screen was covered with a thick layer of mortar, probably to protect the timber from the heat.

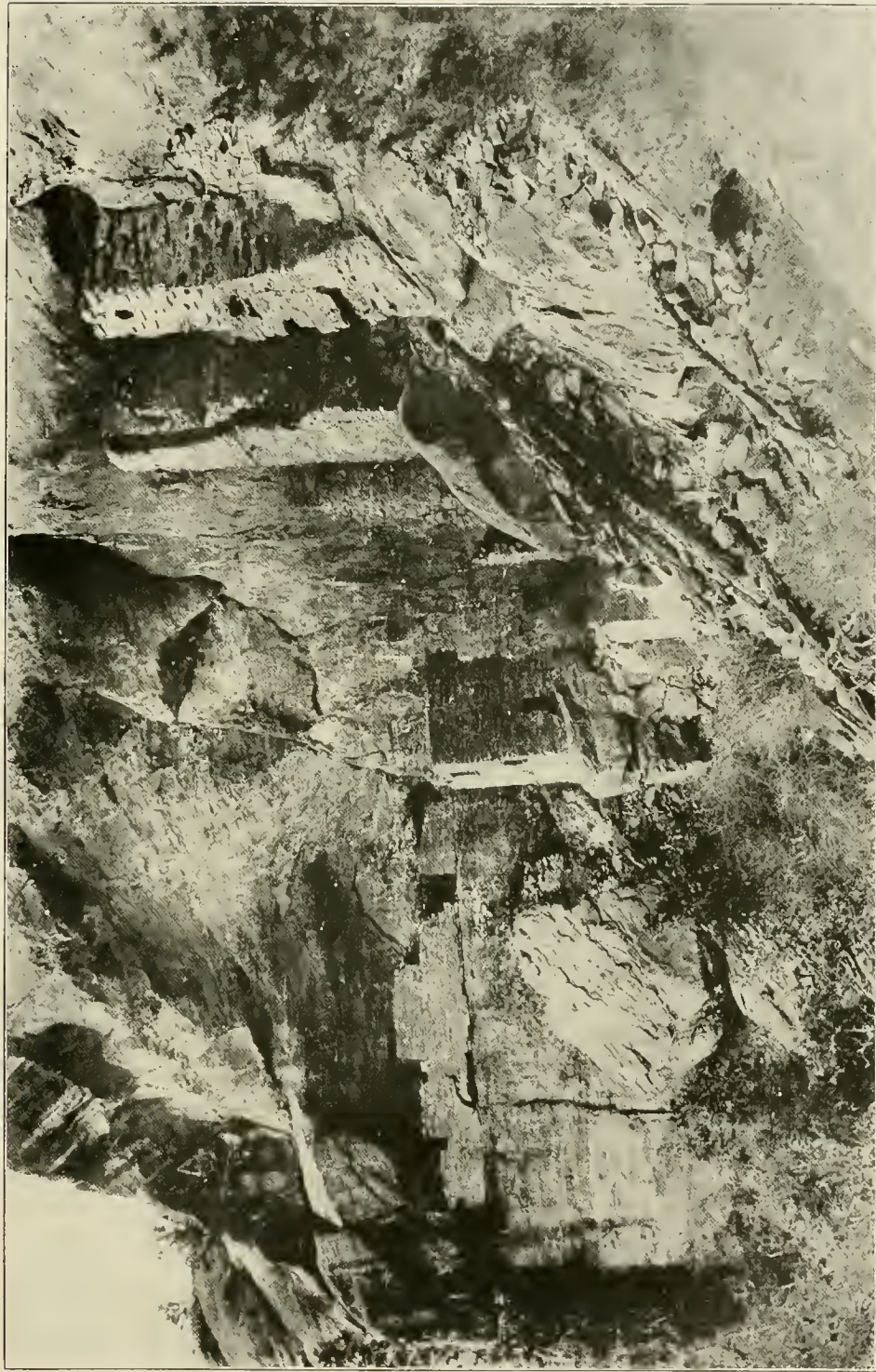
It is probable that Nordenskiöld refers to one of the kivas in this ruin. The deflector in Kiva K, Cliff Palace, is constructed in the same manner.²

The ruin had been thoroughly ransacked by relic hunters many years before it was visited by the author. Although practically every nook and cranny had been pried into, a few good finds were made. At the southern end a kiva is built in between large boulders, which have broken away from the cliff above. On top of one of the pilasters and scattered over the débris beneath were many fragments of a large water jar. The floor was cleared in an effort to find enough sherds to make possible a restoration (pl. 41, *a*). When tapped with a shovel handle the south half of the floor sounded hollow. The plaster when broken through was found to be resting upon a mass of dry grass and twigs. Evidently refuse had been thrown into the south side of the room to bring the floor up to the level necessitated by the presence of a shelving rock on the north. From the trash were recovered six sandals, a quiver, several jar rests, a wooden hoop with a netlike attachment, some fragments of a most excellent basket, and about 2 quarts of corn, the germs of which had not been destroyed by mice or weevils.

A square room was perched on the top of a large boulder west of the kiva. Hidden beneath the floor in the northwest corner were two large coil-ware ollas (pl. 39). Over the tops of both were thin stone slabs and across the neck of one corncobs had been placed, the ends

¹ *Op. cit.*, p. 70.

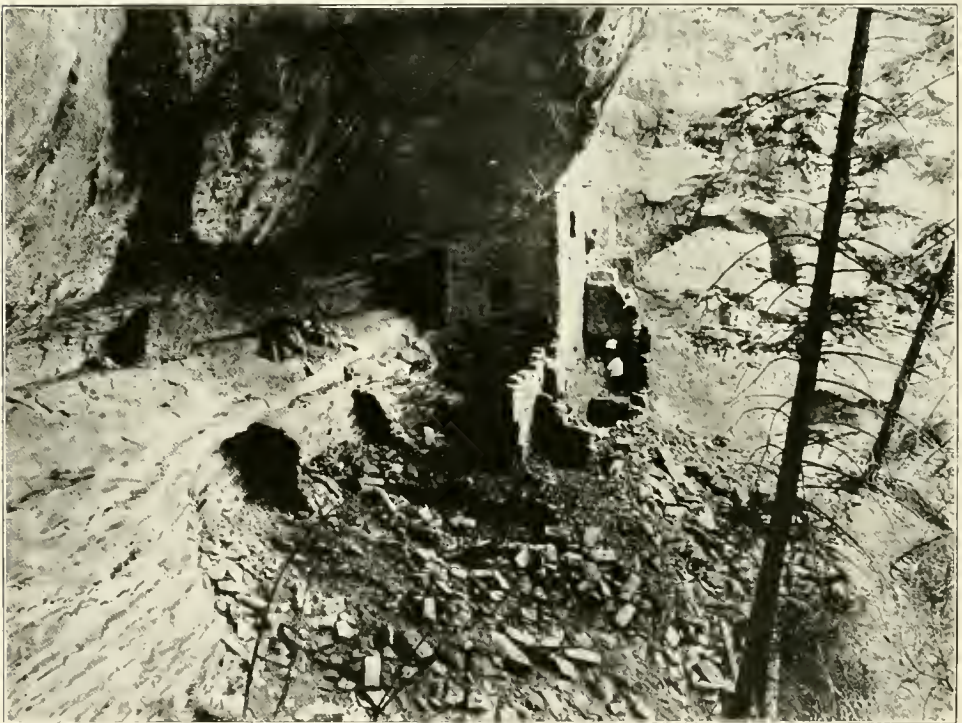
² Fewkes, *Bull. 51, Bur. Amer. Ethn.*, p. 57.



RUIN NO. 6



a



b

RUIN NO. 7



a



b

COIL-WARE OLLAS



a



b

COIL-WARE OLLAS

resting against the flare of the neck. The space above these was filled with clay. Within was about a quart of fine dust not derived from any organic material; hence the reason for sealing the jar is difficult to imagine. The transportation of these large pots down the precipitous cliff and back to camp at Mancos Spring was no small undertaking, as a slight blow would have reduced them to fragments. One was tied in a gunny sack and the other in a shirt, and after much labor they were deposited safe at camp.

Ruin No. 7.—Ruin No. 7 is in a deep pocketlike cavern less than a quarter of a mile up the canyon from the ruin just described. The building consists of four groups of rooms somewhat separated from one another. The first to be reached on approaching the ruin from the south contains six rooms, which have been formed by walling up and partitioning off a deep crevice. The walls, which are intact, reach up to the rock.

Eighty feet farther north is the central and most important part of the ruin. In this are seven rectangular rooms and two kivas. As may be seen in plate 37, *b*, one room is in the second story, the walls reaching to the top of the cave. The floor dividing the stories has fallen. A short distance below the top of the walls four stout beams are set into the masonry, forming a square slightly smaller than the room itself. Some object seems to have been suspended from these beams, but there is nothing to indicate what this may have been.

The kiva which appears in the foreground is nearly filled with debris; this was not excavated. The inclosure between the kiva and the two-storied part of the ruin is of exceptional interest, as it is a rectangular room which in many features resembles a kiva. The corners were filled to a height of about 3 feet with masonry, giving the room an oval instead of a rectangular form. Against the outside of the east wall a buttress of masonry was constructed, into which the horizontal opening extends and through which the ventilator shaft rises. The deflector, a slab of stone, had been broken down, but the fire pit was in the usual position. No sipapu was observed, but as the floor was much broken, it may once have been present. There is no trace of banquettes or pilasters, unless the tops of the triangles of masonry in the corners served as banquettes. The entire south wall and considerable sections of those on the east and west had fallen, so it was impossible to determine all the features of this singular apartment. This is the only instance observed in any of the ruins in Johnson Canyon in which a kiva differed from the one in Eagle Nest House in any but minor details.

The third section of the ruin is about 100 feet farther along the cliff, where the latter has swung eastward toward the main canyon (pl. 37, *a*). It consists of a two-story tower, the cliff forming the rear wall, and a series of three rooms extending eastward in line

with the upper half of the tower. The floor between the stories has been burned away, and the floor of the lower room has been disturbed by relic hunters.

The fourth group of rooms is situated in a large crevice high above sections 1 and 2. Just north of the first cluster of rooms is a considerable space almost closed in front by a huge block of stone. In the dust and refuse which partially fill it several burials were made. Previous visitors had looted the graves, but part of one skeleton remained in the walled pit in which it had been interred, and bones of others were scattered about. It would appear that the first despoilers found many specimens, for large fragments of beautiful pottery, parts of a basket, some bits of feather cloth, and part of a split-willow burial mat were picked up among the trash.¹

In the northwest corner of the oval kiva was the greater part of a splendid water jar, a restoration of which is shown in plate 43.

Upon a sloping rock in front of the first group of chambers a human hand and a few other pictographs are pecked into the smooth surface. These are figured by Nordenskiöld.² Although there are in Johnson Canyon rock surfaces which offered excellent opportunities for the execution of pictographs, these are the only ones observed. In many places there are grooves and depressions caused by the grinding of axes and awls, but pictographs are notably few.

Ruin No. 8.—In a deep cove close-grown with majestic spruces, almost directly across the canyon from Ruin No. 5, Ruin No. 8 is situated. It is small and presents only one feature worthy of mention. The walls of one room are built of poles set upright, bound together with osiers, and thickly coated with adobe plaster. This is a very unusual method of construction in cliff-dwellings of the Mesa Verde, but in northeastern Arizona it is common.³ It is of particular interest here, since, as I shall show later, the walls of the houses on the mesas were built almost entirely in this manner.

If there are any ruins of note in the main gorge below the mouth of Lion Canyon, our party failed to find them.⁴

ARTIFACTS

POTTERY

Structure.—The pottery from Johnson Canyon is of three types—coil ware, plain smooth ware, and decorated smooth ware. It

¹ One of the ruins in this canyon was the site of the phenomenal find made by the Wetherills and described by Nordenskiöld, *op. cit.*, pp. 46-47.

² *Ibid.*, pl. xx, 2.

³ Fewkes, *Bull. 50, Bur. Amer. Ethn.*, p. 14.

⁴ In September, 1915, Mr. N. C. Nelson and the writer found a ruin containing over 40 rooms and 3 kivas at the head of a long but shallow canyon parallel to and west of Lion Canyon.

appears that all types were constructed by the coiling process, the resulting undulations having been obliterated, except upon the exteriors of vessels of the first type.

Coil Ware.—The seven coil-ware jars shown in plates 38, 39, and 40, varying in height from 6 to 15 inches, constitute an excellent series. The typical shape is marked by a globular base tapering toward the top and surmounted by a recurved lip upon which the coils have been erased. It is interesting to note that the coil-ware vases never have the concave bottoms found almost without exception in the large black-and-white vessels of the Mesa Verde area. Although decorations other than the crenulations due to structure are seldom found, coiled fillets of clay applied over the ridges appear in plates 38, *b*, and 39, *b*.

Plain Smooth Ware.—The plain smooth ware is illustrated by plate 40, *a*. I was at a loss to know what to call this vessel. It is a thick-walled, friable, shallow bowl, upon the interior of which is a layer of indurated ashes growing thicker from the rim to the bottom of the dish. It calls to mind baskets coated with clay which were used by some southwestern tribes as roasters. The material to be parched was placed in the dish together with live coals, after which the receptacle was rotated and the ashes blown out with the breath. In the ruins of the Pajarito Plateau are found similar objects, which served as molds for the bases of large ollas.

Decorated Smooth Ware.—Decorated smooth ware is the dominant type of pottery and offers the greatest variety of shapes. In many cases a wash of light-colored earth was applied over the darker paste of the vessel. By rubbing with a smooth stone or like object an extremely fine, often glossy, surface was produced. Upon it designs were traced, which were made permanent by firing.

Bowls comprise the most typical form, of which those appearing in plate 42, *b*, *c*, are characteristic examples. The rims are not tapering or recurved.

The large asymmetrical vase shown in plate 41, *b*, *c*, is a unique specimen. The mouth is oval instead of round and the base is deeply concave. Just beneath the rim (pl. 41, *b*) the coils are still apparent. The surface is not covered with a slip.

In plate 43 is shown a water jar with pinkish-yellow and very friable paste. The slip is as white as chalk and superbly polished. The base of this vessel, as well as that of the other large water jar (pl. 41, *a*), is concave. It would be difficult to find a more beautiful example of the ceramic art of the Mesa Verde.

Red Pottery.—Red pottery is extremely rare in the cliff-dwellings of the Mesa Verde. From a few fragments recovered from Ruin

No. 3, most of which fortunately fitted together, I restored the bowl shown in plate 42, *a*. The paste is slate-gray in the center, becoming yellow toward the surface. The slip is a dark brilliant red. The design, traced in black, is a combination of the rain-cloud and bird patterns, or at least of the symbols which are so interpreted on pottery from ruins known to be closely connected with recent Pueblo culture.

These deep-red bowls with incurving sides and slightly flaring rims seem to be of a type widely distributed over the Southwest. Hough¹ figures one from Blue River, Arizona, identical in shape, and bearing a design resembling that upon the one here shown.² Nordenskiöld³ recovered the fragments of another from the débris in Spring House, and the author found a segment of one in a refuse heap near Farmington, New Mexico. It is obvious that red vessels were highly prized, and it is probable that they were used for ceremonial purposes, a fact which would tend to make them still more precious. For such reasons they would be carried in trade far beyond the boundaries of the ceramic area to which they rightfully pertain.

Pottery Mending.—The high regard in which the ancients of Johnson Canyon held their pottery is shown by the fact that several of the vessels are carefully mended. The olla figured in plate 39, *a*, has a long crack across its bottom. Along this opposite sets of holes were drilled and yucca thongs were inserted to bind the seam together, some of these still being in place. In the bottom of the pot shown in plate 40, *d*, are several small holes stopped with a mixture of pitch and dust. Plate 69, *a*, shows a bowl mended with yucca ties.

Pottery Designs.—The collection does not contain a sufficient series of designs to warrant much generalization on the symbols used in decoration. To judge from the numerous fragments, the absence of zoic forms and the predominance of geometric devices, consisting principally of terraced figures, sinistral and dextral volutes, and combinations based on the triangle, characterize the painted elements.

STONE IMPLEMENTS

Grinding Stones.—Some of the metates are boulders from the river gravel, rubbed smooth or slightly concave on one side, and others are blocks of hard sandstone. The manos are usually of igneous

¹ Culture of the Ancient Pueblos of the Upper Gila River Region, pl. 10.

² The writer has since found a brown-red bowl of the same shape, and having the same decoration, with an exterior ornamentation of white, at Aztec, New Mexico.

³ Op. cit., pl. xxxiii.



a



b



c



d



e

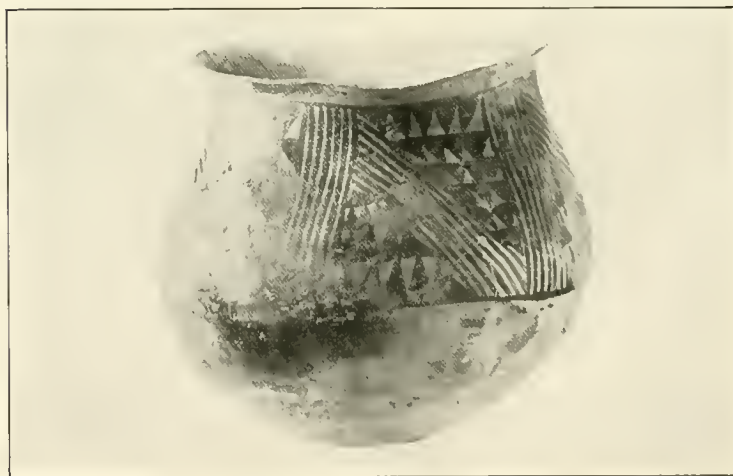
a. PLATE. *b*. WATER BOTTLE. *c, d, e*. COIL-WARE OLLAS



a



b

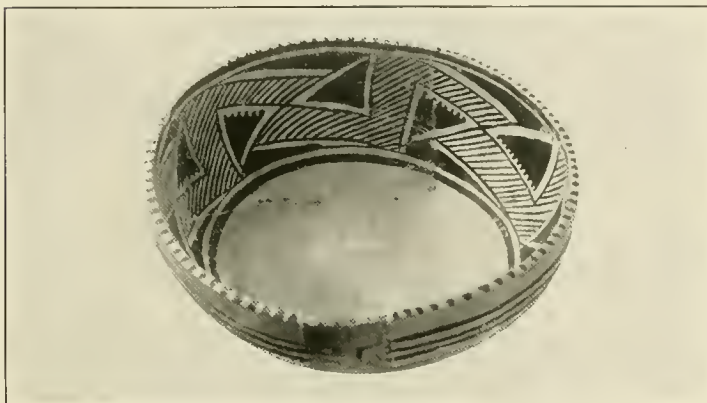


c

BLACK-AND-WHITE VASES



a



b



c

a. BLACK-AND-RED BOWL.
b, c. BLACK-AND-WHITE BOWLS



BLACK-AND-WHITE WATER JAR

rock, also obtained from the gravel in the stream beds. Corn was reduced by being rubbed between the two stones. No true milling rooms, in which the metates are arranged in bins, as are described by Dr. Fewkes,¹ were found in Johnson Canyon. It is probable, however, that these once existed, but were rendered undistinguishable by those who sacked the ruins in an indiscriminating search for relics.

Axes.—The axes are small and well sharpened. The one shown in plate 34, *a*, illustrates the characteristic method of hafting. The grooves are not bounded by ridges or ferrules. The beveled edges were secured by long-continued rubbing upon the blocks and ledges of sandstone about the caves, in many of which are considerable depressions worn in this way. No hammers or mauls were collected.

Potlids and Griddles.—Round stone slabs which functioned as lids for jars were found in considerable numbers. The two ollas shown in plate 39 had covers of this type when found.

In room 11 of Eagle Nest House were the fragments of a thin rectangular slab, polished as smooth as glass on one side, and burned to a glossy black. It seems evident that it was a griddle upon which meal cakes were fried. The Zuñi use, or did use until very recently, a similar stone for this purpose, the interesting preparation of which is described by Mrs. Stevenson.²

BONE IMPLEMENTS

The collection of bone implements consists of needles, scrapers, and a knife (pl. 45). The pointed instruments were made from the bones of birds and mammals. These were sharpened in the same manner as were the axes. The scrapers are parts of large mammal bones, the trochanters having served as handles. In each case the shaft of the bone was cut across diagonally, and the edge thus left was worn smooth. The knife is a flat piece of bone with sharpened point and edges. Probably it was set in a wooden handle.

WOODEN OBJECTS

The articles of wood are shown in plate 44. *A* represents an object of unknown use similar to the one Dr. Fewkes calls a billet.³ One of these was found in each of the kivas excavated. *B* is a hoop of willow bound together with yucca, which may have been used in the hoop-and-pole game.⁴ *C* is a digging stick of extremely heavy wood. The blunt end is shaped to afford a comfortable grip for the

¹ Bull. 51, Bur. Amer. Ethn., p. 37.

² The Zuñi Indians, pp. 361-362.

³ Bull. 51, Bur. Amer. Ethn., p. 73.

⁴ Bull. 41, Bur. Amer. Ethn., p. 50.

hand, and the blade is beveled to an edge. *D* and *c* are of unknown function. They are flat chips which have a curved edge, apparently the result of rubbing. *F* is a stick resembling some of the pahos figured by Dr. Hough.¹ *G* and *g'* are wooden objects whose use is undetermined. *H* is the head of a reed arrow. The notch for the cord and the sinew holding the stubs of the feathers are easily distinguishable. *I* is the tip of a similar arrow. A hard wooden point has been set into the hollow reed and securely bound with sinew. *J* is a stick with neatly cut ends, the use of which is entirely problematical. The other sticks appear to have been arrows. The notch for the cord shows in every case, but often the opposite ends are misshapen and out of plumb, so that they would have been practically useless as arrows.

FIRE STICKS

A fire-making set is shown in plate 47, *a*. The bottom stick is of light, punky wood. Upon it the long stick of hardwood was held upright and rotated, in time wearing out the conical pits which show in the cut. The ignited dust ran out through a groove in the side of the pit onto a small bundle of cedar bark or corn husks, either of which could easily be fanned into a blaze.

QUIVER

The object represented plate 46, *b*, is unlike anything I have seen described from the Mesa Verde. It is a long, cylindrical basket made of reeds, probably *Phragmites phragmites*. Interlaced strips of yucca hold it together, and the bottom is closed with a wad of corn husks. Although it is known that most of the quivers used by the cliff-dwellers were made of skin, it is difficult to assign any other function to the object in question.

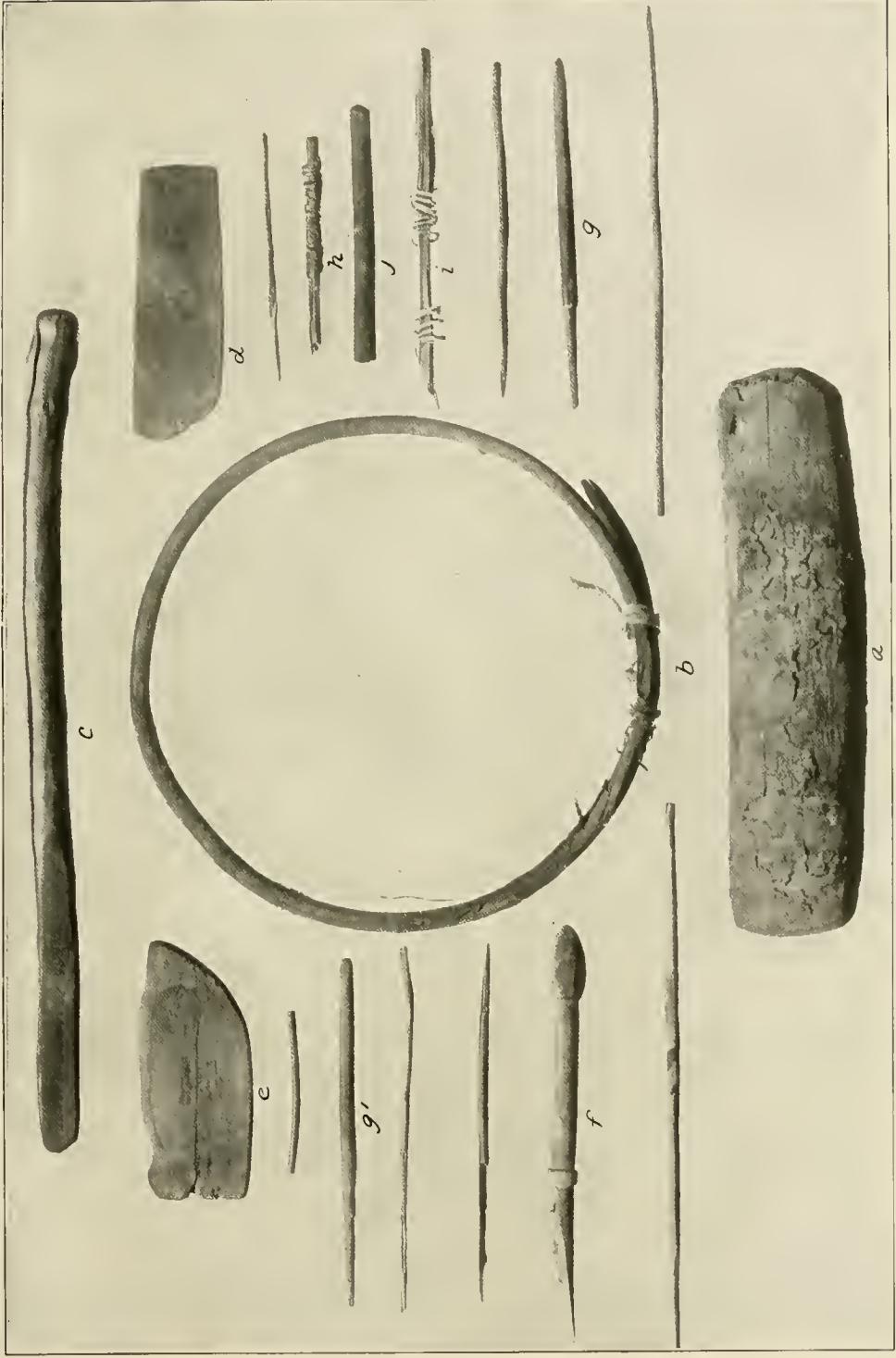
HAIRBRUSH

A hairbrush made of the needles of the rock pine (*Pinus scopulorum*) was found in Eagle Nest House (pl. 47, *b*). It is bound about the middle with a three-strand cord of twisted human hair, and still contains a liberal quantity of black and dark-brown combings.

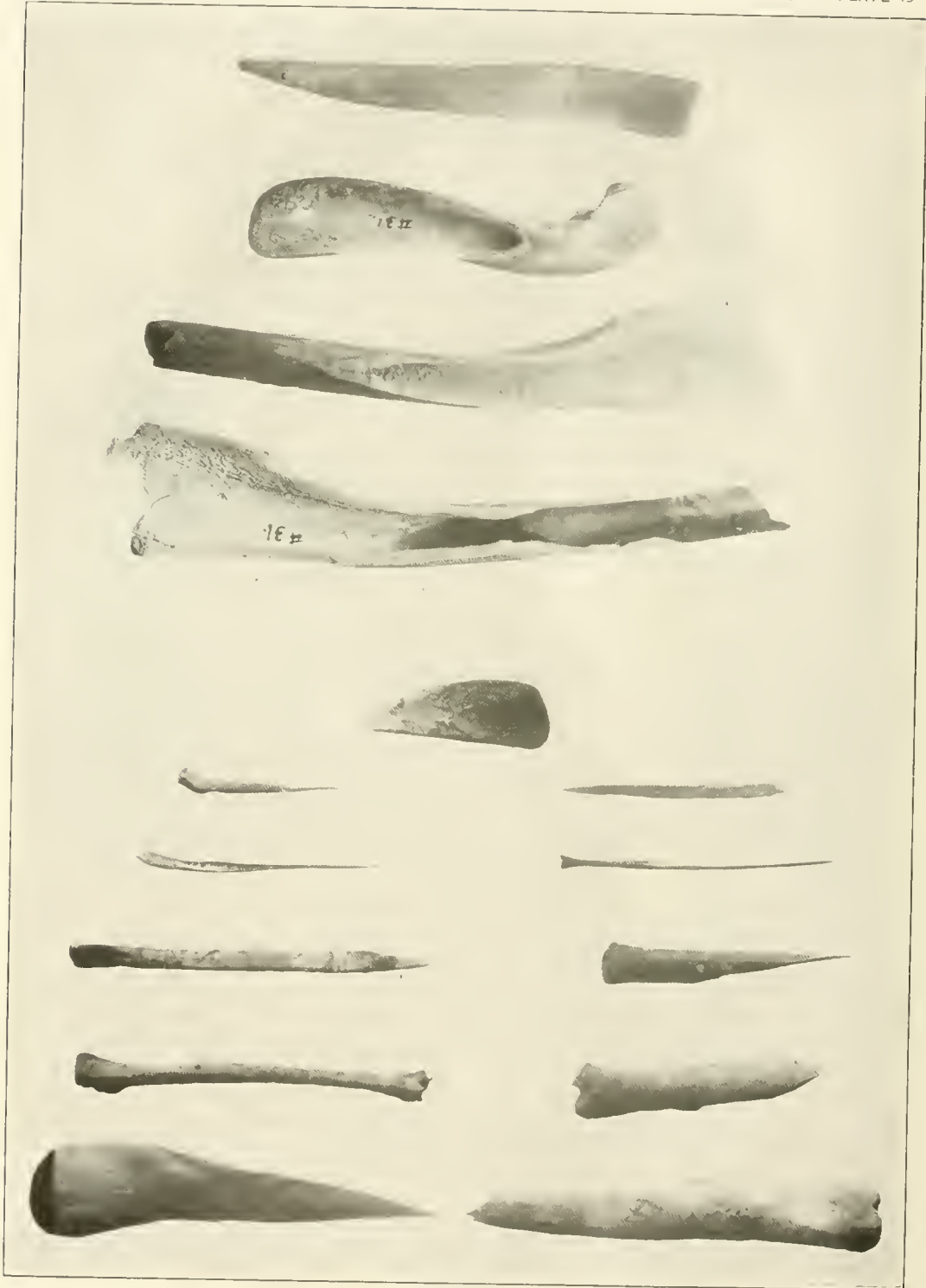
POT RESTS

In plate 48 are shown five hoops which were used as rests for the bases of large jars. They are made of willow, cedar bark, corn husks, some of shredded yucca leaves, bound together with strips of yucca.

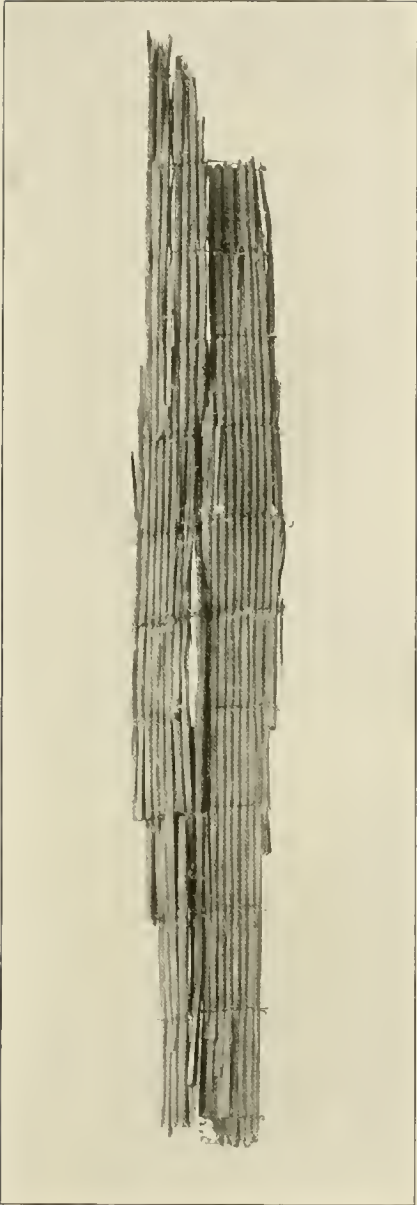
¹ Op. cit., pl. 20.



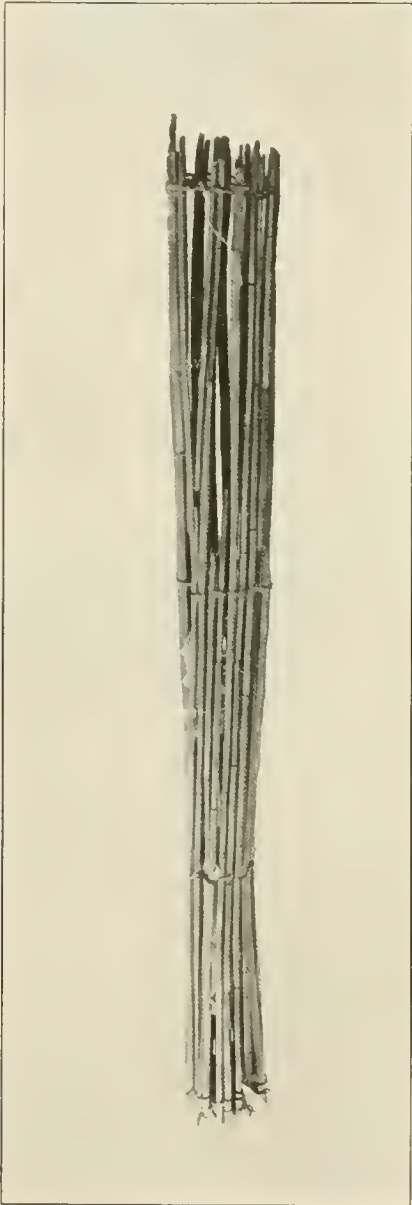
WOODEN OBJECTS



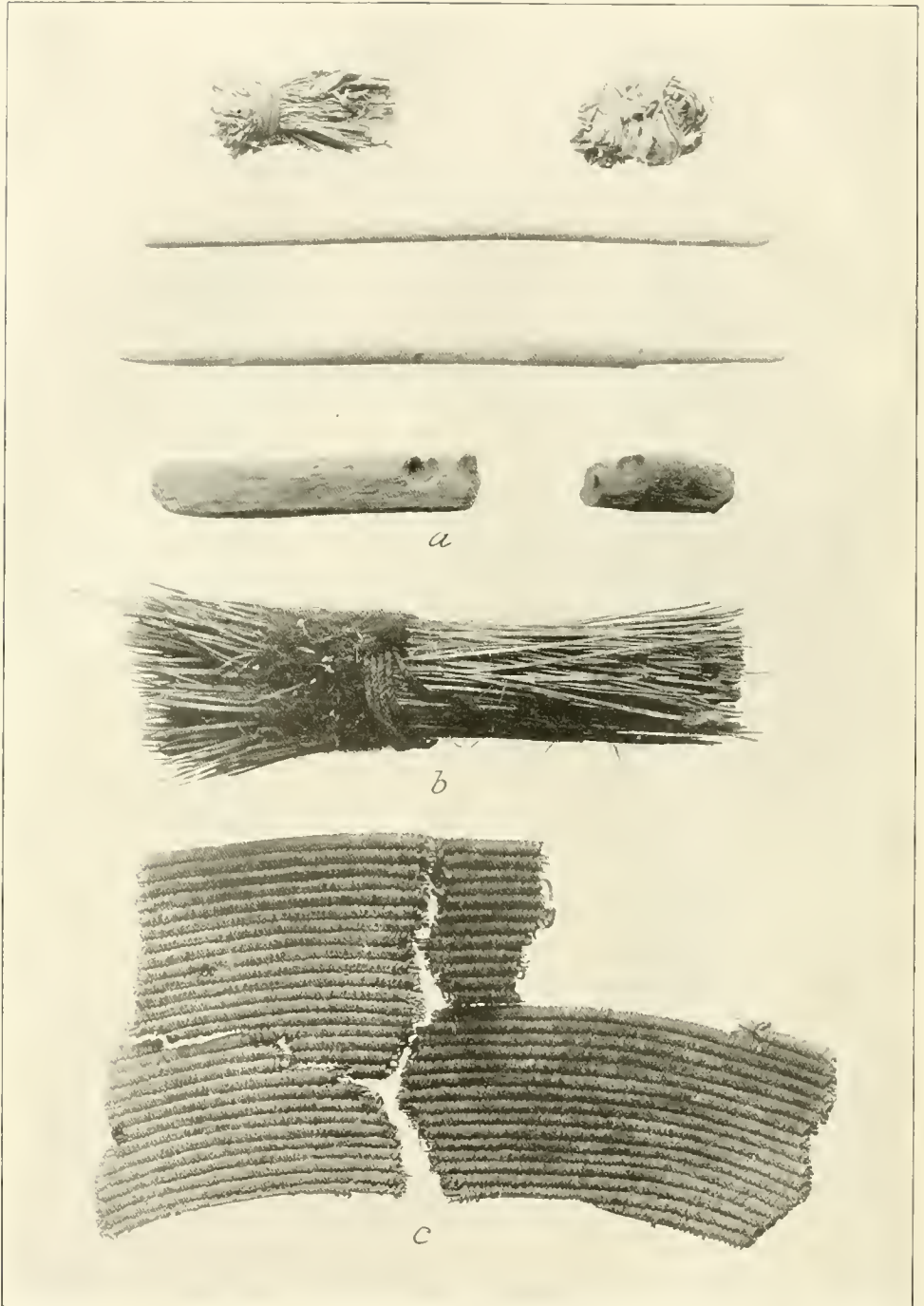
BONE IMPLEMENTS



a. RUSH MATTING



b. REED QUIVER



a. FIRE STICKS AND TINDER. b. HAIRBRUSH OF PINE NEEDLES. c. FRAGMENT OF A BASKET

MATTING

The collection contains several pieces of rush matting, the largest of which are shown in plate 49, *b*. The mats are beautifully plaited and the ends of the strands are turned under and back braided to form a heavy, durable border.

Matting of another variety was made by lacing the stems of rushes together with fine yucca cords. The resulting fabric is much thicker than the plaited mats, and can easily be made into a roll. The fragment shown in plate 46, *a*, was found beneath a shelving rock in Ruin No. 3, and appears to have been part of the wrapping of a body.

FEATHER CLOTH

Feather-cloth jackets seem to have been much worn by the people of Johnson Canyon, to judge from the fragments which are strewn about through the débris (pl. 49, *a*). The down of feathers was stripped from the quills, then wrapped and bound around yucca cords, which were woven into a thick and warm, though rather cumbersome, garment. From a disturbed grave in Ruin No. 7 was taken part of a moccasin made from the same material. The weaving of the jackets and the manner in which they were worn are described in detail and figured by Dr. Hough.¹

CLOTH

Although no large pieces were recovered, a shred of finely woven cotton cloth found in Ruin No. 3 indicates that this textile was not unknown to the inhabitants of Johnson Canyon.

BASKETS

Plate 47, *c*, shows part of an extremely well-made basket, which resembles in every particular the beautiful specimens figured by Nordenskiöld. An entire basket of this type when impregnated with moisture would hold water as well as an ordinary porous jar.

SANDALS

The sandals consist without exception of a flat sole of plaited yucca with a more or less complex lacing of thongs to pass over the foot. Some of them are excellently made, the closely woven strands being one-sixteenth to one-twelfth of an inch across (pl. 51, *a*), while others are loosely constructed of rough strips of yucca as much

¹ Op. cit., p. 72, figs. 149-150.

as five-eighths of an inch in breadth (pl. 50, *b*). Several of them have a cord looped across near the back through which the heel of the wearer protruded. From the top of this a thong passed around the ankle. On the front end are two or more loops, which passed over certain of the toes.

In one specimen (pl. 50, *a*) the cords are numerous, inclosing the foot like a meshwork slipper drawn together over the instep. Inside the lacing of one sandal corn husks have been arranged to form a covering for the foot comparable to the upper of a shoe. All the sandals show considerable wear, and several have been skillfully patched in the regions of the heel and the ball of the big toe.

Of 20 specimens 8 show the offset on one side near the front described by Dr. Fewkes from a sandal found in Cliff Palace.¹

MISCELLANEOUS ARTICLES

Plate 52. *A* is the neck of a basket of rather unusual weave and shape. *B* is a wooden hoop with a netlike attachment of yucca. It resembles the guards sometimes woven about coil-ware jars, but it is rather small to have been put to such a use. *C* is a torch of cedar bark wrapped with strips of yucca. One end has been consumed.

Plate 53. *A* is a bundle of feathers, presumably a prayer plume, and *b* a section of rush matting. *C* consists of the stubs of a number of ears of corn threaded upon a yucca cord. The Pueblos still string ears of green corn in this fashion and hang them up to dry. When an ear is wanted for use it is broken off, and when all have been consumed the string with the stubs attached is thrown away. *D* is a bundle of corn husks of unknown use. Such bundles are very common.

Plates 54, 55. Plate 54, *a*, is a small ball of finely divided yucca with a minute quantity of yellow earth in the center; 54, *b*, is a twist of yucca; 54, *c*, and 55, *c*, are chains of yucca; 54, *d*, *e*, and 55, *b*, are twists of the same material; 54, *f*, is a bundle of herbs which thus far I have not been able to identify; 55, *a*, is a portion of a plaited band done in two colors; 55, *d*, is a loop of split willow tied across with yucca; 55, *e*, is a fragment of a coarse rush mat; 55, *f*, is a number of corncobs tied together with yucca. The use of none of these is known.

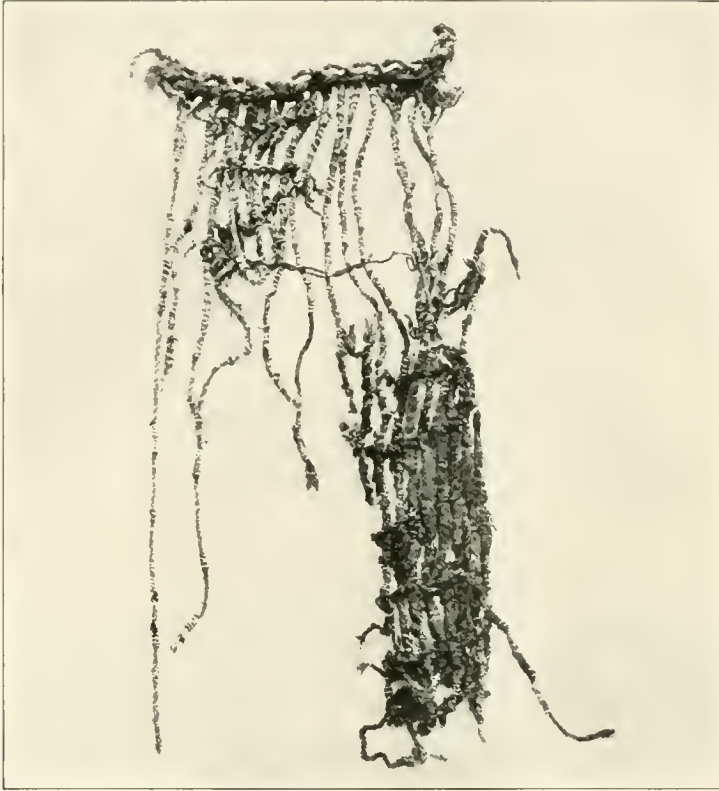
SUMMARY

From the foregoing discussion it appears that there existed in Johnson Canyon a typical example of the rather restricted culture

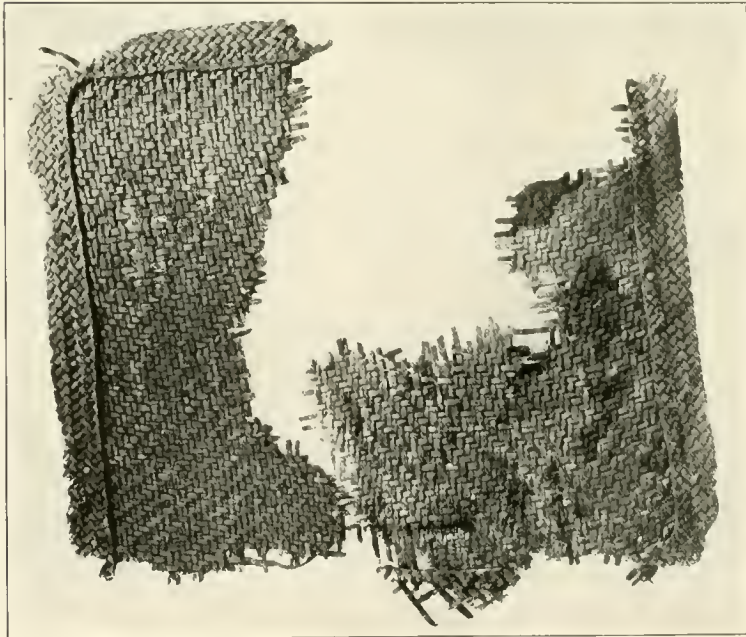
¹ Bull. 51, Bur. Amer. Ethn., pp. 72-73.



JAR RESTS



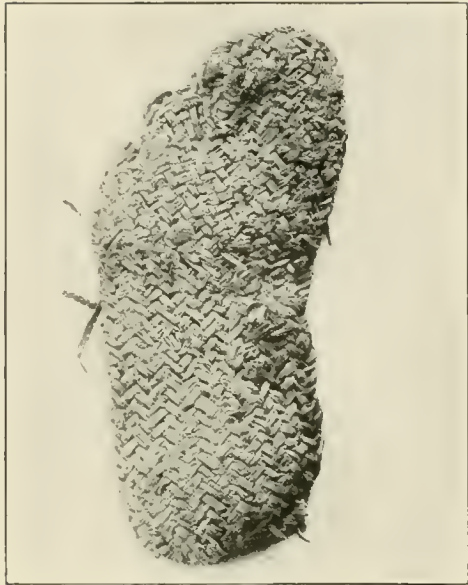
a. FEATHER CLOTH



b. MATTING



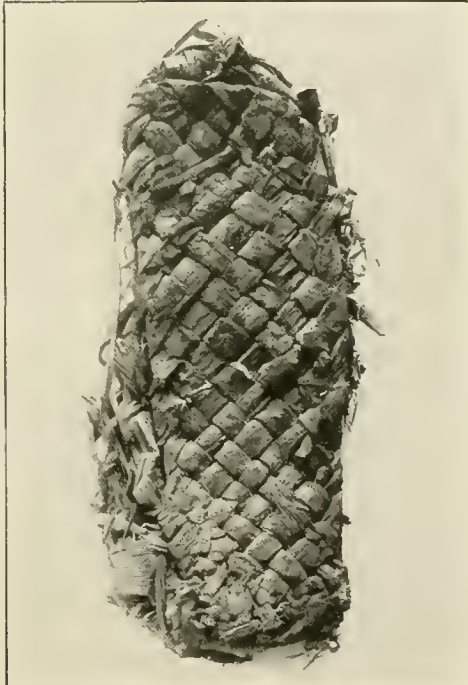
a



a

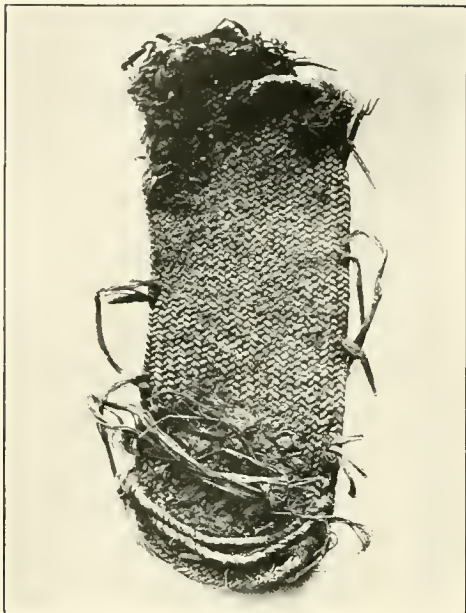


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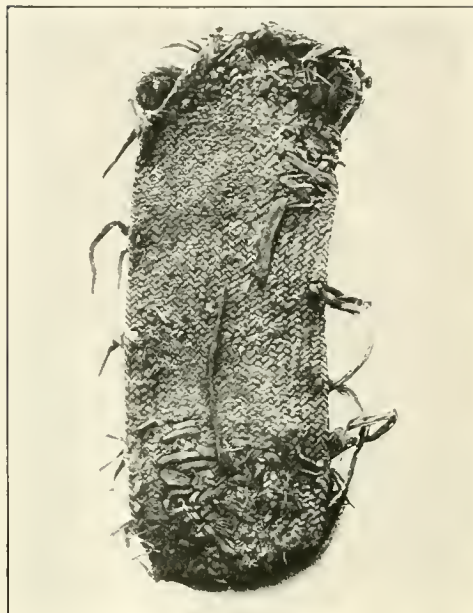


b

SANDALS



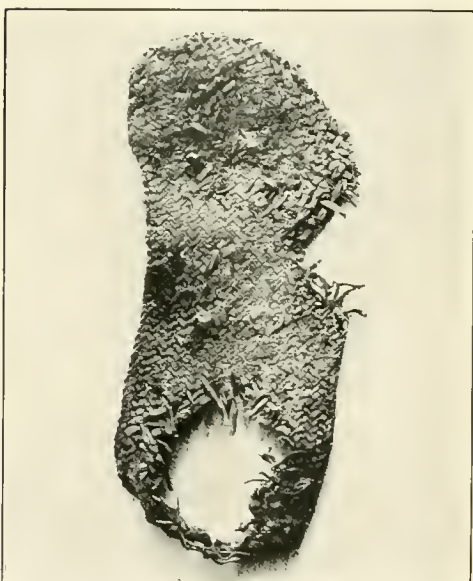
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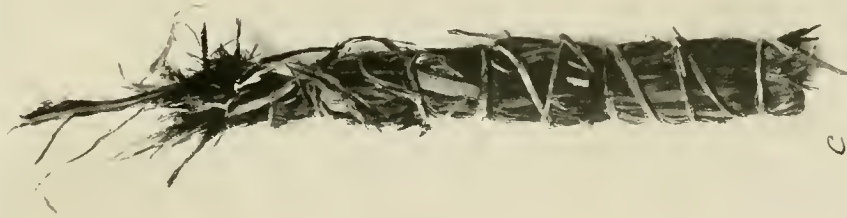
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b



b



c

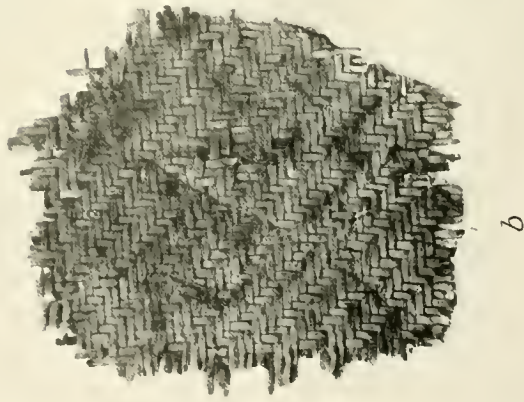


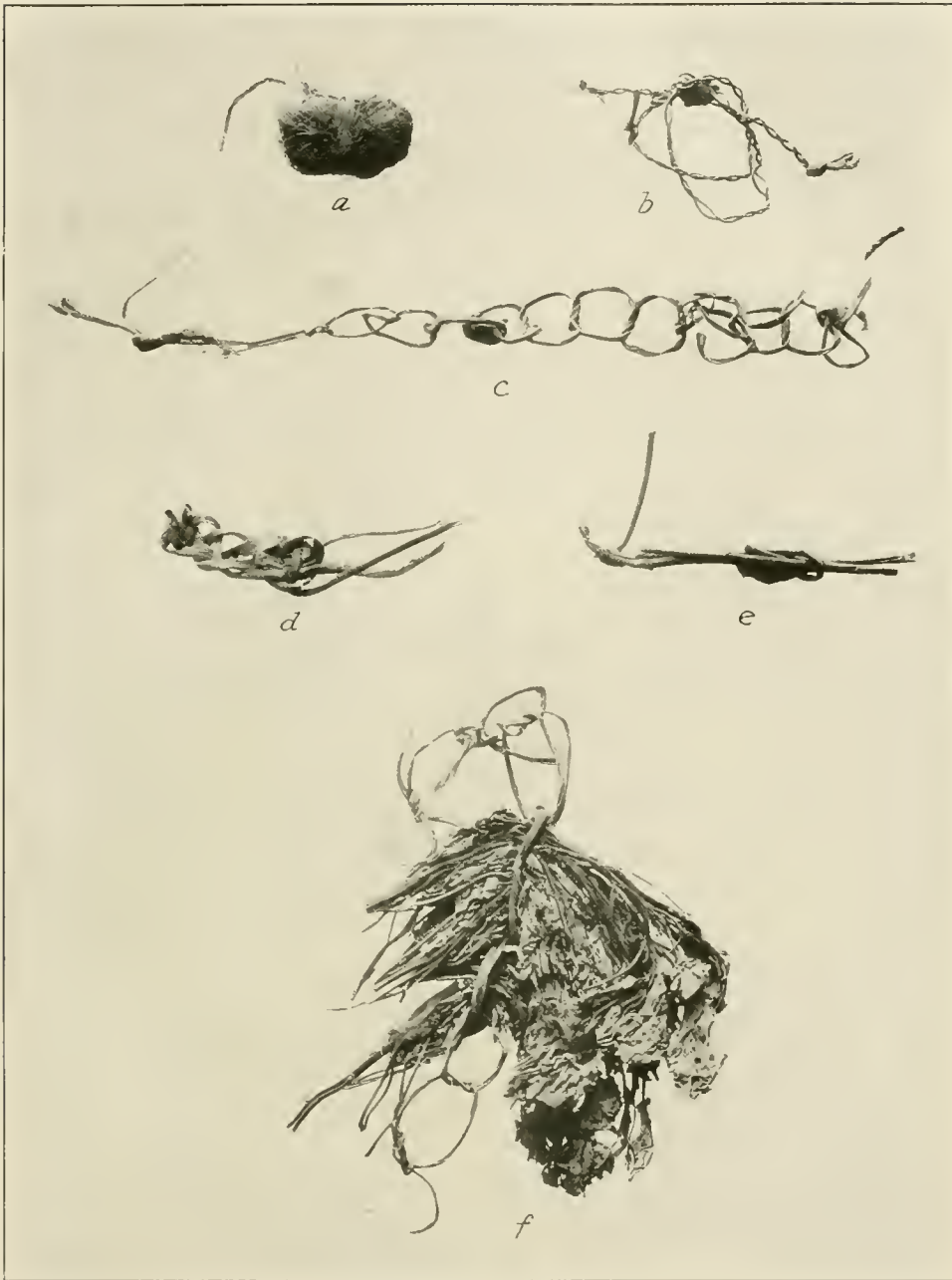
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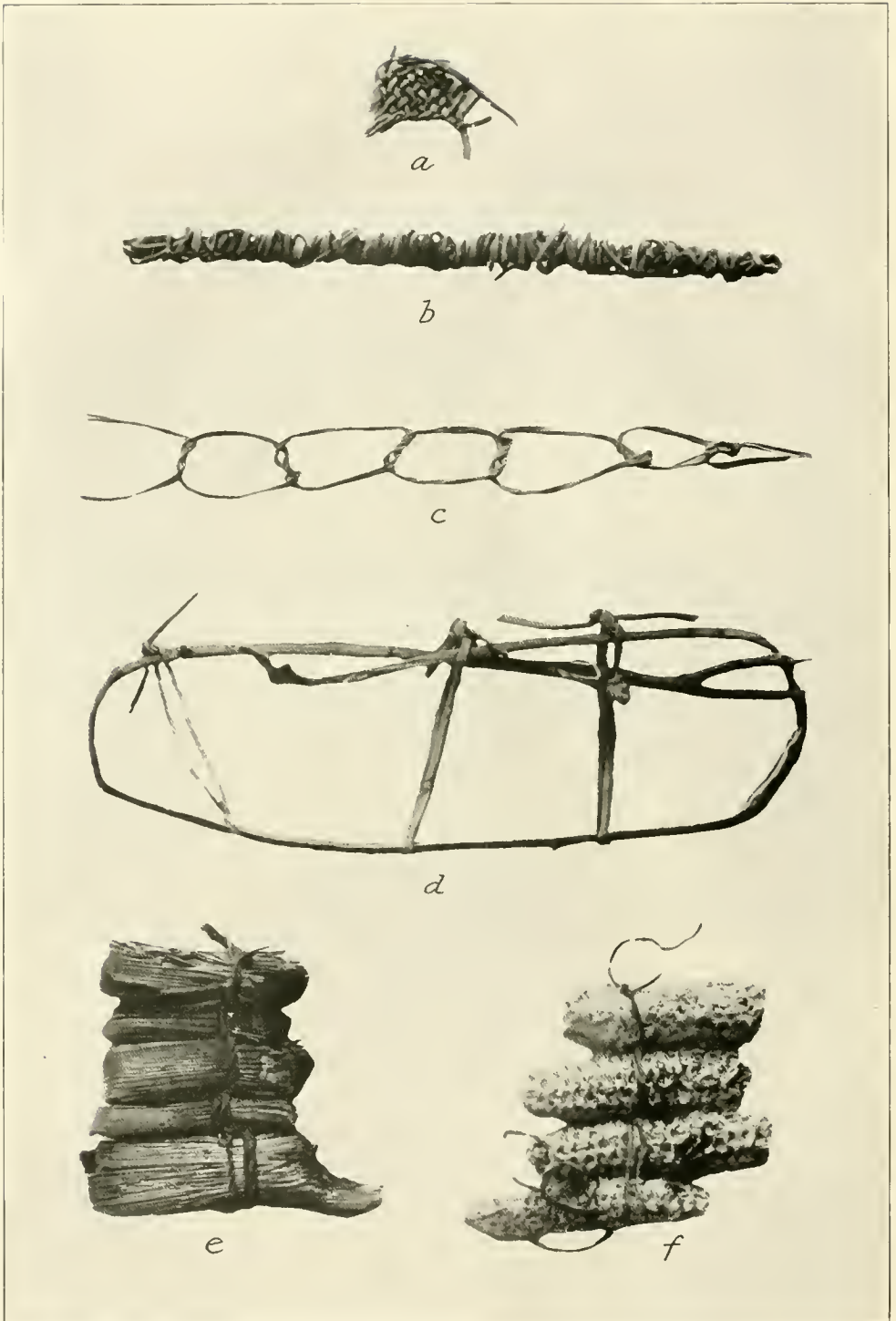
a

MISCELLANEOUS OBJECTS





a. BALL OF YUCCA. *b.* A TWIST OF YUCCA. *c.* CHAIN OF YUCCA. *d, e.* TWISTS OF YUCCA. *f.* BUNDLE OF HERBS



a. PORTION OF PLAITED BAND IN TWO COLORS. *b.* TWIST OF YUCCA. *c.* CHAIN OF YUCCA.
d. LOOP OF SPLIT WILLOW TIED WITH YUCCA. *e.* FRAGMENT OF COARSE RUSH MAT.
f. CORNCOBS TIED TOGETHER WITH YUCCA.

characteristic of the Mesa Verde region. The materials for building, weaving, and pottery making were procured in the immediate vicinity, and the fruits of wild trees and plants, as well as the cultivated crops, came with few exceptions from the near-by canyons and mesas. The general characters of the masonry, the structural features of the kivas and secular rooms, the methods of burial, and the pottery and other artifacts indicate that the cliff-dwellings in this canyon southeast of the Mancos River are culturally and approximately chronologically contemporaneous with the large ruins of the Mesa Verde National Park.

II. RUINS ON THE MESAS

For a number of years it has been a growing conviction with the author that the failure to investigate the badly weathered and apparently very ancient ruins which dot the mesas of northwestern New Mexico and southwestern Colorado has left unworked one of the richest mines of information concerning the prehistoric inhabitants of the Southwest. Naturally the first scientific explorations have centered about the large and more spectacular ruins, as Cliff Palace and Spruce-tree House, but these most important sites should not crowd from the mind of the archeologist the other types of remains, which may contain data of the utmost importance in establishing the chronology of the various types of ruins, the trend of migration of the ancient people, and the relationships among the inhabitants of different parts of the country. Such considerations impelled me to begin excavations among the inconspicuous ruins which are numerous in the upper La Plata Valley and upon the mesas westward to Mancos Canyon. These have been entirely overlooked by the relic hunters who have worked such havoc among the aboriginal remains in neighboring localities.

No earlier writer mentions the ruins in the upper La Plata Valley. The first of which Holmes¹ speaks are on the bench between the La Plata River and McDermott Arroyo, well below the New Mexico line, and Prudden² located but one ruin north of the State line. The Geological Survey's maps of Soda Canyon and Red Mesa quadrangles locate many of them, but these maps are far from complete in this respect.

BUILDINGS AND BURIAL MOUNDS

1. RUINS NEAR MANCOS SPRING

Ruin No. 9.—For convenience I shall begin with the remains crowning the high divide northwest of Mancos Spring. Upon the crest of a knoll, which, if cleared of timber, would command a view of the

¹ *Tenth Ann. Rept. of the Hayden Survey for 1876*, p. 387.

² *Op. cit.*, p. 255.



a



b

RUIN NO. 9

country for a considerable distance in every direction, are the remains of a rectangular building roughly 195 feet from east to west by 90 feet from north to south (pl. 56, *b*). A mound, in no part more than 4 feet high, marks the site. The dense surrounding growth of piñon and cedar has encroached somewhat upon the ruin, and a few large trees have gained a foothold in its midst. The areas not covered by trees are heavily overgrown with sagebrush. No masonry appeared at the surface, although in several quarters rows of stone slabs protruded a few inches from the soil, outlining square or rectangular inclosures.

Where a burrowing animal had brought up considerable quantities of charcoal, near the western end, excavations were begun, and an area 20 by 30 feet was dug over. From 18 to 30 inches below the surface hard, smooth floors of burned mud were encountered. In many places the bounding walls of the rooms were hard to locate, the transition from one chamber to another being indicated by a change in the floor level. Such walls as were unmistakable were of two types. The first consisted of clay plastered directly upon the walls of the pits, which had been excavated slightly into the natural soil; the second, of dividing walls composed of thin slabs of stone set on edge, some of a single row, others of two or more rows parallel to each other and crossed at intervals by other flat stones set at right angles to them. The interstices were filled with mud, and apparently the same material had been applied as plaster to the exposed faces of the slabs.

The one room of which all four sides were distinguishable was $4\frac{1}{2}$ by $5\frac{1}{2}$ feet. From the amount of charcoal present in the soil and the flimsy character of the bases of the walls it appeared that the upper parts must have been built of wood, but the manner of construction was not discovered at this time.

One small extremely crude pot (pl. 66, *c*) was the only object of interest taken from the excavations at this end of the building.

The northeast corner of the ruin was also opened. Here were encountered the bases of several walls built of small sandstone spalls, which at one time had been held together with adobe mud. These walls, which were very poorly constructed, bounded rooms about 6 feet square. The relatively small quantity of fallen stone indicated that, as at the other end of the building, the upper walls had been constructed of other material. Beneath the walls were about 2 feet of soil filled with pottery and charcoal, showing that the site was occupied long before the stone walls were built. In a corner of one of the rooms was the water bottle shown in plate 70, *b*. Because of the dilapidated condition of the ruin, operations in the building itself were abandoned.

A short distance south of the ruin stands a nearly circular burial and refuse mound 70 feet in diameter and 5 feet high in the central part (pl. 56, *a*). Many trees were growing upon it, although it was less densely timbered than the surrounding country. No sagebrush had taken root in the black soil, but in it chapparal flourished, and it is noticeable that ruins and refuse mounds are the only places in the entire region where this thorny bush abounds. The surface

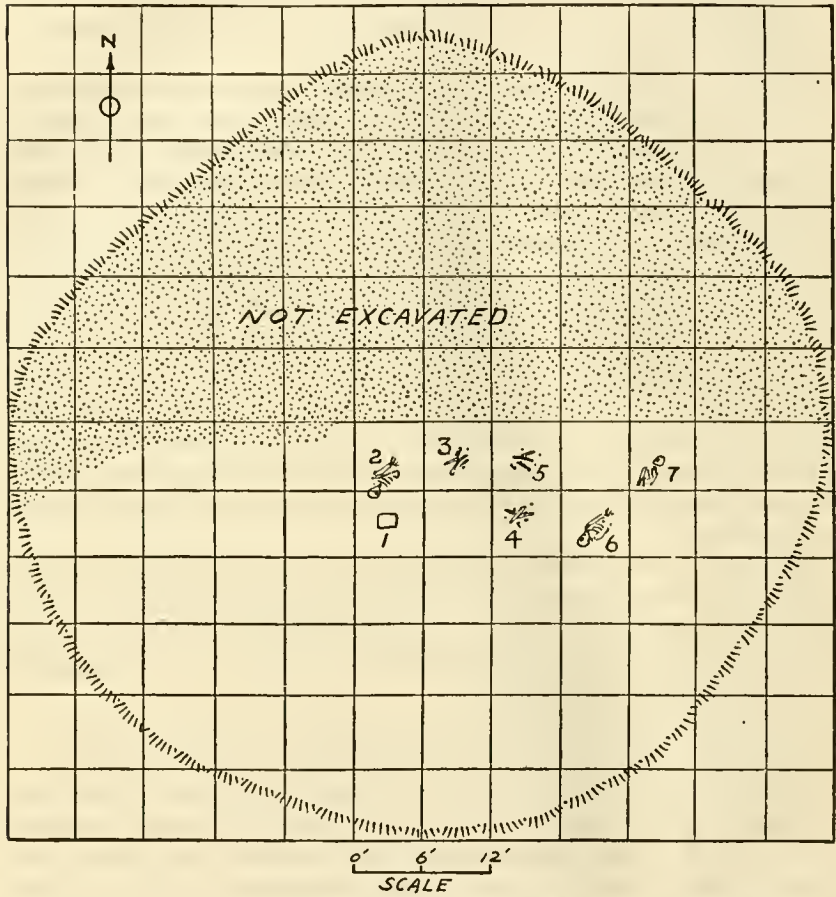


FIG. 2.—Burial mound at Ruin No. 9.

was littered with an almost unbelievable amount of broken pottery and about 30 arrowheads were picked up while the brush and timber were being removed.

Excavations were begun at the southern edge of the mound. The soil was as light as flour and appeared to be composed of intermingled ashes and house sweepings. It contained many broken stones, nearly all of which showed the action of fire, and scattered



a



b

GRAVE IN RUIN NO. 9

fragments of metates and stone axes. From the beginning detached human bones were plentiful, but a week elapsed before the first grave was found. Some 3 feet below the surface, well toward the center of the mound, a slab of stone was lying horizontal, and beneath it was the skull of a person who had not reached maturity. The other bones were not in place or had not been buried with the skull. (See fig. 2.) A few feet toward the north was the skeleton of an adult lying upon the left side with knees drawn up against the chest and arms at the sides. The head pointed toward the southeast, and in front of the face was a small one-eared pot. Just east of this grave was the body of another adult with exception of the skull. The position was undeterminable.

Six feet to the southeast were found some of the large bones of an adult, which had been much disturbed. At length a beautiful red bowl, a femur, and one side of the innominatum were found together (pl. 57, *b*), and a short distance farther on was the nearly toothless skull of an old man (pl. 57, *a*). Some freak of refraction shows two skulls in the negative; the one at the right is the original. This skull is strongly flattened at the back and through the right mastoid process is an aperture 1 inch long and one-fourth inch wide, probably inflicted by a stone spear or arrow.

Five feet to the north was a pit $4\frac{1}{2}$ feet deep containing the bones of the right leg of an adult, surrounded by stones and charcoal.

To the southeast of No. 4 was a large skeleton lying on its back with knees drawn up and to the left, and head toward the west. At the left of the head were two small bowls (pl. 64, *b* and *d*) and a spoon or paddle (pl. 69, *d*), and at the right was a globular wide-mouthed pot with a heavily banded neck (pl. 68, *b*). North and east of this was the grave of a small infant in the usual flexed position.

After finding these bodies the excavations were continued for several days without further results. A surprising quantity of bones and potsherds were mingled with the earth. Numerous badger holes, some of them large enough to admit the body of a man, appeared at the surface of the mound. After extending downward for a short distance they ramified, and an examination showed that practically every cubic foot of the mound at some time had been worked over by the animals. In tunneling they disturbed the bodies and broke the pottery into bits or brought it to the surface, where it was soon reduced to fragments by the action of the elements. Every burial mound subsequently examined had suffered the same fate. Thus can be explained the dearth of pottery to be obtained from the mounds.

When it was determined that practically everything in the burial mound had been destroyed, its excavation was not carried to completion.

Although the explorations in this ruin and its burial mound form but one of the steps leading to the conclusions which will be drawn at the end of this paper, I shall here mention some of the points which should be presented with special emphasis to the mind of the reader. The building was a rectangular block of rooms showing no evidence of having been more than one story in height. The walls consisted of bases of natural earth or of stone slabs plastered together, surmounted by a wooden structure.

The pottery presents many features which differentiate it from that of the cliff-dwellings. These differences are of form and color as well as of decoration. Fragments of the characteristic coil ware were rarely observed, and perhaps 10 per cent of the sherds were of a ground color varying from an orange to a deep red. The decorations are in general crude in form and execution. All these features will be dealt with at length in their proper places.

Perhaps the most significant fact is that nowhere about the ruin were there remains of any structure resembling a kiva.

Ruins at Site No. 10.—The backbone of the long ridge which limits the northern drainage of Johnson Canyon bears an almost continuous line of ruins. I followed it from a point somewhat northwest of the ruin just described to the head of Lion Canyon, and was rarely ever out of sight of fragments of pottery and chips of flint. The majority of the remains are elevations from 6 inches to 2 feet higher than the level of the ridge marking the sites of small buildings of the same type as the one above Mancos Spring; a short distance south of most of them are refuse mounds, many of which are larger and higher than the mounds marking the ruins themselves.

Circular depressions surrounded by low, much-eroded banks of earth, and varying from a few feet to as much as 50 feet in diameter, are of frequent occurrence. It is probable that these depressions are the remains not of reservoirs, as many suppose, but of circular pit rooms. This conclusion is not based on excavations in that particular region, but is drawn from observations on pre-Pueblo ruins situated between the San Juan River and the continental divide, 70 miles east of the La Plata. In that vicinity, near, and even in the midst of the *jacal* structures, the pit rooms extend from 3 to 6 feet below the surface. The plastered clay walls slope outward, and in them at nearly regular intervals are to be found the stumps of the heavy posts which supported the roof. Near the center of each room is a fire pit, and dug into the walls, the bottoms extending somewhat below the level of the floor, are receptacles probably analogous in function to the bins so common in the later buildings.

It may well be that the circular pit houses constitute the prototype of the kiva, although the only essential features of the kiva discernible in those examined were the circular form and the fire pit.

The writer believes that future investigation will show most of the depressions in and about the pre-Pueblo ruins west of the La Plata to be the remains of pit rooms.

Near a small ruin I observed a number of fragments of an archaic type of coil ware lying on the ground approximately in the form of a circle, as if a vessel had been broken on the spot. In carefully gathering these I found a large fragment protruding from the soil. It developed that the surface fragments composed the neck of a large vessel, the greater part of which was embedded in the hard red clay. It is shown completely restored in plate 63, *a*.

Ruins at Site No. 11.—About a mile slightly north of east from the building first described, upon a level-topped divide east of Spring Canyon, is another group of small ruins, some 8 or 10 in number. It was in one of these that the method of constructing the houses on the mesas was first definitely determined. Excavations laid bare three of the walls of a room, which had been erected as follows: Shallow trenches were dug where it was desired to place the walls. In these poles averaging about 4 inches in diameter were set side by side, and held upright by stones wedged into the trenches on both sides of their butts. The poles were then coated with mud till they were almost, if not quite, hidden, and a strong wall superficially resembling one of adobe was formed. It is probable that the roof consisted of beams, twigs, and bark covered with clay. The presence of the charred stumps of the poles still resting in the trenches between the rows of stones, and the large quantities of plaster burned to a bricklike consistency, smooth on one surface and bearing upon the other the distinct imprints of poles, twigs, and knots, with the finger prints of the primitive masons, shows these mesa dwellings to have been the structural analogues of the modern post houses of the Mexicans.

In a pottery-strewn space we found a lone burial. The decomposed skeleton was in the usual flexed position not more than 4 inches below the surface. In front of the face were a small bowl and a rude globular bottle, both without decoration (pls. 64, *c*; 72, *b*).

A refuse mound on the same divide yielded an interesting grave. Some animal had dug out a calcaneum and a tibia at the east edge of the circular heap, and other leg bones were found just beneath the surface. Three feet below these was the complete skeleton of an adult. The grave proved to be a conical pit, in which the body had been placed in a sitting posture, facing southwest. By the right side were the two bowls shown in plate 64, *e* and *f*, and a

fragment of a large red bowl. The pit was filled with mortar made from the red clay of the mesa mixed with charcoal and ashes.

Ruin No. 12.—Two miles southeast of Mancos Spring, on a thickly timbered ridge between the forks of Johnson Canyon, are the remains of two long rectangular buildings. Both are so badly eroded that it is impossible to estimate their original dimensions. Their long axes extend east and west. The more easterly of these structures was built entirely of poles and mud, while parts of the other are of stone. There is not enough fallen masonry to indicate that the stone sections of the walls were more than 3 or 4 feet in height.

South of the eastern ruin was a burial mound like the one at Ruin No. 9, except that it was smaller, being only 45 feet in diameter. On being excavated this was found not to differ markedly from the one already described. It had been ransacked from one end to the other by badgers and everything in the central part destroyed. Around the south edge, where there were many stones mixed with the soil, the animals had operated less extensively, and here were found 11 distinct graves, every one of which, however, had been to some extent disturbed. All were flexed, but there was no determinable uniformity of orientation. Two of the bodies lay beneath large sandstone slabs. From one grave was taken the small undecorated bird-form vase shown in plate 71, *a*. Besides a few arrowheads and a bone awl this was the only artifact recovered from the mound.

The bones of some of the bodies, particularly those of one child, show an advanced stage of disease, the articular surfaces being deeply pitted and in some cases nearly eaten away.

Ruin No. 13.—Upon the mesa separating Johnson and Greasewood Canyons are a number of ruins, one of which deserves mention because of its size. This, which is rectangular in form, falls a trifle short of 600 feet in length (east and west) by 100 to 150 feet in width. It was constructed entirely of poles and mud. No excavations were undertaken here except trenching through a refuse mound, which did not appear to contain human bones.

2. RUINS ON THE DIVIDE BETWEEN SALT AND GRASS CANYONS

Shrine at Site No. 14.—From the head of Johnson Canyon the divide forming the political division between La Plata and Montezuma Counties extends in a southwesterly direction for about 10 miles, ending at the head of the western tributaries of Barker Arroyo. At its southern extremity a conical butte rises 100 feet above the surrounding mesa. The nearly circular top is perhaps 90 feet in diameter and in the center is a pit some 15 feet across and 4 feet deep. It is probable that the commanding position afforded

by the top of the butte was used as a shrine or lookout station, or both. Shrines occur in similar locations in other parts of the Southwest. The excavation of the pit would be an interesting and doubtless an instructive undertaking, but our party did not attempt it, as the site was not found until the close of the field season of 1914.

Ruin No. 15.—In the dense timber just west of the butte there is a ruin of fair size which from surface indications is one of the most promising in the entire region.

From the foot of the butte a plateau runs due west for a number of miles. This constitutes the watershed between Grass Canyon, a fork of Mancos Canyon, on the north, and Salt Canyon, a tributary of the San Juan, on the south. Almost without exception every elevation upon its rolling surface is the site of a ruin; many of these ruins are small and much eroded. In many places the black earth of the refuse mounds has been completely carried away by the freshets caused by the occasional torrential rains, and fragments of the pottery which they contained are now scattered in great profusion over the red mother soil.

At the eastern end of one small ruin, which showed six or seven slab-outlined chambers angling along a ridge, we noticed many fragments, evidently derived from the same vessel, littering a space 5 feet across. After these were collected a brief search sufficed to reveal the remainder of the jar beneath the few inches of black earth which covered the floor of the room in which it sat. The restored vessel is shown in plate 67, *f*.

As the summer of 1913 was practically rainless, excavations on the plateau could not be undertaken, since the cost of hauling water from Mancos Spring would have been prohibitive. However, the summer months of 1914 were as damp as those of the preceding year had been arid, and in consequence the glades were bright with mountain bluestem, which furnished ample feed for our stock. About 5 miles west of the butte we found pools of water in the sandstone bed of one of the forks of Salt Canyon and pitched our tent on the ridge at the head of the draw. Later we found that our camp was about midway between two rather large ruins.

Ruin No. 16.—Southeast of the one west of camp there was a large area which bore the superficial appearance of a burial mound. This was dug over, but only two skeletons were found. A description of one of the graves will serve for both. An oval pit had been dug down 2 feet into the red clay. In this the body lay upon its back with the head toward the west (pl. 61, *b*). The heels were drawn up against the buttocks, and the knees were bent to the right against the wall of the grave. The right arm was extended with the hand beneath the thighs, while the left was crossed over the abdomen. The pit was filled with mortar. The only object found in

the grave which may have been shaped by the hand of man was a ball about five-eighths of an inch in diameter composed of rounded grains of quartz interspersed with patches of some bluish material, presumably malachite.

Ruin No. 17.—The ruin east of camp occupied a slight elevation, at the southern edge of which the plateau breaks off toward Salt Canyon. The encroachment of the slope has carried away the burial mound. The building covered an area approximately 200 feet east and west by 50 feet north and south (fig. 3). Along the north side was a row of 23 chambers, the west end of which swung around toward the south. Without exception the rooms of this tier had been excavated from a few inches to as much as 2 feet into the natural soil. The floor level of no two of them was the same. The majority were bounded by rows of large sandstone slabs set on edge (pl. 58), but in some instances plaster had been applied directly to the clay

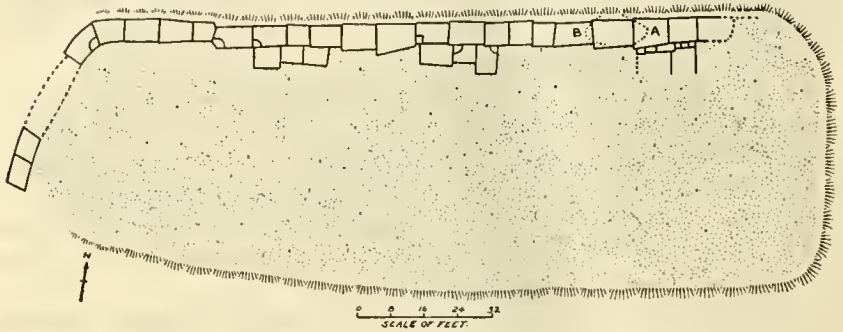


FIG. 3.—Ground plan of Ruin No. 17.

walls of the pits. In the corners were the burned butts of heavy posts which had served to support the roof.

One of the rooms had walls of masonry which showed fair skill on the part of the builders. In several places bins had been constructed by fencing off a corner with slabs and plastering up the joints. Near the east end of the building there was a series of six of these receptacles.

The floor level of the second tier of rooms was invariably higher than that of the first. Here very few slabs appeared in the bases of the walls. The stumps of poles set into the earth, a row for each wall, with mortar 4 to 6 inches thick on each side, marked the boundaries of the chambers. The corner posts were much heavier than those which served only to support the plaster.

As the ruin sloped downward from north to south the floors of the rooms of the second tier, which had not been carried down below the level of the knoll, were practically at the surface, and the walls could not be traced. While the presence of black earth, great quan-



PIT ROOM IN RUIN NO. 17



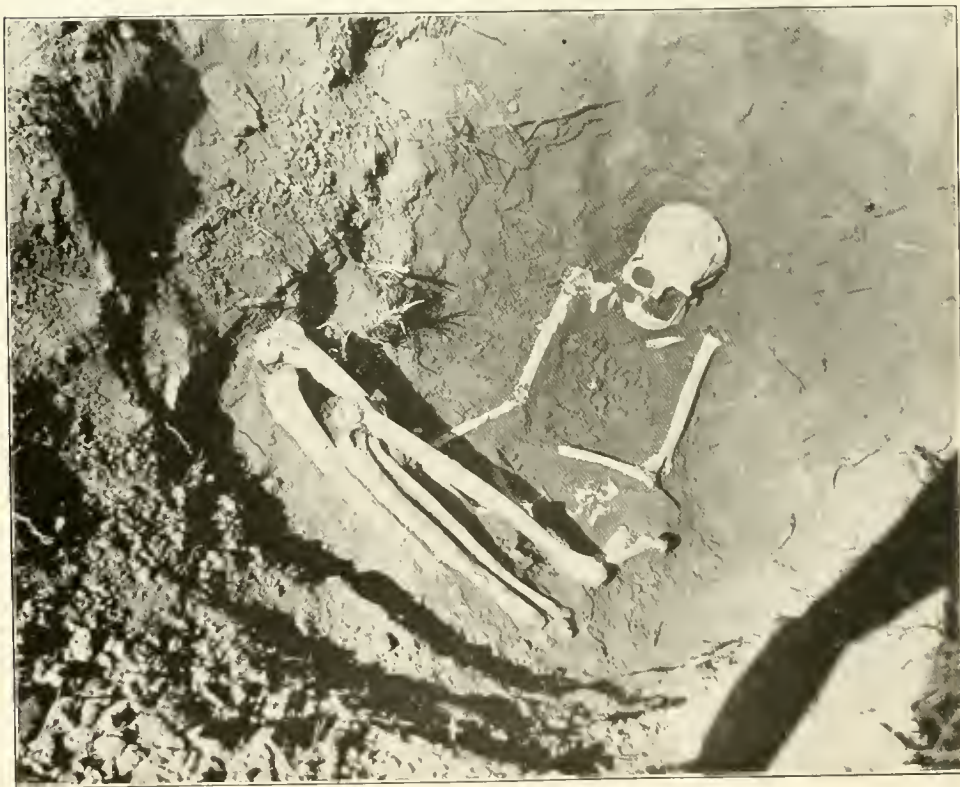
VIEW IN RUIN NO. 17



VIEW IN RUIN NO. 17



a. GRAVE BELOW MOUTH OF LONG HOLLOW, RUIN NO. 23.



b. GRAVE AT HEAD OF SALT CANYON, RUIN NO. 16

tities of plaster, many charred poles, and occasional corner posts left no doubt that the building was originally at least five tiers of rooms in width, it was impossible to trace the boundaries of any of these south of the second row.

The asymmetry of the building was very marked. Seldom did the corners form right angles, and no two walls appeared to be in line. Jogs and offsets were the rule rather than the exception. These conditions suggest that the structure must have grown by gradual accretion.

The floors of 26 of the 31 rooms were covered with 2 to 15 inches of charred corn. Some of it had been shelled, but the greater portion was on the cob. At a conservative estimate there was 100 bushels, which would indicate at least three times that amount before it was subjected to the action of fire. In some places the heat generated by the burning corn and wall beams was so great that stones and mud were fused into lavalike masses, bearing the impressions of the consumed ears, of the sort the presence of which has given rise to the erroneous statement that ruins have been found containing evidences of volcanic activity.

With few exceptions there were pottery vessels in each room. Six were recovered unbroken and 26 more were restored from fragments. Plate 60 shows some of these in place. Stone axes, rubbing stones, dressed slabs, and two metates were also taken from the débris, but not one bone implement was found.

The facts seem to justify the following conclusions: The building was an approximately rectangular aggregation of rooms which numbered in the neighborhood of 100. The sides of the pits which formed the lower parts of many of them were lined with stone slabs, or with plaster daubed upon the original earth (pl. 59). The walls above ground were constructed of poles heavily coated with mud. The roofs were supported by heavy corner posts.

Nothing was discoverable which would indicate the nature of the doors and windows. There is no evidence that the structure was more than one story in height, and in fact such evidence as there is points to the contrary, for the thin walls and the proportions of the corner posts offer no suggestion of the strength which would have been necessary to support a second story.

Fire destroyed the building and its contents. To judge from the large quantities of corn and the many vessels sitting about in the rooms, the conflagration must have been sudden and catastrophic. Whether it started from wind-fanned sparks or was caused by lightning or by enemies is purely a matter of conjecture.

There are other ruins in the vicinity, but no further excavations were attempted.

3. RUINS SOUTH OF RED HORSE GULCH

Ruin No. 18.—There is an immense ruin on the divide south of Red Horse Gulch about half a mile down the canyon from Heathers' tank. This covers about 5 acres of ground. Seemingly it is composed of a group of buildings of the "pole-and-mud" type. I was able to spend only a few minutes at the site, so an adequate description of it can not be given. I would judge this ruin to offer the best opportunity for fruitful excavations to be found between the La Plata and Mancos Rivers. There are three large burial mounds which would not fail to yield many specimens if by any chance they have escaped the ravages of the badgers.

4. RUINS AT RED MESA

Ruins at Site No. 19.—Upon the first terrace east of the La Plata, just below the mouth of Cherry Creek, are many small ruins, a de-

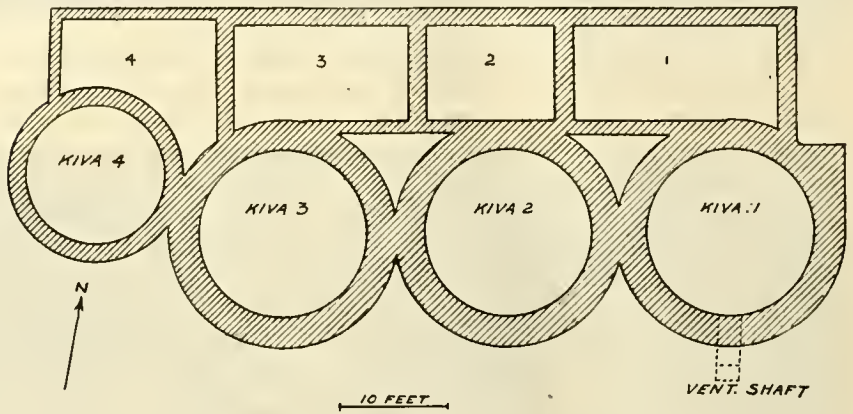


FIG. 4.—Ground plan of Ruin No. 20.

scription of which would be only a repetition of tedious detail. In the river bottom is a detached point 25 feet high and about one-third of an acre in extent whose top is entirely covered by a ruin. The many slab-outlined inclosures are probably rooms like those excavated in Ruin No. 17.

Stone Ruin at Site No. 20.—On the bluff west of the river is a stone ruin 77 feet long and 32 feet wide, the long axis extending east and west (pl. 62, a). A tentative plan is given in figure 4. This ruin consists of a row of three kivas flanked on the north by a single tier of rectangular rooms. At the west end is a smaller round room not in line with the large ones. Rooms 1 and 2 and a part of kiva 1 were excavated. The north and east walls of room 1 are



a. STONE RUIN AT MOUTH OF CHERRY CREEK, RUIN NO. 20



b. MASONRY IN STONE RUIN AT SITE NO. 20

18 inches thick. The wall between room 1 and kiva 1 is 30 inches in thickness and stands to a height of 8 feet. The masonry is excellent (pl. 62, *b*). The small sandstone blocks are dressed to conform to the curve of the wall and the cracks are chinked with tiny spalls.

Kiva 1 is 15½ feet in diameter. The banquettes, six in number, are unusually shallow, being but 5 inches deep. The ventilator shaft opens to the south, as appears to be the case with the other kivas. Since the exhaustion of funds made it necessary to abandon the excavation of this most interesting ruin, the nature of the other features of the kiva was not determined. The fact that the kivas are above ground impresses one as unusual. I have not observed another instance in the San Juan drainage where kivas built in the open were not subterranean.

A discovery of the relation between this stone building and the numerous "pole-and-mud" ruins in the vicinity would be of the utmost importance in determining whether or not the ruins in the cliffs and those upon the mesas were built by the same people. The rooms excavated contained no artifacts which would help to settle the question.

Slightly northeast of the building is a group of slab-inclosed boxes. These occur singly and in groups all over the mesas, but in order to avoid repetition I have deferred mentioning them until this time. Holmes¹ and Jackson² describe similar inclosures on the mesas west of the Mesa Verde, and the author has been told that they extend eastward toward the Animas River. Some are nearly round, some square, and others rectangular. Their average size is about 3 by 4 feet. Slabs of stone form the sides and in many cases there is a slab on the bottom. Their use is difficult to determine. They are commonly known as "Indian graves," but there is nothing to prove that such was their function. They occur in and about ruins and in isolated places far from any sign of a building. In many of them there are small quantities of charcoal and ashes and now and then an animal bone. We dug up about 50 of these "graves," but did not find in one of them enough traces of fire to lead to the conclusion that a body might have been cremated therein. They may have been fireplaces, but if such were the case it is hardly probable that they would be found so far removed from more or less permanent habitations. It is not to be expected that an Indian would transport heavy slabs of stone a considerable distance in order to construct a cooking place for a temporary camp.

¹ *Tenth Ann. Rept. of the Hayden Survey, 1876*, pp. 385-386.

² *Ibid.*, p. 414.

Were these "graves" not so numerous, it might be concluded that they were shrines, and it may be that such was the purpose of some of them.

Round Tower at Site No. 21.—On the point of a bluff about a quarter of a mile up the river from the stone ruin there is a small stone tower. The wall is in a poor state of preservation, standing to a height of only 3 feet. From the point there is a good view of the valley and of the broad mesas which stretch eastward from the river, hence it seems that the tower served as a lookout station.

5. RUINS BELOW THE MOUTH OF LONG HOLLOW

Ruins at Site No. 22.—Purely by accident a group of burials was found farther down the La Plata. About three-quarters of a mile below the mouth of Long Hollow the wagon road ascends from the river bottom, runs for a short distance across a point, and drops back to the lower level. Not 20 feet from the road I noticed black earth and fragments of pottery, and the first thrust of a spade brought up human bones. The skeleton of which they were part was flexed with the head to the northwest. South of it were two other bodies, also flexed, one of them that of a child. The point had worn away until these skeletons were barely covered with earth, and if any pottery was put away with them it had been broken and the fragments scattered. East of them was a skeleton stretched at full length upon its back. By the head was an undecorated vase. North of this burial was a grave which was constructed with more care. In a rectangular pit $2\frac{1}{2}$ feet deep the flexed body reposed upon its right side with the head to the north. Beneath the skull was a flat stone, and in front of the body were four decorated bowls (pl. 65, *c, e, f*).

In all cases the bodies were covered with black earth and refuse, and it appeared from the ashes, fragments of pottery, and chips of flint that trash must have been dumped on the graves for a long period of time.

Southwest of the graves, on the tip of the point, were the remains of a fairly large "pole-and-mud" ruin. On a promontory not far from the ruin the Powells, who own the land in the river bottom and on the opposite side of the river, unearthed a skeleton accompanied by a pipe and a string of beads. Several of the beads are turquoise, and one of them, conical in form, is of ivory. It appears to have been made from the canine tooth of a large animal. I did not see the pipe.

Ruins at Site No. 23.—There are many ruins on the Powell ranch west of the river. Those clustered along the edge of the second terrace are all of the "pole-and-mud" type. The bodies of two children and four adults were found near one of them. One large skeleton was extended with the head to the east, and the rest were flexed.

One grave contained two skeletons interred at different levels. The first (pl. 61, *a*) lay upon its left side with the head to the west. Near the skull were three pottery vessels and a worked stone, presumably a pottery smoother, and by the feet were two more vessels. When the skull was raised it was found to be resting upon the knees of another body lying at right angles to the first, with the head to the south. By the skull were three bowls, a lamp (?), and a vase.

Not one of the 11 skulls from these two series of graves was flattened at the back. Most of these crania were so badly decomposed that they fell to pieces when moved, but three were recovered entire. One appears in plate 70, *e*. In an examination of more than 200 skulls taken from graves in the valleys of the La Plata, the Animas, and the San Juan Rivers, I have seen no others which fail to show pronounced flattening in the occipital region.

Upon the first bench above the river begin the cobblestone ruins so numerous farther down the valley. These are, in general, mounds in the form of a semicircle with a kiva between the horns of the half moon, and a burial mound south or southeast of the building. The shape and construction of these buildings, as well as the pottery strewn over them, suggest that they represent a culture differing in many particulars from that characterized by the ruins in the upper valley and on the mesas to the west.

ARTIFACTS

POTTERY

STRUCTURE

Structurally the pottery from the mesas is inferior to that from the cliffs. In general the paste consists of a fine-grained matrix, through which are scattered many dark-colored granules. This indicates an imperfect reduction of the clay or an admixture of a secondary material, possibly crushed potsherds. The color and composition of some of the paste suggest a volcanic rock such as I have not found on the Mesa Verde.

The hardness varies greatly. Some vessels are quite friable, while the finer ones are not easily scratched and emit a clear, bell-like tone when struck. I have not been able to demonstrate the presence of a superficial slip on a single specimen. While the surfaces of several are of surprising whiteness, this seems to have resulted from the polishing which brought to the surface the lighter-colored, finer-grained portion of the paste.

Although it is probable that all the pottery was constructed by the application of successive coils of clay, from the standpoint of surface treatment it may be divided into four classes—(1) smooth ware, (2) smooth ware the examples of which have banded necks,

(3) smooth polished ware without decoration, and (4) smooth polished ware with decoration.

True coil ware was not exhumed from any of the sites, although a few fragments occurred upon the surface. The excellent vessel shown in plate 63, *a*, although found in the open, was not within the confines of a ruin, and may well have been left at a temporary camp by the cliff people or deposited at a shrine, further evidence of the existence of which has not been preserved.

FORM

It is doubtful whether from any other locality in the Southwest a series of 64 ceramic objects could be chosen at random which would exhibit a greater diversity of form than those shown in the accompanying plates.

Food bowls.—Of food bowls there are 16 (pls. 64, 65). In general their shape is that of a section of a hollow sphere, although one (pl. 65, *c*) has an incurving edge and another (pl. 65, *e*) has a flat bottom. With few exceptions the sides taper to a thin fragile rim. The interiors show much better finish than do the exteriors.

Globular Bowls.—Two of the three globular bowls appear in plates 70, *a*, and 71, *d*. The one not figured has a heavy handle attached to one side near the opening; the others have pairs of perforations opposite each other, through which cords might be passed to carry or to suspend the vessels.

Bowl with Perforated Ears.—In plate 71, *f*, is shown a small, very deep bowl with perforated ears.

Bowl with Double Flare.—The bowl figured in plate 71, *e*, is a unique specimen. The constriction in the sides allows it to be held conveniently and securely in the hand.

Globular Vessels with Wide Mouths.—Plate 66 illustrates vases with approximately globular bases and mouths of large proportionate diameter. One has a single handle consisting of a ridge of clay pinched onto one side of the neck. The recurved neck imparts a pleasingly graceful form to the vase appearing in plate 66, *d*.

Ten similar vessels, the necks of which are embellished with broad rather low ribs or bands, are shown in plates 63, *b*, 68, and 70, *c* and *d*. Somewhat similar vessels are figured from northeastern Arizona by Dr. Fewkes¹ and from St. George, Utah, by Holmes.² One has a handle (pl. 70, *c*) and in another instance there are three tiny protuberances symmetrically placed just below the rim (pl. 68, *e*).

Some of these vessels contained charred corn, which, together with the fire stains almost invariably apparent, and the adhering

² Pottery of the Ancient Pueblos, fig. 242.

¹ Bull. 50, Bur. Amer. Ethn., pl. 18, *b*.



a

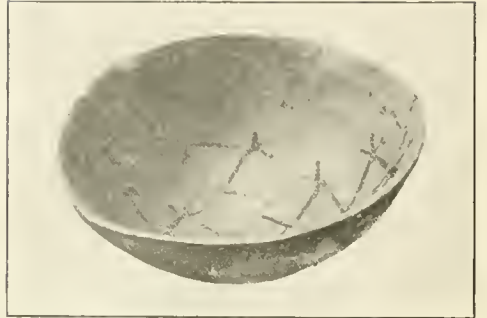


b

LARGE OLLAS



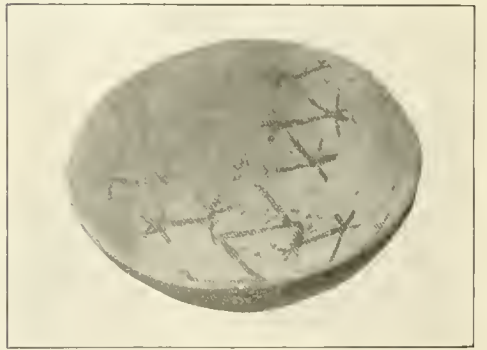
a



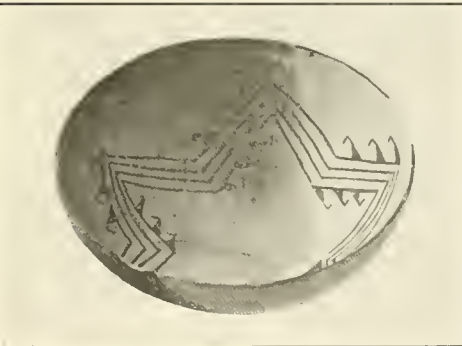
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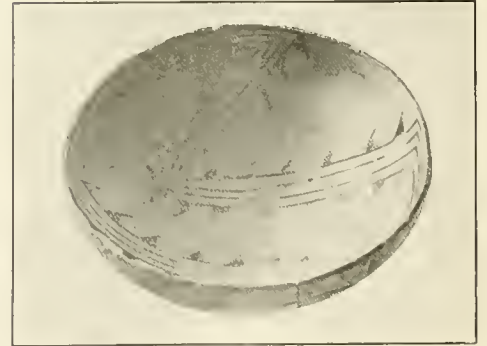
c



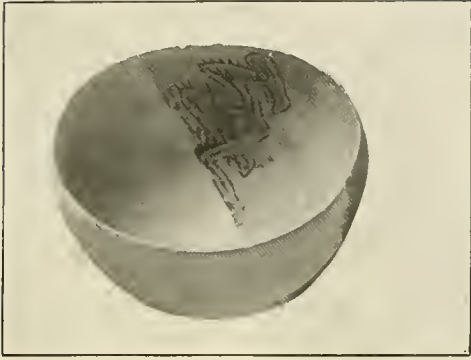
d



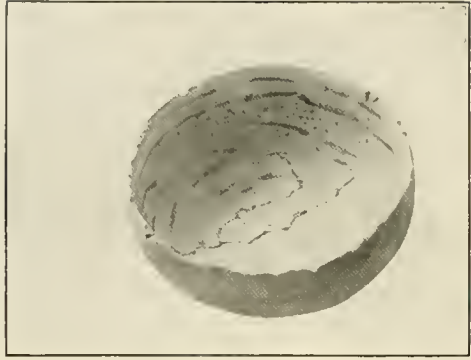
e



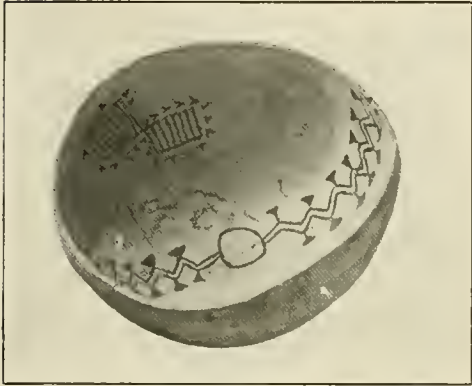
f



a



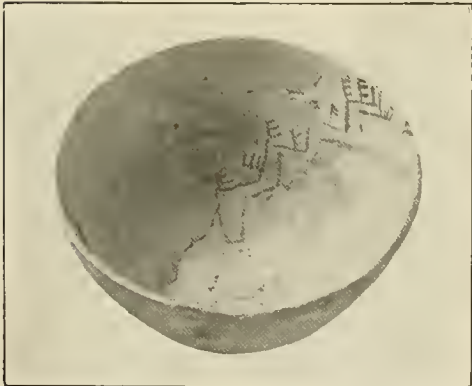
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c



d



e

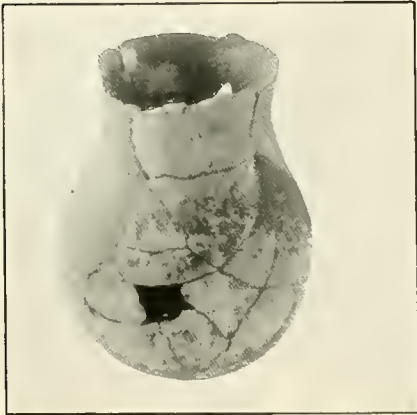


f

FOOD BOWLS



a



b



c

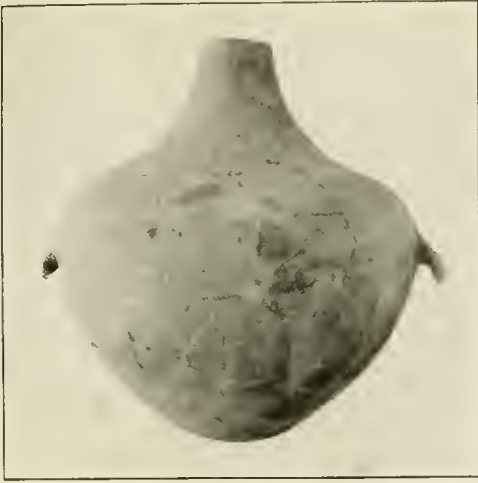


d



e

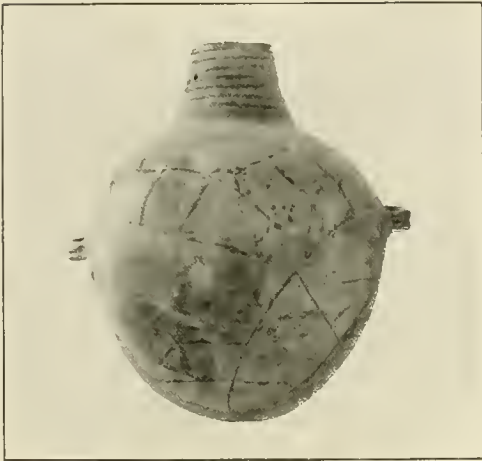
UNDECORATED VASES



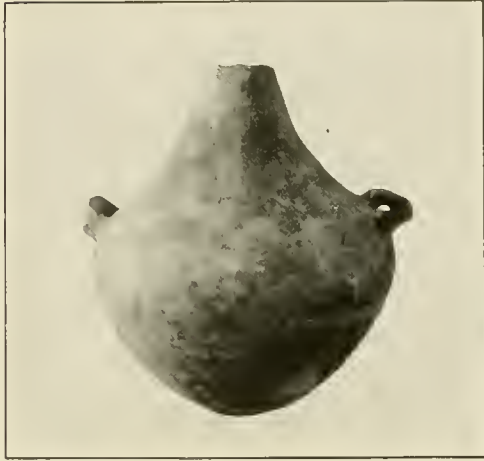
a



b



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e



f



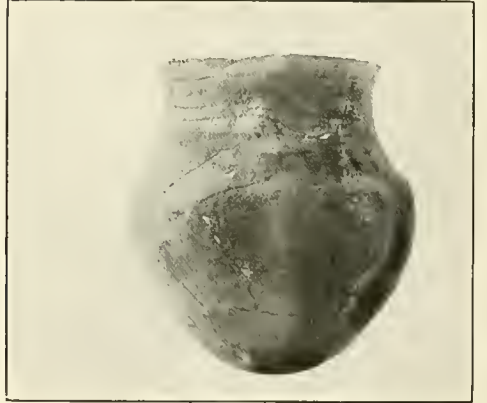
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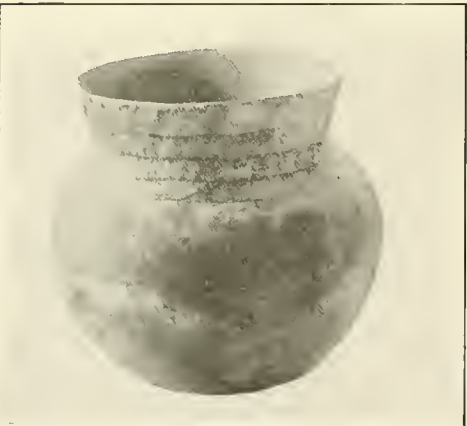
b



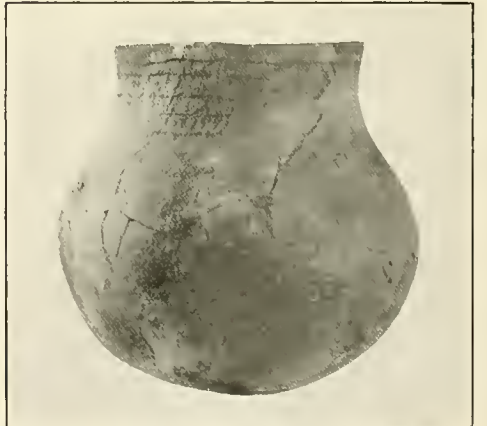
c



d

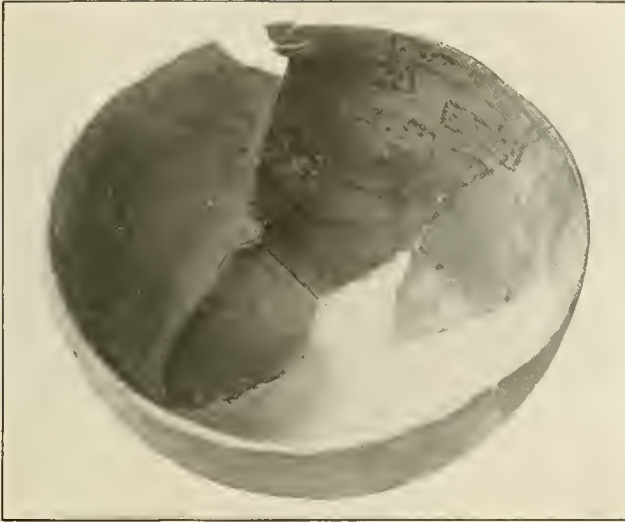


e



f

COOKING VESSELS WITH BANDED NECKS



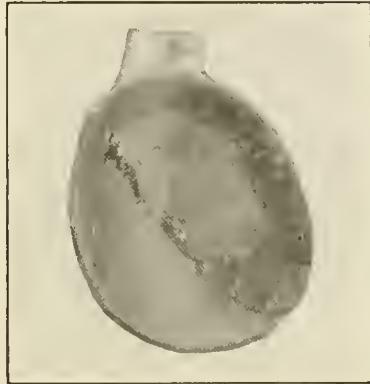
a



b



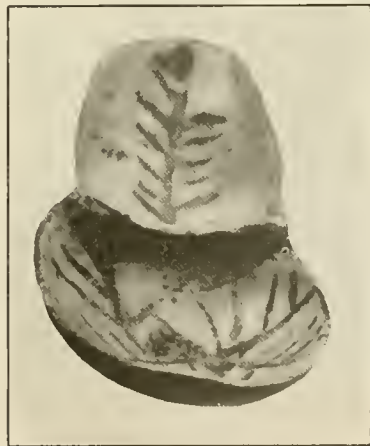
c



d



e



f

a. BOWL MENDED WITH YUCCA TIES. *b, c, d, e, f.* POTTERY



a



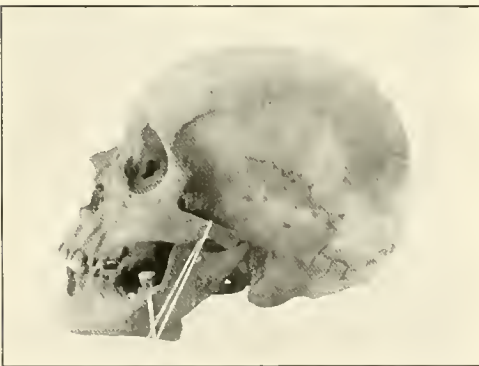
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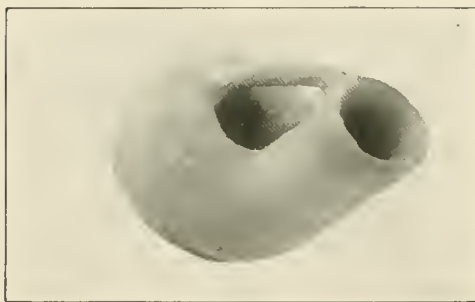
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f



a



b



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d



e



f

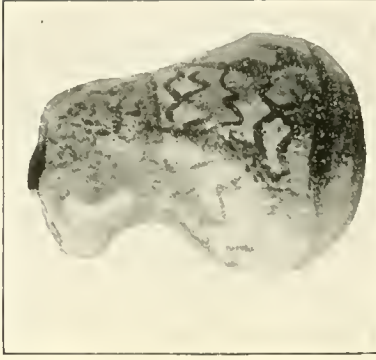
POTTERY



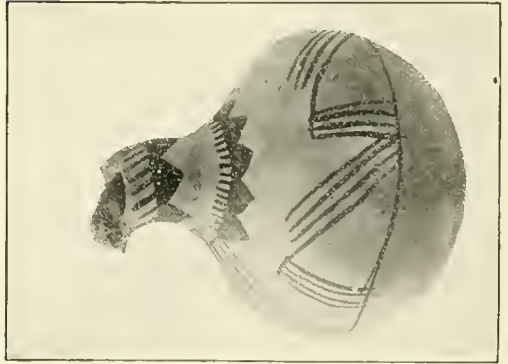
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b



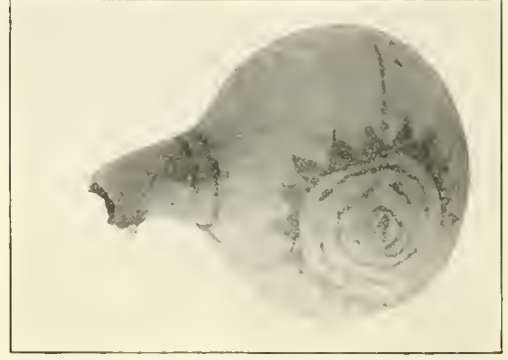
c



d



e



f

soot, indicate that these vessels performed a function analogous to that of the coil-ware ollas of the cliffs—that of culinary utensils.

Undecorated Water Jars.—There were many large water jars (pl. 67) in Ruin No. 17, and fragments of these are abundant in all the refuse heaps. In shape these resemble similar vessels from the cliffs (pls. 41, *a*, and 43), but they bear no sign of decoration and but few of the bases are concave and none are flat. Two of the jars (pl. 67, *c*) have banded necks, while those of the others are plain.

There is an unusual variation in the shape of the handles. On one vessel they are merely solid stubs of clay protruding from the sides of the base (pl. 67, *f*). Four of them (pl. 67, *d*, *e*) have large open handles like the ones from the cliffs, through which three and sometimes four fingers can be inserted. One (pl. 67, *c*) has similar handles except that they consist of two ropes of clay instead of a single band. The handles on the vessels shown in plate 67, *a*, *b*, are broad, flat protuberances which turn down like the stubby tail of a bird. This type is exceedingly common in the refuse heaps.

A water bottle closely resembling the above (pl. 70, *b*) was found in Ruin No. 9. The top is very much flattened, and the base is concave.

Gourd-shaped Bottles.—The four gourd-shaped bottles (pl. 72, *a*, *d*, *e*, and *f*) are unique among the pottery

of the upper San Juan drainage. Unfortunately, not one of them retains its neck entire, hence the outline of that part of the vessels is problematical. Jackson¹ figures a bottle from the pueblo of Zuñi, a drawing of the outline of which appears in figure 5, *a*. One side of a like orifice appears in the tops of three of the bottles here shown, and it may be that the resemblance to a gourd was heightened by their completion in a similar manner. However, I am inclined to think that the curve particularly apparent in the one shown in plate 72, *e*, was continued, and that the neck curved back and ended in a point which was contiguous, but not attached, to the incurving slope of the vessel, as is shown in figure 5, *b*. There are rough spots on the sides of plate 72, *d* and *f*, in the proper positions, as if the presence of the end of the handle had not permitted the polishing of the surface at these points. A detached handle of this sort was found in Ruin No. 17, and Holmes figures one constructed in this manner.²

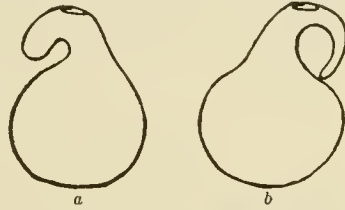


FIG. 5.—Outlines of gourd-shaped vessels.

¹ *Tenth Ann. Rept. of the Hayden Survey*, pl. LXVI.

² *Pottery of the Ancient Pueblos*, fig. 354.

Ladles.—Two ladles appear in plate 69, *e* and *f*. They are divided into compartments by a partition across the middle. While ladles with long hollow handles are known from the cliff-dwellings and from the Animas Valley, I have not observed other specimens in which the part corresponding to the handle is divided from the bowl by a ridge of clay.

Spoon or Paddle.—A spoonlike implement, the handle of which is missing, was found in Ruin No. 9 (pl. 69, *d*).

Bird-form Vase.—While fragments indicate that bird-form vases were fairly numerous, there is but one such specimen in the collection (pl. 71, *a*). The tail is upturned, and there are two pairs of protuberances, one of which probably represents wings. The bird topography is not accurately delineated, but it appears that the vase is rightly named.

Ring-bottomed Vase.—This term, inelegant though it be, I have applied to the vessel appearing in plate 71, *b*. The base is a hollow ring with a roughly circular neck rising from one side. A cylindrical handle connects the top of the neck and the opposite side of the base.

Lamp (?).—The writer suggests that the vessel shown in plate 71, *e*, is a lamp, at the same time realizing fully that this suggestion will meet with considerable criticism. The vessel consists of a rough globular body with a small hole in the top, and a hollow cylindrical spout, which rises from the point of greatest diameter at a slight angle to the plane of the base. The end of the spout, which is much blackened, has been affected by some agency to the extent that part of it crumbled to dust when taken from the bowl in which it was found. Long-continued action of flame might thus destroy the cohesive qualities of the clay.

Mountain-sheep Effigy.—There was found on the surface of Ruin No. 17 a small animal effigy, which from the shape and proportions of the horns is thought to represent a mountain sheep (pl. 69, *c*). It is probably a prayer emblem, similar to those used by the Hopi.

Cloud Blower.—The collection contains one small pottery cloud blower or pipe (pl. 69, *b*). Through the center there is a hole the diameter of which lessens progressively toward the smaller end of the cylinder. The surface is decorated with diagonal lines of pits.

Two rather nondescript bottles appear in plate 72, *b* and *c*.

COLOR

Vessels of gray, varying all the way from black to white, occur in the collection. In addition there are shades of yellow, orange, red, and brown. The vase shown in plate 66, *a*, is a glossy black throughout, which appears not to be the result of use as a cooking pot. As

opposed to this, one bowl (pl. 64, *e*) has an interior as white as well-cleaned kaolin. As has been stated above, this does not seem to be dependent on a surface slip.

One globular bowl (pl. 70, *a*) is a deep, beautiful red. The paste is rather coarse and red all the way through, but the polishing has accentuated the redness of the surface.

The bowl figured in plate 64, *e*, is of orange color in which the yellow is predominant. This bowl once bore decorations which are now untraceable.

There must have been much iron in the clay from which a considerable proportion of the pottery was made. Heat of different degrees has produced peculiar blotchings on several of the vessels. The neck of one, otherwise gray, is almost lemon yellow (pl. 63, *b*), and a red-orange cheek appears on the side of the vessel figured in plate 67, *e*.

The red and orange sherds are of particular interest. They represent most of the shapes present in the collection, besides many others the entire contours of which it is at present impossible to restore. The colored ware of the region will furnish beautiful and instructive material to future excavators.

DECORATION

From the standpoint of decoration the first fact to impress one is that of 62 vessels only 26 bear painted designs. In a typical collection from the cliffs, or from the lower La Plata, the proportions would be more than reversed. In fact, in the author's collection of more than 200 specimens collected near the mouth of the La Plata there are only 5, excepting the coil ware, without decoration.

In color the decorations merge from black through brown to red. The brown and red can not be considered to have resulted from a chemical alteration in a dye originally black. These colors are uniform over the entire surface of the dish; the black is permanent, while the red can be removed with a damp cloth.

Several of the bowls found near the mouth of Long Hollow (Ruins Nos. 22 and 23) had their entire exteriors painted with a light-red substance, which comes off very readily in the presence of moisture.

The decoration is in most cases crude, although fair skill is shown in two instances (pls. 64, *a*, and 72, *c*).

With one exception the symbolism differs from that previously observed on Mesa Verde pottery. This exceptional symbolism appears on a water bottle (pl. 70, *b*). It consists of a hollow square with arms extending from the corners. The essential features of

the design appear on a bowl from Cliff Palace.¹ It is a much-used symbol on the pottery from the Animas Valley, there being several examples in the author's collection.

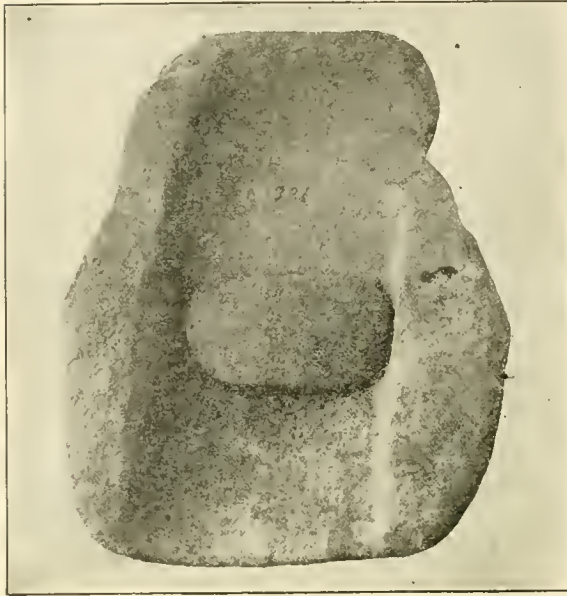


FIG. 6.—Metate and mano.

The star appears twice, once with seven points (pl. 64, *a*) and once with only five (pl. 64, *e*).

The bowl figured in plate 65, *b*, has what appears to be a spotted serpent coiled spirally from the bottom to the rim. Another serpent pattern occurs on the bowl given in *a* of the same plate.

The rims of the bowls, when deco-

rated at all, bear a solid black line instead of the row of dots or zigzag lines found on the pottery from the cliffs.

The designs shown in figures 7-11 are from bowls not in the collection. They were found by Mr. Ralph Linton, of Swarthmore, Pa., on the Powell ranch.

Until a more complete series of designs shall have been gathered, the writer does not think best to attempt an analysis or classification of them.

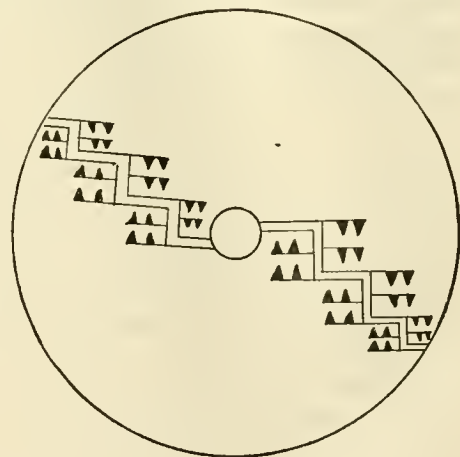


FIG. 7.—Design on bowl from mouth of Long Hollow.

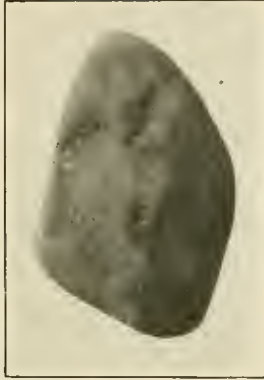
STONE IMPLEMENTS

Grinding Stones.—Metates and manos are most conspicuous among the stone implements from the mesa sites. A pair of these is shown in figure 6. The metate is a slab of moderately

¹ Fewkes, *Bull. 51, Bur. Amer. Ethn.*, pl. 24.



a



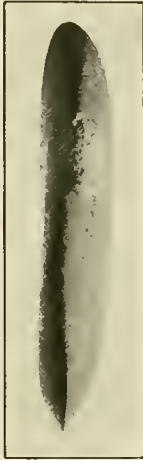
b



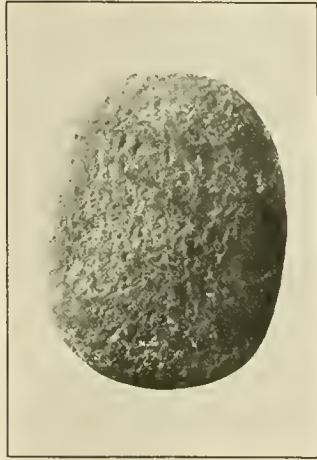
c



d



e



f



g



h

STONE OBJECTS



CHIPPED IMPLEMENTS



CHIPPED IMPLEMENTS AND POLISHED ORNAMENTS

fine grained sandstone, through which a trough has been worn by the incessant back-and-forth motion of the mano. It is worthy of note that only two metates were found in Ruin No. 17, where considerable quantities of corn were stored.

Slabs of Undecided Function.—Two of these slabs are shown in plate 73, *d* and *h*. As they are more nearly rectangular than round, it seems unlikely that they correspond to the round potlids from the cliffs. It is not improbable that they served as plates or platters upon which to stack meal cakes or similar objects. They are too small and not of the right shape to have been used as doors.

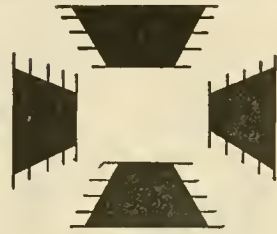


FIG. 8.—Design on bowl from mouth of Long Hollow.

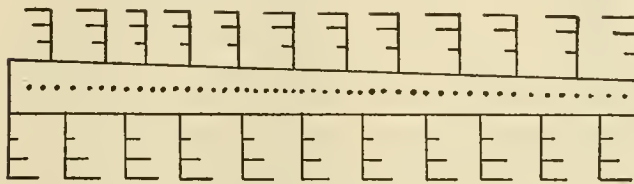


FIG. 9.—Design on bowl from mouth of Long Hollow.

Axes and Hammers.—Two axes of excellent workmanship (pl. 73, *e* and *g*) were found in Ruin No. 17,

besides a number of crude ones. These are made from a dark granitic rock, such as can be found in the river gravel which caps the most ancient erosion remnants in the vicinity. The bits are brought to as keen an edge as I have ever seen on stone implements not made by chipping.

The one hammer is an unaltered oval boulder with a groove pecked about the middle.

Pottery Smoother.—A stone with worked and polished surfaces, presumably a pottery smoother, was found in a grave at Ruin No. 23 (pl. 73, *b*).

Pounding Stones.—Three of these are shown in plate 73, *a*, *c*, *f*. Their specific use is unknown.

Chipped Artifacts.—The best of the chipped implements gathered from the mesa sites are shown in plates 74 and 75. These may be

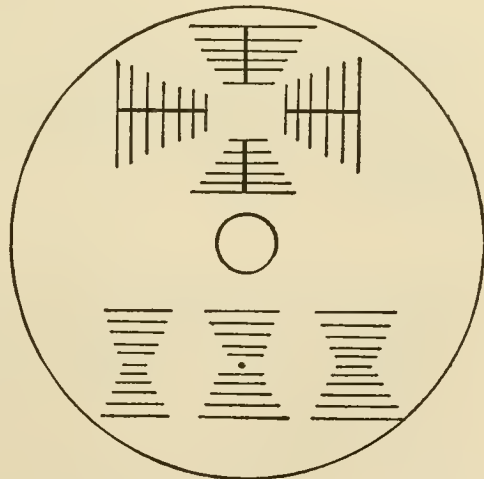


FIG. 10.—Design on bowl from mouth of Long Hollow.

classed as arrowpoints, knives, drills, and scrapers. The materials are mainly jasper, flint, chaledony, quartzite, and obsidian. The dull gloss or luster, which is particularly apparent on the obsidian implements, shows them to be very old. In length these vary from $\frac{1}{2}$ to $2\frac{1}{4}$ inches. The workmanship of many is poor, but some are of unusual beauty. A few ornaments are also figured. Two of these show diagonal incised lines.

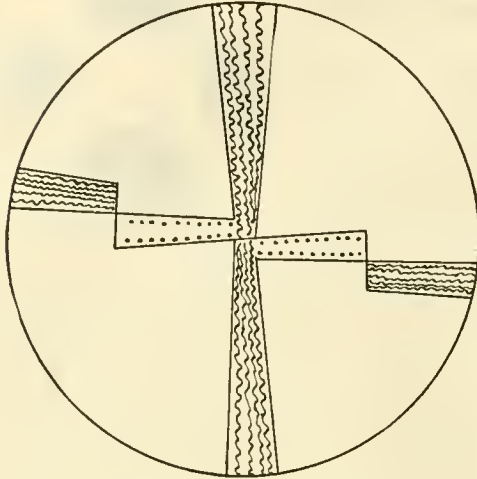


FIG. 11.—Design on bowl from mouth of Long Hollow.

It is impossible to say how many of these objects were lost by the inhabitants of the cliffs and how many belonged to the dwellers on the mesas.

The most notable feature in connection with the stone implements from the mesa sites is the lack in variety and quantity of everything but chipped instruments.

BONE IMPLEMENTS

Bone implements are not numerous. Besides three bone awls no other artifacts of bone were exhumed in the mesa ruins.

As might be expected, all articles of wood and other perishable material not consumed by the burning of the buildings had entirely decomposed.

SUMMARY

The inhabitants of the mesas were an agricultural people whose domiciles were one-storied aggregations of cell-like chambers, usually grouped to form a rectangle. Generally speaking, the rooms extended down into the earth, and with few exceptions the sections of the walls above ground were constructed of upright poles covered with plaster.

Thus far no kiva has been found in, or connected with, a *jacal* dwelling. It is possible, however, that when excavated some of the numerous circular pits will prove to have features linking them unmistakably to the kivas of later time.

The pottery from the mesas exhibits a wide range of form and surface treatment, but structurally it is inferior. Less than 42 per cent of it is decorated with painted designs, and true coil ware does not appear. The symbolism is unlike that on the pottery from the neighboring cliffs and shows less conventionalization.

Stone implements are few, but such as have been found are of the same general types and exhibit as good workmanship as those of the cliff people. Of the work in bone, wood, and other perishable materials almost nothing is known.

CONCLUSIONS

It is evident that there existed on the mesas between Mancos and La Plata Rivers a culture differing in many respects from that of the cliff-dwellers of the Mesa Verde. The meager information at hand seems to connect it with the pre-Pueblo pit-house culture now generally conceded to have existed in the Southwest.

The true Pueblo culture has as its diagnostic character compact community villages several stories in height, usually in terrace form. The absence of the terraced form of architecture serves equally well to characterize the pre-Pueblo culture.

The pottery especially indicates the greater antiquity of the dwelling sites on the mesas. The wide range of form, as well as the unskilled workmanship displayed, shows the ceramic art still to have been quite plastic, and not bound by the rigid convention which is apparent in the pottery from the cliff-dwellings. The same may be said of the symbolism. Though crude, the designs are more boldly executed than are the conventionalized decorations on the cliff pottery.

The skulls offer another point of difference. Of 33 crania 11, or $33\frac{1}{3}$ per cent, do not show the occipital flattening general among the crania from the cliff-dwellings. Too much importance must not be attached to this, however, until further research shall prove whether the variation continues in evidence, or whether the skulls offering a basis for the statements here made comprise only a small aberrant group.

The limits of the type of remains here described can be determined only by extended excavations. Whether they are typical of a small area, or whether they continue and connect with other localities in which the pit-house culture is already known, remains to be seen.

The discovery in the northern part of their domain of a more ancient culture than that of the cliff-dwellers should be of special interest, since it appears that the region north of the San Juan River is the center from which migration carried the true Pueblo culture to the south, southeast, and perhaps to the west.

The direct relationship between the people of the cliffs and those of the mesas can not be established at present. The inhabitants of

the caverns may have been directly descended from the builders of the *jacal* houses, or there may have been a hiatus between the two periods of occupancy.

Necessarily these conclusions are but tentative, and are offered as nothing more. Now that a beginning has been made, it is to be hoped that some one will see fit to undertake a work of sufficient amplitude to lead as nearly as possible to the solution of the problems which the brief research here recorded has done little more than to suggest.

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