big juniper house

OF MESA VERDE — COLORADO

big juniper house

National Park Service Archeological Series

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ARCHEOLOGICAL RESEARCH SERIES NUMBER SEVEN-C

Wetherill Mesa Excavations

big juniper house

Mesa Verde National Park – Colorado

by Jervis D. Swannack, Jr.

NATIONAL PARK SERVICE • U.S. DEPARTMENT OF THE INTERIOR
WASHINGTON 1969

U.S. DEPARTMENT OF THE INTERIOR

Walter J. Hickel, *Secretary*

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NATIONAL PARK SERVICE

George B. Hartzog, Jr., *Director*

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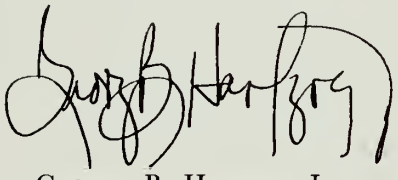
foreword

From 1959 to 1963, the National Park Service, with generous support from the National Geographic Society, made a comprehensive study of the archeology and ecology of Wetherill Mesa, in Mesa Verde National Park. Wetherill Mesa is being developed so that increasing numbers of visitors will be able to observe the evolution of a prehistoric Indian culture over some 700 years, both here and in the nearby and more familiar section of the park known as Chapin Mesa.

This is the third monograph of the Wetherill Mesa Project. Big Juniper House, a small mesa-top ruin, is of interest chiefly as a manifestation of culture-in-transition during the 11th and 12th centuries. Additional reports in the series will deal with other Wetherill Mesa sites, as well as various aspects of the ecology and archeology of the area.



GEORGE B. HARTZOG, JR.
Director

acknowledgments

BIG JUNIPER HOUSE was excavated between May 14 and July 24, 1962, under my direction, acting under the general supervision of James A. Lancaster, archeologist at Mesa Verde National Park. The work crew consisted of J. Lester Goff and Horace A. Ruckel, foremen, and Victor Barney, Mark Hadley, Richard E. Lee, Kee Nez, Richard Parsons, Douglas H. Scovill, Michael Shaw, Donald E. Smith, Charlie R. Steen III, John W. Wade, and Paul Willie, laborers.

The field photographs were taken by Ruckel, Scovill, and myself. The laboratory photographs were taken by Fred E. Mang, Jr., project photographer, who developed and printed all the pictures. I owe Fred a special debt of gratitude for layout suggestions and other illustrative innovations.

Bill Wade and I drew the field maps. The final map of site locations on Wetherill Mesa (fig. 3) was done by Wade, with the other maps and plan layouts being completed for publication by George A. King, architect, of Durango, Colo.

Bone artifacts and unworked bone were examined by Lyndon L. Hargrave and Thomas W. Mathews, of the Southwest Archeological Center, Globe, Ariz. Hargrave identified the bird bones and Mathews identified the mammal bones.

Physical anthropological observations on the burials were made by Kenneth A. Bennett, University of Arizona. Human bone pathologies were identified by James S. Miles, M.D., of the University of Colorado Medical Center, Denver.

Thomas P. Harlan, of the Laboratory of Tree-Ring Research, University of Arizona, dated the wood and charcoal specimens recovered during the excavations. Paul S. Martin, of the Geochronology Laboratories, University of Arizona, supervised the identification of pollen grains extracted from the several soil profiles taken at Big Juniper House.

Stanley L. Welsh, Brigham Young University, identified the wild vegetal material, and Hugh C. Cutler, of the Missouri Botanical Garden, St. Louis, identified the charred corncobs and kernels.

Felix Mutschler, a geologist with the Kennecott Corporation, Durango, Colo., identified the material of the various stone artifacts, as a personal favor.

Richard P. Wheeler, laboratory supervisor of the project, and I analyzed jointly the stone artifacts, and Wheeler gave me advice in analyzing the bone artifacts. Douglas Osborne, supervisory archeologist of the project, studied the stone-chipping debris of Big Juniper House and the other sites excavated on Wetherill Mesa.

Many suggestions and ideas for this report were provided by other members

of the project staff: George S. Cattanach, Jr., Charles L. Douglas, James A. Erdman, Alden C. Hayes, Robert F. Nichols, Carolyn M. Osborne, and Arthur H. Rohn. Bernard S. Katz, project editor, offered helpful suggestions in drafting the report. Al Lancaster contributed the knowledge of his long experience in Southwestern archeology during and after the excavation of Big Juniper House. To him I owe much of my understanding of Mesa Verde archeology.

My thanks go to the museum assistants who cleaned, cataloged, and mended the broken pots, and performed many of the technical and clerical chores that follow an archeological excavation. In particular, I would like to mention Pauline Goff, who helped me with the pottery analysis; Marilyn Colyer, who made the line drawings of the stone artifacts; and Jean Lee, who did most of the work of preparing the plates for reproduction.

Big Juniper House was also the subject of a thesis submitted in partial fulfillment of the requirements for an M.A. degree in anthropology at the University of Arizona. I am grateful to Raymond H. Thompson, Kenneth Hale, and Clara Lee Tanner, members of my thesis committee, for guidance and valuable advice.

References are made in this report to materials from a number of cliff and open sites on Wetherill Mesa which were excavated by the project and which will be reported on in due course. The cliff sites are Mug House (Arthur H. Rohn), Long House (George S. Cattanach, Jr., and others), Step House (Robert F. Nichols and others), and Site 1291 (Jervis D. Swannack, Jr.). The open sites include Badger House (Alden C. Hayes and James A. Lancaster), Two Raven House, Site 1230, Site 1253, and Site 1801 (Jervis D. Swannack, Jr.).

This publication is Contribution 34 of the Wetherill Mesa Project.

May 1966 *J. D. S., Jr.*

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CHAPTER 1

the excavation and the environment

The archeological survey of Wetherill Mesa was in its final season. Canyon and cliff sites had been located and recorded, and a small crew continued the survey on the mesa top. On May 6, 1960, in a rather dense section of woodland south of Mug House, two house mounds were located and designated as Site 1595. Several large junipers grew on the mounds, the largest one—about 30 feet high and about 3 feet in diameter—being rooted in a kiva depression (later called Kiva B). Although this tree was felled (along with the others) in preparation for the excavation, it impressed itself on our minds. Subsequent reference to Site 1595 as "the big juniper site" took hold and led to our naming it Big Juniper House.

REASONS FOR EXCAVATION

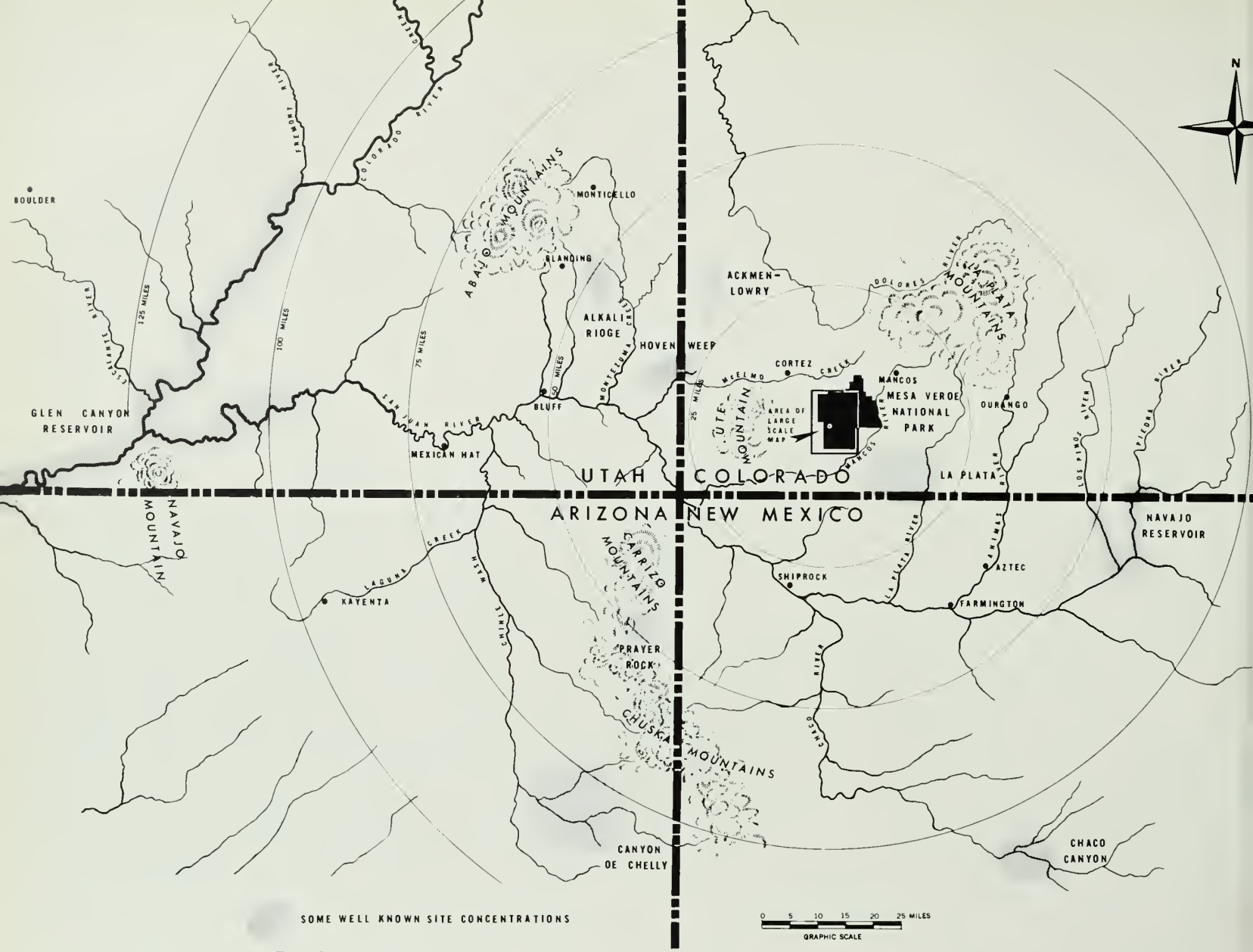
The decision to excavate Big Juniper House was based on two objectives. One was to provide an interesting exhibit-in-place for visitors to Mesa Verde National Park; the other, to obtain information about an inadequately understood phase of occupation in the Mesa Verde region.

Before excavation, surface pottery and architectural features indicated a transitional phase from Pueblo II to Pueblo III. As excavation progressed, we saw that one of our obectives could not be realized—the site would not be suitable as an exhibit in the interpretive program. It had been occupied continuously for some 250 years, and building styles were not clearly differentiated stratigraphically. Some rooms even showed four different masonry styles and construction periods in a single wall. Moreover, the pueblo itself did not present a coherent, compact unit. "Horizontal stratigraphy" is harder to understand than vertical stratigraphy, and visitors with little time to spend at the ruin would be baffled rather than enlightened. In discussions between the park's interpretive staff and the project archeologists, it was decided the site should eventually be backfilled. (Badger House and Two Raven House, mesa-top ruins of Pueblo II and Pueblo III, south of Big Juniper House, were picked as suitable for exhibit purposes.)

The withdrawal of interpretive interest permitted thorough excavation, usually impossible because of stabilization and exhibition requirements. Walls could be dismantled where and when needed; floors could be dug through; and backdirt could be piled wherever convenient. The work proceeded rapidly, and the second objective—to obtain information on the Pueblo II–III transition—was fulfilled.

LOCATION AND ENVIRONMENT

Mesa Verde National Park comprises about half of a large south-sloping tableland or mesa in southwestern Colorado (fig. 1). The mesa is demarcated on its north and west sides by a steep escarpment rising 1,000 to 2,000 feet above the surrounding country, and it is transected in its eastern and southern sections by the Mancos River Canyon. Headward-eroding streams have carved the tableland into northwest-southeast trending canyons creating many small mesas, one of which is called Wetherill Mesa (fig. 2). The name "Mesa Verde" (green table) derives from the perpetually green forest of pinyon and juniper that covers much of the tableland.



1 *Four Corners area.*

The sedimentary rocks exposed in the area are primarily sandstones and shales, with intrusions of small igneous bodies and dikes (Wanek, 1959). The stratigraphic sequence runs from the Dakota sandstone (the oldest), through the Mancos shale, Point Lookout sandstone, and the Menefee formation, to the Cliff House sandstone (the youngest). Locally, the Cliff House sandstone is overlain by small bodics of cemented gravels which are probably derived from the La Plata and San Juan Mountains.

Big Juniper House is on thc west side of Wetherill Mesa, approximately 380 yards due east of Rock Canyon and Jug House (Site 1233), and about 820 yards due west of Long Canyon (fig. 3). The altitude at the site is approximately 7,220 feet.

The site is on a low, east-west ridge that slopes in all dircctions. Figure 4 gives an idea of the general terrain. The greatest slope is to the south, following the inclination of Wetherill Mesa. The site faces toward the south, with the rooms on the north followcd by the kivas and the trash mound.

The undisturbed soil of the site is a red loess, the bottom of which was not encountered in excavations as deep as 10 feet. The loose forest humus on the surface rarely exceeded one-half foot in depth.

In general, the climate of the Mesa Verde region is characterized by low humidity and wide, diurnal temperature ranges. Average annual precepitation over a 38-year period, beginning in 1923, was 18 inches. Two wet periods occur during the year: in late winter, with moisture primarily from snowfall, and in late summer, with moisture usually from afternoon thunderstorms. The wettest months are February and August, the driest are June and November. In 1962, when Big Juniper House was excavated, Mesa Verde National Park recorded its driest summer, with precipitation of 0.74 inches for June, July, and August. The average precipitation during these months in the 38-year period of record was 4.4 inches.

The warmest month is July, with a mean temperature of 72°F., and the maximum recorded temperature of 102°F. The coldest month is January, with a mear

temperature of 29°F. The lowest recorded temperature at Mesa Verde, −20°F., occurred in January 1963.

The area of Big Juniper House is a woodland of pinyon and Utah juniper, with an understory consisting chiefly of mutton grass. Big sagebrush and black sagebrush grew on the house and trash mounds. These shrubs are commonly found on the disturbed soil of other prehistoric sites at Mesa Verde (Erdman, MS.).

Common animals observed in the area are the coyote, mule deer, bobcat, gray fox, Nuttall's cottontail, rock squirrel, Colorado chipmunk, brush mouse, deer mouse, and pinyon mouse. Badger, porcupine, and red fox are seen occasionally.

Birds observed today with varying frequencies are the scrub jay, pinyon jay, common raven, common crow, hairy woodpecker, and red-tailed hawk. Brief appearances are made by the broad-tailed hummingbird, plain titmouse, robin, western bluebird, and chipping sparrow.

Turkeys, probably domesticated or kept in captivity by the prehistoric inhabitants, became extinct in the Mesa Verde historically and were re-introduced in the park in 1944, 1955, and 1957. They are now most common near the park's staff residential areas where food is relatively abundant. However, they have also been observed in other parts of the park. They are native to, and numerous in, areas not far from Mesa Verde, such as the White Mountains of Arizona and the Sangre de Cristo Mountains in New Mexico.

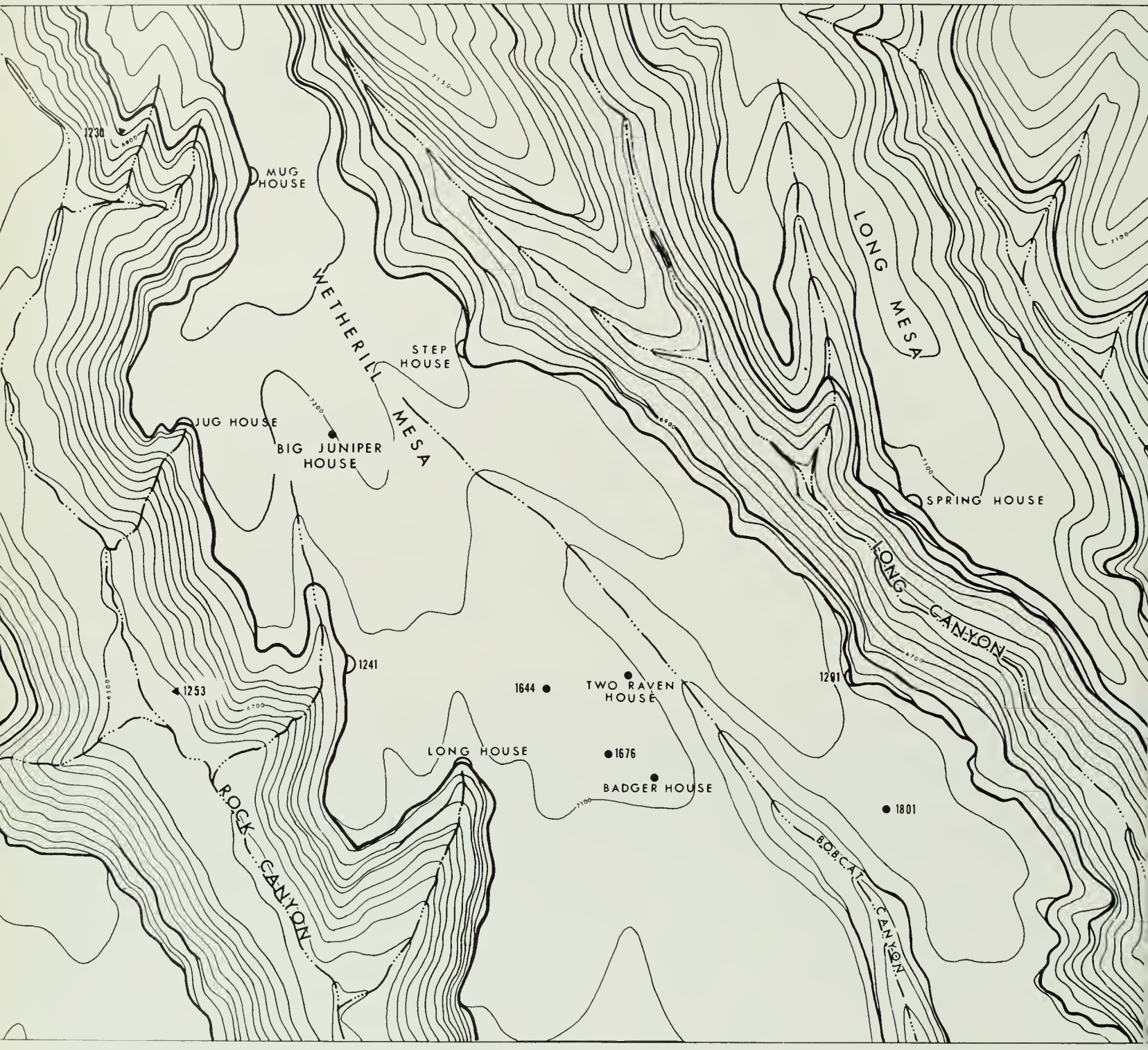
EXCAVATION PROCEDURE

Excavation began by stripping soil from the center of the West House Mound to the outside until walls were found. As rooms were outlined, they were numbered consecutively (fig. 5). Levels within rooms were arbitrary or, in some cases, were by the natural stratigraphy. Artifacts from the floor or, if no floor was encountered, from the level corresponding to the base of the walls were always bagged and cataloged separately from artifacts recovered in the fill. Artifacts from floor features, subfloor tests, and subfloor features were also bagged and cataloged separately.

Areas adjacent to the rooms and kivas were stripped down in an effort to discover occupation surfaces and extramural features. Artifacts from these features were bagged and cataloged separately from those of general proveniences within the areas.

Kivas A and B, marked by circular depressions, were trenched to find the walls and then stripped down by artificial and natural levels. Kiva C was located by a soil auger, trenched, and then stripped. All rooms and kivas that were completely excavated were also tested below floor levels—usually by two trenches at right angles to each other—and dug to sterile native soil. Subfloor features were completely excavated. Artifacts from the kiva floors, floor features, and subfloor features and tests were handled in the same manner as those from rooms.

2 *Aerial view of Wetherill Mesa.*



3 *Big Juniper House and other excavated sites.*

The South Trash Mound was excavated by a series of parallel trenches dug from the surface to sterile soil. The trenches were begun from the south edge of the mound and continued northward until the trash deposit played out. A long trench, Test Trench 10, intersected the other trenches at the north edge of the trash mound (fig. 163). No definite evidence of vertical or horizontal stratification was observed in the trench profiles or in the materials obtained from test blocks cut in 6-inch levels. Accordingly, in the laboratory analysis, all trash mound artifacts were considered together, except for those associated with or near burials or in other special locations.

Tree-ring specimens were cataloged, wrapped, and treated with preservatives in the field, checked through the Wetherill Mesa laboratory, and shipped to the Laboratory of Tree-Ring Research, University of Arizona, for dating. Artifacts, burials, and other material were field-cataloged and then sent to the laboratory for cleaning, preservation, permanent cataloging, and study.

The plan and sections of the site were mapped by telescopic alidade and plane-table, with a stadia rod. Room and kiva plans were made with a leaf alidade and plane-

table, and cross sections of these features were plotted with level line, plumb bob, and tape.

In the field, a 4-by-5 Crown Graphic was used for black-and-white pictures and a 35 mm. Leica for color slides. A special tripod, made of tubular steel with one leg a ladder, enabled us to shoot down from a height of 15 to 17 feet. Bird's-eye views of rooms were taken with the camera secured to a tilt-top head with a 90° piano hinge. In the laboratory, we found that a 4-by-5 view camera gave the best perspective for illustrating three-dimensional objects (Mang, 1965).

CHAPTER 2

architecture

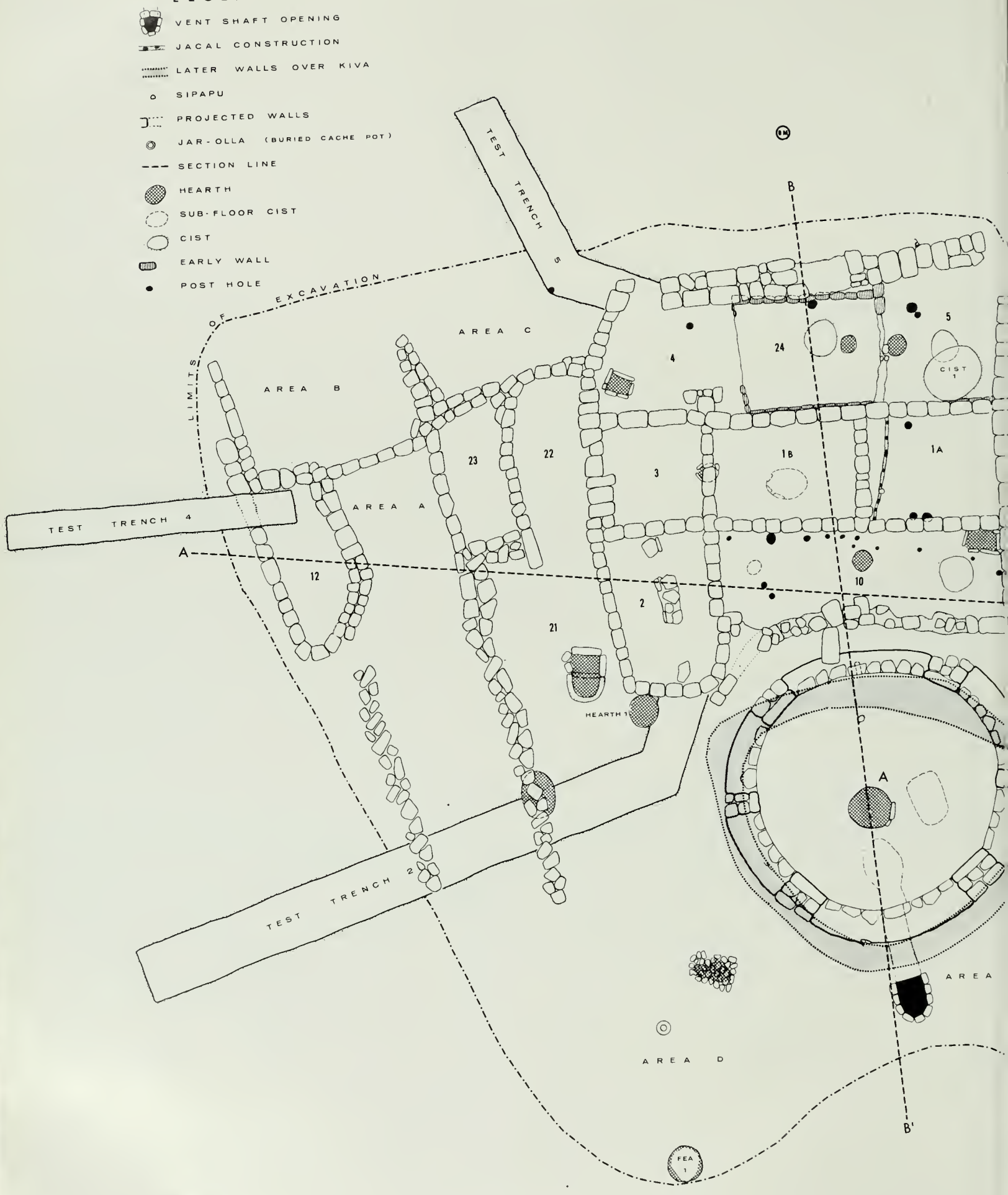
Big Juniper House was marked by two mounds, one to the east and the other to the west, with Rooms 11 and 13 at the low point between the mounds (fig. 4). Two circular depressions, directly south of the mounds, indicated probable kiva locations. South of the house mounds and kiva depressions was a large, low mound—the refuse dump—which was designated as South Trash Mound. Northeast of South Trash Mound and near East House Mound was another small mound, designated East Trash Mound (fig. 163).

Prior to excavation, I speculated on the possibility that the two house mounds represented two sites. I soon discovered they were parts of a single site. West House Mound was completely excavated. The East House Mound was stripped to expose the room outlines and only selected rooms were fully uncovered. Artifacts found during the stripping operations are recorded in the tables of this report as East House Mound artifacts.

The architecture of Big Juniper House (figs. 5 and 6) presented a scrambled picture, the result of construction during two and a half centuries of occupation. Later walls were built directly on top of earlier ones and rarely was the fill undisturbed between occupation levels. Several architectural styles were encountered: coursed stone masonry of different types, slab walls, rubble walls, and jacal walls.

There were at least five stages of building activity. The construction components are listed below in chronological order, beginning with the latest (E).

4 *Big Juniper House, looking north. Most of the West House Mound has been excavated. Kiva A is in center foreground.*


LEGEND
VENT SHAFT OPENING
JACAL CONSTRUCTION
LATER WALLS OVER KIVA
SIPAPU
PROJECTED WALLS
JAR-OLLA (BURIED CACHE POT)
SECTION LINE
HEARTH
SUB-FLOOR CIST
CIST
EARLY WALL
POST HOLE
LIMITS OF EXCAVATION
TEST TRENCH 5
TEST TRENCH 4
TEST TRENCH 2
AREA A
AREA B
AREA C
AREA D
A
A'
B
B'
HEARTH 1
CIST 1
FEA 1
1A
1B
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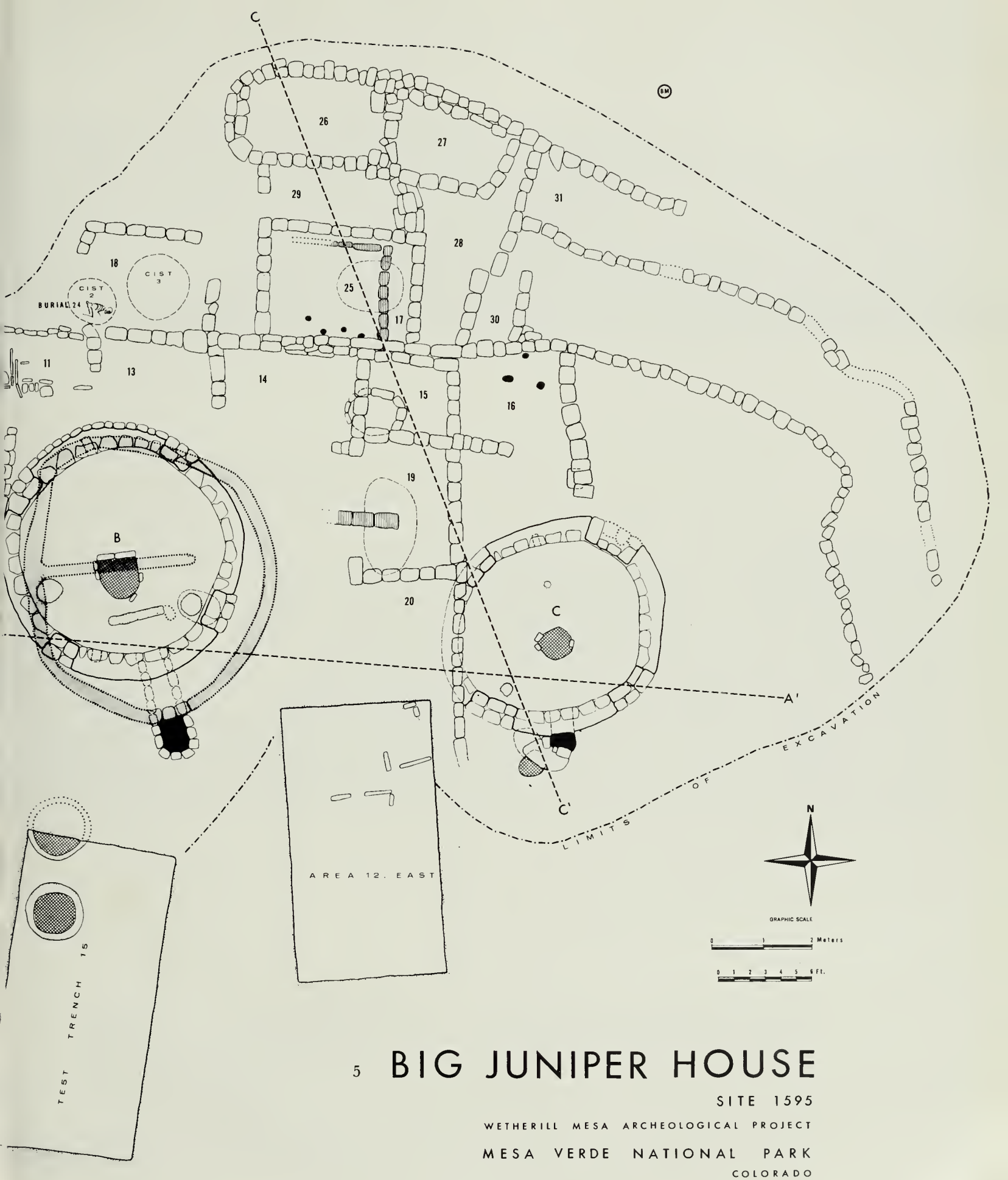


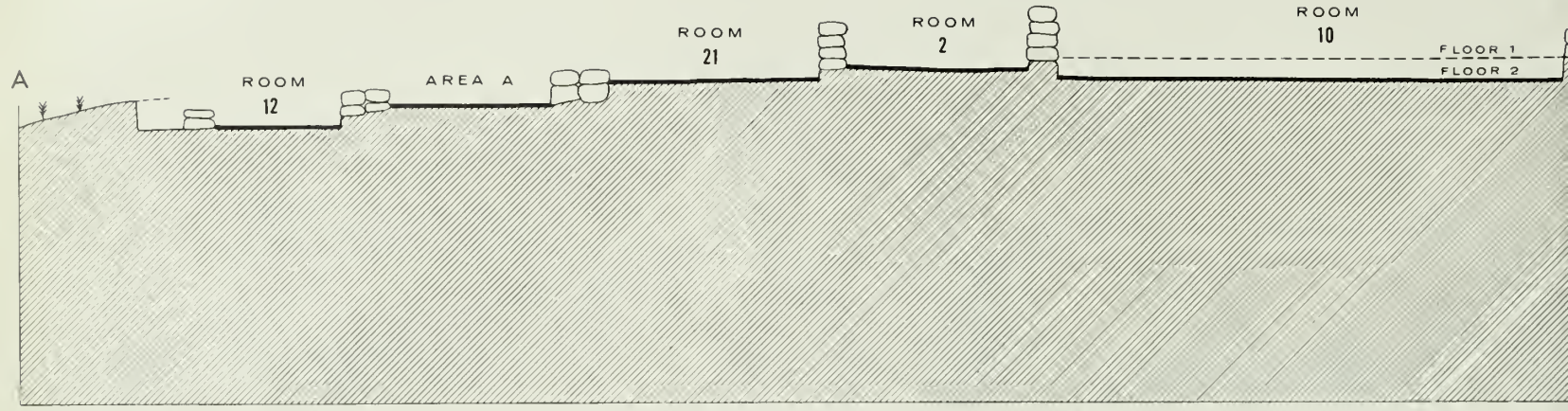
5 # BIG JUNIPER HOUSE

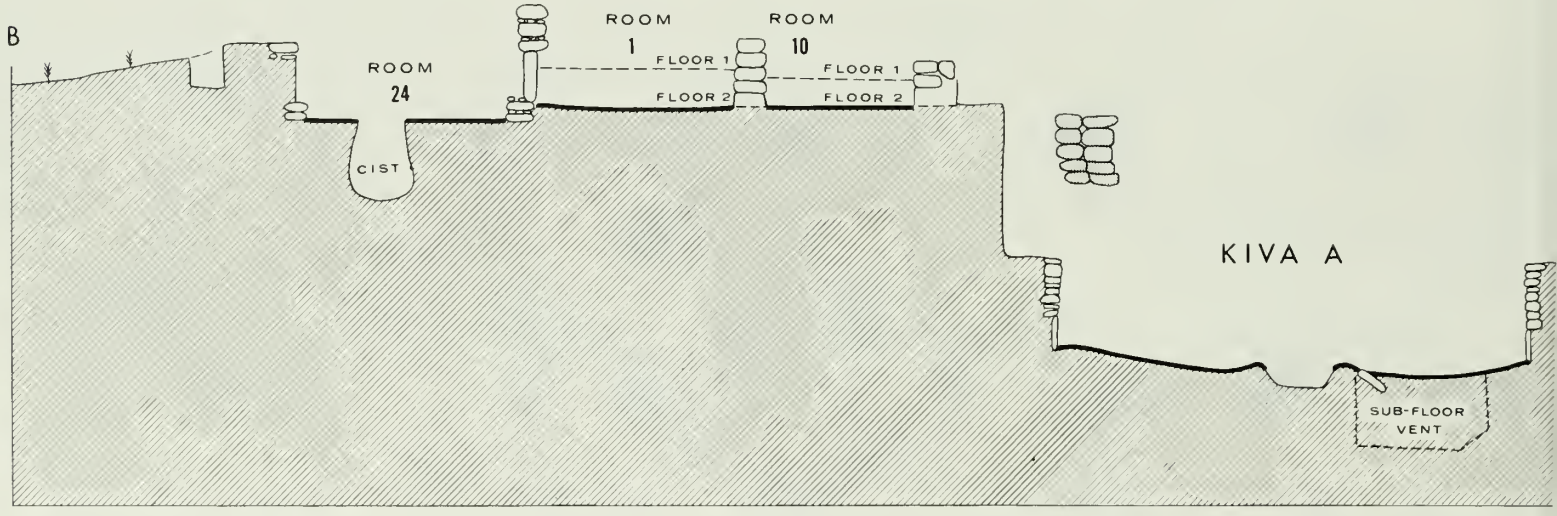
SITE 1595

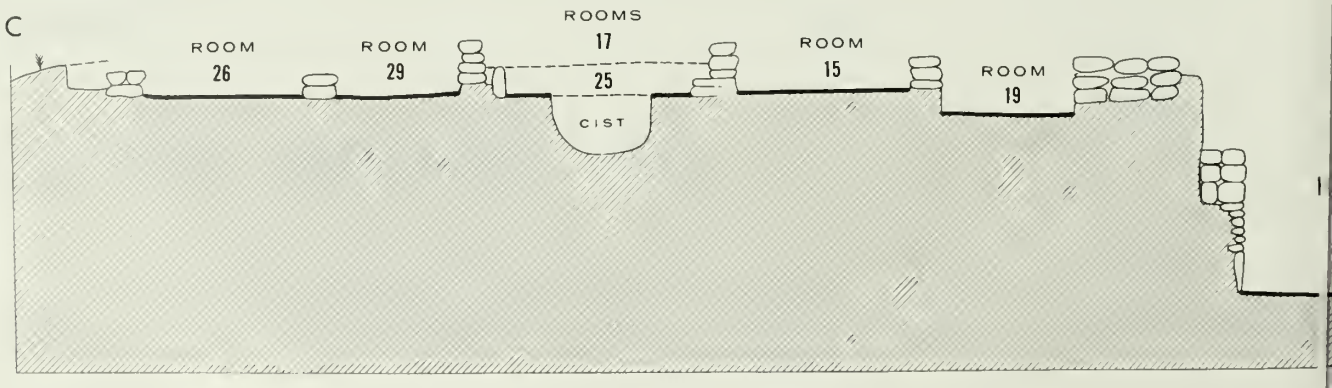
WETHERILL MESA ARCHEOLOGICAL PROJECT

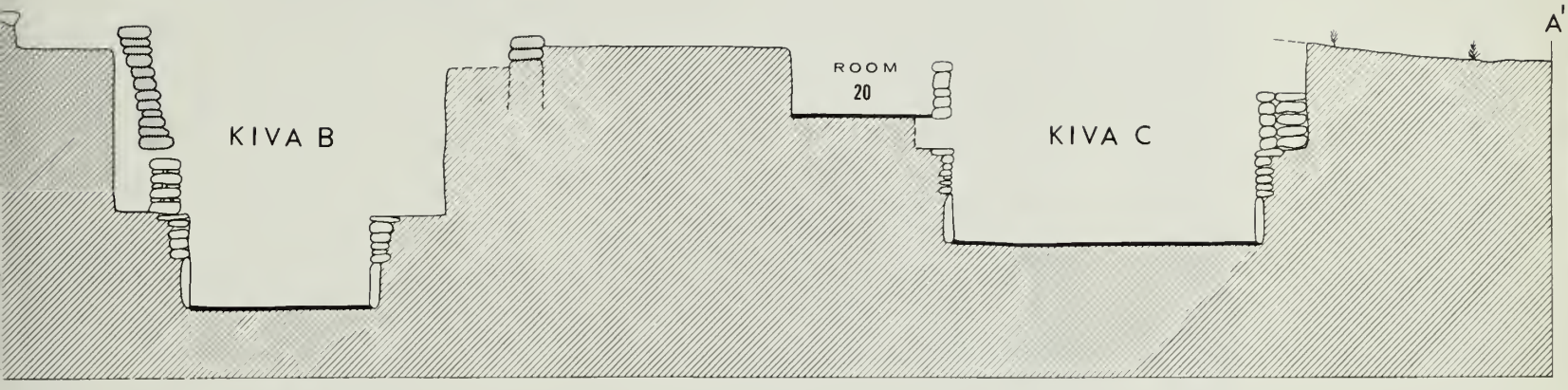
MESA VERDE NATIONAL PARK

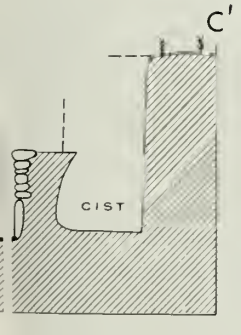
COLORADO


A
ROOM
12
AREA A
ROOM
21
ROOM
2
ROOM
10
FLOOR 1
FLOOR 2


B
ROOM
24
CIST
ROOM
1
FLOOR 1
FLOOR 2
ROOM
10
FLOOR 1
FLOOR 2
KIVA A
SUB-FLOOR
VENT


C
ROOM
26
ROOM
29
ROOMS
17
25
CIST
ROOM
15
ROOM
19





GRAPHIC SCALE

6 # BIG JUNIPER HOUSE

SITE 1595

WETHERILL MESA ARCHEOLOGICAL PROJECT

MESA VERDE NATIONAL PARK

COLORADO

Component	*Associated Features*
E ca. A.D. 1150	Later walls over Kivas A and B. Probably the compound wall north of Rooms 24 and 5.
D ca. A.D. 1080–1100 to 1130	Main occupation of the site. Late occupation of Kiva A. Kivas B and C. Upper fills and walls of Rooms 1a, 1b, 10. Rooms 2, 3, 4, 6, 7, 8, 9, 11, 13, 14, 15, 16, 17, 19, 20. Probably Rooms 21, 22, 23, 26, 27, 28, 29, 30; also Areas A, B, C, D.
C ca. A.D. 1050–80	Lower fill and Floor 2 of Rooms 1a, 1b, 10. Hearth below shared wall of Rooms 1b and 3. Posts below floor of Rooms 7 and 8. Possibly Room 12. Clay-lined firepit under slab hearth and probably Hearth 1 in Room 21. Room 25. Probably Area 12 and Test Trench 15, and the two firepits in Test Trench 15. Firepit under retaining wall in Test Trench 2. Posts under floor of Room 16. Feature 1. Cist to south of Kiva C. Probably early occupation of Kiva A.
B Ca. A.D. 900–1000	Room 5. Subfloor hearth in Room 6. Subfloor cist in Room 7. Cists 2 and 3; cist under wall of Room 25. Subfloor cist in Room 19. Possibly firepit cut by cist south of Kiva C.
A Within time range of Component B, but possibly earlier part of that range.	This is a possible earlier component based on the floor level of Room 24. It may also be part of Component B. Room 24. Sub-Floor 2 cist in Room 1b. Sub-Floor 2 cist in Room 10. Post below Room 21. Post in Test Trench 5. Possibly Pit 1 in the South Trash Mound next to Test Trench 1. It is possible that this pit is earlier than Component A.

Most of the unexcavated parts of the East House Mound probably belong to Component D. The East Trash Mound is also primarily of this component. The South Trash Mound was undoubtedly used during all the components.

In addition to the five construction components, there appeared to be at least two occupational units of kivas and related rooms. The more clearly delineated unit includes Kiva A; Rooms 1a, 1b, 2, 3, 4, 6, 7, 8, 9, 10, 11, and probably Rooms 21–23; and Area D. This unit is composed of several functional categories: living rooms, mealing or work rooms, storage rooms, and courtyard-outdoor work areas. Units are primarily defined on the basis of proximity to kivas, wall junctures indicating times of construction, and contiguity of rooms and areas.

The second unit is Kiva B; Rooms 13–15, 19, 20; and possibly Rooms 17 and 18. There does not seem to be a comparable occupation unit related to Kiva C.

These units will be described under the individual rooms and kivas.

Twenty rooms, or areas numbered as rooms, and three kivas were completely excavated and tested below floor level. In addition, 11 rooms or areas were outlined in the East House Mound, and miscellaneous walls, hearths, and cists scattered around the house area were excavated. The South Trash Mound was almost completely excavated by a series of parallel trenches. Only one trench was dug in the East Trash Mound, which turned out to be a shallow deposit over a natural hillock, yielding little material of importance.

The architectural terms used in this report are defined as follows:

Coursed masonry—masonry in which the stones are laid in layers.

Slab wall—a wall in which the stones are set on edge.

Jacal wall—a wall consisting of a framework of poles or small posts and interwoven twigs or smaller poles covered with adobe; often called "wattle and daub." Jacal walls at Big Juniper House are termed so only by inference. The remains of such walls at the site consist of burned stubs of the vertical members with burned clay between, the rest of the wall having disintegrated.

Simple wall—a wall of coursed masonry, one building stone in width; these walls are sometimes called "single-coursed walls"—a misleading term, since courses refer to layers and not to widths.

Double wall—a wall composed of two simple walls—each wall laid adjacent to but independent of the other.

Compound wall—a wall of coursed masonry, two or more building stones in width; some or all of the stones are exposed on only one face of the wall.

Rubble wall—a wall composed of unworked stones with no apparent coursing or facing.

Scabbled masonry—building stones that have initial shaping by edge-spalling; stones are blocky in appearance.

Chipped-edge masonry—masonry in which the stones are shaped by bifacial chipping or spalling; sides and ends of the stones have usually been worked to thin, sinuous edges.

Finished masonry—masonry in which the initial shaping is by one or both of the above methods, followed by pecking or grinding, usually confined to the faces.

ROOMS AND AREAS

It is difficult to say with any certainty what specific function a room or area served. In fact, as will be seen in the following discussion, some "rooms" might be considered areas. I could not determine what rooms were used only for sleeping, so I have called most rooms "living rooms." This indicates a general-purpose function. A living room could, and probably did, serve at one time or another as a place to sleep, to work, or to store things. On the other hand, when I refer to a storage room or workroom, this is because there appears to be a more definite reason to do so, such as the small size of the room or the presence of mealing bins or of storage jars in the floor.

Room 1a

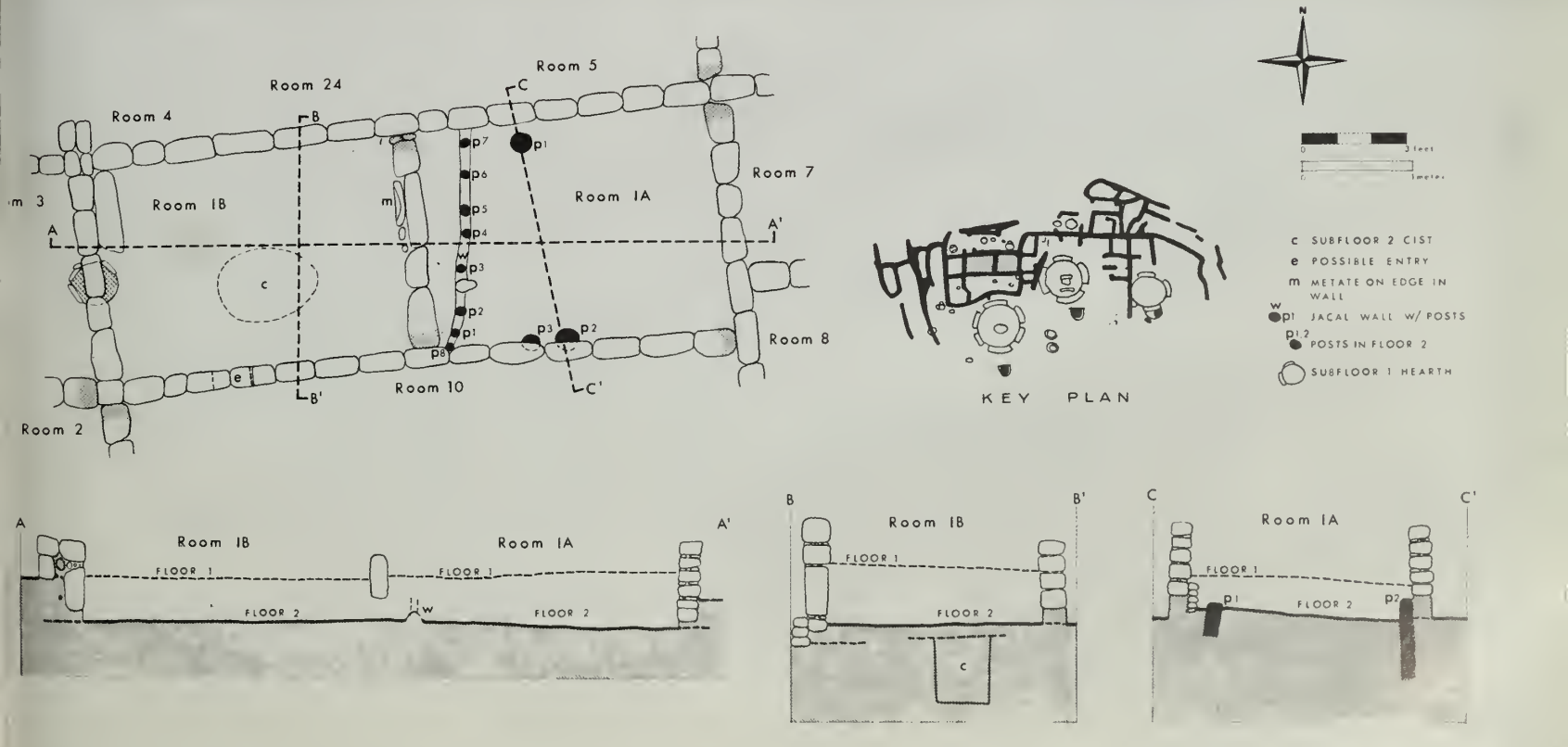
Dimensions. About 8.5 feet long east-west and about 6.5 feet wide north-south; lower level (Floor 2) was approximately 2.7 feet below present ground surface (figs. 7 and 8). Part of the north wall was 0.2 to 0.4 feet above ground surface; part of the south wall was at surface.

Walls. Masonry walls all belong to the Component D building period. The west wall was constructed later than the other walls. East wall abuts north wall, south wall abuts east wall, west wall abuts north and south walls. Rooms 1a and 1b were possibly a single room a

7 *Room 1a, Floor 2.*

one time. The jacal wall on the west side is in Floor 2 and extends under the south wall; it belongs to the Component C building period. The top 1.6 feet of the north wall is finished masonry and is banded with small tubular spalls arranged in even layers between the larger building stones (fig. 9). This masonry was originally chipped-edge masonry that was later finished on the faces by pecking. The south wall is chipped-edge masonry and some finished masonry of the same type as in the north wall. The east wall is chipped-edge masonry.

8 *Plan and sections of Rooms 1a and 1b.*



9 *Room 1a, exterior of north wall. Note pecked facing (dimpled surfaces) of finished masonry.*

The west wall is a partially simple wall of scabbled masonry, with a slab wall at the north end, and had a troughed metate fragment incorporated in it.

It is possible that a trench was dug as a footing for the masonry walls, since they extend lower than the presumed Floor 1 level. However, we found no definite evidence of such a trench. Below Floor 2 on the north side is the top of the south wall of Room 5.

Entry. None indicated.

Floor. No definite floor for the Component D building period was found, but small stone rubble against the north wall, approximately 1.9 feet below surface, may indicate the point where this floor began. At this surface, called Floor 1, are traces of burned clay which probably represent the roof of the Floor 2 occupation. Floor 2 is burned clay, relatively hard-packed at about 2.7 feet below ground surface. Part of the Component C period, this level extends under the south and east masonry wall and the west wall. The Floor 2 occupation was burned. Some of the burned roofing material extended under the west and south walls. Disturbed fill with very few artifacts extended below Floor 2, about 1.3 feet down to native soil.

Artifacts on floors. Sherds and stone artifacts from Room 1a are listed in tables 3 and 9. Artifacts in Upper Fill are from surface to the level of Floor 1; in Lower Fill, from Floor 1 to just above Floor 2; in Floor 2 fill, from the fill just above Floor 2. No artifacts were associated definitely with Floor 2.

A partially restorable Mancos Black-on-white jar was found in the upper fills of Rooms 1a and 1b, and Area 6 (upper levels of Rooms 4–5 and 24). This jar is similar in shape and design to a jar found in the floor of Kiva A (fig. 57b) and may have been made by the same potter.

Dates. The dates listed in table 1 are from burned roof logs, jacal wall posts, and floor posts, all of juniper, from the occupation of Floor 2 (Component C). (All dates from juniper charcoal or charred wood found at Big Juniper House are given in table 17 (appendix).

TABLE 1. — TREE-RING DATES FROM ROOM 1A, BIG JUNIPER HOUSE

Specimen [1]	Provenience	Dates, A.D.[2]	
		Inside	Outside
MV–1650.....	Lower fill: primarily resting on Floor 2.	803	1054vv
MV–1653.....	Lower fill: primarily resting on Floor 2.	755	1052vv
MV–1649.....	Lower fill: primarily resting on Floor 2.	777±	1045vv
MV–1651.....	Lower fill: primarily resting on Floor 2.	886	1035vv
MV–1642.....	Lower fill: primarily resting on Floor 2.	828p	1027vv
MV–1646.....	Lower fill: primarily resting on Floor 2.	791	1017vv
MV–1640.....	Lower fill: primarily resting on Floor 2.	908p	1006vv
MV–1716.....	Lower fill: primarily resting on Floor 2.	933	990vv
MV–1703.....	Lower fill: primarily resting on Floor 2.	790	945vv
MV–1704.....	Lower fill: primarily resting on Floor 2.	824	890vv
MV–1715.....	Lower fill: primarily resting on Floor 2.	637	774vv
MV–1645.....	Lower fill: primarily resting on Floor 2.	652	750+vv
MV–1710.....	Floor 2, jacal wall, Post 2.	669	773v
MV–1707.....	Floor 2, jacal wall, Post 3.	876	990vv
MV–1709.....	Floor 2, jacal wall, Post 5.	875	974vv
MV–1712.....	Floor 2, jacal wall, Post 7.	877	949vv
MV–1713.....	Floor 2, jacal wall, Post 8.	636	770vv
MV–1700.....	Floor 2, Post 1.....	837±	1031r
MV–1701.....	Floor 2, Post 2.....	710	1039vv
MV–1702.....	Floor 2, Post 3.....	832p	971vv

[1] Specimen numbers assigned by the Laboratory of Tree-Rin Research, University of Arizona.

[2] Key to symbols: p—pith ring present; v—outside shows erosior outermost ring variable around circumference; vv—outside show extreme erosion, outermost rings very variable; r—outer rin constant over significant portion of circumference.

10 *Room 1b, Floor 2. Possible entry in south wall (top) to left of the arrow.*

It is not possible to determine the construction date for the Floor 2 occupation. However, since the latest dates are around the mid-1000's, I would imagine that the Floor 2 occupation began no earlier than the last date, or A.D. 1054. There is no suggestion of later building or remodeling during this occupation. The later construction (Component D) represented by the upper fill and masonry walls probably dates around 1100. The 1031r date is probably a cutting date, but the lack of dates grouped around this date suggests that 1031 is probably not a construction date for the Floor 2 occupation. The specimen may have been taken from an earlier building or may represent a tree that was dead several years before it was used in this structure.

Remarks. The Component D building represented by the masonry walls was probably a living room. The earlier jacal structure of Component C represented by Floor 2 is part of a larger jacal structure or structures in the same area, joining with Floor 2 of Room 1b, Floor 2 of Room 10, and subfloor posts in Rooms 7 and 8. The dates from these Component C features all fall within the range of dates from Room 1a.

With the top of the south wall of Room 5 beginning at about the same level as Floor 2 in Room 1a, there are three different building periods represented in this one locality. It is possible that the south wall of Room 5 was razed for building the north wall of Room 1a.

Room 1b

Dimensions. About 8.5 feet long east-west and about 6 feet wide north-south (figs. 8 and 10). Floor 2 is at about the same depth as Floor 2 in Room 1a, or about 2.7 feet below present ground surface. The top of the sub-Floor 2 cist in Room 1b is about 0.3 feet below the floor and is about 2 feet deep. Parts of the north wall were 0.2 to 0.4 feet above the present ground surface.

Walls. The masonry walls, as in Room 1a, all belong to the Component D building period and are not associated with the Floor 2 occupation. The south and west walls are bonded at the corner, but are indefinite because of the poor condition of the walls in that area. The east wall (shared with Room 1a) abuts the north and south walls.

The north wall has a slab base of unworked stones and

11 *Room 2. Possible mealing bins next to walls at bottom and top center.*

12 *Detail of northeast corner of Room 2, showing wall abutments.*

is about 1.3 feet high. It is topped by a simple wall of finished masonry similar to the north wall of Room 1a (fig. 14). The coursed wall is approximately 1.3 feet high. Both styles of walls are above the south wall of Room 24, a possible Component A room.

The south wall of Room 1b is a simple wall of chipped-edge masonry with some finished stones, and the west wall is a simple wall of primarily chipped-edge masonry. The east wall has been described under Room 1a.

Entry. Possible entry in the south wall at the west end, but unfortunately the wall was not high enough for positive identification.

Floor. No clear evidence of a floor for the Component D period. Floor 2 is compacted clay, with some burned areas on the floor near the eastern side of the room. No features in Floor 2 of Room 1b. The sub-Floor 2 cist, located near the center of the room, measures about 2.9 by 2.2 feet and about 2 feet deep. This cist was probably associated with the Room 24 occupation of Component A. A slab-lined hearth, found just under the west wall between Rooms 1b and 3, probably represents a Component C feature.

Artifacts on floor. No definite association of artifacts with Floor 2. Material from the fill is tabulated in tables 3, 6, 9, and 10.

Dates. The following dates from juniper charcoal taken from the lower fill are undoubtedly the Floor 2 (Component C) occupation:

Specimen	Dates A.D.	
	Inside	Outside
MV–1637	915	1008vv
MV–2133	915p	952vv

(NOTE: See table 17 in appendix for key.)

Remarks. Room 1b, Floor 2, and the upper fill and masonry walls represent the same occupations noted in Room 1a. The sub-Floor 2 cist in Room 1b represents an earlier occupation than that of Room 1a, possibly a Component A occupation associated with Room 24. The Floor 2 surface of Room 1b may have been an outdoor working area for the jacal structures of Component C, and the slab hearth under the west wall may have represented an extramural Component C feature.

Room 2

Dimensions. About 9.6 feet long north-south and about 6.5 to 7 feet wide east-west (fig. 11). Floor is approximately 1.5 to 2 feet below present surface. Another possible surface was located about 0.4 foot below the floor. The walls were covered by 0.2 foot of earth and were not visible on the surface.

Walls. All were of the simple wall type. The east wall appears to have been built in two stages; perhaps the room was a later addition to the room block after the construction of Room 10. The section of the east wall extending south of Room 10 abuts the wall shared by Rooms 2 and 10. The north section of the east wall abuts the west wall of Room 1b and the north wall abuts the west wall of Room 1b (fig. 12). The west wall is prob-

ably bonded to the south and north walls. The latter is not certain because most of the wall had collapsed at the northwestern corner of the room. There is no definite corner between the south and east walls, but rather a continuous wall curving from the east to the south.

The north wall and the north section of the east wall were constructed of scabbled masonry; the rest of the walls were chipped-edge masonry.

Except for the west wall, Room 2 walls rest on 0.2 to 0.6 foot of fill above the floor. Evidently, after the walls were built the floor was excavated slightly, perhaps to level it.

Entry. None indicated.

Floor. Compacted dirt over disturbed fill extended about 2 feet below the floor. At the north side there was a slab on the floor and an upright slab next to it—probably a mealing bin. In the center of the floor there was a paved area with the tops of the stones at floor level. Possibly another bin, or bins, was in this part of the room, for against the south wall was another flat slab.

About 0.5 foot below the floor, darker, compacted dirt indicated the possibility of another occupation surface. It is likely that this was a walking surface associated with the Component C occupation of Rooms 1a, 1b, and 10.

Artifacts on floor. No definite association of artifacts with the floor or subfloor occupation surface. Artifacts from the fill are listed in tables 3, 6, 9, and 10. Artifacts listed as Room 2, Floor Fill, are from the fill 0.5 foot above the floor to the floor. Room 2 provided one of the few cases where subfloor testing showed earlier pottery types outnumbering the Mancos Black-on-white of predominantly late Pueblo II. Most of the Cortez Black-on-white sherds came from the disturbed fill below the walking surface. There is a good possibility that these sherds were deposited as sheet trash from the Component A or B occupation of Big Juniper House.

Dates. No wood or charcoal was recovered, and hence there are no absolute dates. Masonry walls and floor of this room are undoubtedly Component D occupation, but probably a somewhat later addition to the masonry room block of Rooms 1a, 1b, and 10. The subfloor occupation surface is probably a Component C feature dating around A.D. 1050; subfloor fill material is somewhat earlier, probably from around 900–1000.

Remarks. Presence of mealing bins suggests that Room 2 may have been a work room during the Component D occupation. Its large size, however, may indicate that it was a living room. Three separate occupations are represented in this area—Components A or B, C, and D.

Room 3

Dimensions. Approximately 6.8 feet long east-west and 5.7 feet wide north-south. The floor was about 1.5 to 2.2 feet below the surface (fig. 13).

Walls. Walls were of simple wall type. The north wall is primarily a scabbled wall, with several building stones also exhibiting incipient pecked facing. This wall was built on 0.2 to 0.4 foot of fill above the floor.

The east wall, shared with Room 1b and resting on the floor, is mainly of chipped-edge masonry. Under the east wall were traces of a slab-lined hearth, probably associated with the Component C period. At the northeast corner there is fill from the top course to the floor, without building stones. The south wall is shared with Room 2 and was described above. The west wall is primarily of chipped-edge masonry and rests on the floor level. Wall junctures: north wall probably bonded to the east and west walls; east wall shared with Room 1b and bonded to the south wall of Room 1b; south wall abutted the east wall.

Entry. None indicated.

Floor. The floor is compacted dirt over lighter-colored disturbed fill, which is, in part, the result of Component C activity as shown by the slab hearth under the east wall. No features on floor. Disturbed fill extends 2 feet below floor to the sterile mesa-top loess. Cortez Black-on-white sherds from the subfloor testing outnumbered the Mancos Black-on-white (table 3) and are probably largely Component A or B trash.

Artifacts. No definite association of artifacts with the floor of Room 3. Fill and subfloor fill material is listed in tables 3, 9, and 12.

Dates. There are no absolute dates for Room 3. Masonry walls are Component D, about A.D. 1100. The subfloor hearth is Component C, or late 11th century. The disturbed fill below the floor is both Component C

13 *Room 3.*

and earlier (Component A or B), or about 900–1000.

Remarks. This room probably functioned as a living room during the Component D phase of occupation. Before the walls were constructed, the area was probably part of a walking surface and work area during the Component C occupation which, in turn, was stratigraphically above Component A or B trash.

Room 4

Dimensions. Although designated a room, this is more likely a walking surface or work space associated with Component D (fig. 5). A simple wall extending north from the west wall of Room 3 probably served as a retaining wall for the area. It had a surface approximately 1.4 to 2 feet below present ground surface that extended east over Rooms 24 and 5. A rectangular slab-lined firepit at this level is in the southwestern corner of the "room." To the north and stratigraphically above this surface is a compound wall of two courses representing a Component E feature. It is about 0.8 foot high, and the bottom of the wall is about 1.2 feet above the Component D surface. The top of the compound wall was exposed at the present ground surface.

Walls. The west retaining wall is an extension of the west wall of Room 3, the top of which was 0.3 to 0.5 foot below present ground surface. A simple wall of chipped-edge masonry, it is about equal in height to the west wall of Room 3 and rests on the Component D surface. The north walls of Rooms 1a and 1b and the west wall of Room 6 bound this area on the south and east. The surface was not traced beyond the compound wall of the later period, so it is not known if the surface extended farther north than is indicated on the site plan.

Entry. None indicated. If Room 4 was an outdoor work area, it would have been open except perhaps on the south, where it was bordered by rooms.

Floor. The topmost surface is Component D, level with the floors of Rooms 2 and 3 and Floor 1 of Rooms 1a and 1b. This surface extended west over Rooms 24 and 5. About 0.5 foot below the Component D surface was another floor, probably contemporaneous with Component C. This, in turn, overlay an earlier surface, about level with the Room 24 floor, which might have been an outdoor surface of Component A. In this latter surface, a posthole was located (indicated by the black dot on the site plan west of Room 24, fig. 5), at approximately

14 *Room 5 (left) and Room 24 (right). Note slab wall base for north wall of Room 1b (right center).*

the same level as a posthole in Test Trench 5, northwest of Room 4.

Artifacts on floors. No artifacts were definitely associated with the three surfaces; all came from the fill above the first surface and are listed in tables 3 and 9.

Dates. No datable wood.

Remarks. Room 4 and the upper occupation west to Room 6 probably functioned as an extramural work area for Component D. Earlier surfaces are probably also representative of extramural surfaces for Components C and A, or possibly Component B.

Room 5

Dimensions. This is another doubtful room which may well have been an outdoor work area or storage and work area (figs. 14 and 15). We found no definite walls associated with this room, although a single layer of scabbled stones underlying the north wall of Room 1a may have been a south wall. The room was defined as the area bounded by Room 1a on the south, Room 24 on the west, Room 6 on the east, and the Component E compound wall on the north.

Walls. The only possible wall would be the one-stone-high, scabbled wall underlying the north wall of Room 1a. The construction of Rooms 1a and 6 may have obliterated other traces of walls.

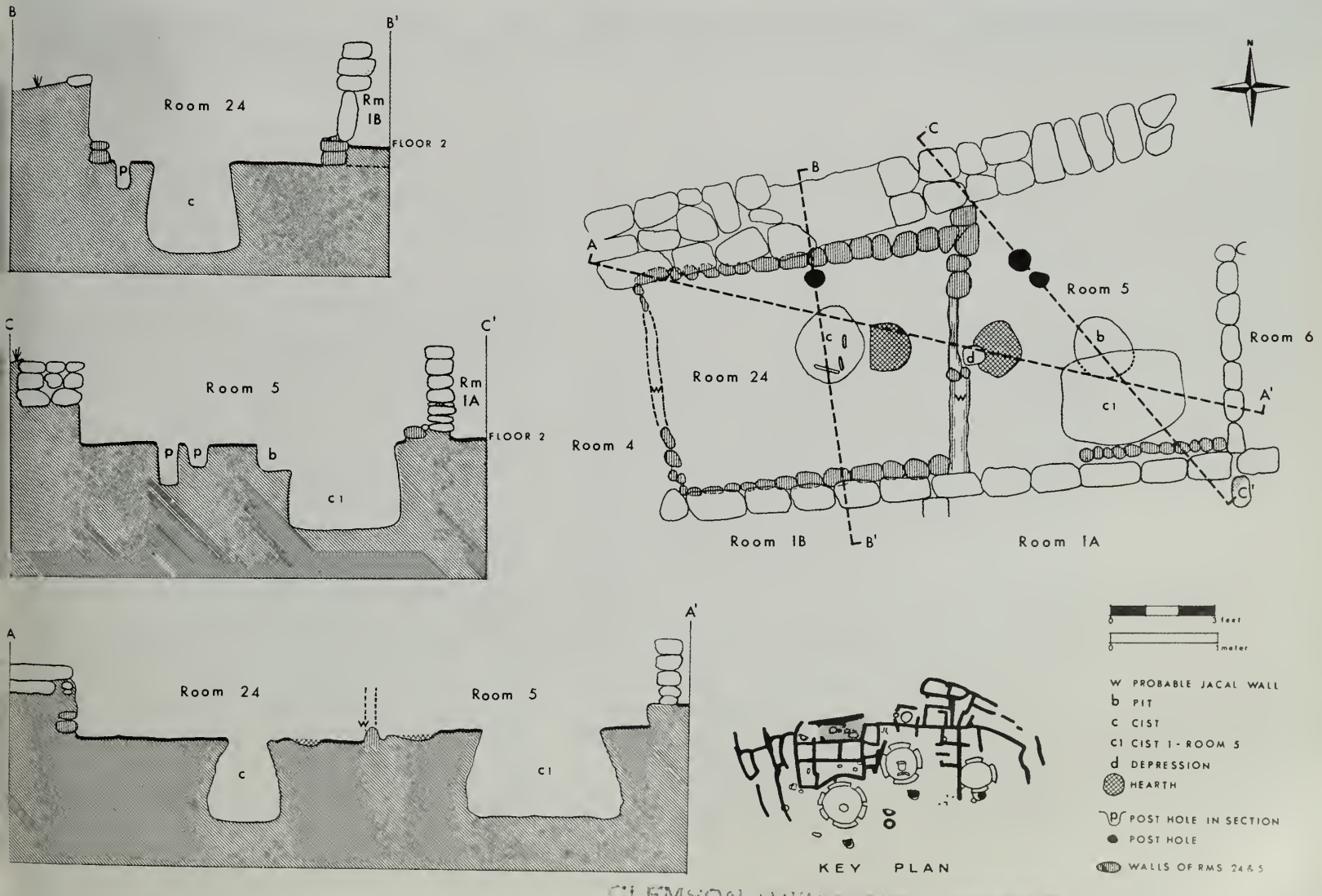
Entry. None indicated.

Floor. The floor was clearly demarcated by a hard-packed surface resting on sterile soil. Because it was somewhat higher than Room 24 floor, this room was thought to be later. However, it is entirely possible that the two rooms were contemporaneous—Room 5 being an extramural storage and work area for Room 24. The Room 5 floor level was approximately 2.5 to 3 feet below ground surface. The floor was about 0.7 foot below the bottom of the west wall of Room 6; 0.5 foot below the bottom of the north wall of Room 1a; and 1.2 feet below the bottom of the compound wall to the north of Room 5.

In the floor were the following features: a cist cutting into an earlier pit; a firepit on the west side of the room next to the east wall of Room 24; and two postholes in the northwestern part of the floor.

Mentioned previously under Room 4 was evidence of a later occupation surface above Room 5. This surface was approximately 2 feet below the ground surface, or about level with the presumed Floor 1 of Room 1a. The

15 *Plan and sections of Rooms 24 and 5.*



16 *Rooms 6 and 11. (a) Room 6 with cache pots in floor, at right; Room 11, poorly defined, at left.*

artifacts listed as "room 5, Fill" in tables 3, 6, 9, and 10 came from above this surface and are considered to be from Component D.

Artifacts on floor. No artifacts were resting on the floor of Room 5, although several artifacts came from Cist 1 fill and floor. Stone, bone, and sherds are listed in tables 3, 6, 9, and 10. Also in the cist were a broken, unfired Cortez Black-on-white jar and two Mancos Corrugated jars (figs. 40b and 43b), one of which was almost completely restorable and the other about half intact. Several sherds from the subfloor cist in Room 7 fitted the restorable Mancos Corrugated jar, indicating that both cists were open at the same time and probably belonged to the same building period.

Dates. Several pieces of juniper charcoal (MV–2138) from the Cist 1 fill gave an outside date of A.D. 1047. The condition of the outside of this specimen suggests that this is probably not a cutting date and thus would be somewhat later. It falls within the later range of the Component C dates from Rooms 1a, 1b and 10, plus other dates for this occupation from subfloor levels in Rooms 7 and 8. Therefore, it is likely that the cist and the Room 5 area were filled and covered by Component C trash and the cist material would belong to a later period than other Room 5 features. The date of Room 5 and the other Component B features is probably within the 900–1000 range, tending toward the latter half of the 10th century.

Remarks. Room 5 is probably an outdoor work and storage area of Component B, or possibly Component A, if it is associated with Room 24. Somewhat earlier building activity in the room is indicated by the shallow pit that was partially obliterated by the construction of Cist 1 in the floor. In this one area, probably all five Big Juniper House components are represented by the floor of Room 24 (Component A), floor of Room 5 (B), Floor 2 of Room 1a (C), the masonry walls of Room 1a and Room 6 (D), and the compound wall to the north (Component E).

Room 6

Dimensions. About 5.8 to 7.1 feet long north-south and 5 feet wide east-west (figs. 16 and 17). Depth of floor from present surface is approximately 2 to 3 feet.

Walls. The east and west walls are simple walls of chipped-edge masonry. The north wall is a slab wall and the south wall has a slab wall base with a simple wall of coursed masonry on top. This latter wall is primarily chipped-edge masonry with a few stones faced by pecking, as in the north wall of Room 1a. The east and west walls abutted the north wall and probably also the south wall. The latter wall is a continuation of the north wall of Rooms 1a and 1b. All of the walls probably belong to Component D.

Entry. None indicated.

Floor. The floor was indicated by a compacted us

surface on fill extending about 1.3 feet down. In the floor were three Mancos Corrugated jars (fig. 40a, d, and e) buried to their rims and probably serving as small storage cists or "cache pots." About 0.5 to 0.8 foot under the floor was the top of an irregular hearth area of burned and cracked rock (fig. 18), probably a Component B feature.

Artifacts on floor. The Mancos Corrugated jars buried in the floor, a Mancos Black-on-white sherd, and the utilized flakes were directly associated with the floor.

In table 3, "Room 6, Floor Fill" artifacts are from fill, from about 0.3 foot above the floor to the floor. Two of the Mancos Corrugated jars (fig. 40a and d) were open on the floor; the third (fig. 40e) was covered by an unworked, irregularly-shaped sandstone slab. Other artifacts from the fill are listed in tables 3, 9, and 10.

Dates. No absolute dates. The major occupation is Component D and dates around A.D. 1100. The subfloor hearth is on a level with Room 5 and would belong to the same occupation as that room (Component B).

Remarks. The three jars buried in the floor may indicate that Room 6 was used primarily for storage. As such, it may be part of a unit of storage rooms including Rooms 7 and 8, which also have cache pots in the floors. The subfloor hearth was probably an outdoor cooking area of Component B or possibly Component A.

(b) Floor excavated in Room 6, showing subfloor hearth and slab base south wall (top of picture).

Room 7

Dimensions. About 5.3 feet long east-west and 3.7 to 5.2 feet wide north-south (figs. 17 and 18). The floor is 1.5 to 2.2 feet below present ground surface.

Walls. The west, south, and east walls are simple walls of primarily chipped-edge masonry. The north wall is shared with Room 6 and was described previously. Some of the stones in the south wall and one or two in the north wall had incipient pecked facing.

Wall junctures: the west wall abuts the north wall, and the south wall abuts the west wall. The east wall is bonded to the south wall. The juncture of east and north walls was not determinable because the corner was missing. Maximum standing heights are: north wall, 1.9 feet; south and west walls, 1.7 feet; and east wall about 0.1 to 0.5 foot. The east wall presents an anomalous situation: it does not conform to the outline of the room, but continues a short distance northeast, not in line with the east wall of Room 6.

Against the slab base of the north wall were areas of small sandstone spalls set in adobe, perhaps in order to make the face even with the coursed masonry above. This situation was not observed on the other side of the wall for Room 6.

Entry. None indicated.

Floor. Composed of compacted dirt resting on fill which extends at least 1 foot beneath the floor. Floor level is about 0.5 foot higher than the floor in Room 6 and may indicate a later construction. The wall junctures also indicate that perhaps Room 6 was constructed first, and Rooms 7 and 8 were added as a unit.

Beneath the floor is another occupation surface at about the same level as Floor 2 in Room 1a. In this surface there were three posts, one of which was dated. Another date was obtained from charcoal scattered on this surface.

About 0.3 to 0.5 foot below this surface was the top of a partially slab–lined cist, approximately 2.5 feet in depth. This cist is probably a Component B feature, as several sherds in the fill fit a restorable jar from Cist 1 in Room 5. It is also about on the same level as the subfloor hearth in Room 6 and floor of Room 5. The cist contained two posts and charcoal which were dated.

Artifacts on floor. Buried in the floor to their rims were two Mancos Corrugated jars (fig. 40f and h), which probably had the same function as those in Room 6 but were not covered by slabs. There were no artifacts in definite association with the floor or subfloor. In the fill above the floor we found a Type 9 worked sherd (fig. 87, top). Artifacts from the fill, subfloor fill, and cist are listed in tables 3, 6, 8, 9, and 10.

Dates. Following are the dates obtained from the five specimens described above:

Specimen	*Provenience*	*Dates, A.D.* *Inside*	*Outside*
MV–1655	Subfloor surface	824	1025vv
MV–1732	Subfloor surface, Post 2	914p	1021vv
MV–1725	Subfloor Cist, Post 1	886	983+vv
MV–1726	Subfloor Cist, Post 2	827	988+vv
MV–1730	Subfloor Cist, Fill	928	992vv

(NOTE: See table 17 in appendix for key.)

Although there are only three dates from the subfloor cist—two from *in situ* posts that were probably wall supports for the slab lining—they appear to be close to the construction date of the cist. The two dates for the subfloor surface above the cist are also fairly close together and are well within the range of dates listed for Rooms 1a, 1b, and 10.

Remarks. Because of its small size and the cache pots in the floor, Room 7 was probably a storage room—one of a unit composed of Rooms 6, 7, and 8, and possibly also Room 11, a work and mealing room that will be discussed later. The subfloor level represents Component C and is probably part of the same structure described for Floor 2 of Room 1a. The subfloor cist is on the same level as the subfloor hearth in Room 6 and probably belongs to Component B. Three components are thus represented in Room 7.

Room 8

Dimensions. About 5.1 feet long east-west and 2.8 to 3.5 feet wide north-south (figs. 17 and 18). The floor is 0.7 to 1.7 feet below present ground surface.

Walls. All are simple walls primarily of chipped-edge masonry. North and south walls abut the west wall and are bonded to the east wall. Maximum standing heights above floor area: north wall, 2 feet; west and south walls, 1.6 feet; east wall, 0.8 foot.

The east wall extends about 1.3 feet below the floor; other walls rest on the floor level except for that part of the west wall shared with Room 1a, which extends below the floor level of Room 8.

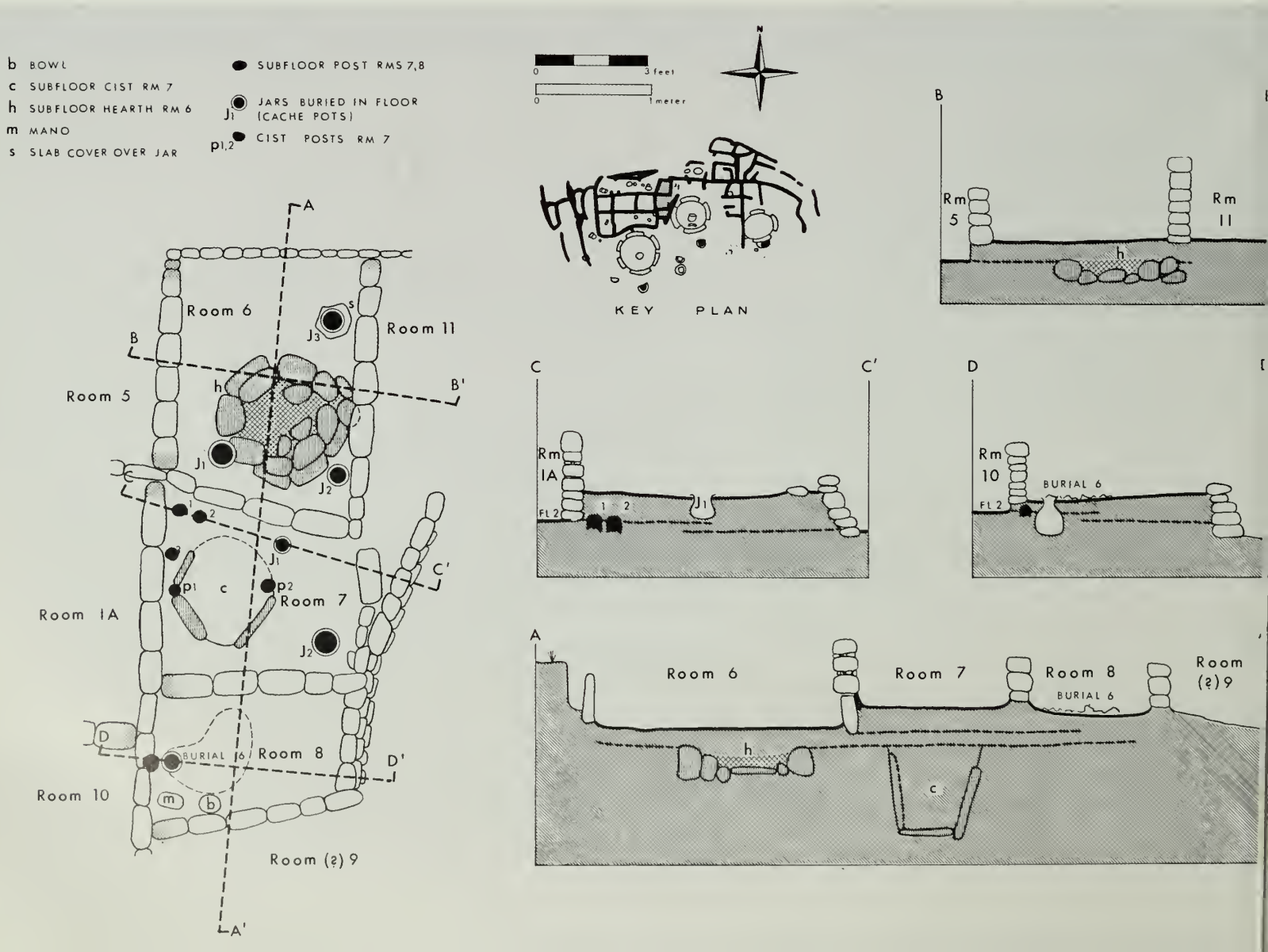
Entry. None indicated.

Floor. Hard-packed use surface resting on approximately 1.7 feet of fill above sterile soil. The floor is slightly basin-shaped and about on the same level as the Room 7 floor. Beneath the floor was an occupation surface of Component C equivalent to Floor 2 in Rooms 1a and 10.

Artifacts on floor. Buried in the western side of the floor was a Mancos Black-on-white olla (fig. 57a), with its opening at floor level. In the southwestern corner of the floor was a Type 1C mano (fig. 100d), half buried in the floor.

Near the center of the room were the burned remains of Burial 6 (fig. 169). This was a secondary burial resting on the floor. Associated with it were burned fragments of rush matting and an unburned late Mancos Black-on-white bowl (fig. 56c). Also in probable as-

17 *Plan and sections of Rooms 6, 7, and 8.*



sociation were a Type 8 worked sherd (fig. 86, center) and an unclassified black-on-white sherd. Artifacts in the room fill and subfloor fill are listed in tables 3, 8, and 9.

Dates. The following dates were derived from beneath the floor—one from an *in situ* post in the Component C surface and one from charcoal fragments below the Component C occupation:

		Dates, A.D.	
Specimen	*Provenience*	*Inside*	*Outside*
MV–1695	Post beneath west wall.....	873	1000vv
MV–1694	Subfloor, 3.4 ft. below present surface..	925	990vv

(NOTE: See table 17 in appendix for key.)

As in Room 7, these two dates show a slight separation between the Component C occupation and the Component B occupation. They are much closer, however, than those from Room 7, which cluster in two groups.

Remarks. Room 8 was probably a storage room during the Component D occupation and was used after its abandonment for the interment of Burial 6. Wall junctures of Rooms 6, 7, and 8 suggest that Room 6 was originally constructed as part of the unit of Rooms 1a, 1b, and 10. Sometime later, Rooms 7 and 8 were added as storage rooms for the unit.

Room 9

Dimensions. About 4 feet long north-south and 2 feet wide east-west (fig. 5). Not a definite room. The floor (or an occupation surface?) is about 1.5 to 2 feet below present surface.

Walls. The north and west walls are shared with Rooms 8 and 10, respectively. They are simple walls of primarily chipped-edge masonry. The east wall is a probable compound wall two courses high, mostly of scabbled masonry. The north wall abuts the west wall and the east wall abuts the north wall. No south wall was located. Walls averaged about 1 to 1.3 feet above the floor and probably rested on it.

Entry. The missing south wall may have contained an entry.

Floor. A use-packed surface resting on approximately 1 foot of disturbed fill. No subfloor features.

Artifacts. None were found on the floor or in the subfloor fill. Artifacts from the room fill are listed in tables 3, 6, and 9. A small mortar (fig. 102, left) was discovered on the west wall.

Dates. No absolute dates. Probably a Component D feature.

18 *Room 7 (upper left) and Room 8 (foreground). Cache pots in floors of both rooms.*

Remarks. Room 9 most likely served as a storage room and was probably part of the storage unit of Rooms 6, 7, and 8.

Room 10

Dimensions. About 17.6 feet long east-west and 5 to 5.8 feet wide north-south (figs. 19 and 20). Floor 2 level is 2.1 to 2.6 feet below present ground surface.

Walls. The north, east, and west walls are simple walls. The south wall is rather indefinite and irregular, and may have been a simple wall. It had no apparent coursing or facing. The east and west walls are composed primarily of chipped-edge masonry, the north wall of chipped-edge stone and some pecked-faced masonry, and the south wall (those stones remaining) is primarily of chipped-edge masonry. All these walls belong to Component D and rest on 0.4 to 1 foot of fill above Floor 2, the Component C level.

The west wall abuts the north wall, the north wall abuts the east wall, and it is likely that the south wall also abuts the east wall. The southwest corner is too fragmentary to determine the wall juncture.

Entry. Possible entry in the north wall from Room 1b.

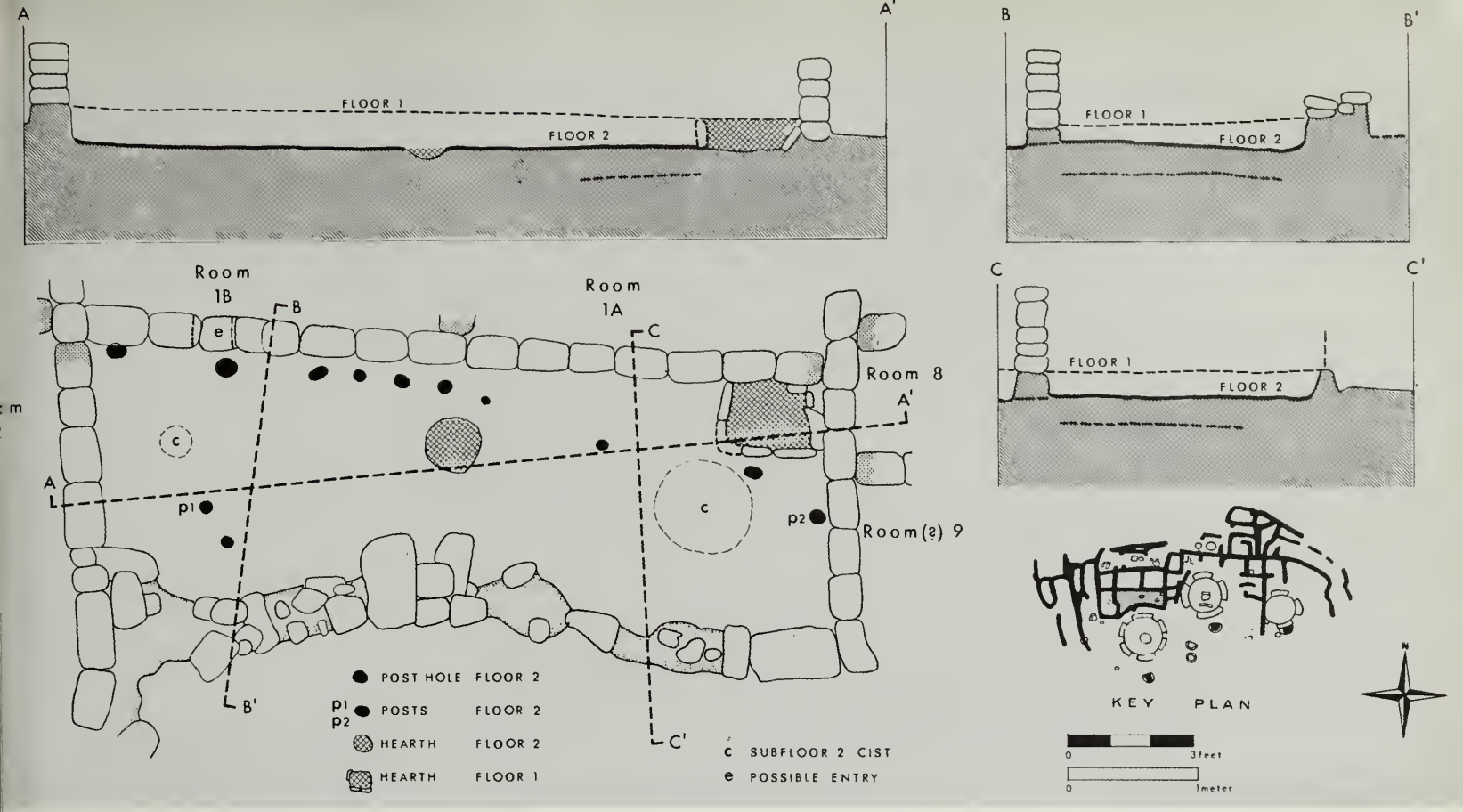
Floor. Floor 1 was not definitely located but is probably level with the top of the slab-lined hearth in the northeastern corner of the room, about 1.4 feet below the top of the east wall. This is at about the same depth as the presumed Floor 1 of Rooms 1a and 1b.

Floor 2 was clearly delimited by a fire-hardened surface in which several postholes were excavated and two burned posts were imbedded. These and burned roofing beams supplied dates. There is a firepit in the north-center part of the room. Floor 2 is part of the same surface represented by Floor 2 in Rooms 1a and 1b and the subfloor posts in Rooms 7 and 8.

About 0.5 and 0.6 foot below Floor 2 were signs of another occupation surface and two cists. They are probably features of Component A or B, as is the sub-Floor 2 cist in Room 1b.

Artifacts on floor. No definite association of artifacts with either Floor 1 or 2 or the sub-Floor 2 occupation surface. Sherds listed in table 3 from Room 10 hearth are from the Floor 1 hearth fill and include McElmo Black-on-white sherds, indicating a definitely later occupation than the Floor 2 level. Artifacts listed from Upper Fill are from Room 10 fill above the level of the slab-lined hearth. Lower Fill artifacts come from the room fill below this level to just above Floor 2, and Floor 2 fill artifacts come from about 0.3 to 0.5 foot above the floor to the floor. Some artifacts were found in the fill of sub-Floor 2, Cist 1; none were found in sub-Floor 2, Cist 2.

19 *Room 10, Floor 2, in center. In left corner (northeast) is hearth, a Floor 1 feature. Burned roofing logs rest on Floor 2. To left of Room 10 are Room 1a (top) and Room 1b; to right is Kiva A.*



20 *Plan and sections of Room 10.*

The artifacts are listed in tables 3, 9, and 10.

A restorable Mesa Verde Corrugated jar (fig. 44, left) was found in the upper fill of Room 10, near the east wall close to the slab-lined hearth, and was probably on Floor 1.

Dates. All dates listed in table 2 are from juniper charcoal from Floor 2 (Component C). One date came from sub-Floor 2, Cist 1 fill, and probably represents fill from the Floor 2 occupation.

TABLE 2. — TREE-RING DATES FROM ROOM 10, BIG JUNIPER HOUSE

Specimen [1]	Provenience	Dates, A.D.[2]	
		Inside	Outside
MV–1680.....	Fill, resting on Floor 2....	893	1041vv
MV–1668.....	Fill, resting on Floor 2....	921	1039vv
MV–1687.....	Floor 2, Post 2.....	812p	1028+vv
MV–1673.....	Fill, resting on Floor 2....	933p	1028vv
MV–1670.....	Fill, resting on Floor 2....	925	1027vv
MV–1735.....	Sub-Floor 2, Cist 1, fill..	911	1024vv
MV–1667.....	Fill, resting on Floor 2....	931p	1022+vv
MV–1678.....	Fill, resting on Floor 2....	910	1018vv
MV–1685.....	Fill, resting on Floor 2....	800	1008+vv
MV–1660.....	Fill, resting on Floor 2....	893±	1007vv
MV–1686.....	Floor 2, Post 1.....	855±	993vv
MV–1677.....	Fill, resting on Floor 2....	924	992vv
MV–1666.....	Fill, resting on Floor 2....	897p	985r
MV–1672.....	Fill, resting on Floor 2....	859p	947vv
MV–1679.....	Fill, resting on Floor 2....	814	886vv

[1] Specimen numbers assigned by the Laboratory of Tree-Ring Research, University of Arizona.

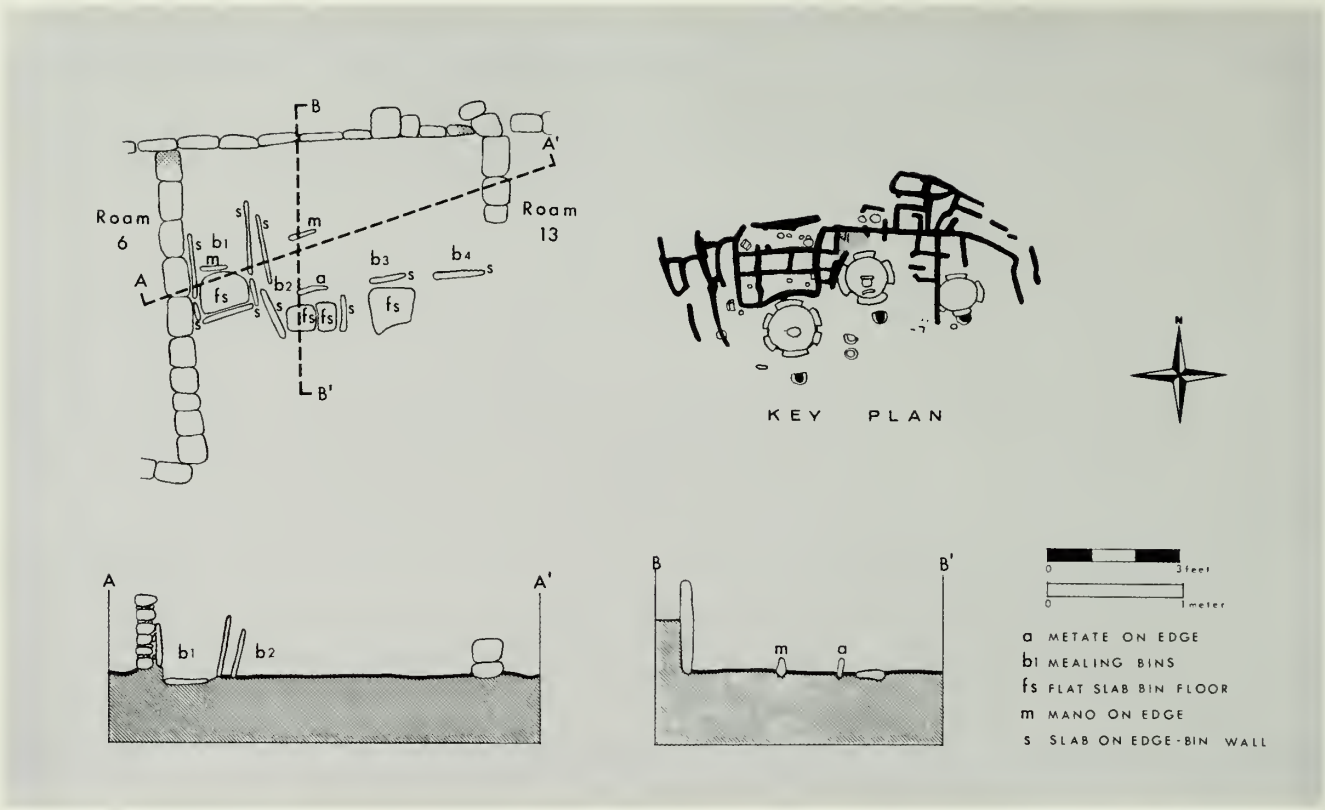
[2] Key to symbols: p—pith ring present; v—outside shows erosion, outermost ring variable around circumference; vv—outside shows extreme erosion, outermost rings variable; r—outer ring constant over significant portion of circumference.

The dates from Room 10 are within the range of those from Room 1a. In the 985r date, the "r" indicates that the outside ring is constant around the circumference, and the date is therefore a probable cutting date. This specimen may represent a re-used beam. The fact that the 985 date is close to the Component B dates from Rooms 7 and 8 strongly suggests that this specimen was originally used as a Component B construction item and then later taken for the Component C building or buildings, represented by Floor 2 of Rooms 1a, 1b, and 10. All the other dates have inconsistent outer rings and probably do not represent cutting dates.

Remarks. The Component D walls of Room 10 enclose the largest area of any of the surface rooms at the site. However, the placement of the slab-lined hearth suggests a courtyard or working area rather than an enclosed room. The south wall is possibly a retaining wall rather than a room wall, as there does not seem to be any apparent coursing or alinement with the other walls of the room.

The Floor 2 occupation is part of Component C, previously described for Rooms 1a and 1b.

If, during the Component D occupation, Room 10 was an outdoor working area, we have several different types of rooms combined in a relatively coherent functional unit. Rooms 1a, 1b, possibly Room 2, and Room 3 were living rooms; Room 11 was a work or mealing room; Rooms 6, 7, 8, and 9 were storage rooms; Room 10 was a courtyard-outdoor work area at the south; and the Room 4 area, extending west over Rooms 24 and 5, was an analogous courtyard-outdoor work area at the north side of the rooms.



21 *Plan and sections of Room 11.*

Room 11

Dimensions. About 7 feet long east-west and 6 feet (?) wide north-south (figs. 16 and 21). Floor level is about 1.6 to 2 feet below present ground surface.

Walls. The north wall is a continuation of the north wall of Room 6, a slab wall which may have originally been the base for a coursed-masonry wall similar to the south wall of Room 6. The west wall is shared with Room 6 and is a simple wall of chipped-edge masonry. The east wall, only two courses high, is evidently incomplete; it is a simple wall of chipped-edge masonry. The south wall (if there was one) was not found. The north wall abuts the east wall stub and the wall shared with Room 6 abuts the north wall. The south wall and the east wall may have been obliterated by the construction of Kiva B or may have fallen into Kiva B when its roof collapsed. The maximum standing height of the north wall above the floor of Room 11 is about 2 feet, the east wall about 1.7 feet, and the west wall about 0.8 foot.

Entry. None indicated.

Floor. The floor was indicated by a hard, use-packed surface of dirt resting on sterile soil. There were no subfloor features or surfaces. On the floor were the remains of four mealing bins. No metates were found *in situ* in the bins, but the supports for metates and some of the slabs making up the walls of the bins were still in place when the room was excavated.

Artifacts on floor. A plain/troughed metate fragment was imbedded on edge in the floor of Bin 2 next to a flat slab on the bin floor. A Subtype 1A mano was also imbedded on edge in the floor of Bin 2, behind the metate fragment, and may have been another metate support or one ready for use on a metate. A Subtype 1C mano was imbedded on edge in the floor of Bin 1, next to the flat slab placed on the floor, and was probably a metate support. The other artifacts on the floor of Room 11 were the worked slabs that formed the bin walls, smaller slabs used for metate supports in Bins 3 and 4, and slabs used to floor Bins 1, 2, and 3. Bins 3 and 4 had no upright slabs around them.

Artifacts from the fill are listed in tables 3, 6, 8, and 9. A partially restorable, unclassified black-on-white ladle was found in the floor fill and is not included in the sherd counts of table 3. A trench along the north wall of Room 11 (Test Trench 3) uncovered a Mancos Corrugated jar (fig. 40g), which lay near the middle of the wall. Also in this same area we found the plain base of a large black-on-white jar.

Dates. None absolute. The room belongs to Component D and probably dates around A.D. 1100.

Remarks. The great number of stone artifacts in the fill of Room 11, surpassed only by the trash mound and kiva fills, is good evidence that it was a workroom during the Component D occupation. Unlike the kivas, Room 11 was probably not used as a trash dump after its abandonment. Most of the stone artifacts listed in table 9 are from fill close to the floor, and are believed to be associated with the occupation of the room.

The north wall, continuing to the west and shared by Room 6, indicates that Rooms 11 and 6 were probably constructed at the same time, and that Room 11 is probably part of the unit described previously under Room 10. This unit would include four living rooms, one work-mealing room, three or four storage rooms, two

outdoor courtyard-work areas, and probably Kiva A. It is a logically functional unit.

Similar units have been described for Mug House, the interrelation of whose rooms generally is indicated clearly by intact doors and windows that suggest traffic patterns and directions of contact (Rohn, 1965). At Big Juniper House, such evidence had long been obliterated by repeated alterations and the effects of weathering.

Room 12

Dimensions. The longest, 10.5 feet north-south; the widest, 4.5 feet east-west (fig. 5). Room 12 is irregularly shaped, without definite corners at the south end. The floor is approximately 1 foot below present surface.

Walls. These are poorly made of scabbled masonry, about two courses high, with about 0.1 to 0.5 foot exposed above the surface. Nothing definite can be said about wall junctures.

The east and north walls are primarily compound walls and the west wall is a simple wall continuing in a curve around the south side to the compound wall, without a definite corner. The east and north walls average about 0.3 to 0.8 foot above the floor of Room 12; the west wall rests on the floor.

Entry. None indicated.

Floor. The surface shows little evidence of use, resting directly on sterile mesa-top soil. No features were observed on or below this floor.

Artifacts on floor. No artifacts were associated with the floor. A few artifacts were recovered from the room fill and are listed in tables 3 and 9.

Dates. No absolute dates. The room is probably a Component D feature, although it could be earlier.

Remarks. Little can be said about this room because of the lack of artifacts and incomplete walls. The paucity of remains and lack of fallen building stones in the area suggest that the room was cleaned out after abandonment and stones from the walls were taken for subsequent construction.

Room 13

Dimensions. This room was not completely excavated (fig. 5). Stripping in the area revealed that portions of both the east and west walls shared with Room 11 were missing. The south wall was not located. The present dimensions are about 7 feet long east-west and 3.5 feet wide north-south. The floor was probably at the same level as the floor of Room 11.

Walls. All are simple walls, primarily of chipped-edge masonry. The walls may have fallen into Kiva B or have been used for construction elsewhere. The east wall appeared to be bonded to the north wall, and the north wall probably abutted the west wall of Room 11. However, there was a gap between the end of the north wall of Room 13 and the east wall of Room 11, and the juncture is uncertain.

Entry. None indicated.

Floor. A trench along the north wall suggests that the floor was at the base of the wall or at about the same level as the floor of Room 11. No features were observed in the trench.

Artifacts on floor. No artifacts were found on the floor; the few in the fill are listed in tables 3, 6, and 9.

Dates. No datable wood. The room is probably Component D and dates around A.D. 1100.

Remarks. Room 13 is probably a living room and may have been part of a unit associated with Kiva B.

Room 14

Dimensions. This room was stripped to outline the walls and was only trenched to the floor along the north wall (fig. 5). The dimensions are probably 8.5 feet long east-west and 5.8 feet wide north-south. The floor is about 1.5 feet below surface at the north wall.

Walls. The east and south walls are simple walls of chipped-edge masonry. The north wall is partly a simple wall and partly a compound wall of chipped-edge masonry. The south wall is bonded to the east wall, and the west and east walls are bonded to the north wall. Parts of the south and west walls are missing. The north wall ranged from 1 to 1.5 feet above the floor and rested on the floor.

Entry. None indicated.

Floor. The floor is a use surface resting on sterile soil. No features were seen in the trench along the north wall.

Artifacts on floor. None. Artifacts from the fill are listed in tables 3 and 9. One complete troughed metate (fig. 97a) was probably incorporated in the north wall, and another (fig. 97b) was found in the fill of Room 14.

Dates. No datable wood. The room is also probably Component D and dates around A.D. 1100.

Remarks. Room 14 probably functioned as a living room in connection with Room 13 and possibly also Rooms 19 and 20. Room 15 may have been a storage room associated with this unit, and all of these rooms were probably related to Kiva B, whose roof may have been a courtyard-working area.

Room 15

Dimensions. About 5.2 to 5.9 feet long east-west and 4.2 to 4.5 feet wide north-south (fig. 22). The floor is about 1.5 to 1.8 feet below present surface.

Walls. The east, west, and south walls were simple walls of chipped-edge masonry. The north wall may have been a double wall; however, the inside north wall may have been added later. The latter is only two courses high, resting on about 1.4 feet of fill above the floor, and does not have the appearance of a definite double wall. The south and west walls rest on the floor and the east wall rests on about 0.8 foot of fill above the floor. The south wall abuts the east and west walls, and they in turn probably are bonded to the north wall. The west wall juncture at the north wall is not certain because most of the walls in that area had fallen.

Entry. None indicated.

Floor. The floor is a hard, use-packed surface on

22 *Room 15.*

sterile soil. A slab-lined cist in the southwestern corner of the room was evidently built shortly before the room walls were constructed. However, the cist was open during the occupancy of the room. The cist had undercut walls and its floor extended slightly below Rooms 14 and 19.

Artifacts on floor. No artifacts were directly associated with the room or cist floors. Sherds and stone artifacts from the fill of the room are listed in tables 3 and 9.

Dates. No datable wood. The room is probably Component D and dates around A.D. 1100.

Remarks. Because it was small and had a cist, this room was probably a storage room. The possibility of the north wall being a double wall would make Room 15 the only structure with a double wall at the site. Double walls are relatively common in late Pueblo III sites in the Mesa Verde, but they are rare in earlier sites in this area.

Room 16

Dimensions. This room was only outlined and trenched (fig. 5). The south wall had fallen and did not extend completely across the room. Room 16 was about 6.4 to 7 feet long east-west and about 4.7 to 6 feet wide north-south. The floor was not definitely located.

Walls. All walls were of the simple wall type, primarily of chipped-edge masonry. The south wall is bonded to the west wall and the east wall probably abuts the north wall. The west wall was also probably bonded to the north wall, but this is not certain because of the scant remains. The east wall extended farther south than the probable extent of Room 16, and very likely may have served as the east wall of another room which had slumped into Kiva C.

Entry. None indicated.

Floor. Not definitely located, but probably on the same level as the floor in Room 15. Three postholes were found in a surface which is probably earlier than the Room 16 floor.

Artifacts on floor. No artifacts were associated with the floor. A partially restorable Mancos Black-on-white plate was found in the fill. Other artifacts are listed in tables 3 and 9.

Dates. No datable wood or charcoal. The masonry walls belong to Component D and date around A.D. 1100.

The subfloor postholes were probably part of the Component C occupation that extended into the East House Mound and were on the same level as the postholes in Room 25.

Remarks. This was probably a living room and may have been part of a unit associated with Kiva C. The placement of the room suggests this, but no other rooms were definitely located to the east that could have formed such a unit.

Room 17

Dimensions. The room was outlined and a trench was dug along the east wall (fig. 5). This room measured 6.1 to 6.6 feet wide north-south and 8.6 to 9 feet long

east-west. The floor was not definitely located, but it was probably about 1.3 feet below the present surface. (See Section C–C′ in fig. 6.)

Walls. All are of the simple wall type, except for the south wall, which is primarily a compound wall. Masonry is generally shaped by bifacial chipping. The east and west walls are bonded with the north wall and probably abutted the south wall at one time.

Entry. None indicated.

Floor. Not definitely found, but probably was about level with the top of the Room 25 wall. Beneath the presumed floor of Room 25 (Component C) is a cist which is probably a Component B or A feature.

Artifacts on floor. There were no artifacts definitely associated with this room.

Dates. No datable wood. This room probably belongs to Component D and dates around A.D. 1100.

Remarks. Room 17 was probably a living room that was built some time later than the north walls of Rooms 14, 15, and probably 16. The north walls of Rooms 13 and 6 appear to be somewhat of a dividing line in the East House Mound, with the rooms having no specific orientation toward any kiva north of that wall.

Room 18

Dimensions. Probably about 8.2 feet long east-west and about 5 feet wide north-south (fig. 5). Room walls are largely missing, so the dimensions are approximate. The floor level is probably about 1.8 to 2 feet below present ground surface.

Walls. Existing walls are simple walls of chipped-edge masonry. Except for the south wall shared with Room 13, the other walls were a maximum of two courses high, but only a single course remained in most cases. The wall junctures are uncertain. The south wall stood a maximum of 1.8 feet above the presumed floor level of Room 18. The other walls averaged 0.4 foot above the presumed floor.

Entry. None indicated.

Floor. The floor level was not found; it is assumed to have been at about the level of the base of the walls. Approximately 1 to 1.2 feet below the "floor" was another occupation surface, corresponding to Component B or possibly Component C. From this surface of compacted earth, about 0.2 foot above sterile soil, Cists 2 and 3 were excavated.

Cist 2, about 2 feet deep, was slightly undercut; the floor dimensions are about 4.6 feet northwest-southeast by 3.9 feet northeast-southwest, and the top measures 4.2 by 3.4 feet.

Cist 3, about 1.9 feet deep, was also slightly undercut; the floor dimensions are 4.25 feet northeast-southwest by 3.8 feet northwest-southeast, and the top, 4 by 3 feet.

Artifacts on floor. No artifacts were in direct association with either the presumed floor or the surface below the floor. Artifacts other than the restorable pots in the cists are listed in tables 3, 6, 9, and 10. Burial 24 (fig. 179) was interred in Cist 2 with a partially restorable Mancos Corrugated jar. A partially restorable Mancos Corrugated jar was found in Cist 3.

Dates. No datable wood. The masonry walls probably belong to Component D. The walking surface and the cists probably belong to Component B, as they are on about the same level as the cist below Rooms 17 and 25.

Remarks. Based on size, Room 18 in its latest occupation was probably a living room. The earlier surface, probably of Component B, may have been a walking surface and storage area.

Room 19

Dimensions. About 7.4 to 8.2 feet long north-south and about 5.5 feet wide east-west (fig. 5). The floor was not definitely located; it was near the same level as the floor in Room 15, about 0.5 to 1.2 feet below the present ground surface.

Walls. They are all simple walls of chipped-edge masonry. The fragmentary walls have a maximum height of three courses and average two courses, or about 0.5 to 0.8 foot high. They may have rested on the floor. The north wall abuts the east and west walls, and the east is probably bonded to the south wall. The southwest corner is uncertain because the walls had fallen down.

The top of a probable Component C wall is about 1.9 feet below the present surface. A simple wall of chipped-edge masonry, it overlies an earlier cist of Component B. The wall was three courses high, or a total height of 1.1 feet. Its extent and the type of structure it belonged to were not determined.

Entry. None indicated.

Floor. The upper floor associated with the masonry walls was not definitely located, but is probably level with the base of the Room 19 walls. No features were observed in this level.

About 1.9 feet below the presumed floor was another surface, probably corresponding to a Component C surface. On this surface were the remains of another wall, which was not traced farther than is shown on fig. 6. This surface also covered a straight-walled cist, about 2.2 to 2.4 feet deep, which extended partly under the south wall of Room 19.

Artifacts on floor. No artifacts were definitely associated with any of the surfaces. Artifacts from the room and cist fills are listed in tables 3, 6, 8, 9, and 10. There were no artifacts below the presumed level of the first floor and the second level upon which the Component C wall was constructed.

Dates. The following dates were obtained from charcoal in the upper fill above the presumed floor and from loose charcoal in the cist fill:

		Dates, A.D.	
Specimen	*Provenience*	*Inside*	*Outside*
MV–1718	Upper fill	782	891+vv
MV–1788	Cist fill	908	977vv

(NOTE: See table 17 in appendix for key.)

The date from the cist does not appear to be inconsistent with the dates from the cist in Room 7 and other probable Component B dates discussed previously. The other date, however, has no relationship to the Component C dates other than the fact that it falls within the wide range of

dates from Rooms 1a and 10. It is assumed that the outside of MV–1718 had lost a number of rings, as indicated by the symbols "+" and "vv," and does not approach the actual cutting date.

Remarks. The upper surface and walls of Room 19 probably were a living room during the Component D occupation and part of an occupation unit that may have centered around Kiva B. The earlier wall of Component C may have been a structure that was destroyed during the construction of Kiva B. The Component B cist seems to be typical of this occupation at Big Juniper House—one of cist-building activity.

Room 20

Dimensions. Since only the east wall of this room was traced and only a trench was excavated along the west side of this wall (fig. 5), the extent of the room is unknown. The floor was not located.

Walls. The walls are simple walls of chipped-edge masonry. As in Room 19, they were at most three courses high, more often only two courses. The walls had evidently been built after Kiva C had been roofed but before it had caved in. Rock fall from the east wall of Room 20 tumbled to the floor of Kiva C (fig. 32).

Entry. None indicated.

Floor. Not located. The features shown in Area 12, East (fig. 5) appear to be at a lower level than the floor of Room 20 and are probably part of Component C. They consist of several upright slabs and a small square formed by slabs. Their function is unknown; they may have been parts of mealing bins and the square a possible posthole reinforced on the sides with small slabs.

Artifacts on floor. No artifacts were found in the fill or along the walls. Quite a few artifacts were found in Area 12, East, mainly in the eastern section (a wide trench), and some in Area 12, West. Both sections of Area 12 were sheet trash, primarily from Component C, with some Component D trash. (Artifacts from Area 12 and additional comments on this area are given later.)

Dates. No datable wood. The room, probably Component D, dates around A.D. 1100. Area 12, a surface somewhat lower than the floor level of Room 20, may belong to Component C, dating later than 1050 but probably ending before 1100.

Remarks. Little can be said about this room on the basis of what was excavated. It was probably a living room, part of an occupation unit consisting of Rooms 13, 14, 15, and 20, centering around Kiva B and its roof, which was probably a courtyard-working area.

Rooms 21 and 22

Dimensions. These "rooms" are considered together, since they appeared to be an outdoor working area, with a rubble retaining wall south of Room 21 as the western limit, the walls of Rooms 2 and 3 on the east, and a probable retaining wall of coursed masonry on the north side of Room 21 as the northern limit (fig. 5). The southern limit was uncertain but probably merged with Area D. During excavation, the limit to the south was Test Trench 4, and all artifacts from Rooms 21 and 22 were from the limits indicated. The dimensions of the area are approximately 24 to 25 feet long north-south and 4 to 7 feet wide east-west.

The floor or walking surface in Rooms 21 and 22 varies from 0.5 foot below present surface along the west rubble retaining wall to about 2 feet below surface near the eastern part of the area, along the west walls of Rooms 2 and 3.

Walls. The east walls are the west walls of Rooms 2 and 3. They range from about 1.5 to 1.9 feet above the floor of Rooms 21 and 22 and are about 0.4 foot lower than the floors of Rooms 2 and 3. The north wall is primarily a simple wall of chipped-edge masonry averaging about 1.1 feet above the floor on which it rests. The west rubble wall of scabbled stones is about 0.5 foot above the floor of Room 21 and extends another 0.6 foot lower, to rest on the occupation surface of Area A. The wall shared with Room 23 is about 1 foot above the floor of Room 22 and is a simple wall of chipped-edge masonry. The part of the wall that Room 21 shares with Room 23 is about 1.3 feet above the floor and the bottom of that wall rests on about 0.6 foot of fill above the Room 21 surface.

Except for the east wall, which is probably a continuous wall for Rooms 2 and 3 and extends north of Room 3, other wall junctures are uncertain because of the few jumbled remains.

Entry. Probably an open access area.

Floor. The floor, hard-packed dirt resting on sterile soil, was probably the use surface of an outdoor cooking and work area. There were no subfloor features or surfaces. Features in the floor included Hearth 1, a circular firepit at the exterior of the southwestern corner of Room 2, and a slab-lined hearth constructed in an earlier clay-lined circular firepit to the northwest of Hearth 1. The west retaining wall was also constructed over an oval-shaped firepit—a probable Component C feature.

Artifacts on floor. There was no direct association of artifacts with the floor of Rooms 21 and 22. Two Type 1A manos and a "crusher" were found in the fill of Hearth 1 (table 9), and sherds occurred in the fill of both hearths (table 3). Artifacts in the fill above the occupation surface of these rooms are listed in tables 3, 6, 9, and 10.

Dates. No datable wood. The relatively large number of sherds found in the fill indicates that Rooms 21 and 22 were used as a trash area after abandonment. The sherd types suggest that the trash was deposited no later than the Component D occupation.

Remarks. The floor level of Rooms 21 and 22 is about the same as that of the subfloor occupation surface in adjoining Room 2, which seems to belong to Component C. It is probable the two rooms were used during Component C and slightly into Component D, after which they were used as a secondary trash area, thus producing a sheet trash deposit. The existence of the earlier firepit, partially destroyed by the later, slab-lined hearth, and the oval firepit covered by the west retaining wall offer evidence for this supposition. Hearth 1 is also slightly lower stratigraphically than the slab-lined hearth. These rooms could have been occupied in the late 1000's.

The irregular shape of the rooms and the large area they cover suggest an open work area associated with Component C jacal structures, and later with Component D living rooms.

Room 23

Dimensions. About 8.6 to 9.5 feet long north-south and 3.5 to 4 feet wide east-west (fig. 5). The floor could not be definitely located, but its presumed depth from the present surface is about 1.3 to 1.8 feet.

Walls. The west and north walls rest on the presumed floor of Room 23 and the bases of the south and east walls are approximately 0.4 to 0.9 foot above the presumed floor. The east and west walls are primarily simple walls of chipped-edge masonry. The north and south walls are compound walls of scabbled masonry. The south wall probably abuts the east wall; the rest of the wall junctures are uncertain due to the fragmentary and scattered remains.

Entry. None indicated.

Floor. Floor was not definitely located, and no associated features were found.

Artifacts on floor. No artifacts were found in the fill or on the presumed floor level. Subflooring testing was unproductive.

Dates. No datable wood or charcoal. Room 23 is probably a Component D structure and dates around A.D. 1100.

Remarks. The paucity of architectural remains and the lack of artifacts suggest the room was razed and most of its building stones were used for a later construction.

Room 24

Dimensions. About 7.8 to 9.2 feet long east-west and 6 to 6.2 feet wide north-south (figs. 14 and 15). The floor is 2.6 to 3.2 feet below present surface.

Walls. It is probable that the features found were the base of a jacal superstructure. The east and west walls appear to be clay with a few small inset stones. The north and south walls are simple walls of scabbled masonry. The south wall is a maximum of two courses, 0.7 foot high, resting on the floor. The north wall is also two courses, 0.6 foot high, and rests on the floor. The east wall of clay is presumably the basal remains of a jacal wall. It was 0.4 foot high when it was excavated. The west wall had largely disappeared, but the stones that were presumably imbedded in a jacal wall were 0.7 foot high above the floor and resting on it. We could learn little about wall junctures because of the few remains.

Entry. None indicated.

Floor. A hard-packed use surface resting on sterile soil. Features in the floor included a D-shaped ash pit or hearth on the eastern side of the floor, a cist in about the center of the room, and a posthole near the middle of the north wall. The hearth was about 0.3 foot deep and was filled with ash. It has a raised lip on the straight side facing the cist. The cist is 2.5 feet deep, with slightly undercut sides and flat floor. The posthole is 0.8 foot deep and approximately vertical. No wood or charred remains were found in it. To the west was another posthole, under the upper occupation of Room 4.

No subfloor features were found. Surfaces above the floor and occupation of Room 24 were discussed under Room 4. The compound wall partly overlying the north wall of Room 24 is separated by about 0.6 to 1.6 feet of fill from the base of the wall to the top of the north wall. On the south side, the slab wall base of Room 1b rests almost directly on the south wall of Room 24. In this case, the Room 24 wall may have been partially destroyed by Room 1b building activity of Component D and possibly Component C. The floor is about 0.6 foot lower than Floor 2 in Room 1b. On the east side, the floor is about 0.3 to 0.4 foot lower than that of Room 5.

Artifacts on floor. No artifacts were found in direct association with the floor; only sherds were in the fill of both the room and cist (table 3). Room 24 is another of the infrequent cases in which Cortez Black-on-white outnumbered later decorated pottery.

Dates. We found no wood or charcoal. The stratigraphic relationship of Room 24 to surrounding rooms suggests that this room is the earliest feature in the area and probably the earliest room found at the site. The sub-Floor 2 cist in Room 1b is on the same level as the floor of Room 24 and suggests an occupation surface that extended south from the room (although such a surface was not definitely located beneath Floor 2 in Room 1a). Room 24, however, may be considered the same component (Component B) as Room 5 because their floors are nearly on the same level. If, on the other hand, this room belongs to the Component A occupation, it would date somewhere between A.D. 900 to 1000 (early Pueblo II). Although the total number of black-on-white sherds was small, Cortez Black-on-white predominated—indicating that the occupation was more likely toward the latter part of the time span. This is further supported by the lack of Pueblo I pottery-type holdovers that are found in definite early Pueblo II contexts.

Remarks. Room 24 produced disappointingly few artifacts to help pinpoint its period of occupation. If it is a Component B (rather than Component A) feature, it was probably associated with Room 5, an outdoor working and storage area.

Room 25

Dimensions. This room was not completely excavated; only its extent was determined (fig. 5). It is a Component C structure built before Room 17. Probably the construction of Room 17, and possibly Rooms 14 and 15, destroyed most of the features of Room 25. The probable floor level is approximately 2.2 feet below present ground surface.

Walls. The north wall consists of a slab wall that probably abutted the east wall, a simple wall of chipped-edge masonry. One of the slabs in the north wall was a large troughed metate on edge (fig. 97e). The walls stand about 0.5 to 1 foot above the floor. Four postholes, more or less in line in the southern part of the floor, may have been a jacal wall on this side of the room. We were unable to locate other postholes.

Entry. None indicated.

Floor. We found no definite floor, but it was probably at the base of the located walls. The surface at this level was slightly more compacted than the fill above it. Except for the postholes mentioned previously, there were no features in the floor of this room. Beneath the floor, and presumably covered by it, was a large oval cist that extended under the east wall. We found no definite occupation surface connected with the cist, so I assume that it was constructed only a short time before Room 25 was built. The cist was probably filled by the people who built the room.

Artifacts on floor. No definite association of artifacts with Room 25 floor. Only sherds were found in the fill above the floor and are listed in table 3. Other than the metate incorporated in the north wall, no artifacts were found in the room or in the subfloor cist.

Dates. No datable wood or charcoal. Since it is earlier than Room 17, Room 25 is probably a Component C structure constructed in the latter half of the 11th century along with other Component C structures discussed previously. The subfloor cist is probably a Component B feature. However, its close stratigraphic relationship to the room's presumed floor suggests that it was not built very much earlier than the room and may be of the same component.

Remarks. Little can be said of the relationship between Room 25 and other Component C structures in the area of Rooms 1a, 1b, and 10. The postholes in Room 25 are probably related to the postholes in the subfloor level of Room 16, and may have been part of another extensive jacal structure in the East House Mound that was largely destroyed by Component D building activity.

Room 26

Dimensions. Room 26 was outlined and a trench was dug to the presumed floor at the north wall (fig. 5). Its shape and walls are similar to Room 12. It is about 4.5 feet wide north-south and 8 feet long east-west. Floor is about 1.4 to 1.7 feet below present ground surface.

Walls. Walls are both simple and compound—the former on the north and south, and the latter on the east and west. Chipped-edge masonry was used throughout. The walls stood about two courses high and about 1 foot above the floor. Wall junctures were indistinct.

Entry. None indicated.

Floor. We found no definite floor, but assumed it was at or near the base of the walls. No features were observed in the trench and no subfloor surfaces or features were encountered.

Artifacts on floor. None were found in the fill, floor, or subfloor.

Dates. No wood or charcoal was found. Room 26 was probably a Component D occupation, dating around A.D. 1100.

Remarks. On the basis of size, Room 26 was probably a dwelling room. As in the other rooms north of the "dividing wall" mentioned previously, its relationship to a kiva and a specific occupation unit is uncertain.

Room 27

Dimensions. The room was outlined but not completely excavated (fig. 5). It is about 4 feet wide north-south and 6 feet long east-west. We did not excavate to the floor, but assume it is close to the same level as the floor in Room 26.

Walls. The north wall is a compound wall of chipped-edge masonry; the others are primarily simple walls of chipped-edge masonry. Junctures being indefinite, it is not possible to say whether the walls were joined by abutting or bonding.

Entry. None indicated.

Floor. Not excavated to floor.

Artifacts on floor. Only some sherds were found in the fill (table 3).

Dates. No wood or charcoal was found. Room 27, like 26, is probably a Component D structure.

Remarks. On the basis of size, Room 27 was probably a living room. Little more can be said because of incomplete excavation.

Room 28

Dimensions. Room 28 was only outlined (fig. 5). From what was uncovered, it does not appear to be a true room; it is more likely an intramural corridor or alley between rooms. Maximum dimensions are 13.7 feet long north-south and 6.2 feet wide east-west. Depth of floor beneath present surface is unknown because the room was not completely excavated.

Walls. The wall shared with Room 29 is a compound wall; the others are simple walls. Chipped-edge masonry was used throughout.

Entry. None indicated.

Floor. We did not excavate to the floor, but I assume its position very likely is near the level of the floors in Rooms 26, 29, and 17.

Artifacts on floor. Sherds and a utilized flake in the fill are listed in tables 3, 6, and 9.

Dates. No datable wood found. The room is a probable Component D feature, dating around A.D. 1100.

Remarks. Room 28 may have been a secondary trash area for the surrounding rooms, as it yielded more artifacts than any of these.

Room 29

Dimensions. Room 29 was only outlined and trenched to the probable floor along the north wall (fig. 5). Its dimensions are about 3 to 3.4 feet wide north-south and about 8 feet long east-west. The probable floor is about 1.4 to 1.8 feet below the present ground surface.

Walls. The north and south walls and the west wall stub are simple walls of chipped-edge masonry. The east wall is a compound wall of chipped-edge masonry. The north wall stands a maximum of 0.7 foot above the floor and the south wall, shared with Room 17, probably stands on about 0.4 foot of fill above the floor of Room 29. Walls are a maximum of two courses except for the south wall, which is about four courses high.

Entry. Not indicated unless a gap in the west wall from the corner of Room 17 was a door. Not enough of

the wall was standing, however, to confirm this.

Floor. Not definitely located but probably corresponds with the level at the base of the north wall. No features were observed in the trench excavated to the floor.

Artifacts on floor. No artifacts were found.

Dates. We found no wood or charcoal. Room 29 is probably a Component D feature related to the surrounding rooms in this area.

Remarks. Because of its small size, the room may have been used for storage, possibly in conjunction with Rooms 17, 26, and 27.

Room 30

Dimensions. Room 30 was only outlined (fig. 5). It is not certain whether it is actually a room or part of a retaining wall system observed in the eastern section of the site. Its dimensions are from 4 to 4.3 feet long north-south and 2 to 2.5 feet wide east-west.

Entry. Not located.

Floor. We did not excavate below the tops of the walls.

Dates. No datable wood was found.

Remarks. No wall was found on the north side. Room 30 is similar to Room 9 in its small size and missing wall, and it may likewise have been used as a storage room. It was possibly associated with the living rooms to the south of the dividing wall—perhaps connected with Room 16.

Room 31

Dimensions. Room 31 was not completely excavated. It might not have been a room but rather an area between two retaining walls (fig. 5). Its dimensions were not adequately delimited by our excavation. Most of the wall was at the surface, and the fill was shallow in this part of the site.

Walls. All that remained of the walls in the eastern part of the site was a single row of stones—probably rubble retaining walls similar to those in the western part of the site in Area A and Room 21. Stones were scabbled for the most part; the others were unworked.

Entry. Room 31 and its environs were undoubtedly an open area during the occupation of the site and needed no specific entry.

Floor. Room 31 and the area surrounding it were not excavated below the wall outlines.

Artifacts on floor. There was no specific association of artifacts with Room 31. Those listed in tables 3, 6, and 9, as coming from the East House Mound, are artifacts found during the stripping of Room 31 and other rooms not completely excavated in the same vicinity.

Dates. There are no datable wood specimens from the area. Most of the East House Mound is probably part of the Compound D building period.

Remarks. Room 31 and the area to the east and south did not appear to have any dwelling rooms north of the main wall of Rooms 13 through 16. The area east of Room 16 did not appear to have any rooms. The walls are retaining walls that curve around to the south, following the general contour of the low ridge upon which the site is located. All of this section was probably a general outdoor activity area, and the walls probably were constructed to prevent erosion and debris washing downhill to Kiva C, as well as to provide level land behind the retaining walls. None of the walls were faced or coursed; rather, they appear as irregular rows of stones with no attempt to make definite or high walls. It is likely that they were never much higher (0.5 to 0.7 foot) than they were when we excavated them.

OTHER AREAS AND FEATURES

Other areas in and around the rooms and kivas were stripped or trenched to discover walking or occupation surfaces and extramural features.

Areas A, B, and C

These areas (fig. 5) are poorly defined and do not appear to be rooms. Area A was mentioned under Rooms 21 and 22. None of these areas were completely excavated, but they appear not to have been enclosed or covered. Artifacts from Area A are listed in tables 3 and 9. No artifacts were found in Areas B and C.

Test Trench 15

This was a wide trench running from the northern edge of the South Trash Mound to just short of Kiva B (fig. 5). In it we uncovered a good many artifacts and two circular, clay-lined firepits. Inadvertently, many of the sherds from this trench were combined with the sherds from the top level excavated in Kiva B. The 776 sherds are listed in table 3 under Test Trench 15 and Kiva B, Level 1. Five restorable or partially restorable vessels were found in Test Trench 15: a Cortez Black-on-white bowl (fig. 46a), a Mancos Black-on-white pitcher (fig. 58a), a Mancos Black-on-white ladle (fig. 59a), a Mancos Black-on-white bowl (fig. 56b), and a Mancos Corrugated jar (fig. 40i). Next to the Cortez Black-on-white bowl were 13 human teeth. We found no other human skeletal remains in this area.

Area 12, East

This wide trench, east of Test Trench 15, has been discussed under Room 20 (fig. 5). Both this trench and Test Trench 15 were excavated to a probable walking surface. This surface probably correlates with the Component C occupation, with a liberal deposit of both Components C and D trash over it. The walking or occupation surface varied from 0.6 to 1 foot below present ground surface and rested on sterile soil.

Area 12, West

(Combined with Area 12, East, in the tables as Area 12.) Also an area of Components C and D.

Area D

Area D (fig. 5), to the west of Kiva A, had several features on the surface that were primarily related to the Component D occupation. Close to the kiva was a hearth area of charcoal and fire-cracked rocks, and southwest of this area was a Mancos Corrugated jar resting on the surface (fig. 40c).

Feature 1

Feature 1, close to the southern limits of excavation in Area D, was a circular firepit about 2.5 feet in diameter and about 1 foot deep, filled with good-sized chunks of pinyon charcoal, none of which provided dates. Feature 1 is unusual in that it is the only hearth at Big Juniper House that contained charcoal rather than finely powdered wood ash. Its construction was also different from other Big Juniper House firepits in being deeper and having undercut sides. The existence of pinyon charcoal only is also interesting, but what this means is not known.

Pit 1

South of Feature 1, in the northern part of the South Trash Mound, is Pit 1 (fig. 163). Stratigraphically, the pit appears to be the lowest and possibly the earliest feature at the site. It was overlain by the trash mound and obviously made before the trash was deposited. It had a hard clay floor about 3.5 feet in diameter and clay also lined what remained of its walls, which were 0.3 foot high. No materials were found in the pit.

KIVAS

It is fairly certain that the three kivas excavated at Big Juniper House were the only ones at the site. All three were oriented northwest-southeast, as determined by an axis drawn through the ventilator, hearth, sipapu, and niche in the face of the north banquette. Kiva A showed definite evidence of remodeling, and Kivas A and B had curious structures built over them after they were abandoned. The structures are referred to as "later walls over kivas" and are indicated by the shading in the site plan (fig. 5). The later walls and the compound retaining wall north of Rooms 4, 5, and 24 are probably the latest features at Big Juniper House and belong to Component E.

Evidently, all three kivas were in use during the Component D occupation. Parts of two vessels occurred on the floors of different kivas. In analyzing the pottery, we discovered that parts of a vessel from the floor of Kiva B fitted a partially restorable vessel from the floor of Kiva A, and part of a vessel from the Kiva B floor fitted sections of a vessel from the floor of Kiva C.

The vessels did not seem to have been discarded on the kiva floors as trash, nor did they appear to have drifted in from surrounding areas. Rather, their presence seemed a deliberate result of breaking the pots and then dividing the fragments between the kivas. Perhaps it was a "ceremonial killing" of the vessels related to the deliberate abandonment of the kivas, or possibly a "killing" of the kivas to obtain roof beams and other wood for building new rooms or a pueblo elsewhere.

All three kivas were later used as trash dumps. The probability that all of them were abandoned at about the same time, the presence of trash in the kivas, and the fact

23 *Kiva A, looking east (toward top of picture). Later wall over kiva on west, east, and south sides. Dark area on floor east of hearth is a subfloor pit.*

that later structures were built over two of them indicate that Big Juniper House continued to be occupied without kivas. The lack of definite Component E rooms suggests either that the occupation was small or that any structures that were built (other than the upper, later walls and the compound wall) were impermanent.

It is also possible that many Component D rooms continued to be occupied after the kivas were abandoned. Evidence for this is the general scarcity of trash in most of the rooms, especially in the East House Mound. It is common at Anasazi sites for rooms as well as kivas to be secondary trash dumps.

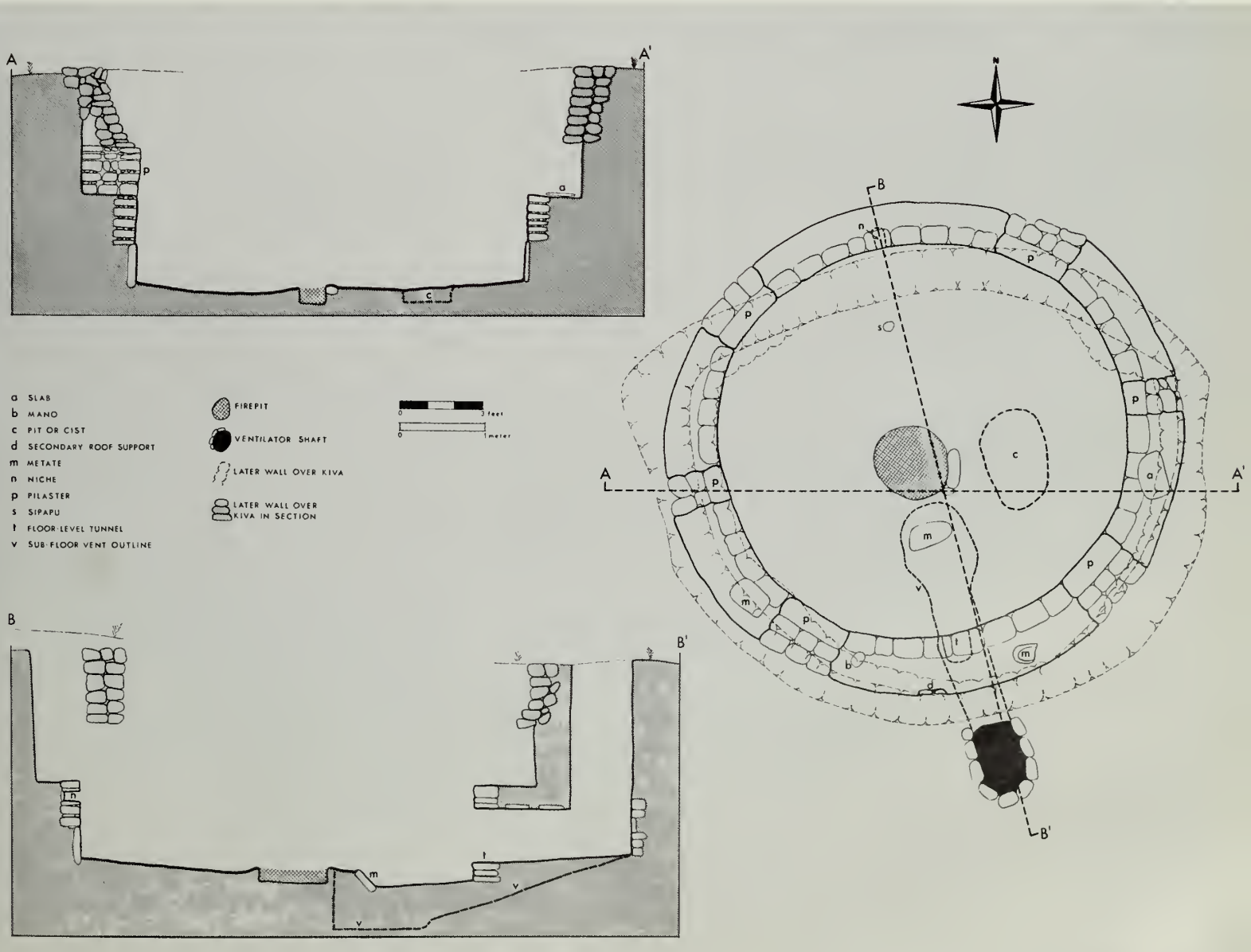
Kiva A

Dimensions. About 15 feet in diameter, although it is somewhat shorter north and south (figs. 23 and 24). The floor is approximately 7.7 to 8.4 feet below the present surface. The inside dimensions of the later wall over Kiva A are approximately 14.2 feet north-south by about 17.5 feet east-west. The top of the later wall was exposed on the present surface.

Banquette. The banquette face in Kiva A, and in the other kivas, was constructed by using a sandstone slab base, between and over which was coursed masonry of somewhat smaller stones than those used for the surface rooms. The simple walls were made primarily of chipped-edge masonry and some scabbled masonry. The courses were often chinked with rows of small stones or pottery sherds. The latter were not found in the walls of surface rooms. The height of the banquette above the floor of the kiva averaged about 3 feet and varied from 2.9 to 3.5 feet. The width of the banquette, upon which the pilasters were built, averages about 2 feet, with a variation of 1.5 feet on the north between the third and fourth pilasters (numbered clockwise from the first pilaster west of the ventilator) to 2.2 feet between the fourth and fifth pilasters and between the sixth and first pilasters. There is no deepened interpilaster space (southern recess) between the sixth and first pilasters in Kiva A or in the other Big Juniper House kivas.

Plaster remained on several parts of the liner and on the banquette, with a maximum thickness of about 0.2

24 *Plan and sections of Kiva A.*



foot. Where the plaster was thickest, there was evidence of at least six coats. The first coat was a thick layer of yellow-brown adobe applied directly to the stones. The second was a thin layer of white plaster, the third was a thick layer of yellow-brown adobe like the first coat, the fourth was again a thin white layer, the fifth was a thick yellow, sandy adobe or plaster, and the sixth was again a thin layer of white plaster.

The liner was constructed directly on the floor and against the raw earth of the hole when the Indians built the kivas. Parts of the liner were torn down to see if earlier walls stood behind it, but only sterile earth was encountered.

There was no liner at the back of the banquette, a feature usually seen in Pueblo III kivas in the Mesa Verde area. Above the banquette the native earth served as the kiva wall. Perhaps the earth was originally plastered, but no evidence of plaster remained.

Niche. In the north face of the banquette, on the kiva axis, is a small square niche about 0.4 foot below the top of the banquette, with dimensions of 0.4 foot on the sides and about 0.7 foot deep. Nothing was found inside of it.

Ventilator. On the south face of the banquette is the ventilator tunnel, opening about 0.5 foot above floor level. The floor may have been level with the bottom of the ventilator, but had slumped in at this point due to its construction over the subfloor ventilator, which was filled with trash and soft earth. The rectangular hole measured about 1 foot wide and 2 feet high. The top of the tunnel was about 0.8 foot below the banquette. Evidently the floor-level ventilator was masonry-lined on the sides and roof and probably also in the shaft section, but the shaft had collapsed to just above the base, to a height of 2 feet. The roof of the tunnel was also lined with slabs supported by wooden lintels, the decayed remains of which were found during the excavation.

The ventilator shaft seems to have remained in the same location for the two types of tunnels. The subfloor ventilator tunnel began at the base of the shaft and inclined steeply downward, ending abruptly at a vertical earth face 0.3 foot in front of the hearth. Although we found no remains, the subfloor tunnel was probably roofed inside the kiva, with an opening into the rounded portion of the subfloor tunnel before the hearth. The vertical face provided a built-in deflector and served to deflect the air up into the kiva.

Later, the subfloor tunnel was filled with trash and dirt, and then a floor-level ventilator was constructed. The floor-level tunnel was somewhat narrower than the subfloor one, as the opening into the banquette face was smaller than the underlying walls of the earlier ventilator.

Pilasters. Kiva A had six pilasters. They were designated pilaster 1 through 6, counting counterclockwise from a point on the south axis of the kiva. We had reason to believe that Kiva A was originally constructed as a four-pilaster kiva, like Kivas B and C, and that the two narrow pilasters (second and fifth) were installed later, perhaps during a major remodeling of the kiva. The spaces between the first and third pilasters and the fourth and sixth pilasters were a good deal larger than between the first and sixth and the third and fourth. It is thus possible that the four pilasters were inadequate and that the two smaller pilasters were constructed to support a sagging roof. The narrowness of the two pilasters and features of their construction also point to a different time of construction.

The four wide pilasters were all constructed of chipped-edge masonry with abundant, small sandstone spalls and sherds used for chinking material. These pilasters were also not so well made or so regular in appearance as the two narrow pilasters. The latter were made of pecked-face masonry with squared corners. Pecked facing is a later masonry style than chipped-edge shaping, and is further evidence that the narrow pilasters were built at a later time than the four wide pilasters. Chinking was sparsely used in the narrow pilasters, because the evenness of pecked-face stones did not need spalls or chinking to level the courses.

All of the pilasters were set flush with the edge of the banquette and were rectangular in shape. In these two characteristics the pilasters of Kiva A differed from those in Kivas B and C and probably indicate (along with other evidence presented later) that Kiva A was constructed earlier than the other kivas. It is a common feature of Pueblo III kivas to have pilasters that flare from front to rear and are set back from the edge of the banquette.

The height of the pilasters above the banquette ranged from 1.8 feet (third) to 2.4 feet (fourth). It is probable that all the pilasters were about the same height during the occupation of the kiva, and that their varying heights upon excavation were due to differences in preservation.

A possible secondary roof support, 3.3 feet east of pilaster 1, was imbedded in the dirt wall of the kiva about 0.65 foot above the banquette. It was about 1 foot high by 0.9 foot wide and was composed of nine courses of very small stones set in two columns.

Floor. About 0.2 foot of adobe mud on sterile earth covered most of the floor area. The subfloor ventilator was filled with trash and loose dirt and then plastered over. A cist, discussed below, was also filled in the same manner and then plastered. The floor was basin-shaped; it sloped up to the walls and reached its lowest point near the hearth.

The hearth was a circular pit with raised edges, about 0.6 foot deep, and filled with white ash. Pieces of unworked sandstone were mudded in at the edges of the firepit. Several sherds (table 3) were in the firepit fill.

A small cylindrical hole, about 0.5 foot deep, was in the floor between the hearth and the north banquet face, in the general line of the kiva axis. The hole, or sipapu, was filled with soft dirt, part of the general kiva fill, and was probably open at the end of the Kiva A occupation.

An oval pit east of the hearth was later filled in and plastered over. It was about 0.5 foot deep. In the pit fill were sherds (table 3) and a hammerstone (table 9).

No definite defector was found. A whole, plain-faced metate (fig. 97f) was partly imbedded in the upper fill of the subfloor ventilator and may have served as a deflector during the last stage of Kiva A occupation, when

the floor-level ventilator was in use.

Entry. We found no definite evidence of an entry, such as ladder holes near the firepit, but it is assumed that the entry was in the roof, above the hearth. This opening would have served also as the smoke hole.

Later wall over kiva. The later wall built over the kiva was constructed after the kiva had been partially filled in. The bottom of the later wall was at about the height of the top of the first, second, and third pilasters on the western perimeter of the kiva (1.65 to 2 feet above the banquette) and was never more than 2.3 feet or less than 1.65 feet above the banquette around the rest of the kiva. The wall was stepped back from the bottom course to the top on the west and east sides and more or less vertical on the north and south. It followed fairly closely the shape of the kiva on the south, east, and west sides but diverged sharply on the north, cutting across the inside from the third to the fifth pilasters. On the north side, the wall was constructed on fill composed primarily of building stones that extended almost to the floor of the kiva. About 25 percent of the stones in the upper wall was pecked-face masonry. The remaining stones were scabbled and chipped-edge masonry. The height of the upper wall ranged from 2.3 to 3 feet.

The upper wall was primarily a compound wall of five to six courses in height. Part of the southern perimeter of the upper wall had a slab wall base; the rest was coursed masonry.

Other features. None.

Artifacts on floor. Sherds of a Mancos Black-on-white jar (fig. 57b) were found on the floor and floor fill and in the ventilator tunnel; most of them came from the ventilator area. Sherds of another Mancos Black-on-white jar were found in the floor fill and on the floor (fig. 57c), but they were so scattered that we were not able to tell where the jar was originally located. It is probable that when the kiva roof fell, or when the kiva was filled, the jar shattered and the sherds "exploded" over a wide area. Fragments of a third Mancos Black-on-white jar were found on the floor and floor fill in Kiva A, and a part of the same jar was found on the floor of Kiva B, in front of the ventilator tunnel.

A conically shaped sandstone block (fig. 135) was found on the floor of the floor-level ventilator shaft, resting on its side and apparently placed there intentionally. It may have been a ceremonial object.

A burned, bird-shaped concretion, possibly used as a firedog or pot support, was on the floor near the hearth (fig. 141, right). Unfortunately, we did not record its exact location in the kiva. The plain-faced metate in the subfloor ventilator fill was discussed previously.

Several artifacts placed intentionally on the kiva banquette included a plain/troughed metate (fig. 97k), in the first interpilaster space next to pilaster 1; a possible anvil (fig. 132, bottom), in the fill on the south part of the banquette between the first and sixth pilasters; a possible door slab (fig. 136a), midway between the fifth and sixth pilasters on the banquette; a troughed metate part on the south banquette; two Subtype 1A manos (one in the fill) on the south banquette (fig. 98a); a side-notched hammer (fig. 112d), in the fill of the south banquette; two Type 2 hammerstones in the fill of the south banquette; a plane (scraper) (fig. 122f), in the fill just above the north banquette; and, on the south banquette, a subcircular travertine pendant with a central perforation (fig. 133g). Also, various sherds were found (table 3) in the fill just above the banquette.

Fill. In general, the earth fill of the kiva was darker and softer toward the top and more orange and compact in the lower parts. No artifact changes were noted. About 5.6 to 7.6 feet below the surface, numerous building stones composed most of the fill. It is probable that this was deliberate fill upon which the upper wall was constructed over the kiva. Also in this level we encountered sections of a human vertebral column and other scattered human bones. Articulated portions of a human leg and arm bones were labeled Burial 22 (fig. 177). Several of the sherds of the restored Mancos Black-on-white jar shown in figure 57b were near the burial and may have been associated with it.

The large number of artifacts found in the fill indicated that Kiva A was used as a trash dump after its abandonment. Several artifacts are worth mentioning—restorable vessels found in the fill that are not listed in table 3. A partially restorable Cortez Black-on-white jar (fig. 46d) and a partially restorable plain bowl, sliped and polished on the interior but without painted design, were found in the upper fill of the kiva, and about half of a small McElmo Black-on-white pitcher or jar was found in the fill of the subfloor ventilator tunnel. Several artifacts from the floor fill may have been associated with the use of the kiva. Two azurite beads were found together close to the floor, as well as various other artifacts and refuse material listed in tables 3, 6, 9, and 10.

Dates. Several pieces of charcoal were found in the fill, but none provided dates. It is likely that Kiva A was constructed during the Component C occupation of Big Juniper House and therefore would have been associated with the jacal structures underlying Rooms 1a, 1b, and 10, and with the other features of this component mentioned previously. If this were the case (reasons for this inference are discussed below), Kiva A was probably constructed around A.D. 1050. It undoubtedly was used through the Component D occupation and probably abandoned somewhat later than 1100 but before 1150. About A.D. 1150, the Component E "later wall over the kiva" was built.

The existence of McElmo Black-on-white sherds and the partially restorable vessel in the deliberate fill of the subfloor ventilator tunnel indicates this remodeling took place around 1080 to 1100, about the time that McElmo Black-on-white began to be made in the Mesa Verde.

Remarks. When Kiva A was constructed, it had a subfloor ventilator, probably four pilasters, and a floor cist or pit next to the hearth. In the Mesa Verde area, kivas with four pilasters that are rectangular in shape and set flush with the banquette face are typical of Pueblo II. Kivas of this period do not normally have southern recesses or a masonry lining above the banquette. Subfloor ventilators in Mesa Verde kivas have been most

commonly found in Pueblo III kivas, although it is a rare trait in that period. However, more sites, and many more kivas, of Pueblo III than of earlier periods have been excavated in the Mesa Verde area. As a result, the subfloor ventilator data may be "overweighted" for comparative purposes. Remodeling of subfloor ventilators to floor-level ventilators, as in Kiva A, is quite typical of Pueblo III kivas.

It has also been suggested that four-pilastered kivas did not have cribbed roofs, but rather followed the old roofing pattern of the four-post kivas or "proto-kivas" and pithouses of earlier times (Lancaster and Pinkley, 1954, pp. 55–56). The roofs in these are assumed to consist of four horizontal beams placed on the roof supports. In the case of Kiva A, the primary beams rested upon the four masonry pilasters over which smaller poles spanned the rectangular space to form the top of the roof. Other small construction members were placed from the four primary beams to the top of the earthen kiva walls to form the sides of the roof. Shakes, bark, reed, or other material, and a coat of adobe finished off the roof. It is not a hard and fast rule, but this generally appears to be the pattern. It is almost a certainty that six- and eight-pilaster kivas, primarily confined to Pueblo III, had cribbed roofs and therefore they reflect a basic change in roof construction.

It is probable, then, that Kiva A underwent a major remodeling that included a change from a subfloor to floor-level ventilator, and a four-pilaster "old" kiva roof design to a six-pilaster, cribbed-roof of "modern" design. The pit next to the hearth was probably filled and plastered over at this time, too.

The question remains as to why Kiva A was remodeled. If the kiva had been in good condition there would have been little reason to tear down the roof, install two new pilasters, and build a new roof. If Kiva A was extensively changed, as has been suggested, it must have fallen into a state of disrepair and perhaps the roof had already collapsed. Although there is little evidence at Big Juniper House to suggest abandonment of the site between Components C and D, there may have been a time when Kiva A was not in use. Perhaps there was insufficient manpower to keep it in good repair. If, as seems likely, the population increased at the beginning of the Component D occupation, with new styles in architecture including most of the masonry rooms at the site, the reoccupation of an older kiva with appropriate changes in its design would probably have been easier than building a completely new one. It is also probable that sometime after Component D began, Kivas B and C were constructed to accommodate other groups.

From its relationship to the surface rooms at Big Juniper House, Kiva A may be considered an integral part of an occupation unit. This has been mentioned in my remarks on Rooms 10 and 11. During the Component D occupation, the roof of Kiva A was probably part of an outdoor courtyard or work surface that included Room 10 and Area D, and possibly Rooms 21 and 22. It was probably the focus of religious and social activities for the people of the occupation unit as well.

Later, Kiva A was used as a trash dump and a wall was built over it. The purpose of this wall is a mystery, but it appears to be a feature restricted to kivas. One other example is Kiva B, and similar later walls over kivas were found at Two Raven House and at Sites 1230 and 1253.

Kiva B

Dimensions. About 13 feet in diameter, varying between 12.8 and 13.2 feet (figs. 25 and 26). Floor is approximately 8.3 feet below present ground surface. The inside dimensions of the later wall constructed over Kiva B are 17.1 feet long north-south and 14.2 feet wide east-west.

Banquette. Kiva B followed the same style of banquette facing as in Kiva A—a base of slabs with intermixed and overlying coursed masonry (fig. 27). Sherds and sandstone spalls were also used for chinking as in Kiva A. Several of the stones in the banquette face were dressed by pecked facing, a situation that did not occur in Kiva A. The remainder of the stones were primarily scabbled, with a few chipped-edge. The banquette averaged about 2.8 feet above the floor; it was plastered on top with about 0.2 foot of adobe mud. There was also some plaster remaining on the banquette face, but not enough to determine the presence of multiple coats. The width of the banquette averaged about 1.5 feet, with a range of 1 to 2 feet.

Liner above banquette. Kiva B was the only kiva at Big Juniper House with a liner above the banquette, a common feature of Pueblo III kivas in the Mesa Verde area. The liner was built only on the north part of the banquette, between the second and third pilasters, and was similar in style to the banquette face, having a slab base topped by coursed masonry of small stones (fig. 28). However, smaller stones were used in the liner than on the banquette. It was probably about the same height, 2.3 feet, as the second pilaster. The remainder of the wall above the banquette was the dirt wall of the original excavation and was probably plastered.

Later wall over kiva. The later wall built over Kiva B was constructed on fill at the level of the tops of the pilasters, and extended down lower on the west side to slightly above the level of the banquette. The later wall over Kiva B was similar in most respects to the wall over Kiva A; the one difference is the existence of a cross wall or partitioning wall that was bonded to the west part of the later wall and extended east (fig. 29). The height of the later wall ranged from 3 to 4.1 feet and averaged about 3.5 feet. The highest point was at the western side near the area of the cross wall. Portions of the later wall were exposed at the present surface. As in the Kiva A later wall, approximately 25 percent of the building stone was pecked faced, the rest scabbled or chipped-edge. We found no occupation surface to indicate whether there was a room or structure inside the later wall and the cross wall. The later wall was most clearly defined on the north and west sides where it was carefully stepped back from bottom to top, to a maximum displacement of 1.9 feet on the north side.

Niches. There were two niches. One was in the usual

place on the kiva axis in the northern portion of the banquette face (fig. 28). It was about a 0.3-foot-square opening with the top inner edge 0.4 foot below the top of the banquette. It extended into the banquette 1.3 feet. The other niche was in the southern banquette face about 0.6 foot east of the first pilaster. Its dimensions were 0.45 foot wide, 0.2 foot high, and 0.7 foot deep. Nothing was found in either niche.

The north niche was difficult to find, having been filled and plastered over. The other niche was probably open.

Ventilator. The ventilator was a floor-level type, probably originally masonry lined throughout, and the shaft was built of both slabs and coursed masonry. Slabs, probably supported by wooden lintels, made up the tunnel roof, and the sides of the tunnel were coursed masonry. The tunnel floor was native earth.

Pilasters. Kiva B had four pilasters, all flaring from front to rear and set back from the edge of the banquette 0.15 foot. They ranged in height above the banquette from 1.6 feet (fourth pilaster) to 2.3 feet (second pilaster). The other two pilasters were nearly 2 feet high. The fourth had partially fallen, and it is probable that it, too, was about 2 feet high when the kiva was used.

The pilasters had pecked-face stones with the corners nicely squared. They were decorated with bands of small sandstone spall- and sherd-chinking between the courses of the larger stones.

Floor. The basin-shaped floor was formed by about 0.3 foot of adobe applied on the sterile earth.

The hearth was a D-shaped pit, 0.7 feet in maximum depth, with several small sandstone slabs and rocks mudded into its sides. It was filled with fine white ash and contained no artifacts.

No sipapu was found.

Two cists were in the floor: Cist 1 below the fourth pilaster, and Cist 2 between the first and second pilasters. Both had been filled with trash and plastered even with the floor before the kiva was abandoned.

Cist 1 has a flat floor and deeply undercut sides, extending about 1.1 feet under the banquette on the east. Its depth is approximately 2.6 feet. In the cist fill we found eight sherds (table 3), two Type 1A manos, one Type 2 hammerstone (table 9), and a miniature ladle (fig. 90). We also found an unfired teardrop-shaped clay pendant (fig. 96, left) and a number of unworked bones of turkey, black-tailed jackrabbit, deer, and unidentified mammals (tables 12 and 13).

Cist 2 had straight sides and a flat floor, and was approximately 0.8 feet deep. Four sherds were the only artifacts found in the fill (table 3).

The deflector was indicated by a mud line of a different color from the surrounding floor (fig. 25). It is assumed the deflector was a short jacal wall—a type of deflector found occasionally in Mesa Verde kivas. It was situated about 1 foot from the south edge of the hearth and about 2.1 feet from the ventilator opening. The deflector was about 3.4 feet long and 0.6 foot wide, with a possible extension on the east side that curved south.

Entry. No entry was indicated, but it is assumed that there was a hatchway in the roof above the hearth.

Other features. None.

Artifacts on floor. The plan and photograph of Kiva B show the location of artifacts found on the floor (figs. 25 and 26). Pottery consisted of a restorable Mesa Verde Corrugated jar (Pot 1), close to the east side of the hearth (fig. 44b); a partially restorable Mancos Corrugated jar (Pot 2), southwest of the hearth; the base of a black-on-white jar (Pot 3), north of the Mesa Verde Corrugated jar; a partially restorable Mancos Corrugated jar (Pot 4), close to Pot 3; a partially restorable Mummy Lake Gray jar (Pot 5), north of the ventilator opening (fig. 36); a Mancos Black-on-white bowl (fig. 56f), in the same area as Pot 5; and a Mancos Black-on-white jar, also in the same general area as Pot 5. Sherds of the last two were found, respectively, on the floor of Kiva C and on the floor of Kiva A.

Stone artifacts included a Type 2 hammerstone, next to Pot 1; a Type 2 hammerstone, next to Pot 2; a Type 1 hammerstone, northeast of Cist 2; a pitted hammerstone (fig. 116f), over the east side of Cist 2; a Type 1A mano, in the Pot 2 area; a Type 1A mano, close to the north banquette face between pilaster 2 and the north banquette face niche; a full-grooved, unfinished ax (fig. 118a), over the west side of Cist 2; a bird-shaped concretion (fig. 141, left), possibly a pot support west of the hearth; a Type 1 unspecialized milling stone, to the north of the hearth; a Type 4 unspecialized milling stone, over the southeast side of Cist 2, next to the pitted hammerstone; an unmodified pebble showing possible slight use as a polishing stone, east of the pitted hammerstone and Cist 2; and a large, unmodified flake, over the north side Cist 2. Also on the floor below the third pilaster were two skeletons, one of rabbit and one of kangaroo rat. A Type 1 unspecialized milling stone was just under the floor and below the second pilaster.

One of the most interesting finds at the site was an apparent cache of eight mammal bone awls and a mammal bone scraper (fig. 149, ch. 5). These were found 3 feet east of the ventilator, in the fill next to the southern portion of the banquette. They had probably fallen from the banquette.

The following artifacts were on the banquette: a large Mancos Black-on-white jar sherd (fig. 62 l); a Type 3 deer bone awl and a Type 2 hammerstone, on the western portion of the banquette; a combination-grooved abrader and three utilized flakes, on the north part of the banquette; and a roughly rounded slab fragment, on the south banquette. A whole Mancos Black-on-white miniature ladle (fig. 90), found in the fill near the second pilaster, might have fallen there from the banquette. Pottery sherds taken from the fill just above the banquette are listed in table 3 as Kiva B, Banquette Fill.

Fill. There was no discernible stratigraphy in the fill. The kiva was excavated in artificial levels to the floor, and no significant change was noted in the artifact types recovered. In the lower fill and floor fill we found a restorable McElmo Black-on-white bowl with a corrugated exterior (fig. 73a). Stone and bone artifacts, sherds and worked sherds found in Kiva B fill are listed in tables 3, 6, 8, 9, and 10. The quantity of artifacts

and refuse material, mostly in the upper fill of the kiva, indicates that it was used primarily as a trash dump after its abandonment.

Dates. The following charcoal specimens, all juniper, were dated. All came from the fill; two, MV-1659 and MV-1688, came from Level 3 (6.1 to 7.8 feet below the surface) on the west side of the kiva in the vicinity of the second pilaster. The third, MV-1692, from the floor fill, gave the latest date at Big Juniper House.

		Dates, A.D.	
Specimen	*Provenience*	*Inside*	*Outside*
MV–1659	Bottom, Level 3	823	1048vv
MV–1688	Level 3	897	1062+vv
MV–1692	Floor fill	927	1130B

(NOTE: See table 17 in appendix for key.)

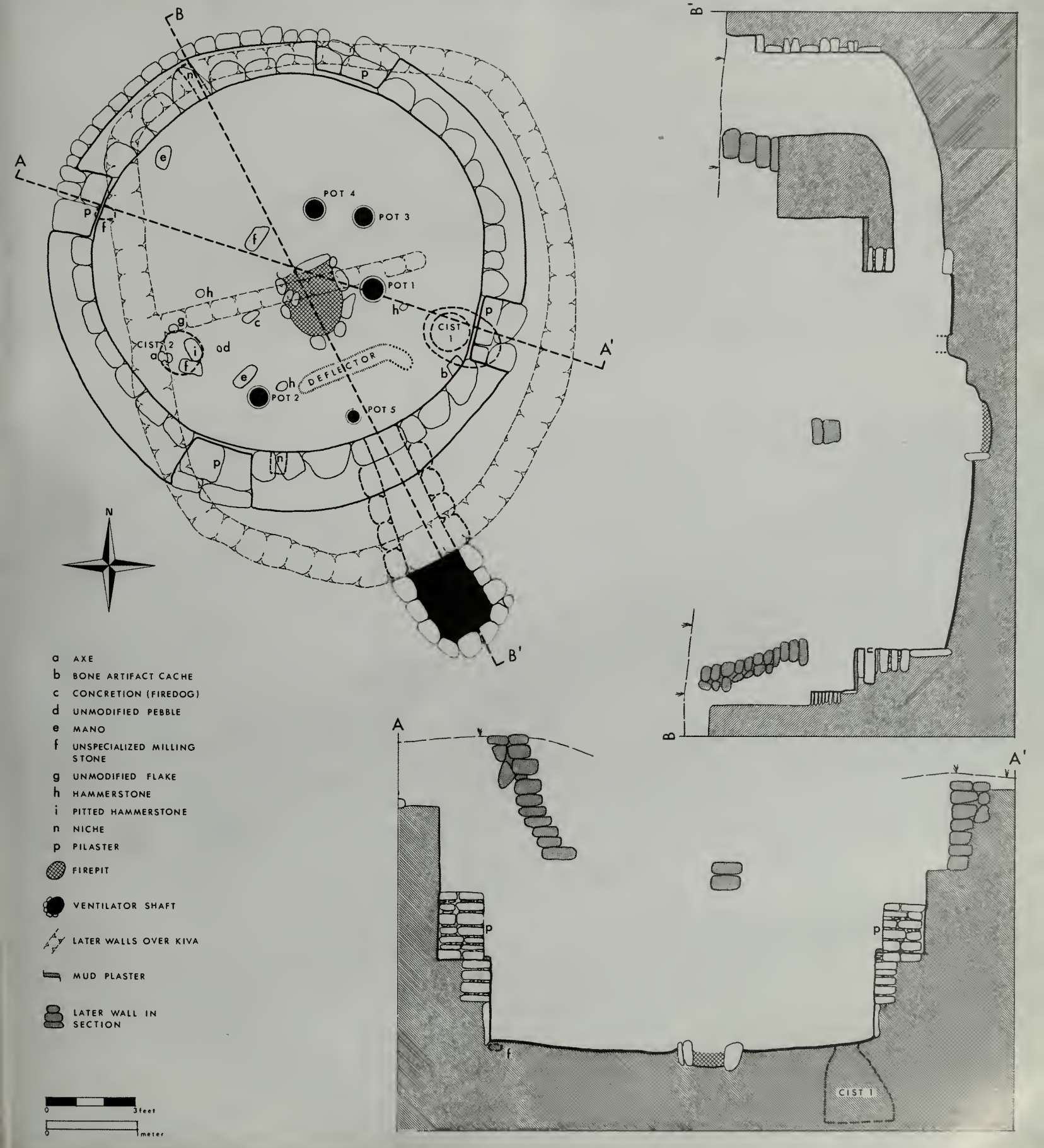
The "B" after the 1130 date indicates bark is present and that 1130 is very likely a cutting date—indeed the only reasonably certain cutting date derived from our wood and charcoal specimens. Kiva B does not show evidence of burning and it is likely that the specimen is not part of a structural feature in the kiva, but rather part of the fill deposited after the kiva's abandonment. However, the fill in which MV–1692 occurred was deposited before the Component E later wall of the kiva was constructed, and therefore would have been earlier. Based on the evidence from the artifacts found associated with the floor of the kiva and in the kiva fill, it is probable that the 1130 date is quite close to the actual time of abandonment of the kiva.

Remarks. Several architectural features of Kiva B point to its relative lateness when compared to Kiva A. The flaring pilasters, the pecked-face masonry used in the pilasters and scattered on the banquette face, the pilasters set back from the banquette edge, and the liner above the banquette are all features typical of Pueblo III kivas in the Mesa Verde area. These traits indicate that Kiva B probably was constructed no earlier than about A.D. 1100. In all respects, except for the number of pilasters, Kiva B is the latest kiva typologically at Big Juniper House. The four pilasters may indicate a holdover of an earlier style of roofing, or possibly the construction of a cribbed roof on four pilasters.

The physical relationship of Kiva B to the rooms is also an indication that it was the last kiva to be built. The integration of kivas within room blocks is a trait not well established before Pueblo III, but Kiva B was enclosed on three sides by rooms and is therefore more clearly integrated with rooms than either Kiva A or Kiva C. The usual Pueblo II pattern is reflected in Kiva A's propinquity to the rooms, clearly in front of

25 *Kiva B, looking southwest (top of picture). Later wall over kiva is on the southern part, in front of the ventilator shaft.*

26 *Plan and sections of Kiva B.*



27 *Detail of Kiva B banquette face.*

28 *Detail of north section of banquette face with niche, Kiva B.*

29 *Later walls over Kiva B on north (top of picture) and west sides, and part of cross wall in the center.*

them but not integrated into the room block. Kiva C presents a somewhat anomalous situation that will be discussed later.

Kiva B, from its probable dating, was a Component D occupation feature. The later wall over Kiva B is considered a Component E feature, probably constructed after 1130 but before 1150.

As discussed previously under Rooms 14, 19, and 20, Kiva B was likely a focal point for an occupation unit consisting of Rooms 13, 14, 15, 19, and 20. The roof of this kiva probably served as a courtyard-working area for this assumed occupation unit. Other rooms behind the main north wall of Rooms 13 to 15 may also have been part of this unit, but their relationship to Kiva B is not as clear as the above rooms.

Kiva C

Dimensions. Kiva C is less circular than Kivas A and B. The dimensions are approximately 10.4 feet wide north-south and 11.5 feet long east-west (figs. 30 and 31). The floor lies from 6.2 to 7.3 feet below the present surface.

Banquette. The same style of banquette facing that was observed in the other kivas—a base of slabs intermixed and overlain with coursed masonry (fig. 32)—was present in Kiva C. No pecked-face rocks were observed in the banquette face or the pilasters. The stones were primarily scabbled, with a few being chipped-edge.

The banquette was 3 feet above the floor and its width averaged 1.5 feet, with a range of 1.2 to 2 feet. The banquette is wider between the third and fourth pilasters than between the first and fourth and between the second and third.

There were traces of at least three layers of plaster on the banquette face, to a maximum thickness of 0.1 foot. A relatively thick layer of yellow, sandy plaster was overlain by two thin coats of brown plaster.

There was no liner above the banquette and the native earth of the kiva excavation served as the wall above it. Originally, this may have been plastered.

No later wall was built over the kiva as in Kivas A and B. The east wall of Room 20 skirted the kiva on the west side, but it was probably constructed over part of the kiva roof and consequently fell in after the roof collapsed, as shown in figure 30.

Niche. Kiva C had one niche, 0.3 foot square, which extended about 0.7 foot into the north portion of the banquette face on the kiva axis. The inside top of the niche was 0.6 foot below the top of the banquette. In the niche were a Type 2B worked sherd, a Mancos Black-on-white jar sherd, and two unmodified cores.

Ventilator. The ventilator had a floor-level tunnel and probably a masonry-lined vertical shaft. It appears that the shaft was constructed through an old cist which, in turn, cut through an older firepit. Because of the soft fill in the ventilator area, most of the stones that lined the shaft had collapsed and little remained of the original shaft lining. The ventilator tunnel did not appear to have been lined behind the banquette face. The native earth provided the walls, ceiling, and floor of the tunnel.

Pilasters. All of the Kiva C pilasters flared from front to rear and all were set back from the edge of the banquette an average of 0.1 foot. They were unlike Kiva B pilasters, however, for they were wider and lacked pecked-face masonry. In fact, the fourth pilaster was so wide that it had to be shaped inward to conform to the curve of the banquette. The masonry of the pilasters was scabbled and chinked with small stones or spalls. Kiva C also differed from the other two kivas in the absence of sherd-chinking in the pilasters and the banquette face.

Floor. The floor in Kiva C was basin-shaped and silghtly lower in its northern part. Approximately 0.2 foot of adobe applied to the sterile earth formed the floor. There were no subfloor features.

The hearth was a circular pit about 2 feet in diameter and 0.6 foot deep, slightly deeper on the south side. It had three sandstone concretions or "pot supports" mudded in the sides (fig. 140), and was filled with ash.

A sipapu was located on the kiva axis about midway between the hearth and the north banquette face. The cylindrical hole measured 0.4 foot in diameter and 0.7 foot in depth.

A small cist covered by a sandstone slab (fig. 136b) was next to the banquette, beneath the first pilaster. It is a cylindrical hole 0.8 foot in diameter and 0.85 foot deep. Nothing was found inside it.

No deflector was found. Three irregularly shaped slabs lay on the floor between the ventilator and the hearth, but their size and arrangement precluded their use as either ventilator covers or deflectors. Probably they were part of the collapsed roof.

Entry. As in the other kivas, no evidence of an entry was found. It is assumed that it was a hatch directly above the hearth.

Other features. None.

Artifacts on floor. The plan of Kiva C (fig. 31) shows the position of the various stone, bone, and pottery artifacts in place on the floor and on the banquette.

Pottery on the floor included: a Mancos Black-on-white bowl (fig. 56f), on the west side of the kiva near the cist; a partially restorable Mancos Black-on-white jar (fig. 57d), in the same area; a Type 10 worked sherd (fig. 83a), on the east side of the floor; and a Type 7 worked sherd (fig. 83c), on the south side, to the west of the ventilator. Sherds of the Mancos Black-on-white bowl were also found on the floor of Kiva B.

Stone artifacts on the floor were: a Type 2A mano (fig. 101b) on the east side of the floor below pilaster 4; a Type 1 unspecialized milling stone with a red paint stain on one grinding surface (fig. 103d) on the west side of the floor; a Type 2 unspecialized milling stone (fig. 104b) next to the west side of the hearth; a Type 4 unspecialized milling stone (fig. 104h) to the east of the sipapu; a "jar lid" (fig. 136g) to the northeast of the sipapu, which may have been used to cover this feature; the sandstone slab covering the cist, as mentioned previously; a handstone (fig. 105e) on the southeast portion of the floor beneath the fourth pilaster; three Type 2 hammer-

stones in the same area as the handstone; a utilized flake (fig. 126a) in the area of the Mancos Black-on-white bowl and jar; an unmodified flake in the same area; and the three pot supports already mentioned.

A bone artifact made of a mule deer rib (fig. 156b) was on the floor east of the hearth. It is possible that it was used as a knife or scraper.

Two artifacts were on the banquette: a plain-faced metate (fig. 97h) on the southern portion over the ventilator tunnel, and about half of a Type 1A mano on the east portion of the banquette next to the fourth pilaster.

Fill. We discovered no evidence of stratigraphy. About 4.5 feet below the surface, next to the second pilaster, we found the jumbled remains of a slab hearth and scattered ash that indicated the hearth was probably atop the roof and became part of the kiva fill when the roof collapsed.

Also in the fill was a partially restorable Mancos Black-on-white ladle (fig. 59d); a partially restorable Cortez Black-on-white bowl (fig. 46b); and a large Mancos Black-on-white bowl sherd that was probably used to mix pigment since the central area of the sherd was coated with a fugitive red paint.

It is interesting to note, though its significance is uncertain, that the fill of Kiva C produced by far the greatest number of worked sherds from a single provenience at Big Juniper House (table 6). Pottery sherds and stone and bone artifacts are listed in tables 3, 8, 9, and 10.

Dates. No wood or charcoal was recovered. Other evidence points to Kiva C as a probable Component D feature, or possibly a late Component C or an early Component D feature. The architectural style indicates it was built before Kiva B and later than the first construction in Kiva A, but earlier than the second construction or remodeling of Kiva A. The flared pilasters set back from the edge of the banquette are later features

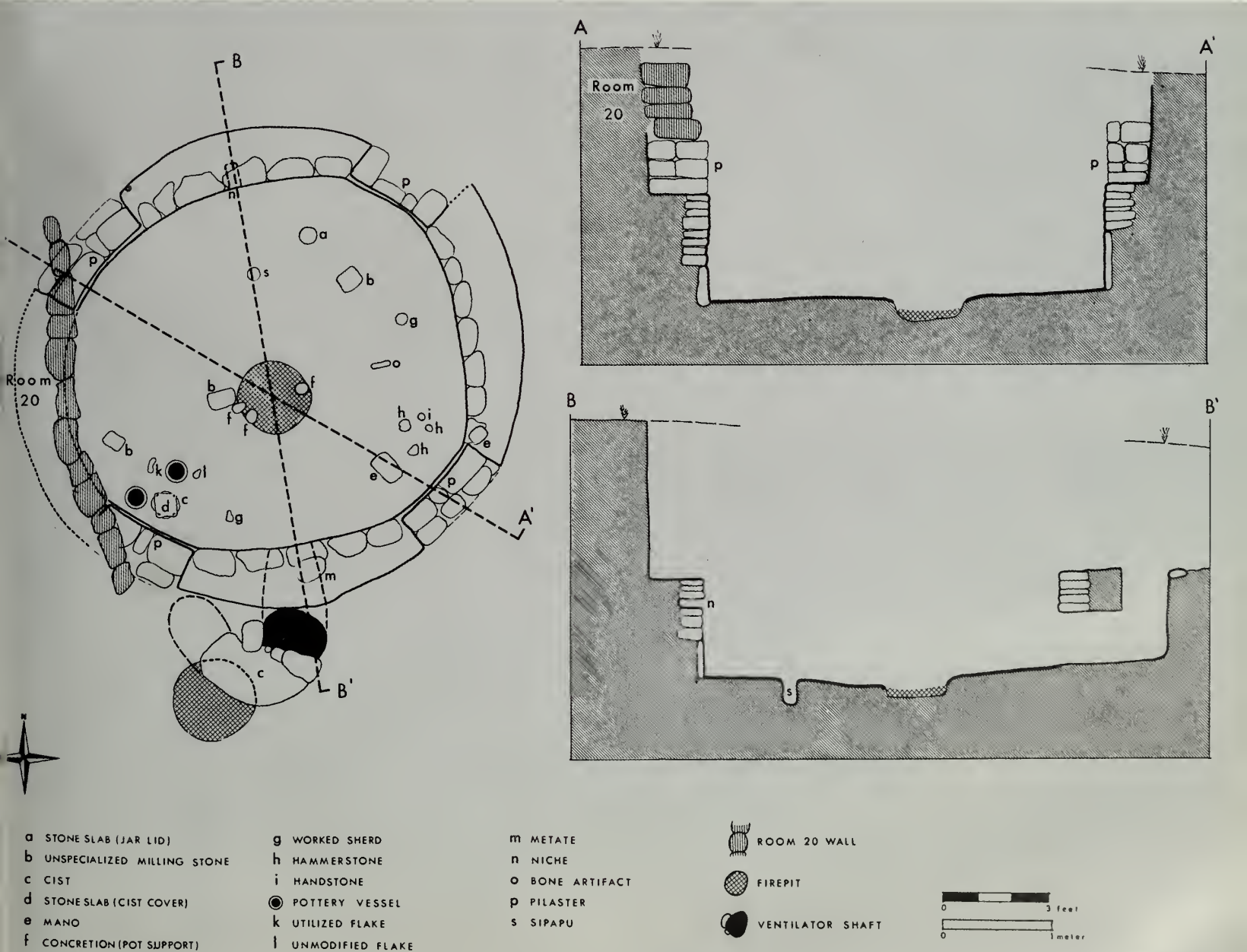
30 *Kiva C, looking south (top of picture). East wall of Room 20 (at right) has slumped into the kiva.*

than Kiva A. However, the lack of pecked-face masonry and a masonry liner above the banquette of Kiva C are early features that indicate a later construction date for Kiva B and a later date for the construction of the two narrow pilasters with pecked-face stones in Kiva A.

If, as seems likely, Kiva C was constructed in late Component C times, it was built in the late 1000's. We have already seen that it continued to be used during the time the other kivas were in use and that it was probably abandoned at about the same time as the other kivas, or around 1130.

Remarks. Unlike Kivas A and B, Kiva C shows no clear relationship to surface rooms, with the possible exception of Room 16. Although the area in the Kiva C locale was stripped, there does not seem to be more than one room that would have been associated with the kiva. Kiva C has the appearance of an "outlier," perhaps used by the people living either in rooms north of the main wall of Rooms 13 to 16 or in the other two occupation units.

32 *Detail of Kiva C banquette face and fourth pilaster.*



31 *Plan and sections of Kiva C.*

CHAPTER 3

ceramics

Approximately 13,600 sherds and 56 complete or partially restorable vessels were recovered during the excavation of Big Juniper House. All the pottery was examined macroscopically to determine rim shape, neck form, surface treatment, slip, paint type, and decorative style. Representative sherds were then selected for microscopic examination of temper and, in some cases, the presence or absence of a slip.

Worked sherds, miniature vessels, pipes, and other ceramic objects are described in this chapter under separate headings. They are not included in the sherd counts of the types discussed immediately below.

Pottery manufactured in the Mesa Verde area in prehistoric times is assigned to two wares: Mesa Verde Gray Ware and Mesa Verde White Ware. They are separated on the basis of surface treatment—the plain and textured utility or culinary pottery is assigned to Mesa Verde Gray Ware, and the black-on-white painted pottery is designated as Mesa Verde White Ware.

Mesa Verde Gray Ware includes the types called Chapin Gray, Moccasin Gray, Mancos Gray, Mummy Lake Gray, Mancos Corrugated, and Mesa Verde Corrugated. Mesa Verde White Ware includes Chapin Black-on-white, Piedra Black-on-white, Cortez Black-on-white, Mancos Black-on-white, McElmo Black-on-white, and Mesa Verde Black-on-white. All but Mesa Verde Black-on-white were found at Big Juniper House.

A third ware, San Juan Red Ware, is encountered in small quantities at sites in the park. In this report, the ware is divided into two types: Abajo Red-on-orange and Bluff-La Plata Black-on-red. Very few of these sherds were found in relation to the number of black-on-white or gray sherds, and their distinctive paste sets them apart from the usual pottery found at Big Juniper House. We do not know if red ware was locally produced or not. The period of occupation at Big Juniper House was late enough so that very little red ware of the Alkali Ridge series would be expected to survive in use. The contemporary Tusayan Black-on-red and Citadel Polychrome types, to the west, were evidently far enough removed in space so that very little of these would be found in the Mesa Verde region.

MESA VERDE GRAY WARE

Plain Gray Body Sherds

No attempt was made, other than in a trial run, to type the 612 plain gray body sherds. Body and base sherds of the plain gray pottery made in the Mesa Verde region are indistinguishable from the body sherds from plain portions of textured vessels. Surface treatment of plain vessels and plain sections of textured vessels appear to have changed very little through time.

Probably many of these sherds are from Mancos Gray or Mummy Lake Gray vessels rather than earlier plain gray types such as Chapin Gray or Moccasin Gray. The major use of these latter types was prior to the occupation of Big Juniper House. Very few black-on-white types of this early period are represented at the site, adding more evidence that the plain gray body sherds came from types later than Chapin Gray or Moccasin Gray.

The sherds, primarily from jars, usually have scraped or smoothed surfaces, and some display a light polish on the exterior. They are unslipped and range from light to dark gray.

Approximately 90 percent of the sherds examined microscopically have crushed rock temper. Temper in several sherds is a combination of rock and sherd, and in a few others it is sand or crushed sandstone.

Ten body sherds can be considered as local gray pottery with decorations on the exterior due to experimentation or method of construction. Four are punctated and five are incised (fig. 33). There is a possibility that these nine sherds are from trade vessels. They are similar to O'Leary Tooled and Honani Tooled, both of which

33 *Surface texturing on gray ware body sherds: punctating, a, b; incising, c–f.*

occur in northeastern Arizona (Colton, 1956, Ware 8A, Types 7 and 8). Except for the surface, these sherds do not differ from local pottery. Similar surface characteristics on presumably local utility pottery sherds have been found in Mancos Canyon by Reed (1958, p. 121) and at other Mesa Verde sites. One plain gray base sherd had a coiled basket-impressed exterior (fig. 34), which occurs occasionally on the local black-on-white vessels.

Chapin Gray

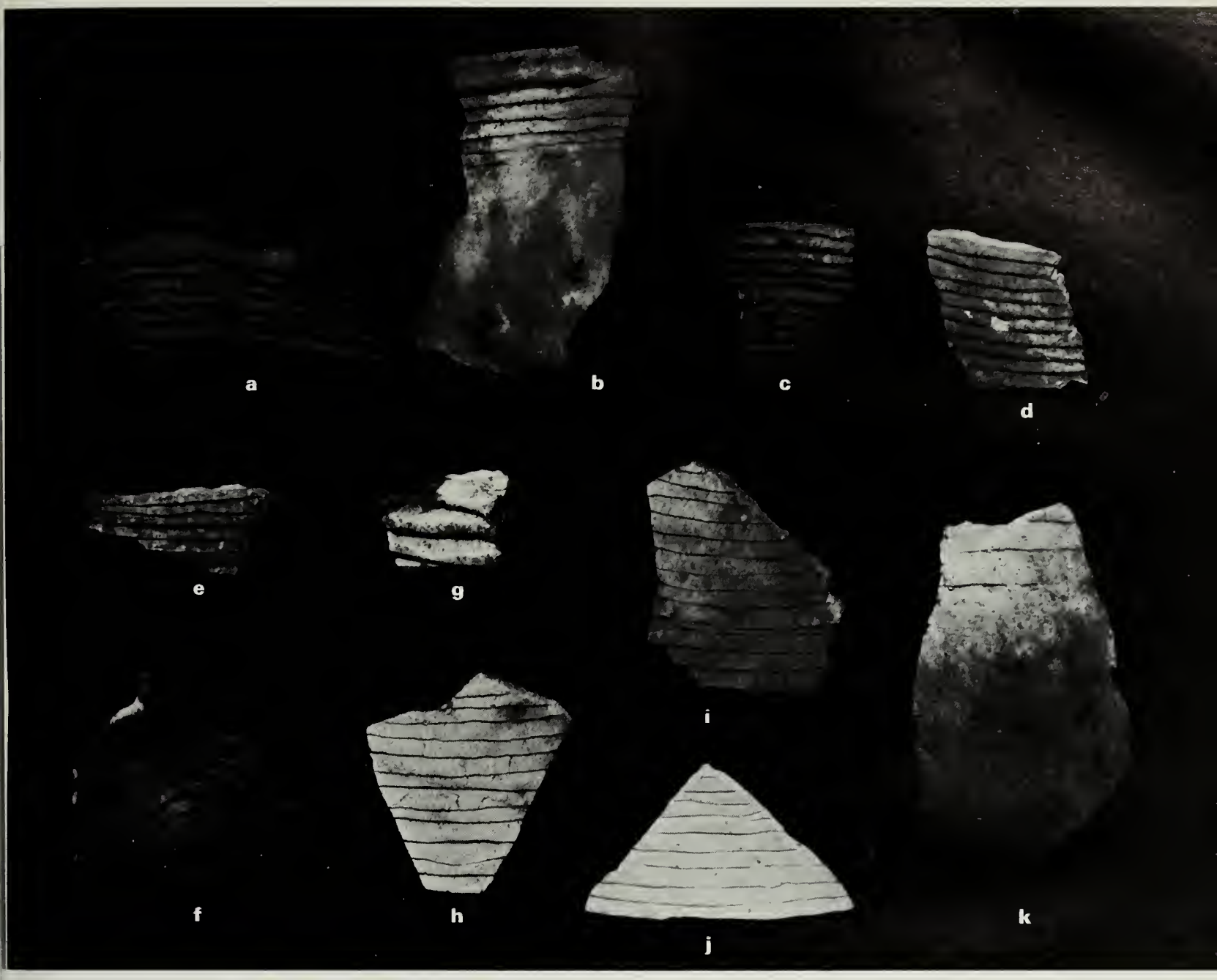
Thirteen jar rims were classified as Chapin Gray (Abel, 1955, Ware 10A, Type 1). Rims are tapered and straight, belonging to short-necked jars. They are light to dark gray, and the surfaces are unpolished and are either scraped or smoothed. Crushed rock temper was identified in all the sherds.

One bowl sherd with a tapered rim was found, but it was too small to reconstruct the shape. It is possible that the sherd came from an undecorated portion of a Chapin or Piedra Black-on-white bowl or from a later, unslipped black-on-white bowl.

Chapin Gray was made during Basketmaker III and Pueblo I. Abel (1955, ibid.) states that its time range extended from about A.D. 450 to 900, but Rohn (1959, p. 16) suggests dates from about 575 to 900. On the basis of tree-ring dates published for Mesa Verde Basketmaker III sites and from the dates obtained through the work of the Wetherill Mesa Project, the earlier date of 450 has not been substantiated and Rohn's beginning date is undoubtedly more nearly correct.

With few exceptions, Basketmaker III and Pueblo I pottery was not found at Big Juniper House. The time of these Chapin Gray sherds would therefore have had to occur late in the Chapin Gray time span, probably representing a holdover of this type into early Pueblo II (early 900's). We found no earlier sites in the immediate area that could have been the source of these sherds.

34 *Gray ware base sherd with coiled basket-impressed exterior.*



35 *Mancos Gray rim and body sherds, a–j; Moccasin Gray neck sherd, k.*

Moccasin Gray

Only one definite Moccasin Gray sherd, a jar neck, was found during the excavation (fig. 35k). It was not associated with a floor or other occupation surface. Moccasin Gray is the Pueblo I banded-neck pottery produced from about A.D. 800 to 900 (Abel, 1955, Ware 10A, Type 3). As noted above, no pre-Pueblo II sites have been located in the vicinity of Big Juniper House from which this sherd could have come.

Mancos Gray

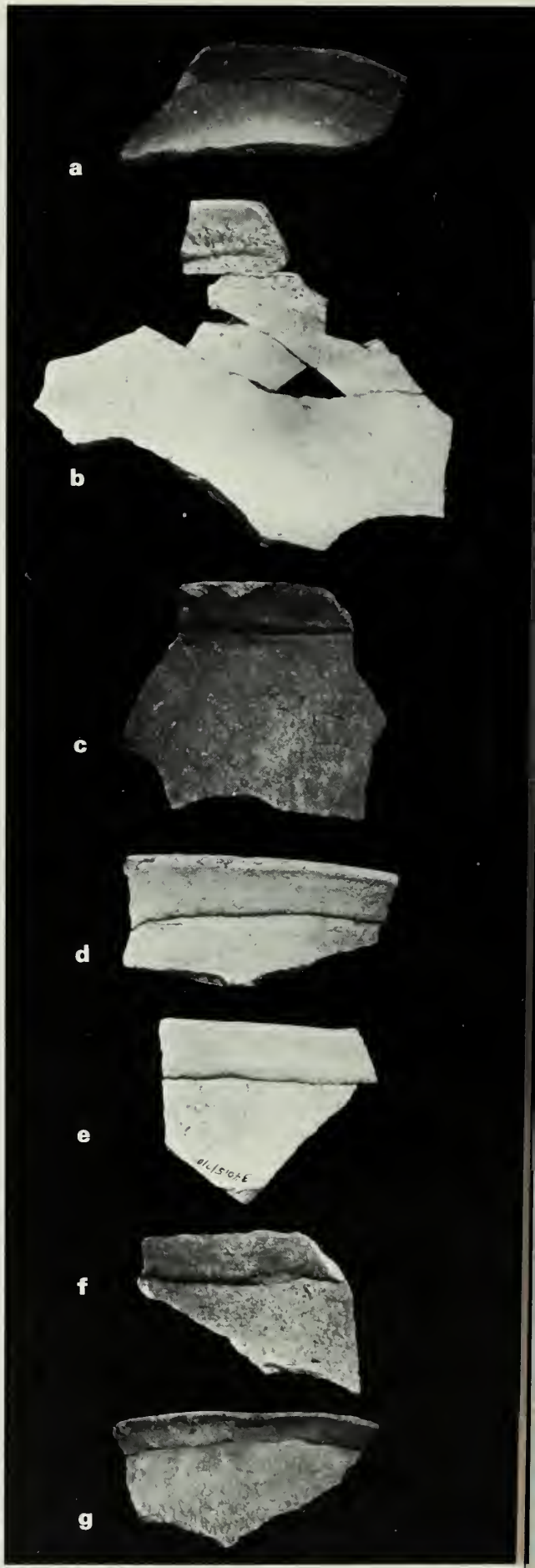
Mancos Gray pottery was made in early Pueblo II. The suggested time range is from A.D. 875 to 950, and it appears to be an evolutionary step toward the overall corrugated pottery that began to be made during Pueblo II. A description of this type has been published by Abel (1955, Ware 10A, Type 4).

Six rim sherds and 46 body sherds represent the Mancos Gray sherd collection from Big Juniper House (fig. 35a–j). No whole vessels were found. Most rims are straight or direct and some show slight flaring. Crushed rock temper was found in all of the sherds which were examined microscopically.

Undoubtedly, many of the body sherds are from patterned-corrugated vessels with alternate zones of indented and unindented coils. Mancos Gray is frequently embellished with tooling between the coils, thus creating grooves. Another frequent practice was smoothing the coils, sometimes almost obliterating them.

The primary characteristic distinguishing Mancos Gray from Moccasin Gray is the use of relatively narrow, often overlapping coils applied in a spiral fashion in Mancos Gray, in contrast to relatively wide, concentric coils employed in Moccasin Gray.

36 *Mummy Lake Gray jar; height, 24 cm.*



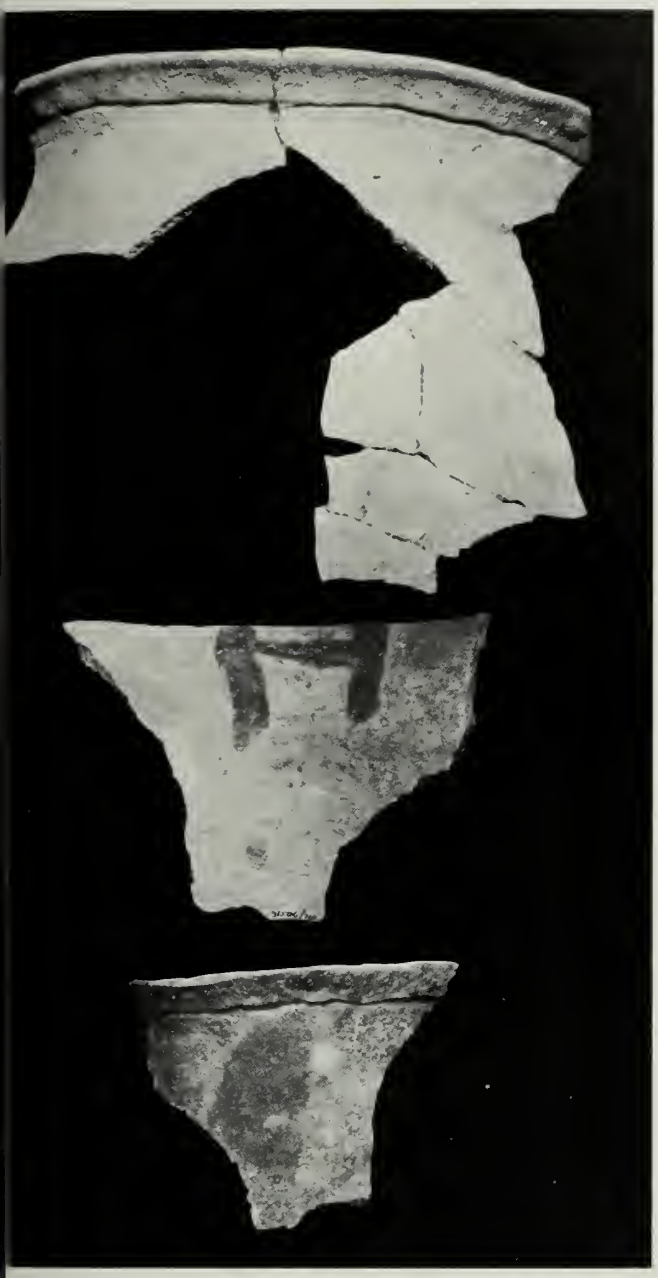
37 *Mummy Lake Gray rim sherds. The rims are straight to slightly flaring except g, which is sharply everted.*

Mummy Lake Gray

One restorable jar (fig. 36) and 39 rim sherds (figs. 37 and 38) of Mummy Lake Gray pottery were found at Big Juniper House. This site was one of several excavated by members of the Wetherill Mesa Project that provided information for the recently described pottery type (Rohn and Swannack, 1965).

Mummy Lake Gray jars are plain over the entire surface, except where an unindented coil or fillet forms the rim. Occasionally, parts of the surface show traces of the original coiling. Body shape and rim form generally parallel those of Mancos Corrugated, although Mummy Lake Gray vessels are comparatively small.

The characteristic rim fillet of Mummy Lake Gray was almost obliterated on the restorable jar that was found. Its dimensions are 24 cm. high, 20.8 cm. in maximum diameter, and about 17 cm. in orifice diameter. Its capacity, measured with vermiculite is 4.8 liters (a compar-



38 *Mummy Lake Gray rim sherds with exterior and interior views of sherd with mineral-painted "H" on interior.*

atively large Mummy Lake Gray vessel). All of the rim sherds are from jars, although pitchers are quite common vessel forms. Tempering material is primarily crushed rock. A few sherds are tempered with a combination of crushed rock and sherds and one or two sherds are tempered with sand or crushed sandstone.

One of the sherds has a mineral-painted "H" on the interior, just below the rim (fig. 38). This figure is similar to the simple designs painted on the interior of several Mancos Corrugated rim sherds.

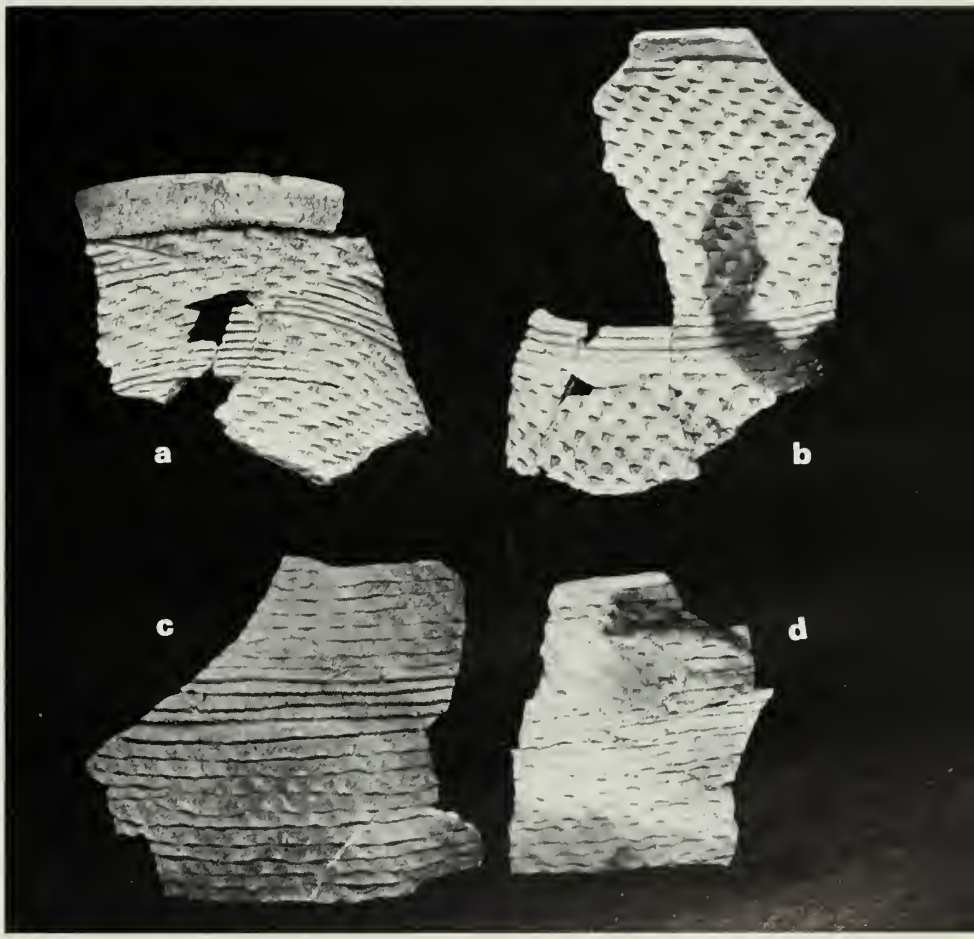
Mummy Lake Gray was made from about A.D. 950 to 1200, but its period of abundance was from about 1000 to 1150 (Rohn and Swannack, 1965). The one restorable vessel at Big Juniper House was found on the floor of Kiva B along with Pueblo III vessels—a Mesa Verde Corrugated jar and a McElmo Black-on-white bowl. The jar probably dates from about 1100 to 1130 on the basis of dated charcoal from the kiva.

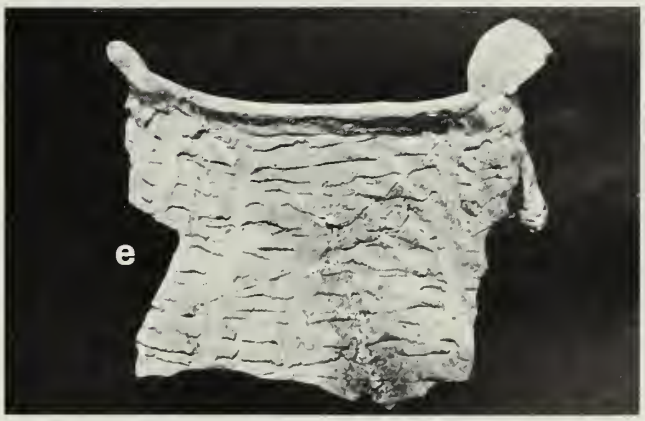
Corrugated Body Sherds

No attempt was made to separate the 4,771 indented-corrugated body sherds into Mancos Corrugated and Mesa Verde Corrugated types. As a group, Mesa Verde Corrugated shows less variation in surface treatment than Mancos Corrugated, but there is no sharp division between them. Most of these body sherds may be identified as Mancos Corrugated because of the preponderance of rim sherds and restorable vessels of this type.

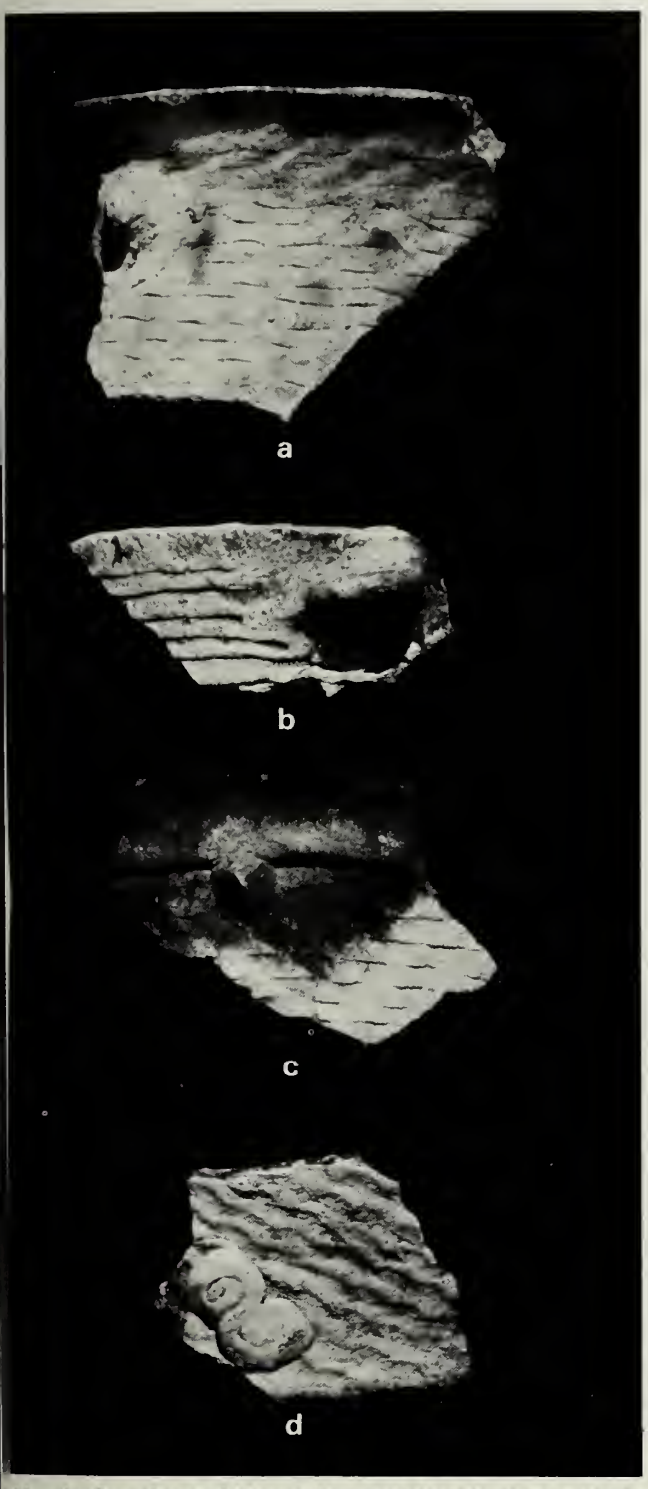
One hundred and fifty-two sherds are patterned-corrugated (fig. 39), a more common trait in Mancos Corrugated than in Mesa Verde Corrugated. The only form represented by the corrugated body sherds are jars. Pitchers have been found in other sites.

39 *Mancos Corrugated sherds showing typical forms of patterning; rims sherds, a, b, e, and body sherds, c, d.*






a
b
c
d
e
f
g
h
i



41 *Applique forms of Mancos Corrugated jar sherds; rim sherds, a–c, and unusual neck sherd, d.*

42 *Mancos Corrugated jar sherds: exteriors, above; interiors of same sherds showing simple mineral-painted designs, below.*

Mancos Corrugated

This is the major utility type represented at Big Juniper House (figs. 39–43; table 3), and, with one exception, only jar forms were found. We recovered 13 whole or partially restorable jars and 595 rim sherds.

Mancos Corrugated was separated from Mesa Verde Corrugated primarily by the degree of rim eversion. In general, Mancos Corrugated is characterized by a hemispherical base and nearly vertical sidewalls leading to a wide mouth. The diameter of the mouth is nearly equal to the maximum diameter of the vessel.

Mancos Corrugated rims at Big Juniper House were both slightly to medium flaring (314) and direct or straight (281). The greater number of flaring rims may be another indication of the transitional nature of this site from Pueblo II to Pueblo III.

Nine of the rim sherds and one complete jar are patterned-corrugated. The usual form of patterning is a zone or zones of unindented coils alternating with indented coil areas (fig. 39a–c). Less common forms are scored or wiped zones through indented coiling (figs. 39d and e, and 40b), alternating directions of ridges created

ncos Corrugated jars. Height of a is 38 cm.

TABLE 3.—DISTRIBUTION OF SHERDS BY POTTERY TYPE, BIG JUNIPER HOUSE

PROVENIENCE	Types																						
	Mesa Verde Gray Ware								Mesa Verde White Ware							San Juan Red Ware			Intrusive				
	Plain Gray Body	Chapin Gray	Moccasin Gray	Mancos Gray	Mummy Lake Gray	Corrugated Body	Mancos Corrugated	Mesa Verde Corrugated	Plain from B/W vessels	Unclassified B/W	Chapin Black-on-white	Piedra Black-on-white	Cortez Black-on-white	Mancos Black-on-white	McElmo Black-on-white	Abajo Red-on-orange	Bluff-La Plata B/R	Unclassified San Juan	Puerco Black-on-red	Wingate Black-on-red	Tusayan Polychrome	Totals
South Trash Mound	158	5	...	28	22	1, 684	253	9	954	506	1	...	217	1, 572	65	2	6	6	2	...	...	5, 49
East Trash Mound	8	...	...	...	...	33	4	...	39	10	...	...	9	31	...	...	...	...	...	...	...	13
Test Trench 2	3	...	...	...	...	22	1	...	3	4	...	...	...	8	...	...	...	...	...	...	...	4
Test Trench 3	1	...	...	...	...	12	3	...	5	2	...	...	...	4	1	...	...	1	...	...	...	2
Test Trench 4	...	1	...	...	...	28	...	...	4	4	...	...	2	10	1	...	...	...	...	...	...	5
Test Trench 5	1	...	...	...	...	16	...	...	8	4	...	...	...	10	...	...	...	...	...	...	...	3
Test Trench 13	2	...	...	...	...	13	2	...	7	5	...	...	...	5	...	...	...	1	...	...	...	3
Test Trench 15	2	1	...	...	...	26	3	...	18	7	...	...	5	9	...	2	5	1	...	...	...	7
Area A	4	...	...	1	...	15	2	...	11	3	...	...	2	7	...	1	...	...	...	...	...	4
Area D	4	...	...	...	...	22	2	...	8	3	...	...	1	5	...	...	...	...	...	...	...	4
Area 12	55	2	...	...	...	331	45	3	149	61	...	...	38	139	2	...	2	1	...	...	...	82
East House Mound	14	...	...	1	1	125	13	...	57	28	...	...	14	62	2	...	1	1	...	1	...	32
Area 2, upper fill	2	...	...	...	...	41	3	...	14	11	...	...	3	21	...	...	...	...	...	...	...	9
Room 1a, upper fill	4	...	...	...	...	29	2	...	18	5	...	...	5	11	...	...	...	2	...	...	...	7
Room 1a, lower fill	2	...	...	...	...	9	...	...	5	...	...	...	1	3	...	...	...	...	...	...	...	2
Room 1a, Floor 2 fill	...	...	...	...	...	5	2	...	3	...	...	...	...	...	...	...	...	...	...	...	...	1
Room 1a, sub-Floor 2 fill	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Room 1b, upper fill	1	...	...	...	...	26	1	1	7	4	...	...	4	13	...	...	...	...	...	...	...	5
Room 1b, lower fill	...	...	...	1	1	9	...	...	...	...	...	...	1	3	...	...	...	...	...	...	...	1
Room 1b, Floor 2 fill	...	...	...	...	...	8	...	...	11	...	...	...	1	3	...	...	...	...	...	...	...	2
Room 1b, sub-Floor 2 fill	1	...	...	...	...	10	...	...	5	2	...	...	...	...	...	...	...	...	...	...	...	1
Room 2, fill	1	...	...	...	...	22	2	...	26	1	...	...	6	9	1	...	1	...	...	...	...	6
Room 2, floor fill	...	...	...	...	...	8	2	...	2	2	...	...	...	5	3	...	...	...	...	...	...	2
Room 2, subfloor fill	3	...	...	1	...	28	2	...	16	3	...	...	13	6	2	...	...	...	...	...	...	7
Room 3, fill	4	...	...	...	...	24	1	...	13	2	...	...	1	17	1	...	...	...	...	...	...	6
Room 3, subfloor fill	2	...	...	...	...	20	3	...	2	1	...	...	5	4	...	...	...	...	...	...	...	3
Area 6 (Rooms 4, 5, 25, upper fill)	6	...	...	...	1	18	2	...	25	6	...	...	14	24	7	...	...	...	...	...	...	10
Room 4, fill	7	...	...	...	...	67	9	...	16	7	...	...	3	16	...	1	...	...	...	...	...	12
Room 5, fill	8	...	...	...	...	47	3	...	29	6	...	1	9	46	...	...	...	...	...	...	...	14
Room 5, Cist 1 fill	2	...	...	...	...	13	2	...	6	1	...	...	...	6	...	2	...	...	...	...	...	3
Room 6, fill	12	...	...	...	...	82	7	...	21	7	...	...	8	27	3	...	...	...	...	...	...	16
Room 6, floor fill	2	...	...	...	1	31	2	...	8	2	...	...	...	4	...	...	...	...	...	...	...	5
Room 6, subfloor fill	5	...	...	1	...	15	1	...	1	3	...	...	1	2	...	...	...	...	...	...	...	2
Room 7, fill	5	...	...	...	1	30	1	...	19	4	...	...	1	22	1	...	...	...	...	...	...	8
Room 7, subfloor fill	1	...	...	...	...	7	3	...	2	1	...	...	...	4	...	...	...	...	...	...	...	1
Room 7, subfloor cist fill	1	...	...	...	...	11	...	...	2	...	...	...	...	1	...	...	...	...	...	...	...	1
Room 8, fill	3	...	...	...	1	17	...	...	7	...	...	...	...	10	...	...	...	...	...	...	...	3
Room 8, subfloor fill	6	...	...	...	...	18	1	...	13	...	...	...	2	7	...	...	...	...	...	...	...	4
Room 9, fill	8	...	...	...	...	11	3	...	5	1	...	...	...	2	...	...	...	...	...	...	...	3
Room 10, upper fill	8	...	...	1	...	76	4	...	32	12	...	...	4	28	1	...	...	...	...	...	...	16
Room 10, hearth fill	...	...	...	...	...	1	...	...	...	4	...	...	...	4	2	...	...	...	...	...	...	1
Room 10, lower fill	1	...	...	1	...	97	...	...	6	41	...	...	...	20	...	...	...	...	...	...	...	16
Room 10, Floor 2 fill	...	...	...	...	...	3	...	...	2	...	...	...	...	13	...	...	...	...	...	...	...	1
Room 10, sub-Floor 2, Cist 1	...	...	...	...	...	9	...	...	3	1	...	...	...	2	...	...	...	...	...	...	...	1
Room 10, sub-Floor 2 fill	...	...	...	...	...	7	...	...	5	...	...	...	...	2	...	...	...	...	...	...	...	1
Room 11, fill	12	...	...	...	...	47	6	...	37	13	...	...	3	31	...	...	...	1	...	...	...	15
Room 11, floor fill	...	...	...	...	...	...	...	...	...	1	...	...	...	2	...	...	...	...	...	...	...	
Room 12, fill	...	...	...	1	1	17	1	...	11	3	...	...	4	6	...	...	...	...	...	...	...	4
Room 13, fill	3	...	...	...	1	11	3	...	9	2	...	...	2	8	...	...	...	...	...	...	...	3
Room 14, fill	5	...	...	...	...	31	4	...	14	1	...	...	2	9	...	...	...	...	...	...	...	6
Room 15, fill	7	...	...	...	1	26	1	...	13	3	...	...	1	13	3	...	...	...	...	...	...	6

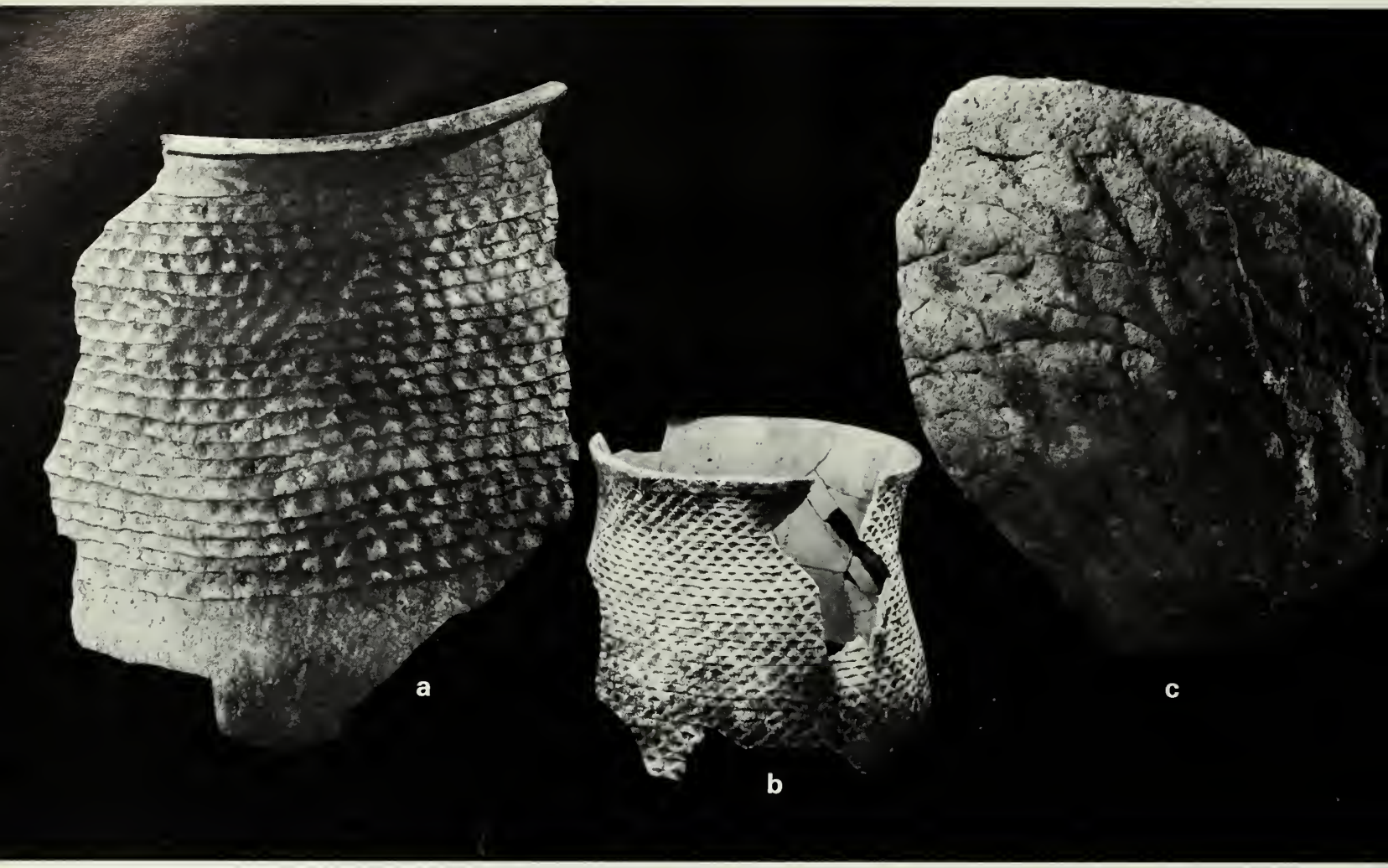
TABLE 3.—DISTRIBUTION OF SHERDS BY POTTERY TYPE, BIG JUNIPER HOUSE—(CONT.)

PROVENIENCE	Types																				
	Mesa Verde Gray Ware								Mesa Verde White Ware							San Juan Red Ware			Intrusive			
	Plain Gray Body	Chapin Gray	Moccasin Gray	Mancos Gray	Mummy Lake Gray	Corrugated Body	Mancos Corrugated	Mesa Verde Corrugated	Plain from B/W vessels	Unclassified B/W	Chapin Black-on-white	Piedra Black-on-white	Cortez Black-on-white	Mancos Black-on-white	McElmo Black-on-white	Abajo Red-on-orange	Bluff-La Plata B/R	Unclassified San Juan	Puerco Black-on-red	Wingate Black-on-red	Tusayan Polychrome	Totals
Room 16, fill	4			1	1	29	4	1	18	4			1	20								83
Room 18, fill						14	2		17	1			3	5								42
Room 19, fill	2					78	4		42	13			6	19								164
Room 19, subfloor cist fill	2					29	4		9	3			5	13	1							66
Rooms 21 and 22, fill	12	1	1	8	1	231	33		64	18			15	47	2		2					435
Room 21, hearth	1					6	3		4	5				4								23
Hearth 1	2					21	2							1								26
Room 24, fill						3			3				3	2								11
Room 24, cist fill						1			1				1					2				5
Room 25, fill				1		7	2		1	1			1	9				1				23
Room 27, fill									1					1								2
Room 28, fill	4					20	3		22				1	22	1					1		74
Kiva A, fill	49	1			1	249	26		38	67			23	175	14			1				744
Kiva A, floor fill	8			1		75	6		97	34			3	52	5							281
Kiva A, subfloor vent fill						8	1		6	11				14	1							41
Kiva A, banquette fill	2					8	1		13	2			1	10								37
Kiva A, hearth fill						3			4					10								17
Kiva A, cist fill						2			1					6								9
Kiva A, chinking sherds	3					3			6	2			3	11								28
Kiva B, fill	35				3	108	9		72	25			15	64	6	1				4		342
Kiva B, floor fill	6					69	4		11	5			2	9								106
Kiva B, Cist 1 fill						2	1			2				2			1					8
Kiva B, Cist 2 fill						3								1								4
Kiva B, banquette fill						2							1	3								6
Kiva B, chinking sherds	1									1				3								5
Test Trench 15 and Kiva B, Level 1	42	3		2		247	57		146	74			53	152								776
Kiva C, fill	49			3	1	234	26	3	123	43		1	30	164	1			2				680
Kiva C, floor fill	7					21	3		20	6			5	19			1					82
Kiva C, niche														1								1
Cist 2, fill						1	1		4					6								12
Cist 3, fill	2					4	2		4				1	2								15
Associated with Burial 3						2																2
Associated with Burial 4	2					9	1		2	1			4	5								24
Associated with Burial 5	1				1	12			4	1			1	10	1							31
Associated with Burial 6										1												1
Associated with Burial 8	3					8	1		5	1			5	12								35
Associated with Burial 12									1				1	1								3
Associated with Burial 19						1								1								2
General	1					1								1								3
Totals	612	14	1	52	39	4, 771	595	17	2, 510	1, 108	1	2	566	3, 143	127	9	19	20	2	6	1	13, 615

by alinements of the coil indentations, or areas of definite ridges alternating with areas of indented coiling with no definite ridge arrangement (fig. 40i).

Other than patterning, jar exteriors are sometimes embellished with appliques, usually in the form of conical nodes applied just below the rim (fig. 41a-c). A rare applique used on Mancos Corrugated is the spiral (fig. 41d); this motif is almost always associated with Mesa Verde Corrugated. Several sherds have a painted line or lines on the interior surface just below the rim (fig. 42).

Most Mancos Corrugated vessels have corrugations over the exterior surface from the base to just below the rim, which is formed by an unindented coil or fillet. However, some have plain bases or are plain up to the



43 *Mancos Corrugated sherds (not to scale).*

shoulder (figs. 40f and h, and 43a). These characteristics may represent a developmental step from the neck-banding of Pueblo I (Moccasin Gray) and unindented coil-neck vessels of early Pueblo II (Mancos Gray) to the overall corrugated pottery of Pueblo II and Pueblo III. Evidence from other sites on Wetherill Mesa supports this hypothesis (Hayes, 1964, pp. 48–49). Previously, Reed (1958, p. 117) and Morris (1939, p. 186) believed this feature to be an evolutionary step in the development toward the entire surface being corrugated. Big Juniper House lacked the necessary stratigraphy in both the trash and the house to corroborate this hypothesis. Published dates for Mancos Corrugated are from about A.D. 900 to 1200 (Abel, 1955, Ware 10A, Type 5).

One bowl rim was found having a corrugated exterior and a roughly scraped but unslipped and unpolished interior (fig. 43c). It does not appear to have been intended for a painted design on the interior surface. The small size and rather poor execution may indicate an individual's first effort in pottery making. Its exterior surface and interior characteristics are, however, within the range of Mancos Corrugated.

Tempering material in the majority of sherds examined was crushed rock. A few specimens were tempered with sand, crushed sandstone, or a combination of crushed rock and sherds.

Capacities of the restored Mancos Corrugated jar range from 2.8 to 21.8 liters, and average about 9.6 liters

Mesa Verde Corrugated

Three restorable jars and 17 rim sherds were classifie as Mesa Verde Corrugated (table 3). The typical Mes Verde Corrugated jar is egg-shaped with an inward slop ing neck and a sharply everted rim. Mouth diameter i usually much smaller in proportion to the largest diame ter of the jar than in Mancos Corrugated. The thre jars found at Big Juniper House are more spherical tha egg-shaped and may indicate that a spherical shape wa more commonly made during the early part of the Mes Verde Corrugated time range.

One of the three vessels, a large jar, is unusual i having indented coiling on the neck area only, with th rest of the body scraped to a plain surface (fig. 44, left) Another jar is unusually small (fig. 44, right).

The relatively few Mesa Verde Corrugated sherds an vessels suggest that this culinary type was just beginnin to be made at Big Juniper House near the end of i occupation. Abel's dates (1955, Ware 10A, Type 6) fc its manufacture are from about A.D. 1200 to 1300. Roh (1959, p. 21) dates it from about 1100 to 1300. Th evidence from Big Juniper House would tend to suppor Rohn's earlier beginning date.

44 *Mesa Verde Corrugated jars. Heights of jars are 18.4 cm. (top) and 29.5 cm. (bottom).*

MESA VERDE WHITE WARE

Plain Sherds From Black-on-white Vessels

A large number (2,510) of plain sherds, presumably from black-on-white vessels because of their color, slip, and surface finish, were recovered during the excavation of Big Juniper House. Approximately 25 percent of the sherds came from bowls and 75 percent from jars. Nine bowl sherds had indented-corrugated exteriors, a trait common to both Cortez Black-on-white and Mancos Black-on-white. Plain sherds from black-on-white vessels account for nearly a third of the total Mesa Verde White Ware sherds (table 3).

The jar sherds share a characteristic of painted jars in the Mesa Verde area—open designs with undecorated spaces between the elements. Because of this trait and their larger size, jars would tend to produce more plain sherds than the smaller bowls.

Unclassified Black-on-white

Many black-on-white sherds could not be classified because they showed little decoration or lacked distinctive traits. The 1,108 unclassified black-on-white sherds account for approximately 15 percent of the total Mesa Verde White Ware sherds. There were 483 bowl sherds, of which 9 had corrugated exteriors, and 624 jar sherds and 1 unidentified sherd, possibly from an effigy jar, with the unsual feature of a corrugated interior.

Chapin Black-on-white

Only one sherd was classified as Chapin Black-on-white, the Basketmaker III and early Pueblo I decorated type in the Mesa Verde region (Abel, 1955, Ware 12A Type 1). The site was not occupied at this time. It is possible the sherd came from a Basketmaker III or Pueblo I site, though none was located in the vicinity of Big Juniper House.

Piedra Black-on-white

One whole Piedra Black-on-white bowl (fig. 45) and other later pottery were associated with Burial 4. The bowl was probably an heirloom and not made during the occupation of Big Juniper House. Piedra Black-on-white is the Pueblo I black-on-white type dated about A.D. 750 to 900 (Reed, 1958, p. 79). Two Piedra Black-on-white sherds were also found and may have derived from heirloom vessels or possibly drift from an as yet undiscovered Pueblo I site.

45 *Piedra Black-on-white bowl. Mouth diameter is 15.8 cm.*

Cortez Black-on-white

The 566 Cortez Black-on-white sherds comprise 7.6 percent of the total Mesa Verde White Ware sherds (table 3). Six whole or partially restorable vessels were also found (fig. 46). Three hundred and sixteen of the sherds are from bowls, of which 177 are rim sherds. Bowl sherds with corrugated exterior represent 4 percent of the Cortez Black-on-white sherds. The Cortez jar sherds number 250, of which 12 are rim sherds.

This type was made in the form of bowls, jars or ollas, seed jars, pitchers, ladles, pipes, miniatures, and some eccentric forms. Designs are predominantly painted with a mineral pigment and usually confined to bowl and ladle interiors and jar exteriors. Design is rim-oriented and most often a combination of several elements or motifs repeated in panels on the decorative field. Narrow lines, interlocking scrolls, and ticked lines are common design motifs.

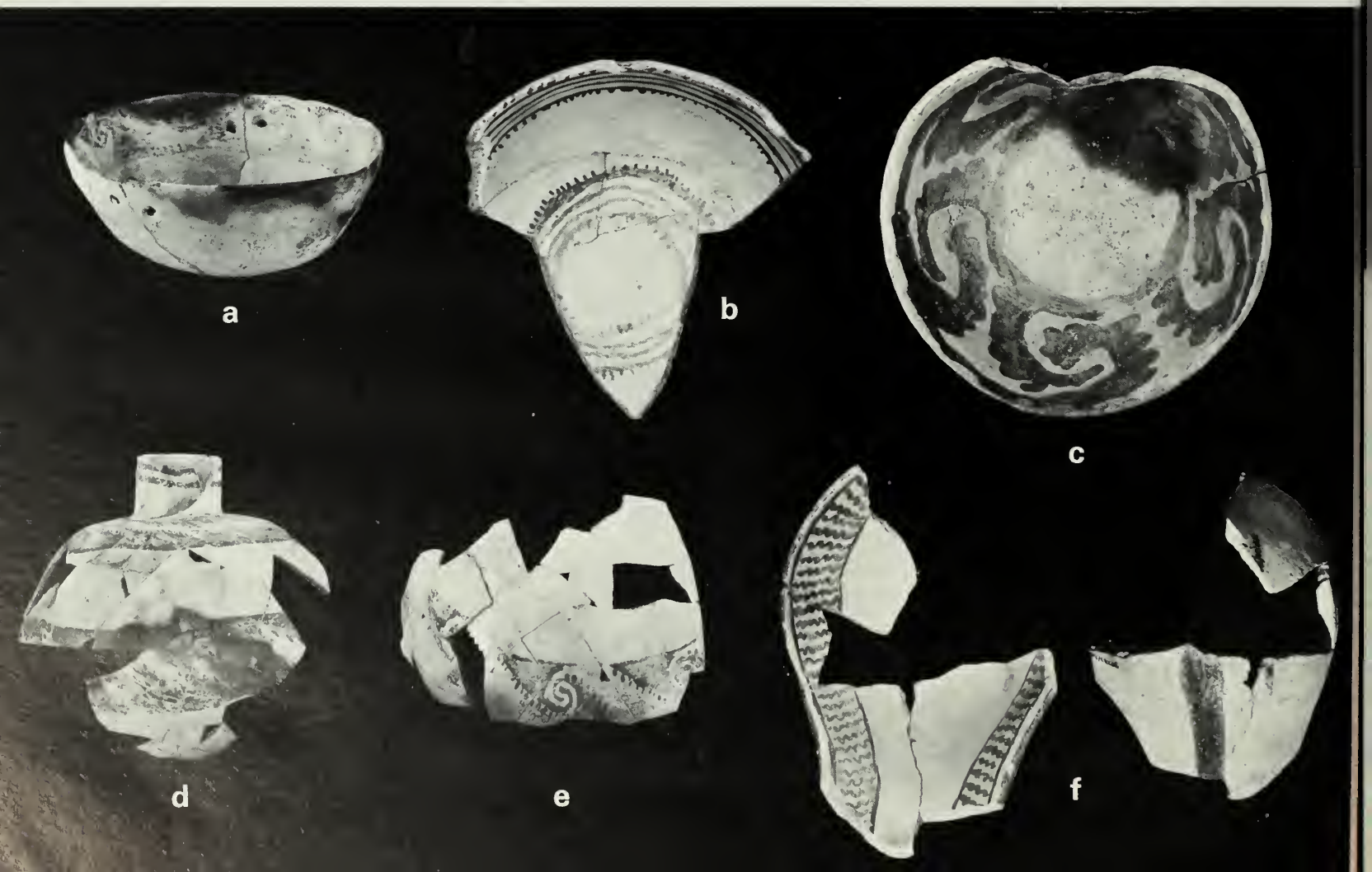
Cortez Black-on-white was undoubtedly the first of the black-on-white types produced at Big Juniper House. The dates of manufacture are early Pueblo II, about A.D. 900 to 1000 (Abel, 1955, Ware 12A, Type 3), but it may have been made for the next 100 years in minor quantities, according to our findings.

Paint on the sherds was 98.7 percent mineral pigment and 1.3 percent organic pigment. One or two sherds showed both types of paint in combination (fig. 53i). Carbon paint was most likely to be found on sherds wit a scroll design (table 4). There is convincing evidenc from two Wetherill Mesa sites, Badger House and Tw Raven House, that the percentage of carbon-painted Co tez Black-on-white was greater at the beginning of i manufacture than at the end.

The use of carbon paint in the Mesa Verde regio was probably at its lowest point near the end of Corte Black-on-white pottery production. In no other typ was the percentage of carbon paint so reduced. Mir eral pigment was predominant through Mancos Black on-white and dropped off to minor percentages whe McElmo Black-on-white was produced. By the en of the Mesa Verde occupation, the use of mineral pig ment was negligible. However, in the Yellow Jacket dis trict, mineral paint continued to show a high frequenc in McElmo Black-on-white and only became a mino factor when Mesa Verde Black-on-white was made (Jo Ben Wheat, personal communication).

Design layout is primarily one of the repeated ele ments and combinations of elements filling the field o decoration. Band layout is also popular, but never con stitutes a majority of layouts. The most frequently use motif in band layouts is the interlocking scroll, repeate in the band and usually just under the rim in bowl inte riors, and one or more bands on jar exteriors (figs. 46a c, and f, and 47).

46 *Cortez Black-on-white vessels: a, diameter 22 cm.; b, present length 12.7 cm.; c, diameter 12.6 cm.; d, present length 18.2 cr e, extant width 30.8 cm.; f, (interior left, exterior right), present length 15.7 cm.*



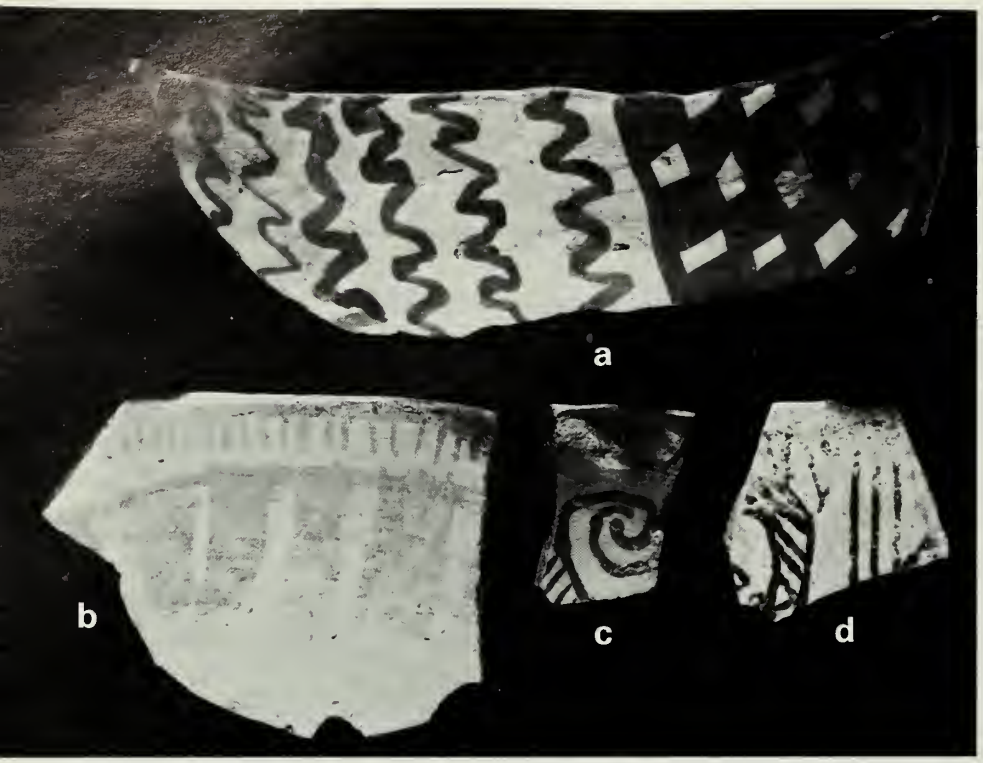
47 *Cortez Black-on-white sherds with interlocking scroll designs. Organic pigment used on a, b, d, e, and h.*

The commonest form of design combination is narrow lines with other motifs such as triangles (simple, ticked, or scalloped), ticked lines, broad lines, checkerboard, and interlocking scrolls. There are many other combinations of motifs also (figs. 48–52).

Single motifs or elements not used in combinations in a layout are triangles (often ticked or scalloped), squiggle hatch, interlocking scrolls (see above) often ticked, squiggle lines, narrow straight lines, ticked lines, cross hatch, and stepped figures (figs. 53 and 54). Table 4 shows the design classes and the frequency with which they are used on Cortez Black-on-white pottery.

Interiors of bowls and ladles and exteriors of jars and pitchers are usually slipped and polished. Slipping and polishing are less common on bowls and ladle exteriors and do not occur on jar and pitcher interiors. Crackling

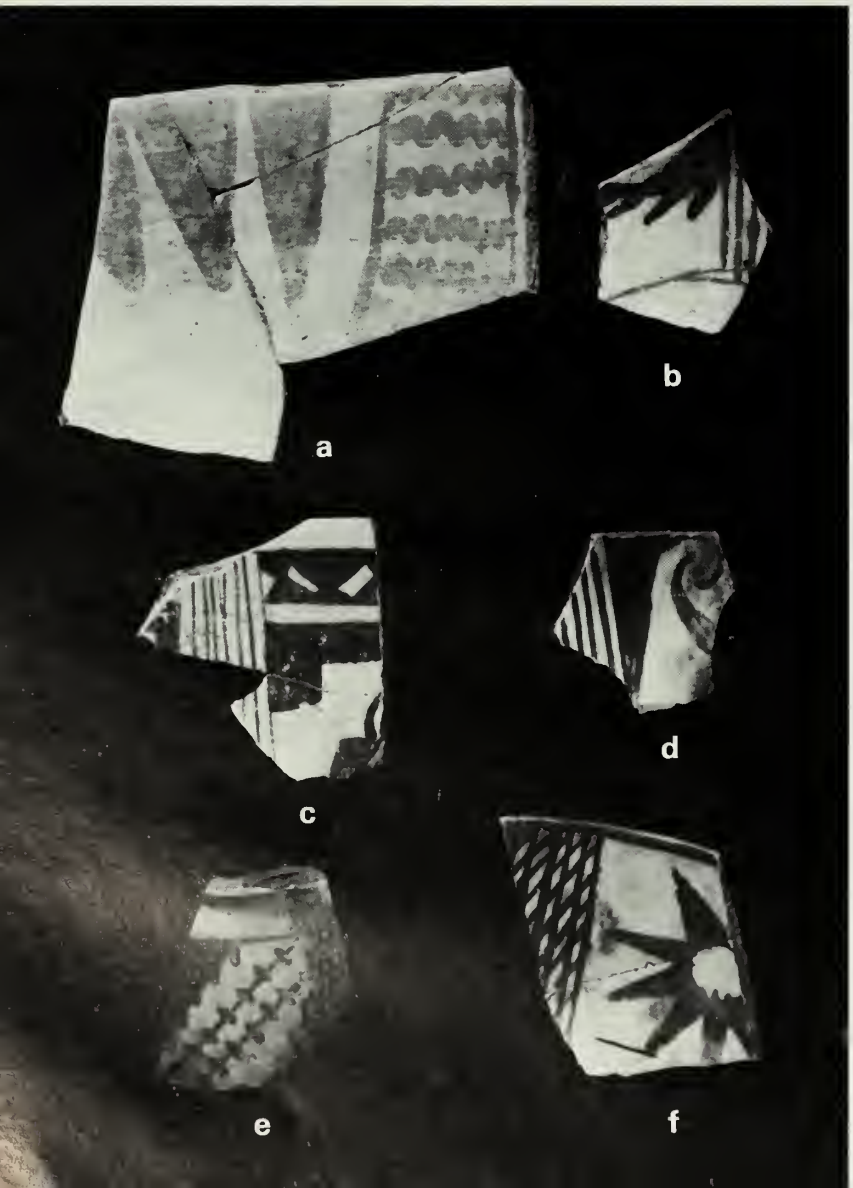
48 *Cortez Black-on-white sherds with combination designs.*



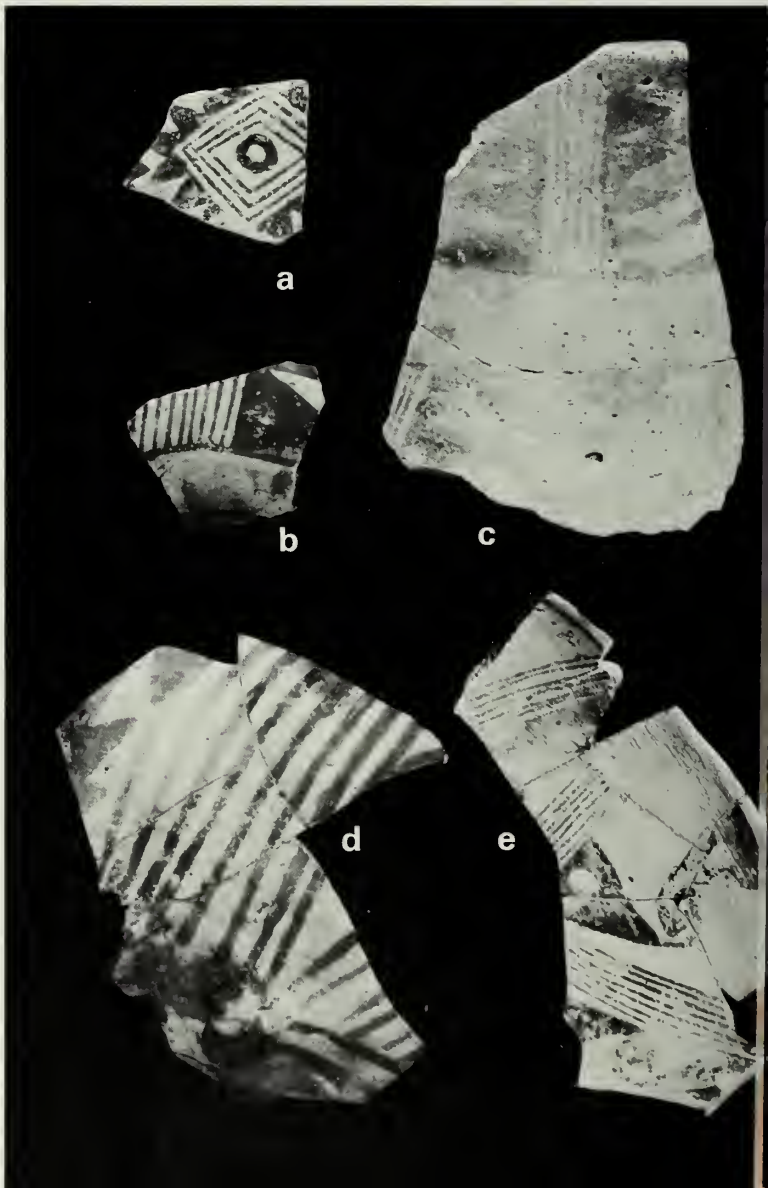
49 *Cortez Black-on-white bowl sherds with combination designs.*

50 *Cortez Black-on-white jar sherd with a combination design. Present maximum length about 22 cm.*

51 *Cortez Black-on-white sherds with combination designs.*



52 *Cortez Black-on-white sherds with combination designs.*



53 *Cortez Black-on-white sherds with various designs: narrow line, a–d; ticked line, e–g; ticked circle, h, i; cross hatch, j; and stepped figure, k, l.*

54 *Cortez Black-on-white sherds with various designs: triangle and ticked/triangle, a–h; squiggle hatch, i, j; and squiggle line, k–p.*

TABLE 4.—PERCENTAGES OF DESIGN STYLES, CARBON PAINT, AND RIM DECORATION ON CORTEZ BLACK-ON-WHITE SHERDS, BIG JUNIPER HOUSE

Design styles	Percent of style to total Cortez B/W sherds	Percent of carbon paint to sherds in the style	Percent of mineral paint to sherds in the style	Percent of plain rims to rims in the style	Percent of rims painted solid to rims in the style	Percent of ticked rims to rims in the style	Percent indetermi rims to r in the st
Combination	36.7	1.0	99	27.1	69.5	1.7	
Broad-line	.5	.....	100	.....	100	.....	.....
Narrow-line	17.0	.....	100	17.9	75	.....	
Triangle	6.7	.....	100	53.8	38.5	.....	
Ticked triangle	2.5	.....	100	33.3	22.2	.....	
Squiggle hatch	4.3	.....	100	10	90	.....	.....
Cross hatch	.7	.....	100	.....	.....	.....	1
Squiggle line	9.2	.....	100	23.8	47.6	.....	
Scroll	12.7	7.14	92.86	11.1	55.5	.....	
Step figure	6.7	.....	100	10	60	.....	
Ticked circle	.9	.....	100	.....	100	.....	.....
Ticked line	2.0	.....	100	66.7	33.3	.....	.....
Overall percentages	100	1.3	98.7	23.2	61.6	.5	

of the slipped and polished surface is common, but is not the same as the distinctive crackling found on the thick-slipped Mesa Verde Black-on-white. Surface color is usually a grayish to chalky-white, and fire clouds on the surface are not uncommon. Rims are tapered and usually rounded, but a sizable minority are tapered and flattened on top. Rims are seldom untapered and flat on top—a characteristic of Mesa Verde Black-on-white.

I examined 120 Cortez Black-on-white sherds for temper and recorded 41 with crushed rock (34.2 percent), another 41 with a combination of sherd and rock, 28 with sherd (23.3 percent), and 10 with sand (8.3 percent). This contradicts the statement made by Abel (1955, Ware 12A, Type 3) that Cortez Black-on-white is tempered exclusively with crushed rock.

Alden Hayes reports similar temper identifications, although with somewhat different percentages, from the Wetherill Mesa survey (Hayes, 1964, pp. 58–59). The foregoing suggests that temper is not a good diagnostic of this pottery type nor, for that matter, of the other types in the Mesa Verde region. No type is tempered exclusively with a single material. In the utility types, however, rock temper constitutes a large proportion of the tempering material.

One bowl sherd was found that can be termed a variant of Cortez Black-on-white. It is a polychrome rim sherd with the design done in red-brown paint on a tan filler, both of which are on a white slip (fig. 76s). I know of no reported polychrome sherds with a Cortez design and therefore believe it to be of little importance, other than as an interesting experiment or an anomaly caused by firing. Two probable Cortez Black-on-white sherds are from plates. This rare form is discussed later un Miscellaneous Ceramic Objects.

Mancos Black-on-white

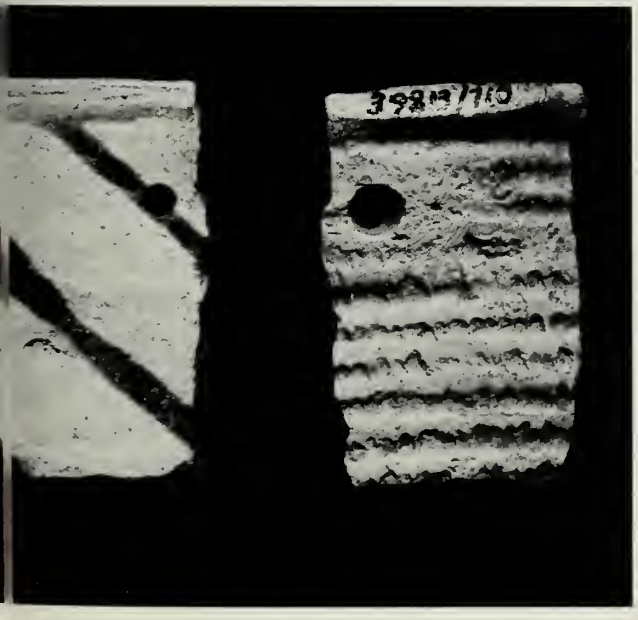
This pottery type makes up approximately 42 per of the Mesa Verde White Ware sherds recovered f Big Juniper House and is the predominant decora type (table 3). Of the 3,143 Mancos Black-on-w sherds, 1,935 are bowl sherds (941 rims); 104 of t sherds (including 51 rims) have corrugated exteriors. the 1,208 jar sherds, 55 are rim sherds. We also foun whole or partially restorable vessels. Corrugated teriors account for about 3.3 percent of the total Ma Black-on-white sherds, a slight decrease from Co Black-on-white. Figure 55 shows typical forms of rugated exteriors on Mancos Black-on-white. One s had a coiled basket-impressed exterior (fig. 56).

Mancos Black-on-white was made in the form of b (fig. 57), jars (fig. 58), seed jars, pitchers (fig. 59), l (fig. 60), pipes, miniatures, perhaps mugs, and va eccentric forms. Paint is predominantly mineral usually confined to bowl and ladle interiors and ja teriors. Designs are usually of a single motif or ele repeated in panels that are rim-oriented. The most c mon elements are diagonal straight-line hatching broad lines—both usually arranged in rectilinear or angular frets. Triangles are also popular design elem

Abel (1955, Ware 12A, Type 5) suggests a time r for Mancos Black-on-white from A.D. 950 to 1 Evidence from Badger House and Two Raven H points to a beginning for some Mancos design s around 900. From the present evidence, 1150 seems t

Mancos Black-on-white bowl sherds. Painted interiors at left; corrugated exteriors at right.

Mancos Black-on-white bowl rim with coiled basket-pressed exterior.



a fairly good end date for this pottery in the Mesa Verde.

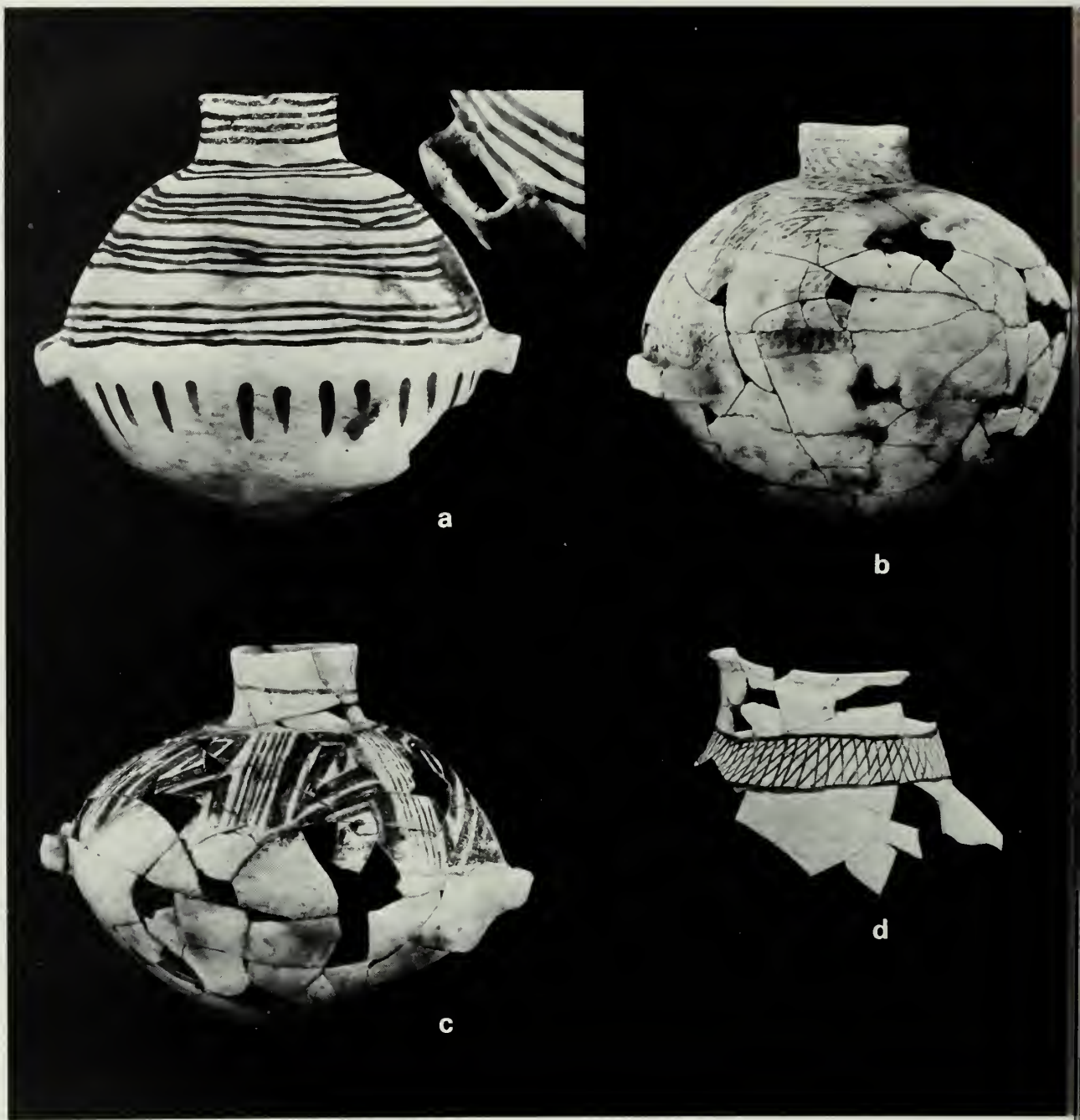
The percentage of carbon-painted sherds jumps from 1.3 percent in Cortez Black-on-white to 5.4 percent in Mancos Black-on-white. (See table 5 for the frequency of carbon-painted sherds in relation to the various design styles used on Mancos Black-on-white.) Evidence from Badger House and Two Raven House indicates that the percentage of carbon paint used on Mancos Black-on-white increased in the course of its manufacture.

Two polychrome jar body sherds in our collection, which in all other ways were Mancos Black-on-white, suggest experimentation (fig. 77r) and, like the Cortez "Black-on-white" polychrome sherd, are considered an interesting variant of Mancos Black-on-white. Both jar sherds may have come from the same vessel. The broad-line designs were done in a dark red framed by black lines on a cream-colored slip.

Mancos Black-on-white design layout is usually in panels and bands, and, in the case of bowls, sometimes covers the entire surface. Panels are the predominant layout and are usually arranged in triangular or rectilinear frets.

57 *Mancos Black-on-white bowls, interior and side views: a, diameter 15.2 cm.; b, base diameter 15.0 cm.; c, diameter 25*

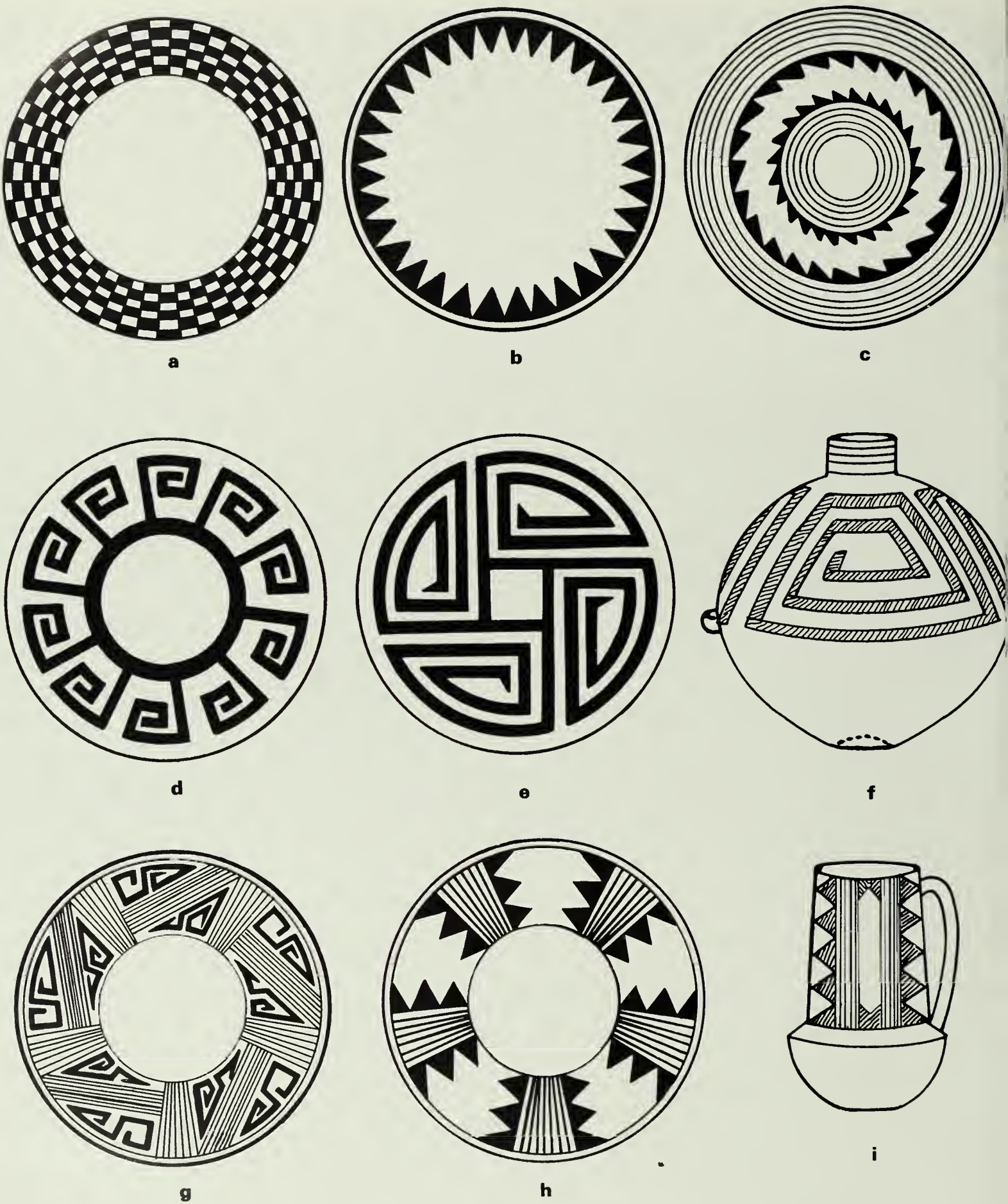
, maximum width 16.5 cm.; e, diameter 26.7 cm.; and f, diameter 25.7 cm. Bowls e and f have indented bases.



58 *Mancos Black-on-white jars. Height of a is 33.5 cm. Enlargement of handle to right of a shows indentation.*

59 *Mancos Black-on-white pitchers. Present height of a is 13.1 cm. Height of b is 16.1 cm. (c and d, same scale).*

60 *Mancos Black-on-white ladles. Length of a is 12.7 cm.; b, 11.5 cm.; c, 8.0 cm.; and d, 11.7 cm.*



61 *Mancos Black-on-white design layouts, fields of decoration, and vessel forms. Bowls, a–e, g, h; jar or olla, f; and pitcher, i.*

62 *Mancos Black-on-white sherds with combination designs.*

Checkerboard designs occur most frequently in band layouts, but triangles, simple lines often with pendent triangles, and other design styles are also used. Bands are never framed by lines as in McElmo Black-on-white or Mesa Verde Black-on-white. Figure 61 shows typical layouts of this type.

Although all of the design elements used on Cortez Black-on-white pottery also appear on Mancos Black-on-white, the way they are employed and the popularity of certain styles enable us to distinguish between the two. In Cortez, combinations of design elements and motifs are the most popular form of decoration; in Mancos, decorative elements and motifs are usually not combined. Combination designs account for only 5.6 percent of the various design styles employed on Mancos Black-on-white (fig. 62; table 5).

The most popular decoration on Mancos Black-on-white is a diagonal, straight-line hachure used as a filler between parallel lines which frequently form triangular or rectilinear frets (fig. 63). This style did not occur on Cortez Black-on-white sherds from this site as a single design, but did occur (in small numbers) in combination with other motifs. Diagonal, straight-line hatching combined with other motifs can be seen in the illustrations mentioned above.

Approximately 20 percent of all the Mancos Black-on-white sherds have the broad-line design style, which is almost nonexistent in Cortez Black-on-white sherds. The broad lines are usually arranged in triangular or rectilinear frets (fig. 64).

Triangles are probably used most frequently in the design pattern. They occur as solid triangles or as dots, broad and narrow lines, checkerboard, and hatching arranged to form triangles (fig. 65).

Other elements such as dots, squiggle hatch, cross hatch, checkerboard, and narrow lines are fairly common on Mancos Black-on-white (figs. 66–69).

Exterior decoration on bowls and ladles is more usual on Mancos Black-on-white than on Cortez Black-on-white and also shows more variety. Various arrangements of simple lines predominate, as well as designs not found on Cortez Black-on-white such as concentric circles and crosses (fig. 70).

Zoomorphic and geometric figures occur occasionally on Mancos Black-on-white bowl and ladle interiors (fig. 71), but they did not become popular until later, in Mesa Verde Black-on-white.

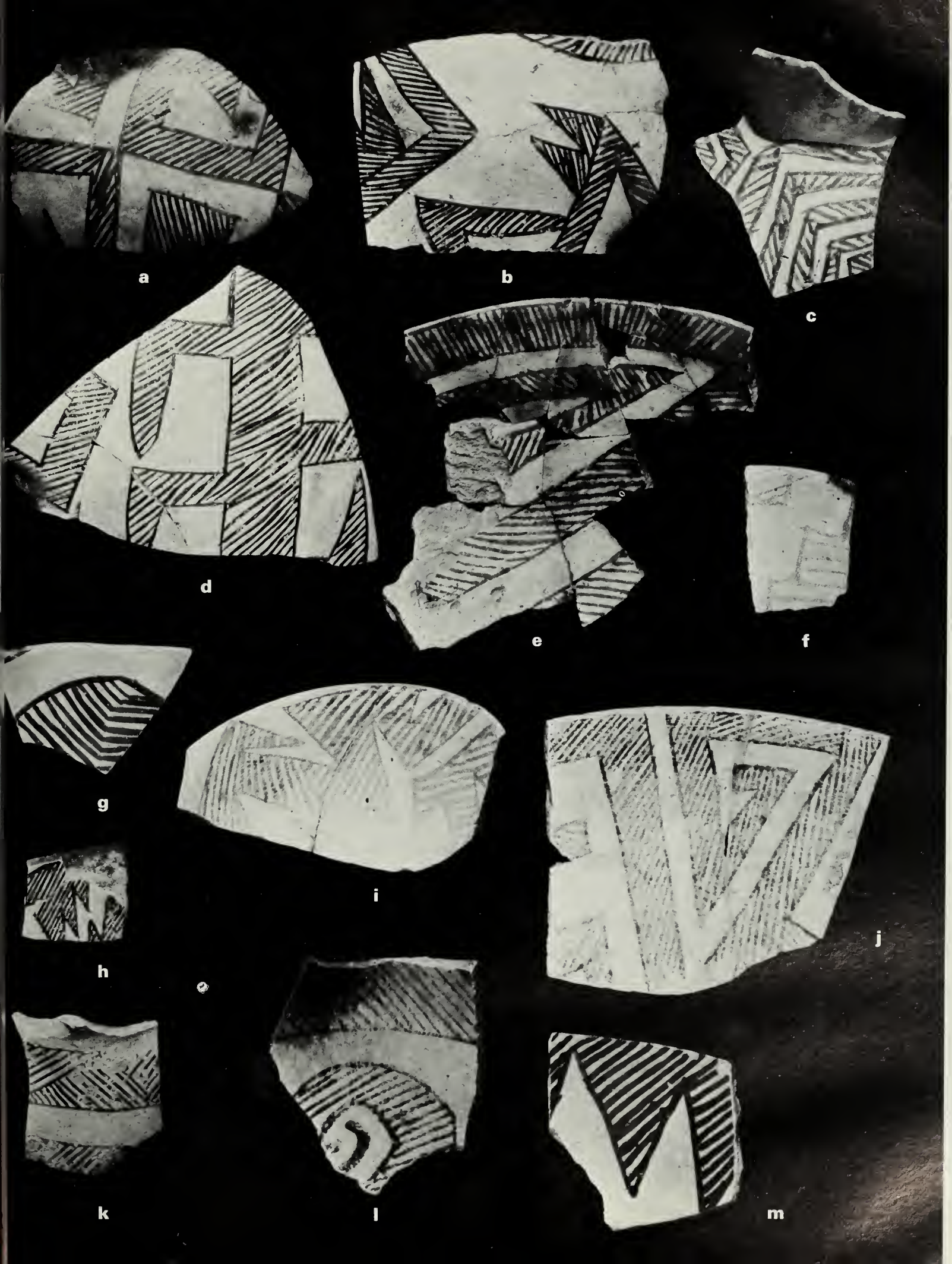
Rim decoration differs slightly from that of Cortez Black-on-white. One of the major differences is in the increased frequency of ticked rims—from 0.5 percent in Cortez Black-on-white to 3.1 percent of the Mancos Black-on-white—and a corresponding decrease in solidly painted rims in Mancos as opposed to Cortez. Dot ticking is predominant, but several sherds showed diagonal slashes on the rim tops.

Interiors of bowls and ladles and exteriors of jars and pitchers are usually slipped and polished. Crackling of the slip is also common. Exteriors of bowls and ladles are also usually slipped and polished, but less frequently than the interiors. Jar and pitcher interiors are slipped

TABLE 5.—PERCENTAGES OF DESIGN STYLES, CARBON PAINT, AND RIM DECORATION ON MANCOS BLACK-ON-WHITE SHERDS, BIG JUNIPER HOUSE

Design styles	Percent of style to total Mancos B/W sherds	Percent of carbon paint to sherds in the style	Percent of mineral paint to sherds in the style	Percent of plain rims to rims in the style	Percent of rims painted solid to rims in the style	Percent of ticked rims to rims in the style	Percent of indeterminate rims to rims in the style
Combination	5.6	.2	99.8	24.2	62.9	1.6	11.3
Checkerboard	8.2	4.3	95.7	17.7	55.6	6.4	20.2
Broad-line	20.19	7.2	92.8	24.5	47.3	4.4	23.9
Narrow-line	9.2	6.6	93.4	20.0	55.8	.....	24.3
Triangle	14.9	6.7	93.3	33.1	47.4	1.9	17.5
Ticked triangle	.1	.....	100	100	.....	.....	.....
Squiggle hatch	5.3	.....	100	14.7	64.7	.....	20.6
Straight-line hatch	30.8	5.4	94.6	20.5	60.6	2.9	16.0
Cross hatch	3.8	3.4	96.7	15.7	74.5	2.0	7.8
Dots	3.8	5.1	94.9	38.9	22.2	16.7	22.2
Scroll	.1	100	.....	.....	.....	.....	100
Ticked line	.1	.....	100	.....	50	.....	50
Step figure	.6	.....	100	25.0	50	.....	25.0
Ticked circle	.1	.....	100	.....	100	.....	.....
Overall percentages	100	5.4	94.6	22.9	54.9	3.1	18.7

63 *Mancos Black-on-white she*
diagonal straight-line


a
b
c
d
e
f
g
i
j
h
k
l
m

64 *Mancos Black-on-white sherds with broad-line designs.*

65 *Mancos Black-on-white sherds with triangle designs. Sherds l–n are bowl rims.*

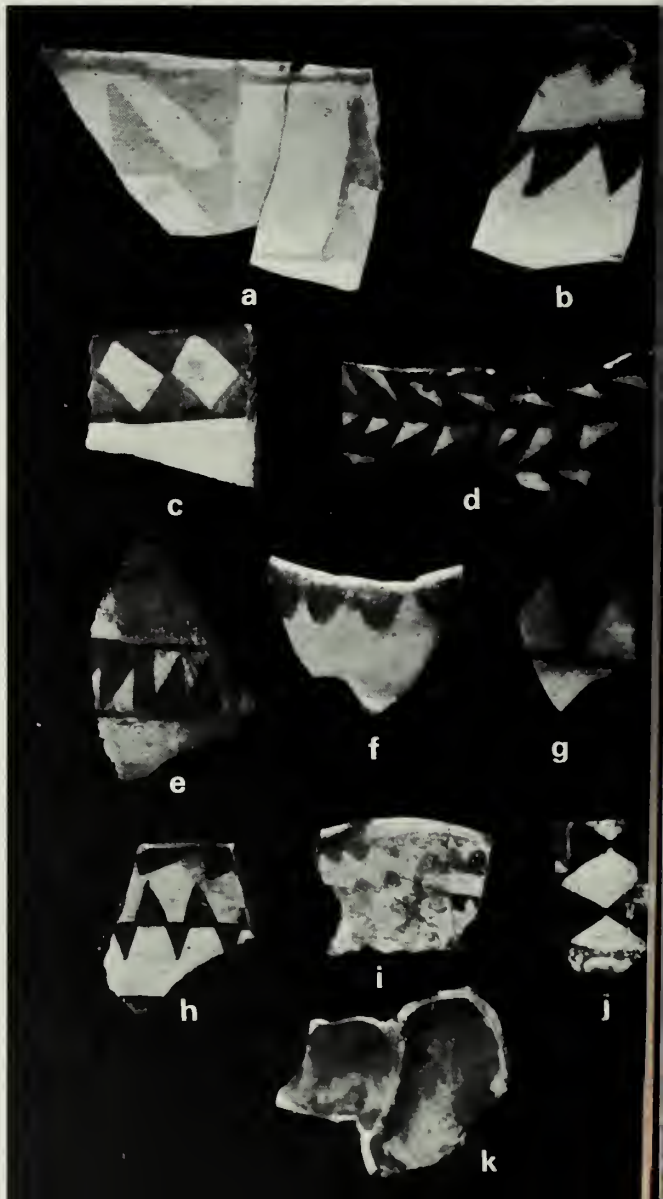
just below the rim in rare instances. Color of the slipped surfaces is most often creamy white, less frequently slate gray. Unslipped surfaces usually have a grayish cast.

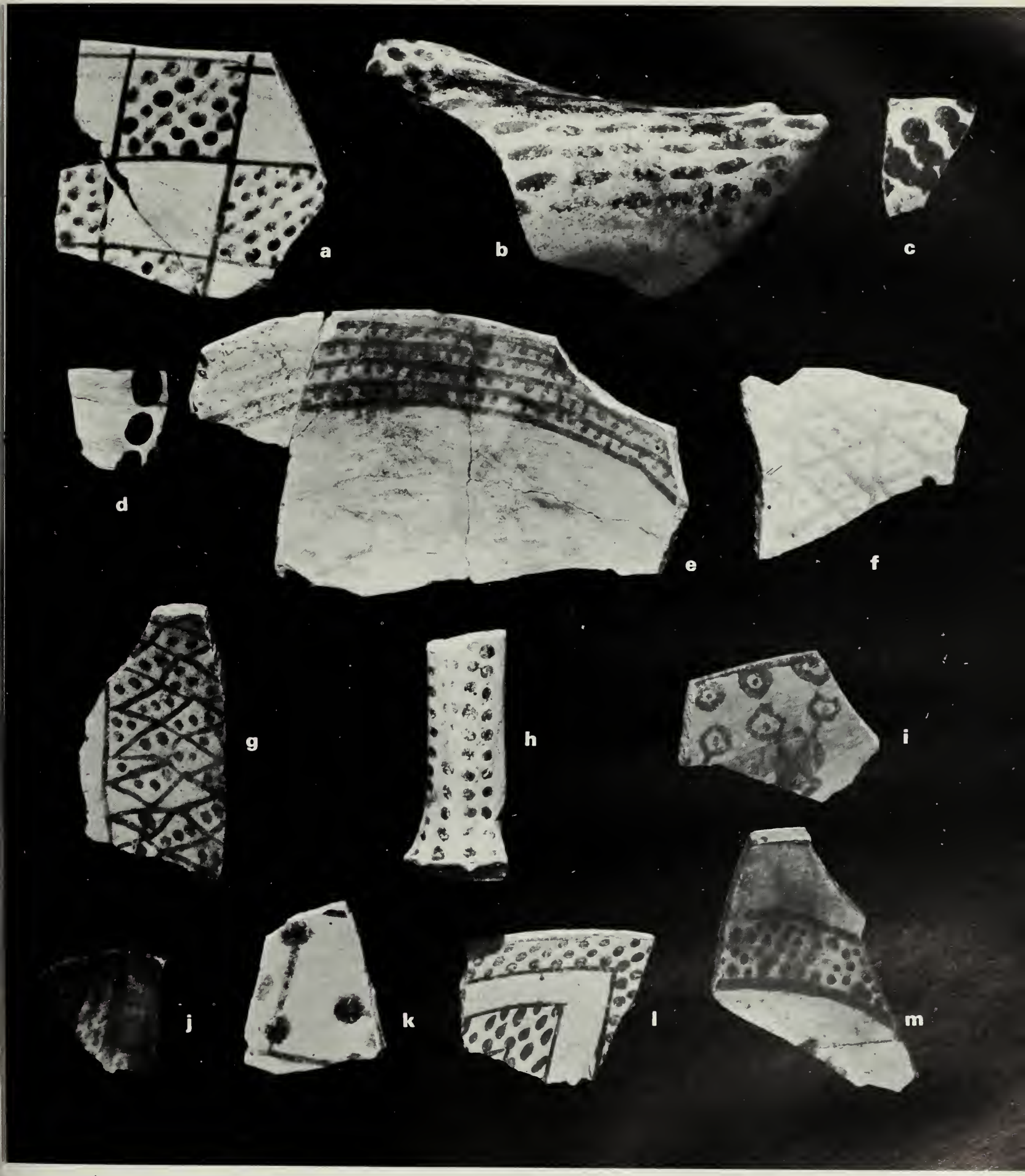
A sample of 160 Mancos Black-on-white sherds was examined microscopically, and 75 sherds had rock temper (about 46.9 percent), 27 sherd temper (about 16.9 percent), 48 sherd and rock temper (about 30 percent), 4 rock and sand temper (about 2.5 percent), 3 sand temper (about 1.9 percent), and another 3 sherds had sand and sherd temper.

These results disagree with Abel's (1955, Ware 12A, Type 5) statement that the only temper used in Mancos Black-on-white was crushed sherds. The number of variations in temper in these "good" Mancos Black-on-white sherds shows that temper is not a reliable criterion for pottery classification.

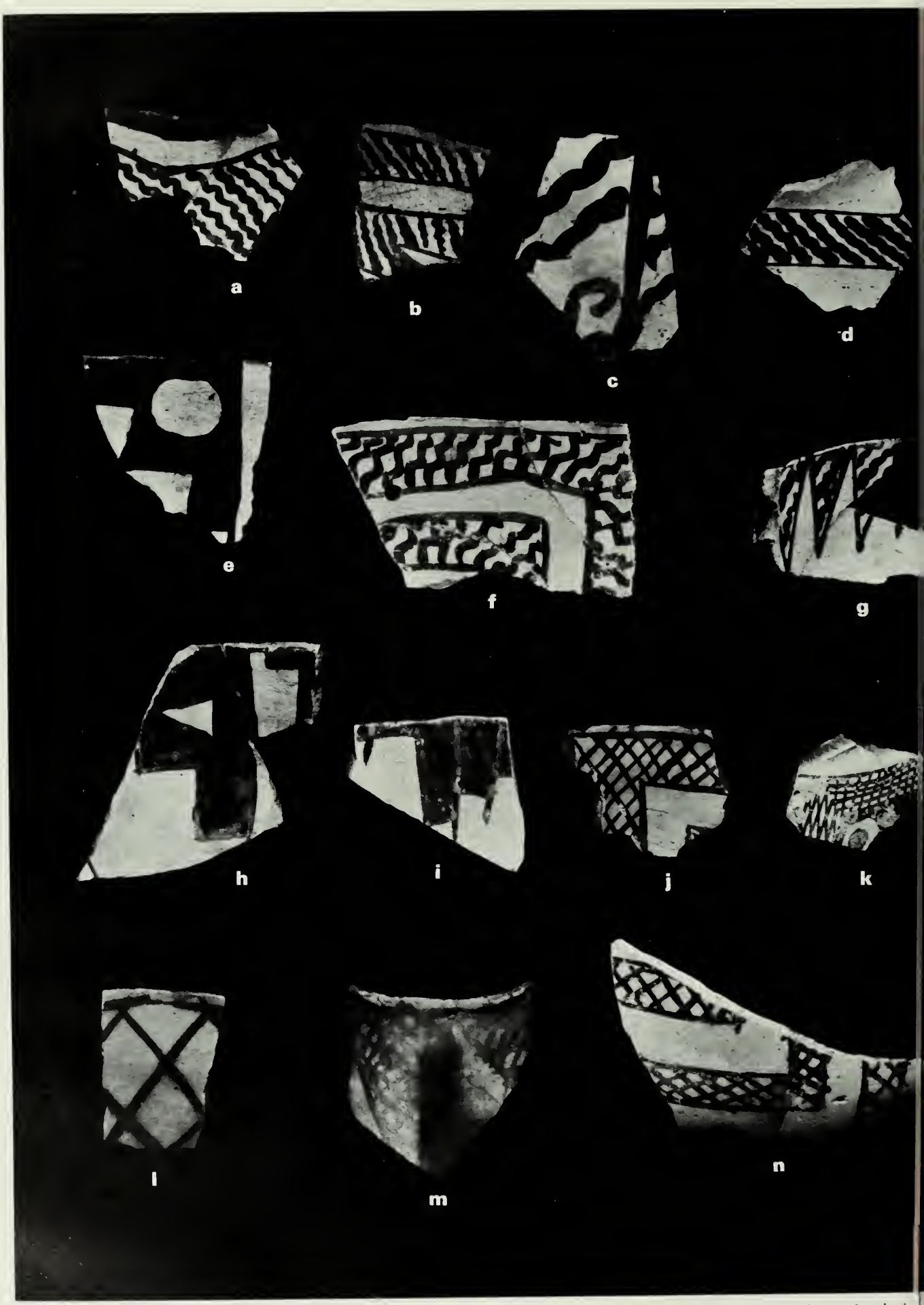
Generally, Mancos Black-on-white vessel shapes continue to be the same as those of Cortez Black-on-white. Bowls are steep-sided, approaching the vertical, but one restored bowl (fig. 57e) has exaggerated outsloping walls. Bowl bases generally are slightly rounded to flat; however, two bowls have indented bases, a characteristic usually confined to the black-on-white jars (fig. 57e and f). Several bowls, as in Cortez Black-on-white, have handles and lugs (fig. 72a–c).

65 *Mancos Black-on-white sherds with triangle designs.*





56 *Mancos Black-on-white sherds with dot designs.*



67 *Mancos Black-on-white sherds showing various design styles:* **squiggle** *hatch, a–d, f, g; stepped figure, e, h, i; and cross hatch, j–*

Mancos Black-on-white jars usually have globular bodies with short, cylindrical necks. One has a corrugated neck (fig. 58b). The jars, or ollas, generally have opposed lateral strap handles often indented in the middle (fig. 58a–c) or, occasionally, coil handles placed at the greatest diameter of the jar and just under the painted design (fig. 72d). Bases have a shallow kickup or indentation. One partially restored rim neck and shoulder (fig. 58d), with rim fillet and slightly flaring rim, resembles Mancos Corrugated and Mummy Lake Gray jars.

Mancos Black-on-white pitchers are characterized by truncated, cone-shaped necks, meeting the body either at sharp or gently curving angles. Strap handles are common and are placed parallel or slightly diagonal to the long axis, beginning at the rim or just below and usually ending at some point on the angle where the neck and body meet. Bases are indented.

Ladles are straight-sided and tend to have flatter bases than bowls. Forms are the same as Cortez, but the scoop type or half-gourd ladle was definitely less popular than the bowl-and-handle variety. Tubular handles occur more frequently than on Cortez Black-on-white ladles, but the commonest handles are solid and flat, oblong, or round in cross section. They are usually placed about midway between the rim and base, but one ladle (fig. 70f) has a handle that projects directly from the base.

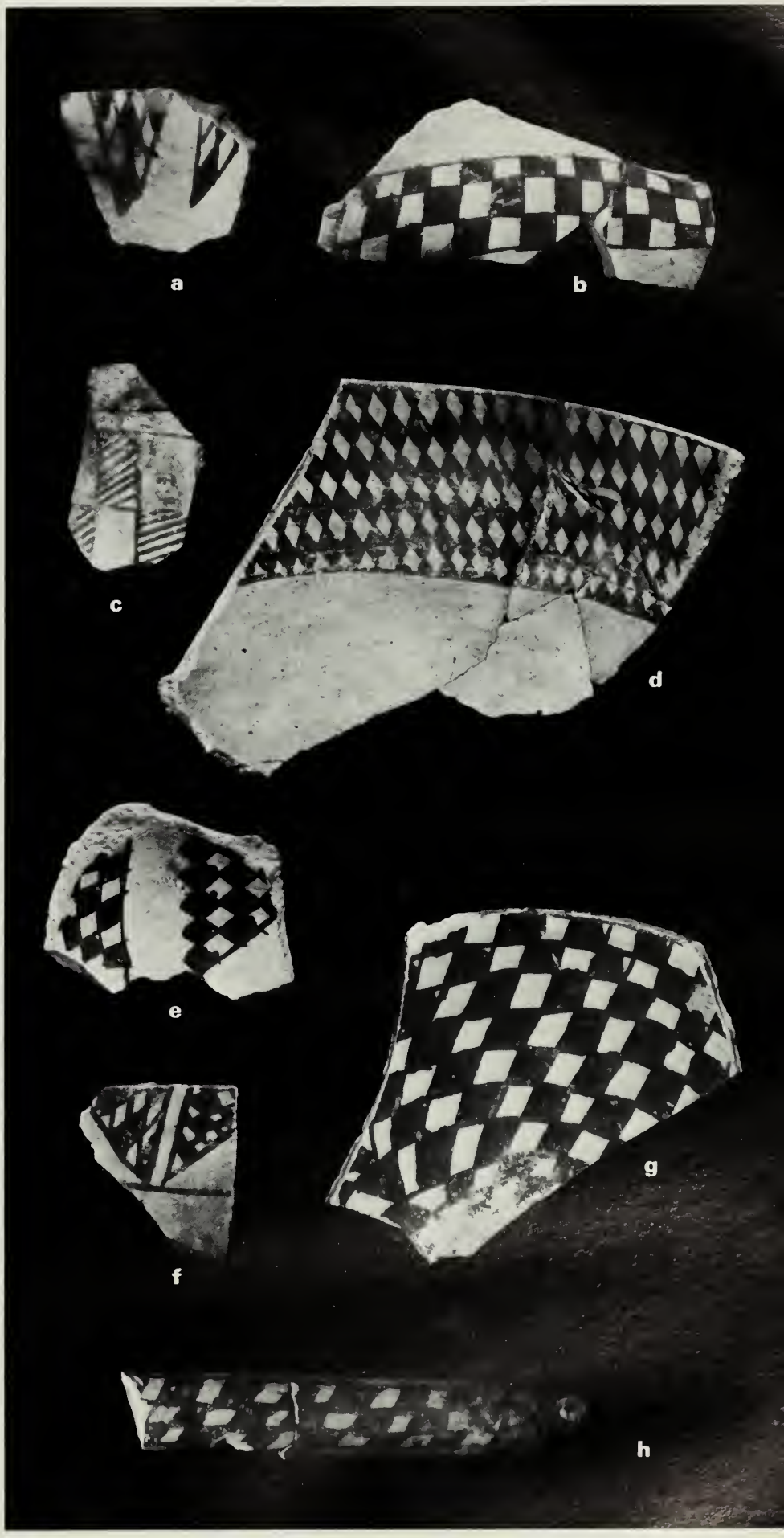
Other forms of vessels occurring in the Mancos Black-on-white collection from Big Juniper House are plates, miniatures, and a bird effigy vessel (fig. 66b).

McElmo Black-on-white

This pottery type has long presented one of the more perplexing problems in Mesa Verde archeology. Controversy has ranged (and raged!) all the way from describing its characteristics and determining its associations, to questioning its validity as a type. I regard McElmo Black-on-white as a valid type, and in the chapters on architecture and stone artifacts I discuss cultural manifestations indicative of the period during which this type occurs. In the final chapter, I attempt to bring these manifestations together and draw some conclusions regarding the last stage of occupation at Big Juniper House—the transition from Pueblo II to Pueblo III.

Three restorable vessels (fig. 73) and 127 sherds (figs. 74 and 75) are identified as McElmo Black-on-white, the latest type of Mesa Verde White Ware found at the site. The quantity of McElmo Black-on-white sherds is small compared to that of Mancos Black-on-white and Cortez Black-on-white. The terminal occupation of Big Juniper House—during late Pueblo II and early Pueblo III, prior to A.D. 1150—was the most extensive. The scarcity of McElmo Black-on-white was thus not the result of few people living at the site, but rather because this pottery had just begun to be made at this time.

Findings at Fewkes' Unit Pueblo (O'Bryan, 1950, pp. 137–140) and at Sites 1230 and 1801 indicate that McElmo was probably the dominant decorated type at Mesa Verde from about 1150 to 1200, after which time Mesa Verde Black-on-white was the potters' choice.



68 *Mancos Black-on-white sherds with checkerboard designs.*

69 *Mancos Black-on-white sherds with narrow-line designs.*

The McElmo Black-on-white pottery described here is the McElmo of early Pueblo III. It was made from about 1100 to 1200, with a possibility of slightly earlier beginnings about 1050 to 1080. The question of the viability of McElmo Black-on-white after 1200 is one I will not attempt to answer here. Its time span can be established by those who are working with late Pueblo III sites. After 1200, McElmo Black-on-white is clearly superseded by Mesa Verde Black-on-white. The McElmo of early Pueblo III is clearly distinguishable both from Mancos Black-on-white (which preceded it) and from Mesa Verde Black-on-white (which followed it).

Much of McElmo Black-on-white has been classed as "sloppy" Mesa Verde Black-on-white. But most of the McElmo of early Pueblo III can be described as having boldly executed designs. Crude Mesa Verde Black-on-white pottery was very likely produced by potters who had little decorative skill. The pots with "sloppy" designs but with most of the other characteristics of Mesa Verde Black-on-white should be considered within the range of Mesa Verde Black-on-white rather than confusing the issue by classifying them as McElmo Black-on-white. One can find examples of atypical vessels in all periods of Mesa Verde occupation that are fully contemporary with the standard forms.

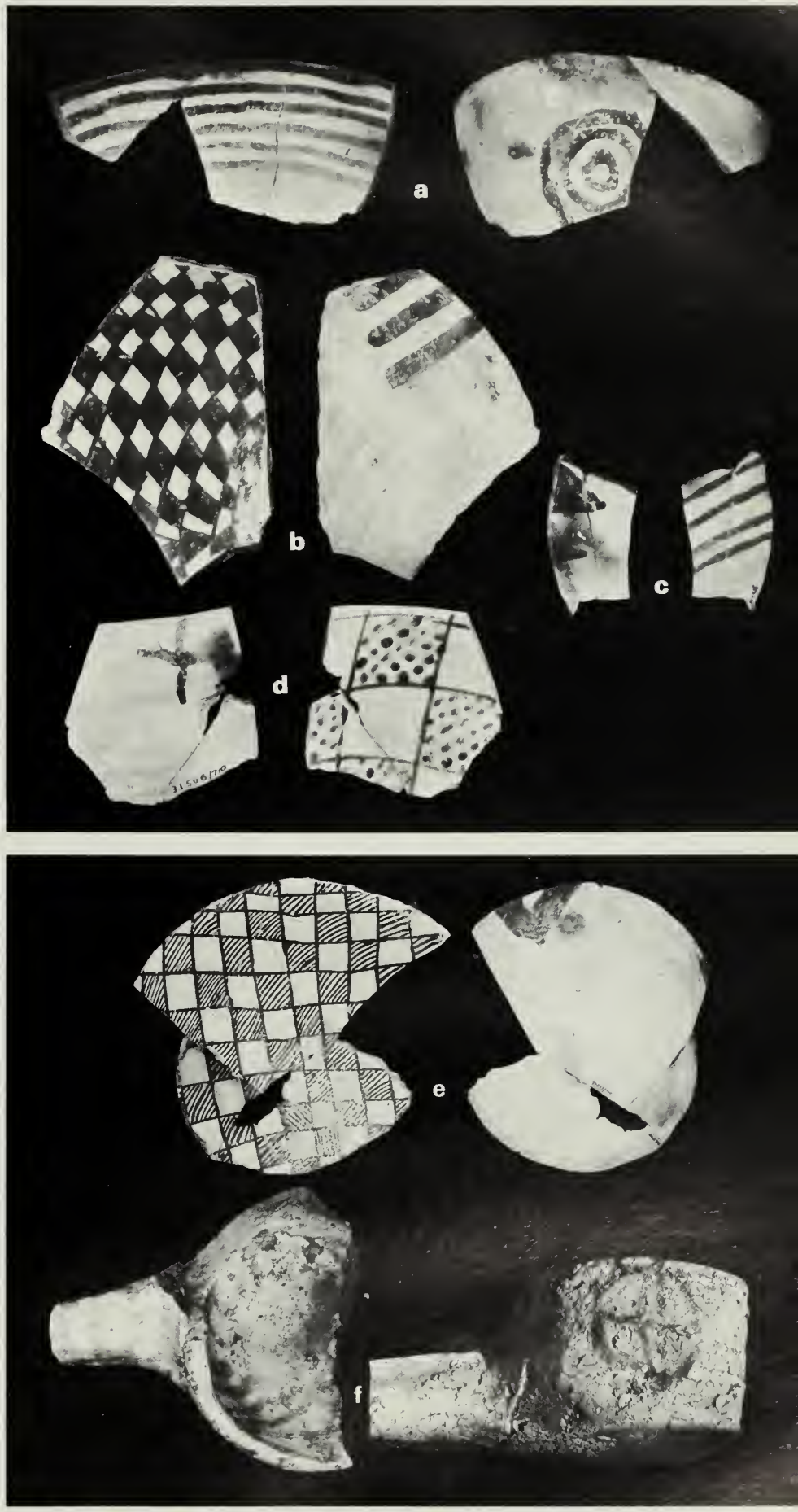
Early Pueblo III McElmo Black-on-white vessel forms represented by the sherd collections from Big Juniper House and whole or partially restored vessels from Big Juniper House and from Sites 1230 and 1801 are bowls, shallow bowls or plates, ladles, jars or ollas, seed jars, and, rarely, mugs and pitchers. (Kiva jars and effigy forms such as bird and submarine vessels were not found at these sites.)

McElmo Black-on-white bowl shapes and wall thicknesses are more like Mancos Black-on-white than Mesa Verde Black-on-white. At the same time, McElmo bowls tend to be more hemispherical than Mancos. Rims are more squared than Mancos but more tapered than Mesa Verde. There seems to be relatively little difference in surface finish, color, and slip between Mancos and McElmo. On the other hand, jar shapes are more similar to Mesa Verde: more squat, with wider diameter necks and more flaring rims, than Mancos; and they usually possess unindented strap handles, rather than the indented form so typical of Mancos jars. Ladle shapes are similar to Mancos ladles, but tubular handles are more common on McElmo than on Mancos ladles.

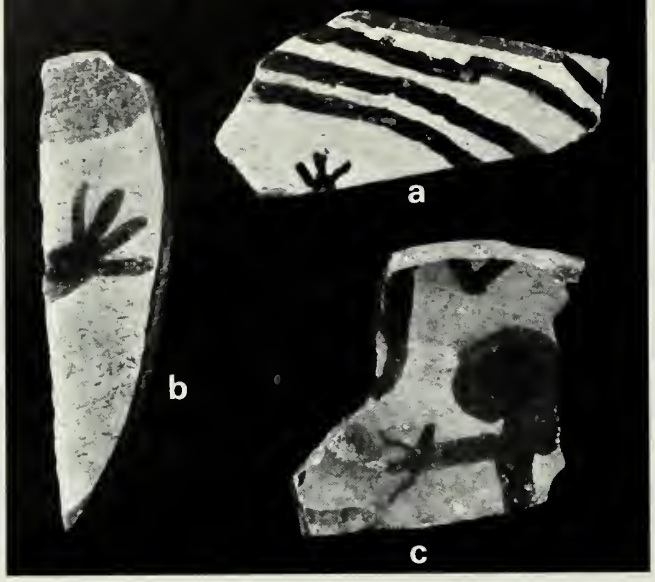
A major difference from Mancos is the high frequency of carbon paint on McElmo—approximately 90 percent in the sherds from Big Juniper House. But, as noted earlier, mineral pigment continued to occur very commonly on McElmo in the Yellow Jacket district.

Rim decoration shows change from Mancos Black-on-white and is an important diagnostic (see table 5). Approximately 37 percent of the rims are ticked, usually with round and somewhat irregular dots, and about the same percentage of rims are plain with no decoration. Only about 10 percent are painted solid. The rest of the rims are indeterminate.

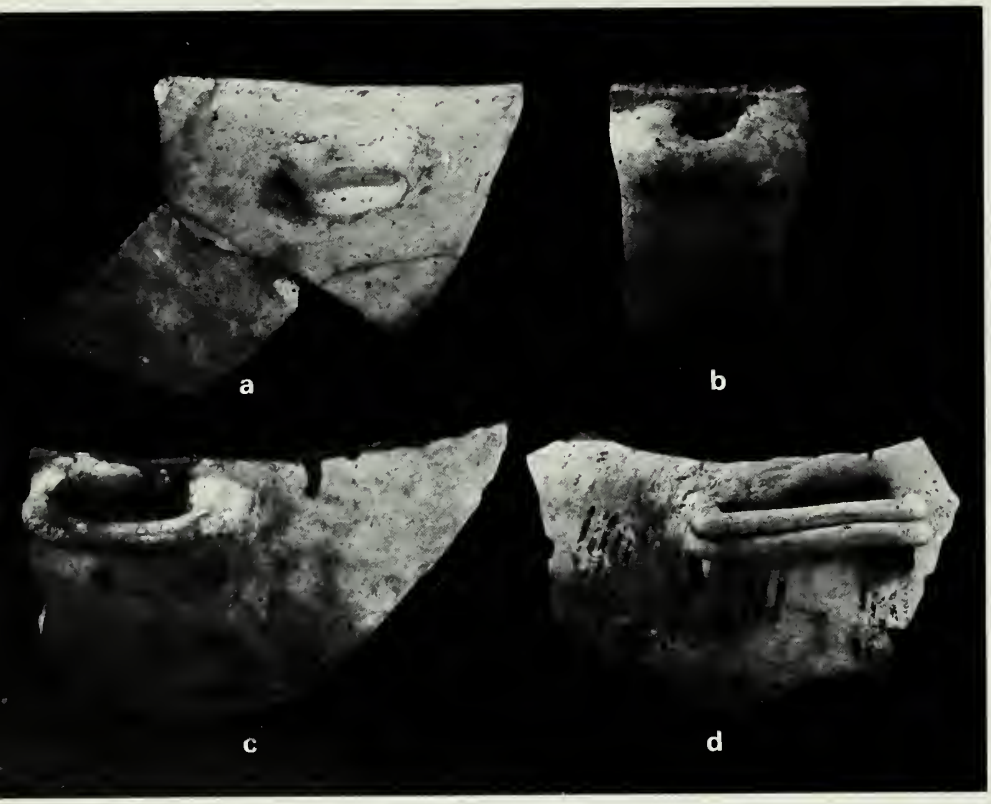
An important difference from Mesa Verde Black-on-



70 *Mancos Black-on-white sherds and fragments showing variations in decoration of interior (left) and exterior (right) surfaces.*



71 *Mancos Black-on-white sherds with zoomorphic figures.*



72 *Mancos Black-on-white handle forms on bowls, a–c, and jar, d.*

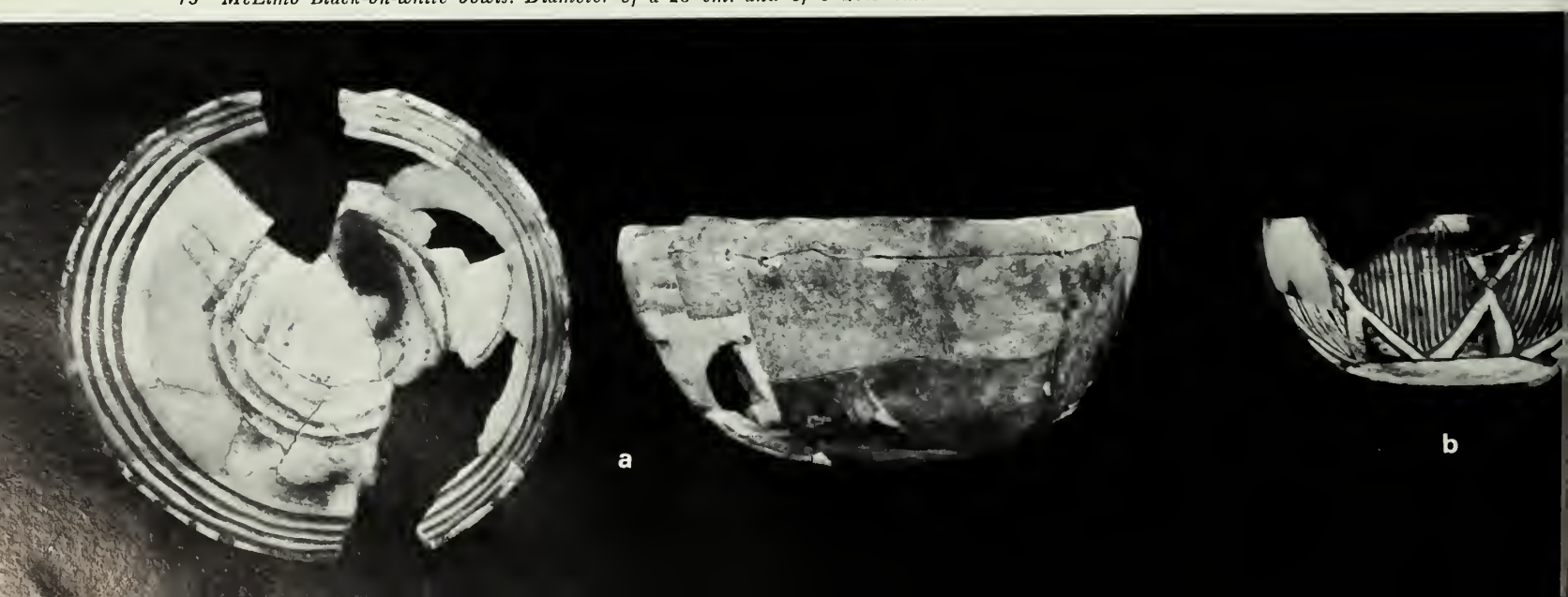
73 *McElmo Black-on-white bowls. Diameter of a 23 cm. and of b 20.5 cm.*

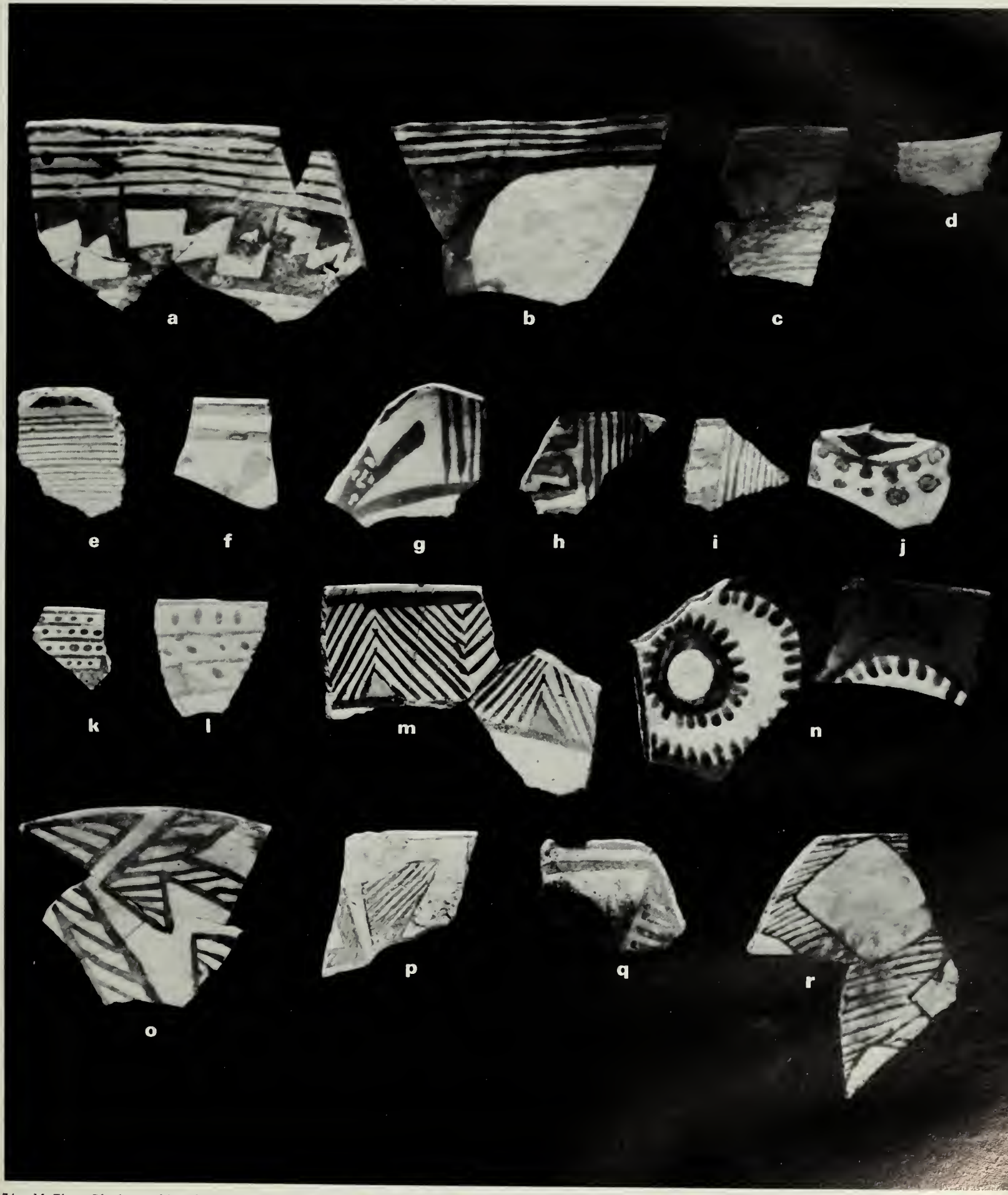
white is the lack of exterior decoration on the early McElmo bowl sherds from Big Juniper House. Long House has provided convincing data to support this observation.

We can distinguish the early McElmo Black-on-white from other types by decorative style. Broad, boldly executed lines employed either in bands parallel to the rim or in triangular or rectilinear frets are the most common designs. Combinations of motifs and elements are also popular and represent a significant difference in design preference from Mancos Black-on-white. Diagonal, straight-line hachure is used as a single design style, but it is not as frequent as in Mancos and is generally better executed. Bands of design with framing lines occur in minor numbers, but the framing lines are usually all the same width and not as well drawn as in Mesa Verde Black-on-white. Other design elements are dots, triangles, diamonds or negative diamonds created by opposed triangles, stepped figures in combination with other elements, narrow lines, and a few miscellaneous elements.

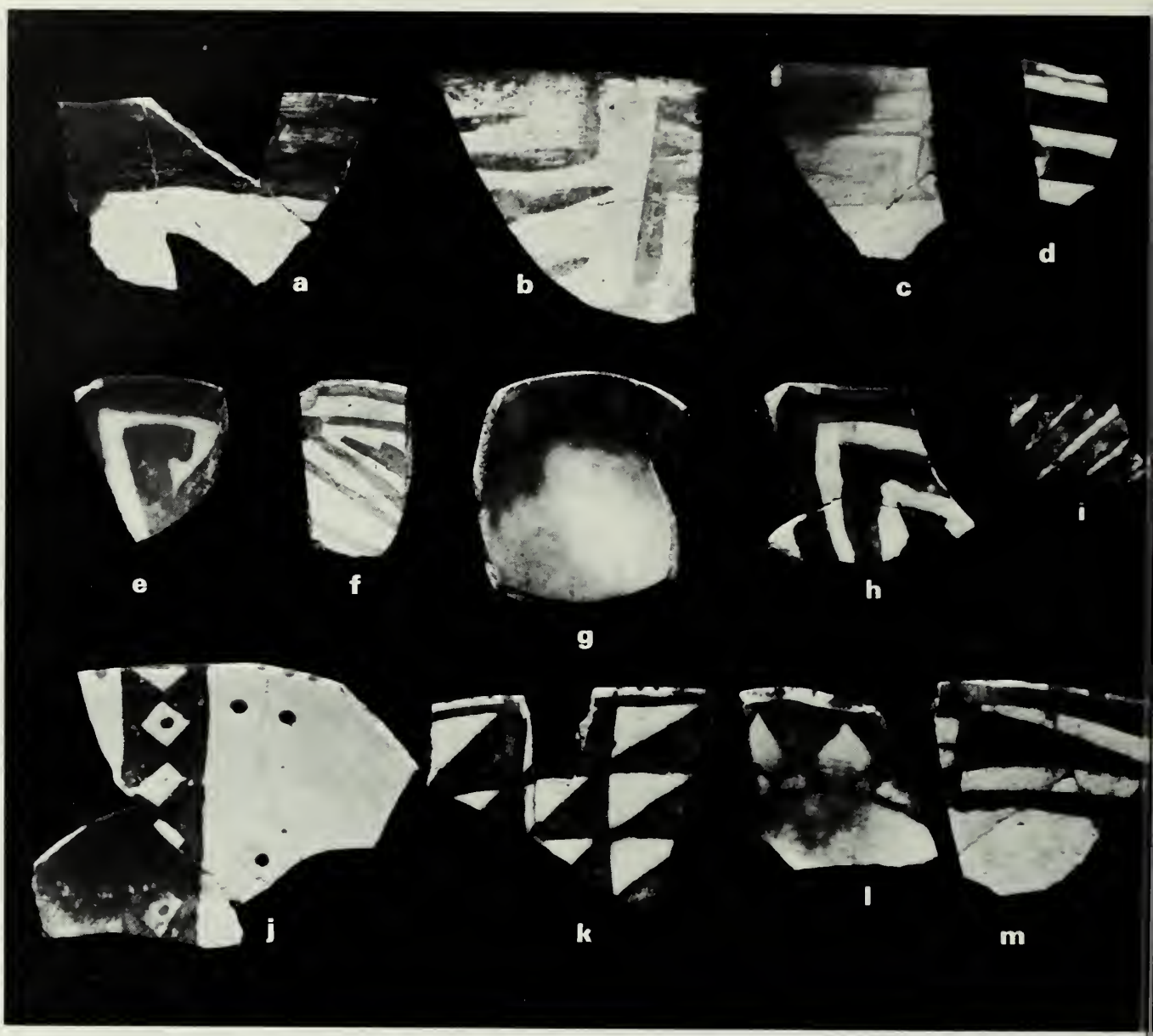
Examining a sample of 50 McElmo Black-on-white sherds under a microscope, I found 20 had crushed sherd temper (40 percent), 15 sherd and rock temper (30 percent), 11 rock temper (22 percent), and 4 sand temper (8 percent). These figures show that sherd temper increased, and rock temper definitely decreased, in comparison to Mancos Black-on-white. Sand-tempered sherds also show an increase in percentage from Mancos, but it is quite similar to the percentage of sand-tempered Cortez Black-on-white sherds.

A pottery type described by Hayes (1964, pp. 63–64) under the name Wetherill Black-on-white overlaps, in part, the McElmo Black-on-white of the 13th century. This type was subsequently dropped by the Wetherill Mesa Project on the grounds that it included two different things: primarily carbon-paint Mancos Black-on-white, and a little McElmo Black-on-white. Excavations carried out since the survey of Wetherill Mesa was completed have shown that Mancos Black-on-white includes some carbon-painted pottery and that this material should not be considered a separate type.





74 *McElmo Black-on-white sherds. All sherds from bowls or ladles except j, from a jar, and o, from a plate.*



75 *McElmo Black-on-white bowl or ladle sherds.*

SAN JUAN RED WARE

About 0.3 pereent of the total sample from Big Juniper House—48 sherds—were identified as San Juan Red Ware on the basis of their distinetive paste and appearanee. Although this ware was presumably made in the Mesa Verde area, prototypes of it may have been imported from the Alkali Ridge area to the northwest, where it oceurs in mueh greater quantity, or possibly from the La Plata region to the east.

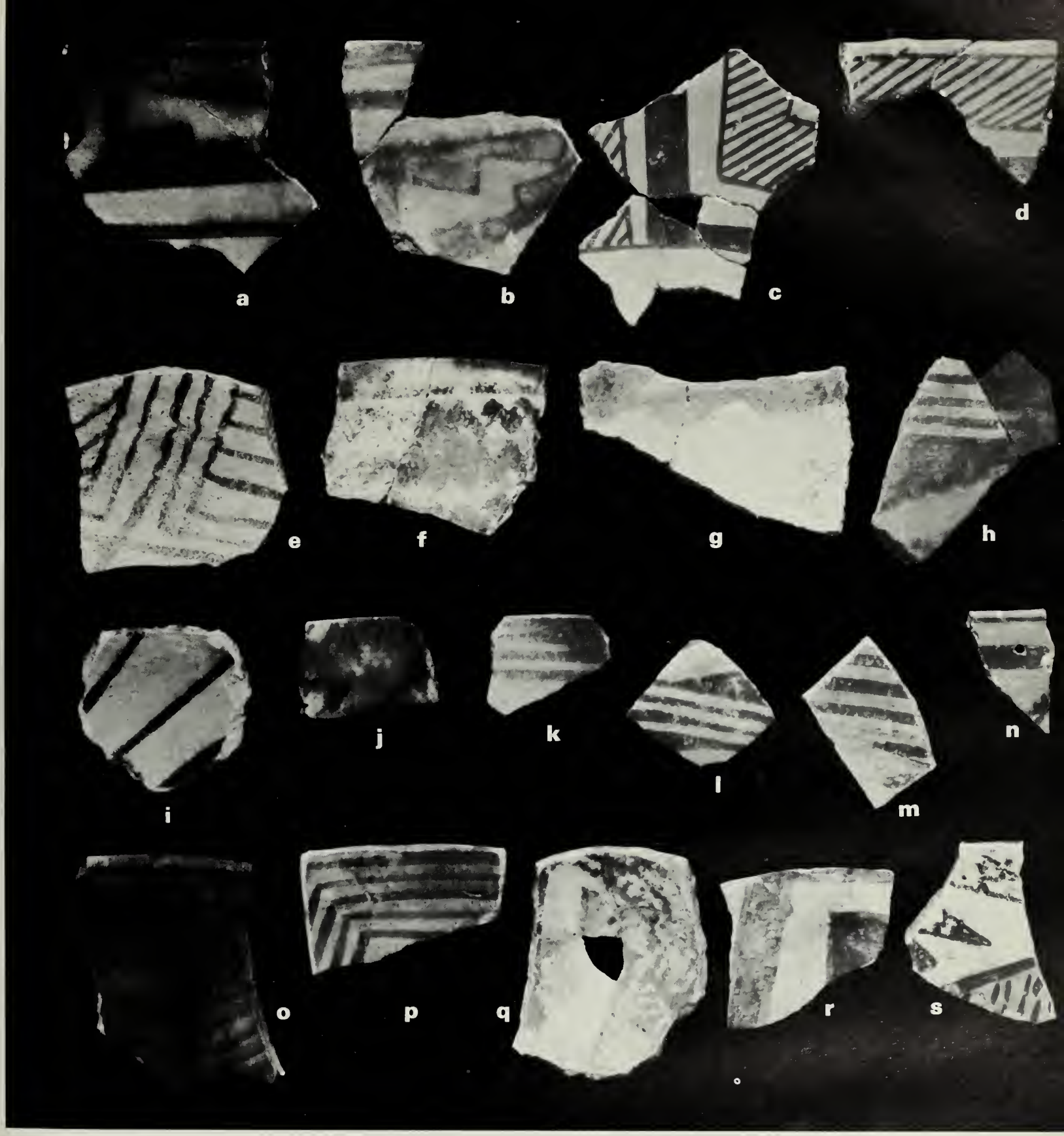
I have separated San Juan Red Ware into two elasses: Abajo Red-on-orange and Bluff-La Plata Blaek-on-red. The latter elass is deseribed in the literature under two types, separated primarily on the presenee or absence of a slip. Bluff Blaek-on-red is deseribed as unslipped and having somewhat less finely executed designs than La Plata Black-on-red, characterized as slipped pottery. I have found that sueh distinetions are extremely diffieult to reeognize. Another feature that makes separation difficult is variation in surfaee and paint color. The surface ranges from orange to shades of red. Paint color ranges from almost-red, to reddish-brown, purple, and black. These features erosscut the design styles and, in a sample this small, produee confusion. I have evaded the issue and ealled it Bluff-La Plata Blaek-on-red, hoping that larger samples from other sites on Wetherill Mesa may elear up this problem.

Sherds with color and design style elose to the deseription of Abajo Red-on-orange (Brew, 1946, p. 254) were identified as Abajo Red-on-orange. There is a possibility, as explained below, that Abajo may have been made for a longer time than it was in the Alkali Ridge area.

Sherds which had little or no design, but whose other eharaeteristies remained more or less eonstant, were lumped under Unelassified San Juan Red Ware.

Abajo Red-on-orange

There is evidenee from Big Juniper House and other Wetherill Mesa sites that Abajo Red-on-orange lasted



76 *Local red ware, trade ware, and local polychrome sherds: Puerco Black-on-red, a, b; Wingate Black-on-red, c, d; Abajo Red-on-orange, e–g; Bluff-La Plata Black-on-red, h–p; Tusayan Polychrome, q; polychrome variation of Mancos Black-on-white, r; and polychrome variation of Cortez Black-on-white, s.*

somewhat later than the terminal date of A.D. 850 given by Abel (1955, Ware 5A, Type 1). Because there is no evidence of a Pueblo I occupation at Big Juniper House, we can assume that Abajo Red-on-orange was probably made into the early 900's.

Bowls and jars are the only forms represented by the nine sherds from Big Juniper House (fig. 76e–g). Both Brew and Abel have said that Abajo Red-on-orange does not include the pitcher form. However, a gourd-shaped pitcher found with a burial at Site 1291 seems to be Abajo Red-on-orange in most of its features. Pitcher sherds of Abajo have been found at other sites on Wetherill Mesa.

Bluff-La Plata Black-on-red

The 19 sherds in the collection which were classified as Bluff-La Plata Black-on-red show a greater range in surface and paint color than was indicated in published descriptions (fig. 76h–p). There seems to be a good deal of confusion regarding these types, and I agree with Reed (1958, p. 131) that one solution is to include all these variations under one type—under Bluff Black-on-red, as he suggests, or under Bluff-La Plata Black-on-red, as is done here. Another type, La Plata Black-on-orange, discussed at some length by Reed (1958, pp. 128–129), is a common color variation on the sherds from Big Juniper House, and there is no evidence from this site or others excavated by the Wetherill Mesa Project that it precedes the black-on-reds. Bowls and jars are the only forms represented by the sherds from Big Juniper House.

At Site 1291, a Bluff-La Plata Black-on-red bowl was found with a burial, along with the Abajo Red-on-orange pitcher described above. The bowl has a rather poorly executed black design on what appears to be a reddish-orange slip. It also has been well polished. To my knowledge, this is the only complete vessel of the type that has been found in the park.

Unclassified San Juan Red Ware

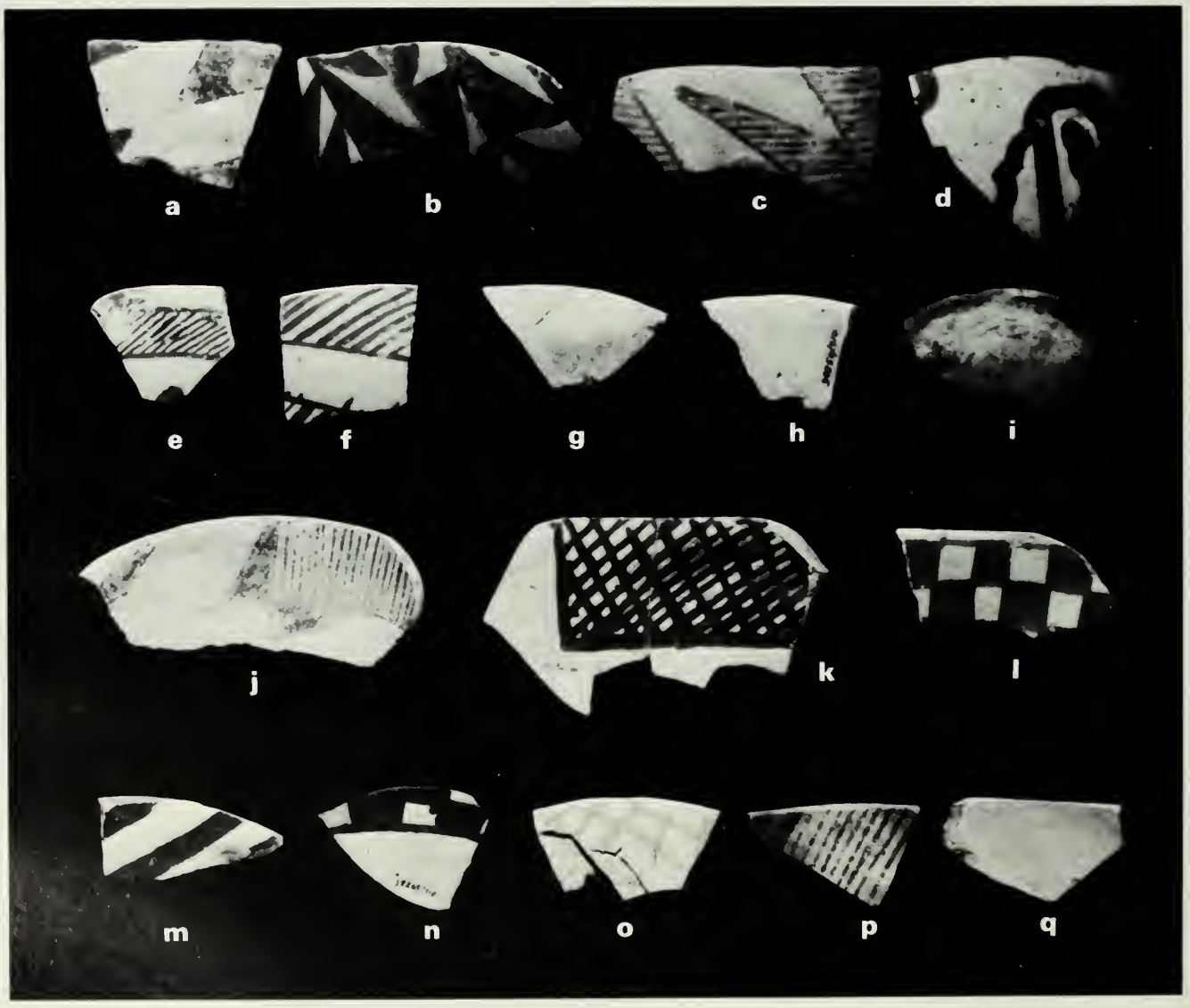
Twenty sherds could not be classified, but paste and color characteristics placed them in the San Juan Red Ware. Several sherds, with no paint but bright orange in surface color, may be plain sections of decorated vessels. The other sherds had painted designs that were not complete enough to be typed.

INTRUSIVE POTTERY

Only nine sherds, actually less than 0.1 percent of the total number from the site, could be identified as definitely intrusive pottery.

Puerco Black-on-red

Two bowl rims found in the South Trash Mound were classified tentatively as Puerco Black-on-red (fig. 76a and b). The designs on both are executed in solid lines; one appears to be a band of interlocking scrolls, and the other has interlocking triangular frets. The designs seem to



77 *Type 1 worked sherds, ground on one edge (worked edges at the top). Subtype 1A (large jar sherds), a–d; Subtype 1B (small jar sherds), e–i; Subtype 1C (large bowl sherds), j–l; and Subtype 1D (small bowl sherds), m–q.*

be clearly within the range of Puerco Black-on-red as described by Carlson (MS., pp. 33–48), who dates this pottery from A.D. 1000 to 1200, with its greatest production around A.D. 1100.

Wingate Black-on-red

Six black-on-red sherds, probably from the same bowl, were found in the upper fills of Kiva B, Room 28, and the East House Mound (fig. 76c and d). The characteristics of these sherds—sherd temper, bumpy surface with pitting over the temper particles, design of interlocking solid and diagonal hatched units of essentially the same form, solid units somewhat narrower than the hatched units—conform to those of Wingate Black-on-red (Carlson, MS., pp. 48–66). Carlson dates this pottery from A.D. 1050 to 1200, with a maximum use after A.D. 1100.

Tusayan Polychrome

One badly eroded bowl rim sherd from the fill of Room 6 was tentatively classified as Tusayan Polychrome (fig. 76q). It has red bands outlined with black lines on an orange background, probably conforming to "Style A" of Tusayan Polychrome and dated from A.D. 1150 to 1300 (Colton, 1956, Ware 5B, Type 9).

MISCELLANEOUS CERAMIC OBJECTS

A number of objects excluded from the discussion of pottery types are described here. Plates, mentioned under Cortez Black-on-white and Mancos Black-on-white pottery, are described in detail in this section.

Worked Sherds

A total of 157 sherds were worked (ground or chipped, or both) in a variety of ways to produce tools, ornaments, bowls and plates from larger vessel forms, and other indeterminate objects. The worked sherds are classified into 10 types with various subtypes on the basis of modification, form, shape, and, when possible, function. Below are summaries of each type. Table 6 lists the types and subtypes by provenience and table 7 lists the worked sherd types by pottery types.

Fifty-seven sherds from bowls and jars, ground on one edge only, are designated Type 1. The sherds are divided into four subtypes on the basis of form and size

TABLE 6.—DISTRIBUTION OF WORKED SHERDS BY TYPE, BIG JUNIPER HOUSE

PROVENIENCE	Types																							Totals
	1A	1B	1C	1D	2A	2B	2C	2D	3A	3B	4A	4B	4C	4D	5A	5B	5C	5D	5E	6	7	8	9	10	
South Trash Mound	6	10	4	13	3	10	4	4	4	2	2	4	...	2	1	1	...	1	...	4	3	1	1	...	80
East Trash Mound	....	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Area D	....	....	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Area 12	1	....	...	1	1	....	...	...	...	1	...	...	...	...	...	...	...	...	...	...	2	...	...	1	7
Test Trench 15	1	....	...	...	...	1	...	...	...	...	...	2	1	...	1	...	...	...	...	...	...	...	...	...	6
East House Mound	....	1	...	...	...	1	...	2	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	5
Room 1b, lower fill	....	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	2
Room 2, fill	1	....	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
Room 2, subfloor fill	....	....	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Room 5, fill	....	....	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	3
Room 7, fill	....	....	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Room 7, subfloor cist fill	....	....	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	2
Room 9, fill	....	....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1
Room 11, exterior	1	....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Room 13, fill	....	....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1
Room 19, fill	....	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	3
Room 19, subfloor cist fill	....	....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1
Rooms 21 and 22, fill	....	....	...	1	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	3
Room 28, fill	....	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Kiva A, fill	....	2	...	...	...	3	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1	8
Kiva A, floor fill	....	1	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3
Kiva B, fill	....	....	...	1	1	....	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	4
Kiva C, fill	1	4	...	2	1	....	2	2	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	14
Kiva C, floor	....	....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1	2
Kiva C, niche	....	....	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Cist 2, fill	....	....	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1
Associated with Burial 6	....	....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1
Associated with Burial 17	....	....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1
Totals	11	22	5	19	6	21	6	9	4	3	5	7	4	2	2	1	2	1	1	8	9	3	3	3	157

(fig. 77). Large and small jar sherds compose Subtypes 1A and 1B, and large and small bowl sherds make up Subtypes 1C and 1D. Their function is uncertain, but many of them would have been excellent surface-finishing tools for pottery. Some of the larger sherds may have been used as scoops or ladles. Most of the wear is on the exterior or convex surface, giving the edge a distinctly beveled profile.

Forty-two sherds ground on two or more edges, with part of the perimeter unworked, are classed as Type 2. The specimens are divided into four subtypes in the same manner as Type 1 (fig. 78). Exact function is problematical, but the same possibilities exist as in Type 1.

Seven sherds with the entire perimeter ground, designated Type 3, are divided into two subtypes: 3A, bowl sherds, and 3B, jar sherds (fig. 79). These sherds do not fall into any particular shape or size categories, and their functions are open to question.

On the basis of shape and quality of work, 18 worked sherds may have been pendant blanks, designated Type 4 (fig. 80). There are no drilled holes or grooves, so their function is not definite. They are divided into four subtypes, according to shape: 4A keystone; 4B, rectangular; 4C, oval or rounded; and 4D, irregular.

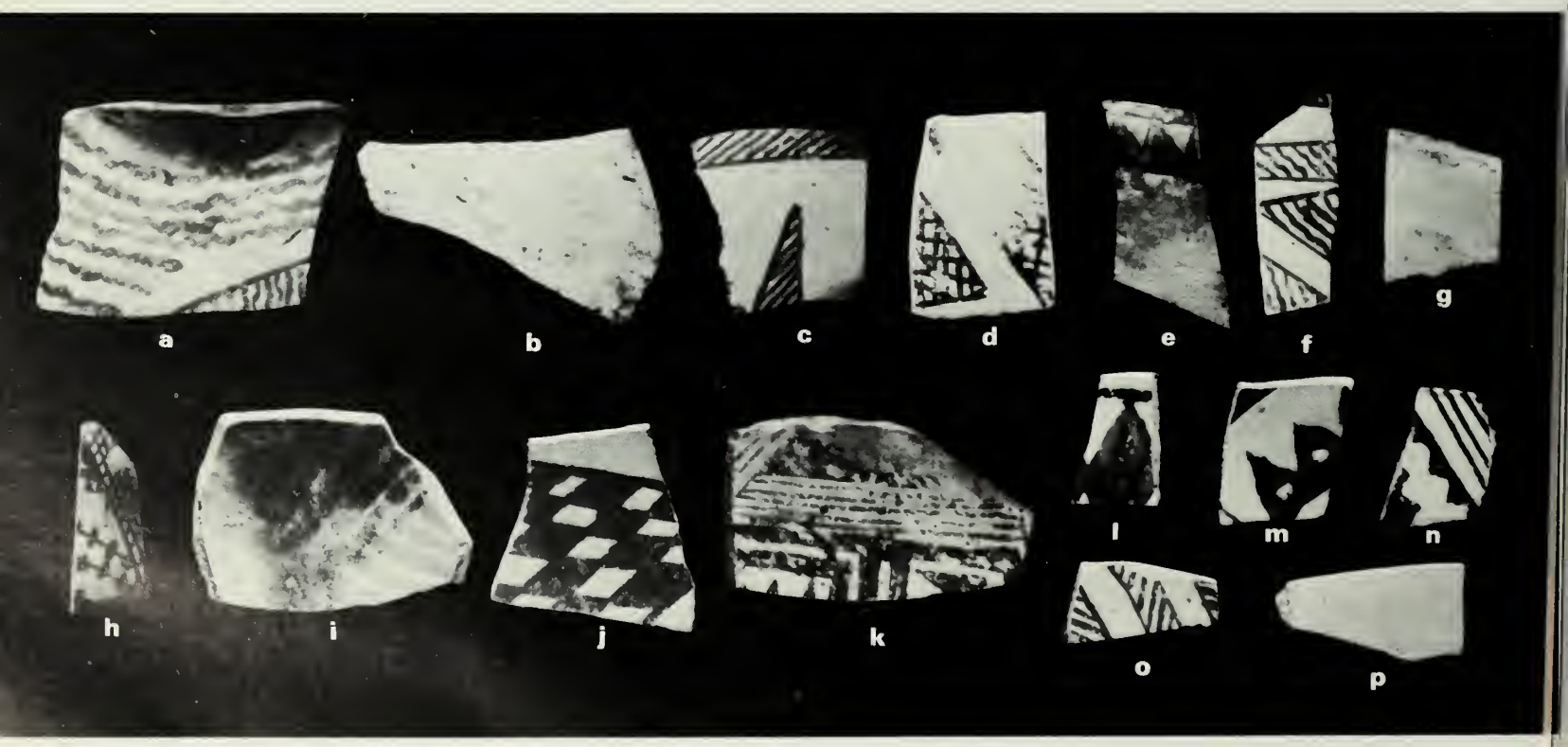
Seven sherds were recognized as definite pendants because of shape and the presence of biconical holes presumably drilled for stringing (fig. 81). These specimens, classified as Type 5, are also divided into subtypes on the basis of shape: 5A, rectangular; 5B, teardrop; 5C, oblong or oval; 5D, circular or discoidal; and 5E, indeterminate. One 5C pendant has a biconical hole started, but not completely drilled, in each face.

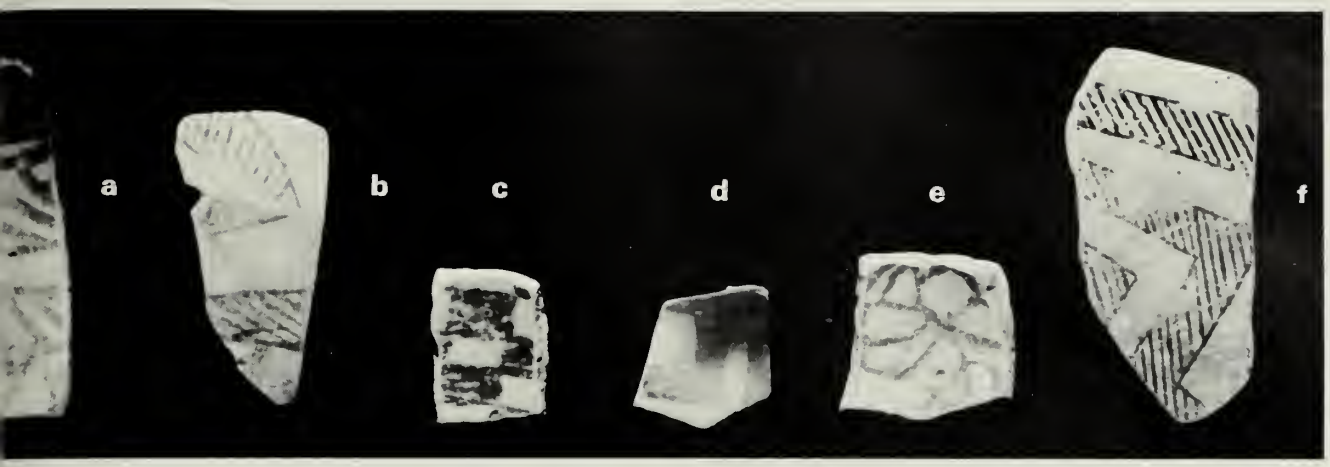
Eight disk sherds, classified as Type 6, are often chipped

TABLE 7.—DISTRIBUTION OF WORKED SHERD TYPES BY POTTERY TYPE, BIG JUNIPER HOUSE

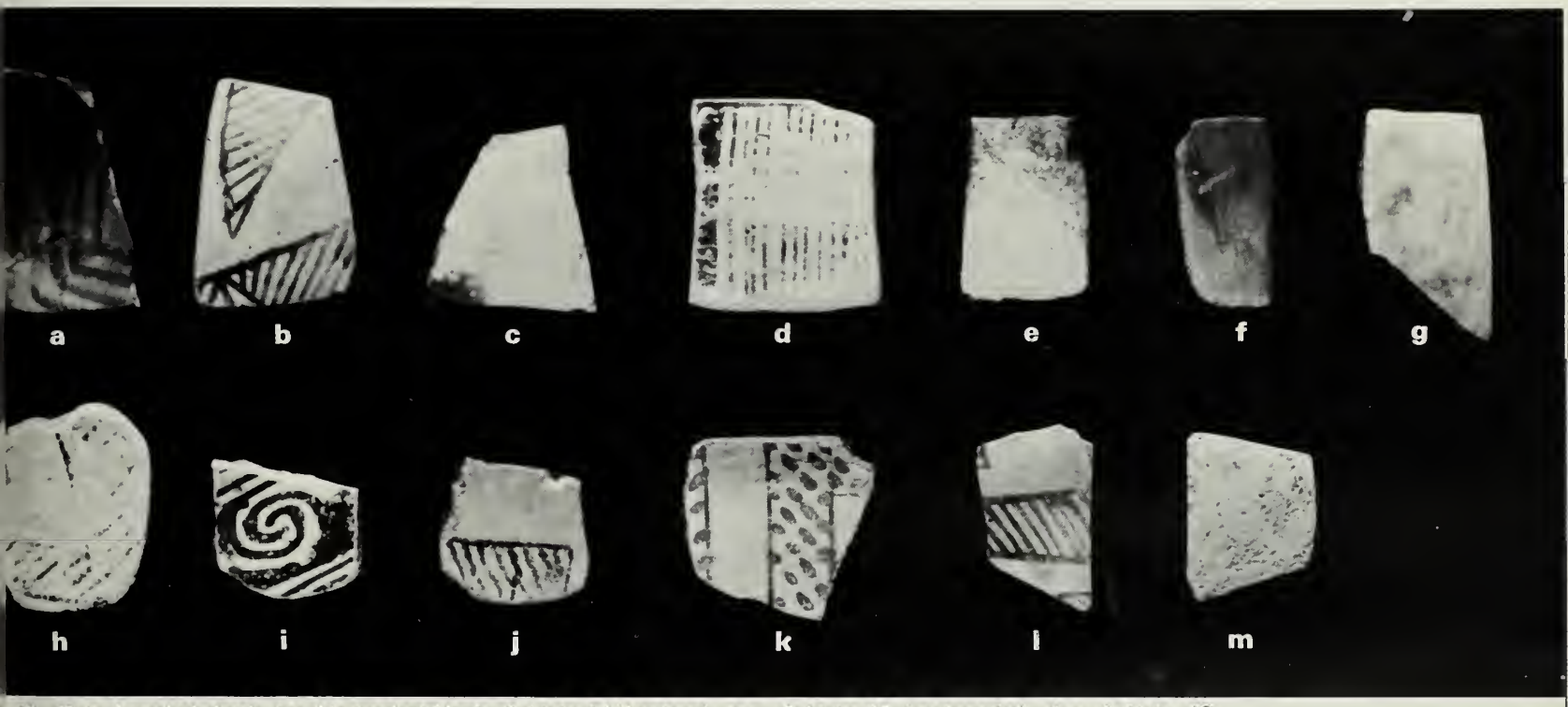
Worked sherd type	Cortez Black-on-white	Mancos Black-on-white	McElmo Black-on-white	Unclassified B/W	Plain from B/W	Corrugated body sherds	Bluff-La Plata B/R	Unclass. San Juan Red Ware	Totals
Subtype 1A	....	7	....	1	3	....	....	....	11
Subtype 1B	1	8	....	2	11	....	....	....	22
Subtype 1C	1	3	....	1	....	....	....	....	5
Subtype 1D	....	8	....	4	6	....	....	1	19
Subtype 2A	1	2	....	2	1	....	....	....	6
Subtype 2B	3	10	....	2	6	....	....	....	21
Subtype 2C	1	5	....	....	....	....	....	....	6
Subtype 2D	1	2	2	3	1	....	....	....	9
Subtype 3A	....	2	....	1	1	....	....	....	4
Subtype 3B	....	3	....	....	....	....	....	....	3
Subtype 4A	....	1	....	....	3	....	1	....	5
Subtype 4B	1	....	....	....	5	....	....	1	7
Subtype 4C	1	3	....	....	....	....	....	....	4
Subtype 4D	....	1	....	....	1	....	....	....	2
Subtype 5A	....	1	....	1	....	....	....	....	2
Subtype 5B	....	....	....	....	....	....	....	1	1
Subtype 5C	....	....	....	....	....	....	2	....	2
Subtype 5D	1	....	....	....	....	....	....	....	1
Subtype 5E	....	....	....	....	1	....	....	....	1
Type 6	....	1	....	....	3	2	2	....	8
Type 7	....	5	....	....	4	....	....	....	9
Type 8	....	2	....	....	1	....	....	....	3
Type 9	....	....	....	....	....	3	....	....	3
Type 10	1	....	....	....	2	....	....	....	3
Totals	12	64	2	17	49	5	5	3	157

78 *Type 2 worked sherds, ground on two or more edges, with part of perimeter unworked. Subtype 2A, a–c; Subtype 2B, d–h; Subtype 2C, i–k; and Subtype 2D, l–p.*



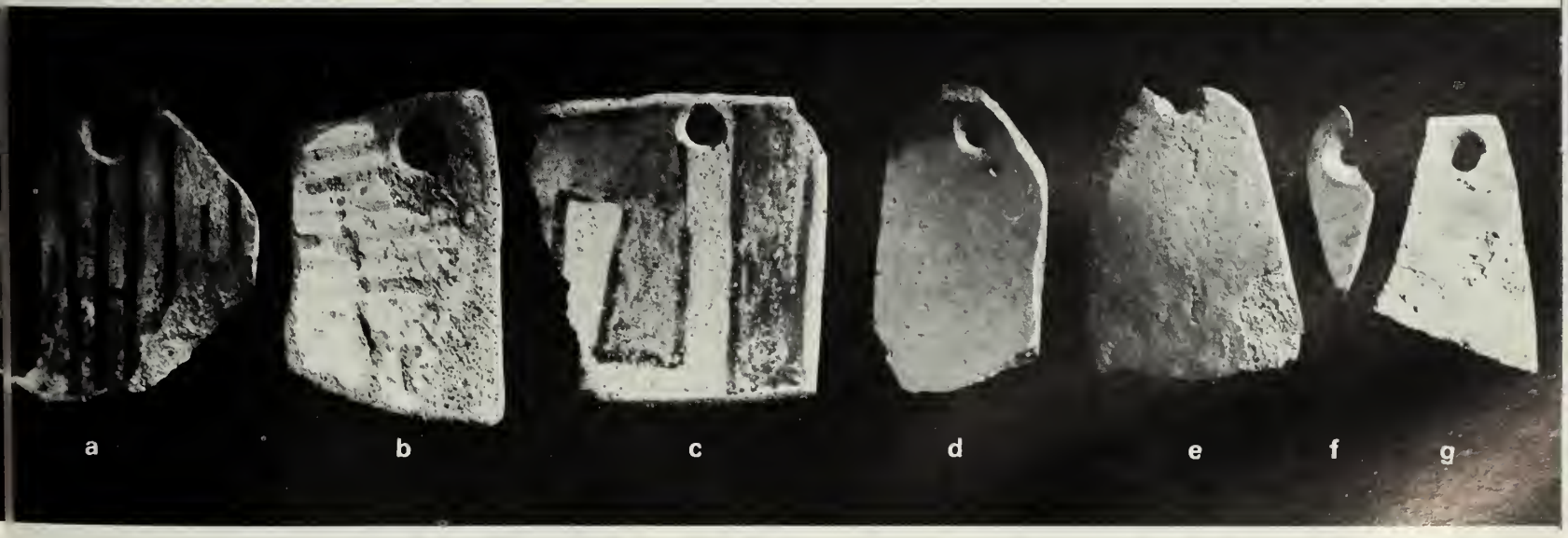


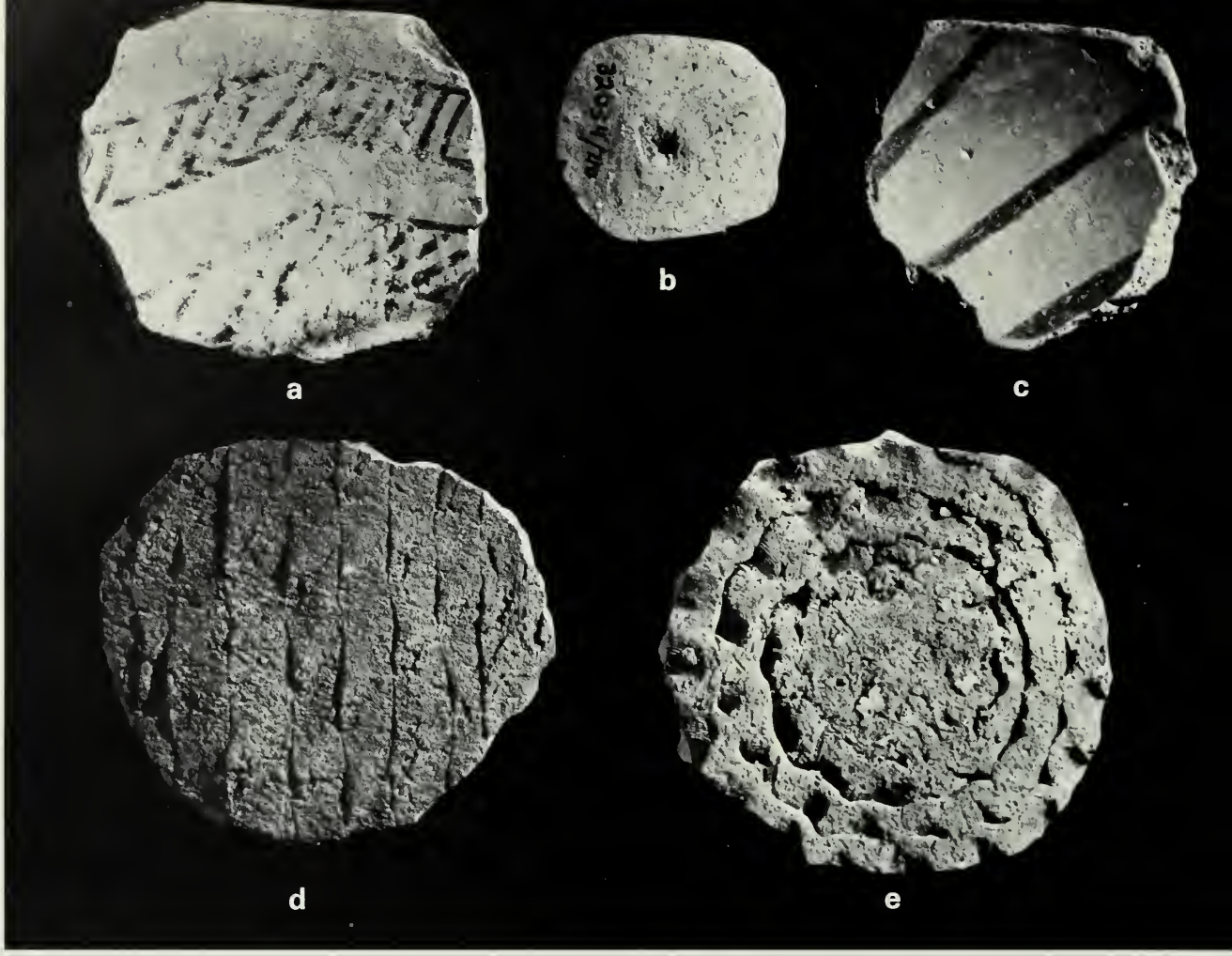
79 *Type 3 worked sherds, entire perimeter ground. Subtype 3A (bowl sherds), a, c, e; and Subtype 3B (jar sherds), b, d, f.*



80 *Type 4 worked sherds, possible pendant blanks. Subtype 4A (keystone), a–c; Subtype 4B (rectangular), d–g; Subtype 4C (oval or rounded), h–k; and Subtype 4D (irregular), l, m.*

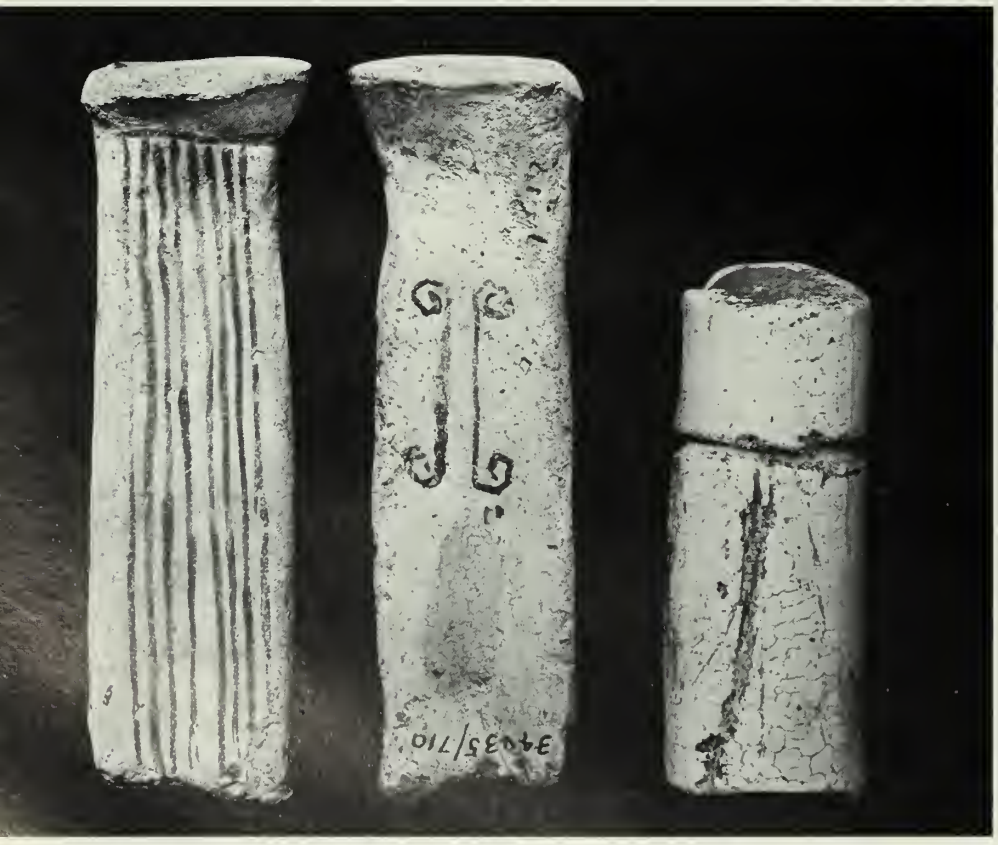
81 *Type 5 worked sherds, pendants. Subtype 5A (rectangular), b, c; Subtype 5B (teardrop), f; Subtype 5C (oblong or oval), d, e; Subtype 5D (circular or discoidal), a; and Subtype 5E (indeterminate), g.*



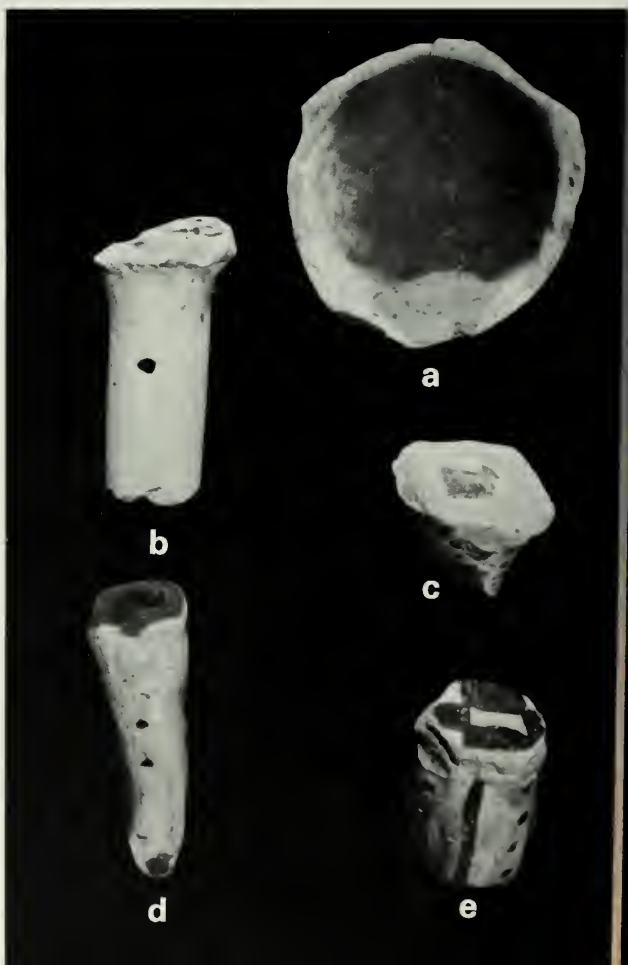


82 *Type 6 worked sherds, disks, often chipped around perimeter, some with grinding over chipping.*

84 *Type 7 worked sherds. At left, top and bottom views of solid, flat ladle handle; at right, part of ladle fashioned into possible pendant.*



83 *Type 7 worked sherds, derived from ladles, with grindi usually on broken section of handle, b–e; and Type 10 worke sherd, miscellaneous category, a.*



around the perimeter and sometimes ground over the chipping (fig. 82). These forms occur widely in the Southwest, but their function is not known.

An unusual category of worked sherds, designated Type 7, is represented by nine ladle sherds, with grinding usually on broken sections (figs. 83b–e, and 84). One section, ground smooth at both ends and with a small groove engraved around the circumference at one end, may have been a pendant (fig. 84, right). A possible use of worked tubular handles has been suggested by an artifact that Carolyn Osborne, who studied various museum collections for the project, observed at the University Museum, University of Pennsylvania. The object, originally from the McLoyd and Graham collection from Utah, is a piercer or dagger, consisting of a wooden pile and a tubular ladle handle as the grip (fig. 85). Our tubular ladle sherds may have had the same use.

Two bases from Mancos Black-on-white bowls and one plain base from a black-on-white jar classified as Type 8, were ground on the edges to form plates (fig. 86). None of them are whole. The worked jar base had fugitive red pigment over the entire inside surface and may have served as a paint palette. These sherds may also have been used as *pukis,* or platforms for rotating vessels during their construction (Guthe, 1925).

Three complete or fragmentary bases of corrugated jars, shaped into shallow bowls or possible *pukis,* are designated Type 9 (fig. 87). Two were chipped and slightly ground on the perimeter, but the third was chipped only on the edge.

Three sherds that do not fit into the other categories are classified as Type 10. The sherd illustrated (fig. 83a) is the indented base of a black-on-white jar. It is well ground on the exterior bordering the kickup, and the broken edge was chipped and lightly ground. It resembles a miniature bowl. The other two sherds are from a Cortez Black-on-white jar and from a black-on-white jar or pitcher. The Cortez sherd shows wear on

86 *Type 8 worked sherds, formed into plates.*

85 *Wooden piercer or dagger inserted into tubular handle (two views), indicating possible use of Type 7 worked sherds. Overall length about 25 cm.; handle only, about 9 cm. (Photo courtesy The University Museum, University of Pennsylvania.)*

87 *Type 9 worked sherds, jar sherds worked into bowls; interiors at left, exteriors at right. Top sherd, 22 cm. in diameter; bottom sherd, 24.8 cm. in longest dimension.*

the exterior surface which might have resulted from use of the jar prior to breakage. The third specimen shows work on the broken edge of the single coil handle and part of a broken rim edge. Its function is not known.

Miniature Vessels

A number of miniature jar, bowl, and ladle sherds, and one complete miniature ladle, both decorated and undecorated, fired and unfired, were found during the excavation (table 8). They are tentatively identified as ceremonial objects or toys. Table 8 lists the miniature vessels and sherds by form and provenience.

TABLE 8.—DISTRIBUTION OF MINIATURE VESSELS AND VESSEL FRAGMENTS, BIG JUNIPER HOUSE

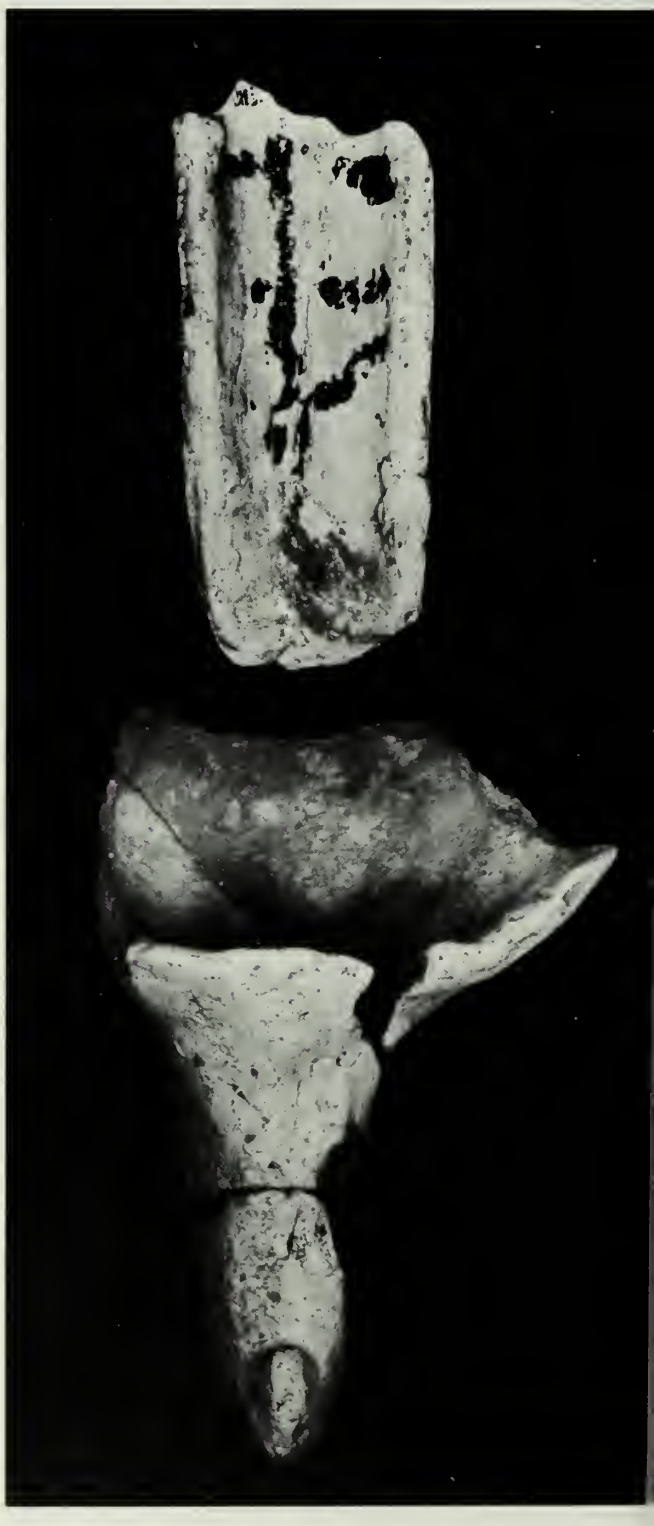
PROVENIENCE	Vessels				
	Bowls	Ladles	Jars	Seed jars	Totals
South Trash Mound	6	1	9	1	17
Area 12			1		1
Test Trench 15			1		1
Room 7, fill	1				1
Room 8, fill		1			1
Room 11, fill	1	1			2
Room 19, fill	1				1
Kiva B, Level 1 and Test Trench 15	2		8		10
Kiva B, fill		1			1
Kiva B, Cist 1		1			1
Kiva C, fill			1	1	2
Totals	11	5	20	2	38

88 *Miniature bowl sherds. Left, longest dimension 4.7 cm.*

The miniature bowl sherds (fig. 88) were assigned to the following pottery types: Mancos Black-on-white (2); plain, from a black-on-white bowl (2); and unfired, plain bowl sherds (2)—one with fugitive red pigment on both exterior and interior surfaces.

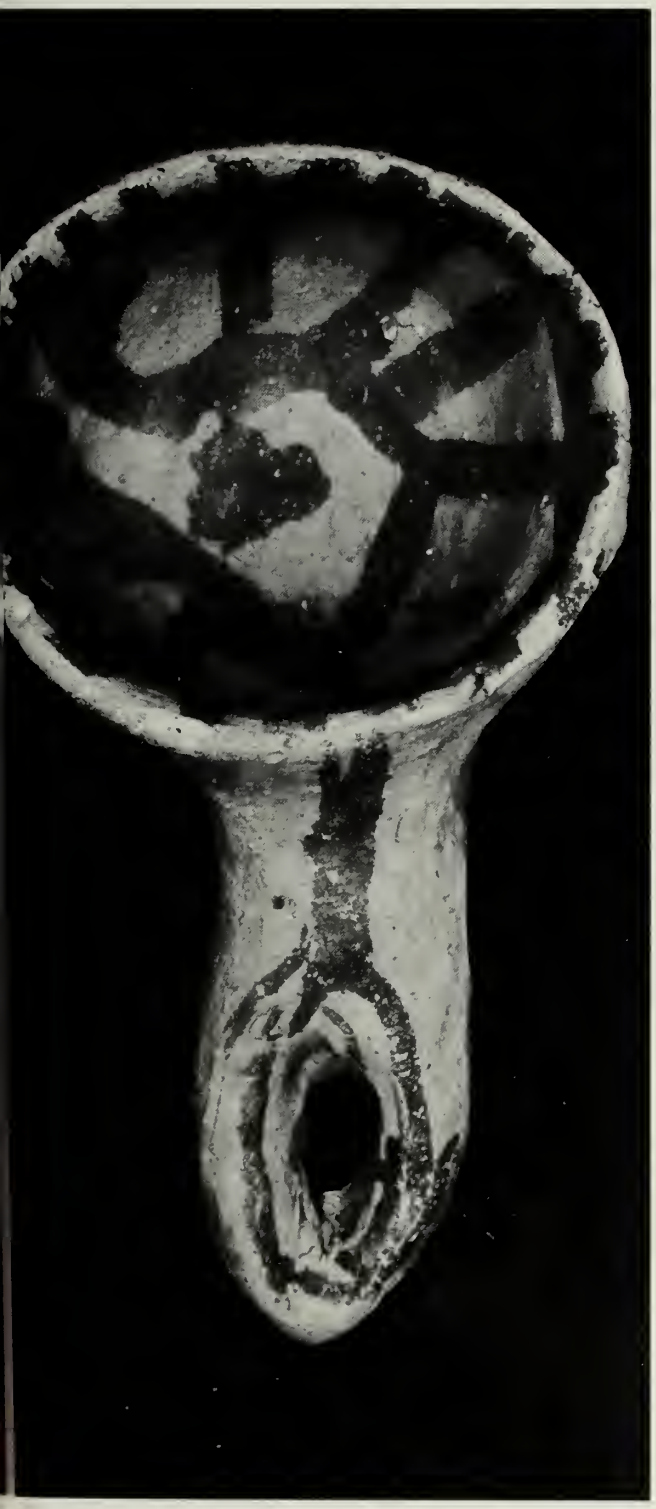
Miniature ladle sherds (fig. 89) belonged to the following types: Cortez Black-on-white (1); unclassified black-on-white (1); and plain, probably no design intended (2). There was one complete miniature ladle, probably Mancos Black-on-white (fig. 90).

89 *Miniature ladle sherds. Top sherd, probably Cortez Black-on-white, 3.7 cm. in length; bottom sherd, plain, 7.0 cm. in length.*



Miniature jar sherds (fig. 91) included: Cortez Black-on-white (2); unclassified black-on-white (2); plain, from black-on-white jars (3); corrugated (4); plain fired, probably no design intended (2); and plain unfired (7). Of the unfired group, four sherds had shapes similar to the normal-size Mummy Lake Gray, Mancos, or Mesa Verde Corrugated. Two of these unfired plain sherds had corrugated interiors. Two miniature seed jar sherds were a probable Cortez Black-on-white and an unclassified black-on-white.

90 *Miniature ladle, probably Mancos Black-on-white, 10.1 cm. in length.*

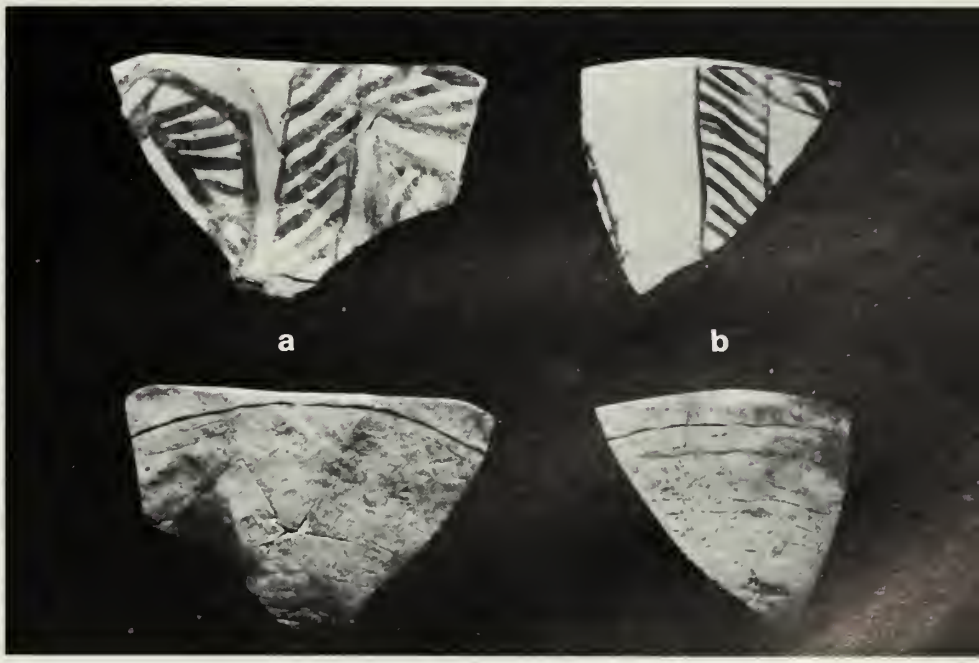


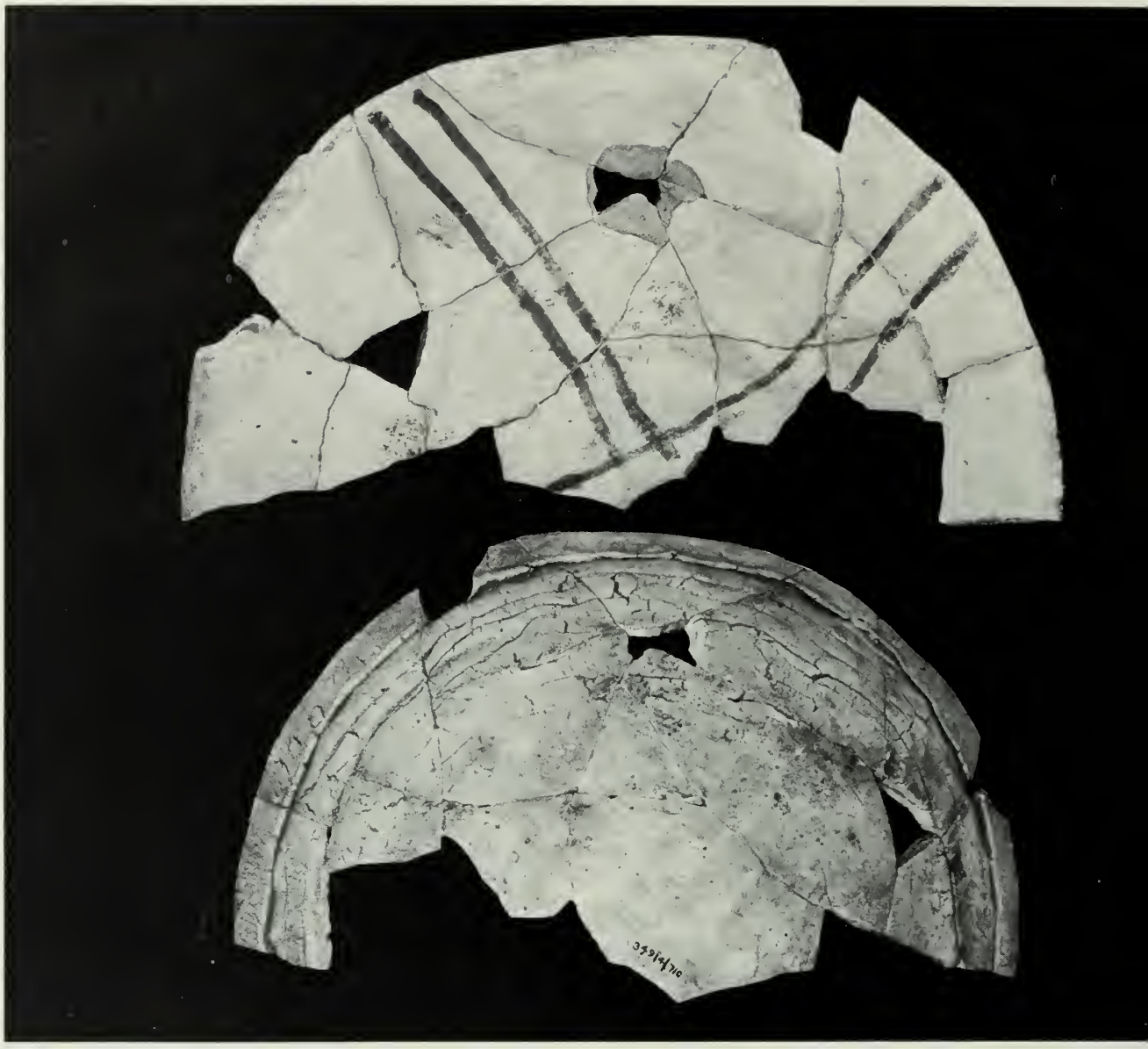
Plates

We found four sherds from plates—two Mancos Black-on-white (fig. 92) and two probable Cortez Black-on-white (fig. 93). This form is not included in published descriptions of these two pottery types. Plate sherds were also found at Badger House. The sherds in each collection show similar attributes. Exteriors are roughly finished, usually by indented-corrugation or unindented coiling, and there is a rim fillet on the exterior. The specimens from Big Juniper House have a thin slip applied over the partially obliterated, indented-corrugated exteriors. One of the Mancos Black-on-white sherds has been ground over a section of the rim, perhaps to smooth a broken edge (fig. 92a).

91 *Miniature jar sherds: corrugated, a; Cortez Black-on-white, 4.5 cm. in length, b; and plain, 4.2 cm. in width, c.*

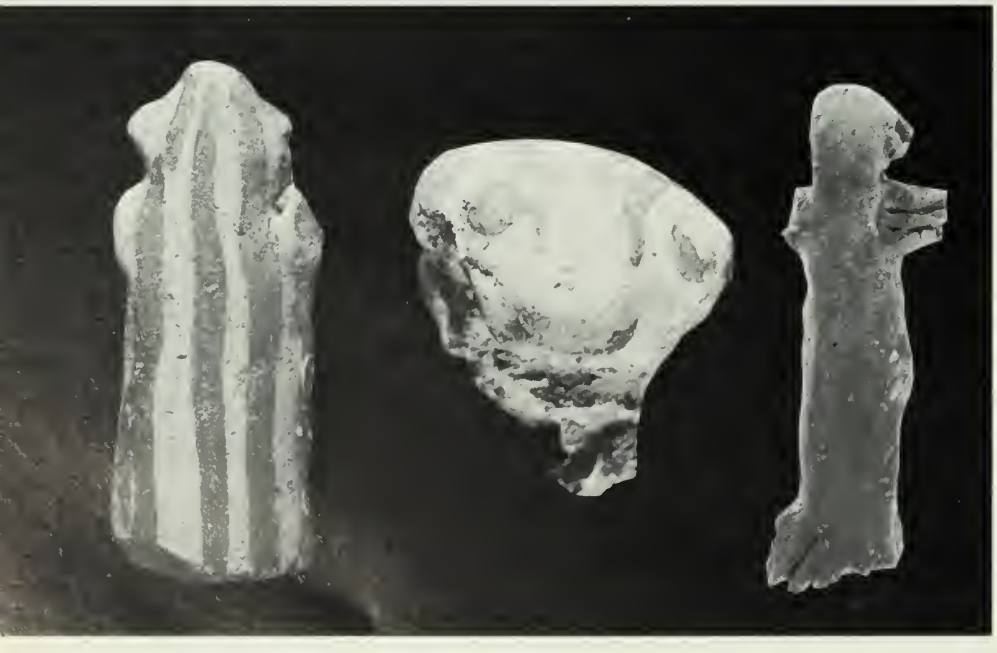
92 *Mancos Black-on-white plate sherds; interiors at top, exteriors at bottom.*





93 *Cortez Black-on-white plate fragment; interior at left, exterior at right. Diameter about 22 cm., height about 4.5 cm.*

94 *Figurines. Left, top and end views of carbon-painted effigy handle (?); right, plain gray, 6.4 cm. in length.*



Figurines

Two figurines were found, one almost complete an the other broken near the distal end. The latter, possibl representing a skunk or badger, may have been a handl (fig. 94, two views at left). It is black-on-white, painte with organic pigment. The nearly complete figurine is very crude; it is plain gray and fired, but unslipped an unpolished (fig. 94, right). It has the appearance of foetus with flipper-like extremities.

Pipes

Two probable pipe fragments, a bowl and a bit en were found during excavation (fig. 95). From person observation of the various collections obtained from oth sites in Mesa Verde National Park, I would say that pip occur more frequently in Cortez Black-on-white and th earlier plain gray pottery than in Mancos Black-on-whi and later pottery.

95 *Fragments of pipes (?).*

Unfired Sherds

A group of 220 sherds, all probably from the same jar, was found in Cist 1 of Room 5. The sherds are unfired and have a red design on a gray, slipped surface. Undoubtedly, the vessel broke before firing. If it had been fired, it might have been a Cortez Black-on-white jar. Three unfired and undecorated sherds from normal-size vessels were also found.

Fugitive Red Sherds

Nineteen sherds had fugitive red pigment on either the decorated or undecorated surface and were probably used for mixing paint. The following types were represented by these sherds: Mancos Black-on-white (9); Cortez Black-on-white (4); McElmo Black-on-white (1); unclassified black-on-white (2); plain, probably from a black-on-white jar (1); and corrugated body sherds, with fugitive red on the interior surface only (2).

Other Objects

Two modeled objects of unfired, undecorated clay were found. One is a teardrop-shaped pendant or bead from Cist 1 of Kiva B (fig. 96, left). It has a perforation at the narrow end made by a small round object when the clay was still plastic. It is almost identical to one found at Badger House. The other modeled object is a roll of clay, of unknown purpose, from Test Trench 11, South Trash Mound (fig. 96, right).

96 *Modeled objects of unfired, undecorated clay. Left, 2.2 cm. in length; right, roll of clay, 4.5 cm. in length.*

CHAPTER 4

stone artifacts

The stone artifacts from Big Juniper House are described under broad functional categories, such as milling or grinding and fabricating implements (table 9). The conventional classification into pecked-and-ground stone and chipped or flaked stone has not been followed here because of the many internal inconsistencies that would result. For example, a mano is a grinding implement that usually shows more than one kind of modification—flaking or spalling, to shape the tool, as well as pecking and grinding. To be sure, there are artifacts in this collection, as in all collections, which cannot be identified as to function. These are described under "Objects of Uncertain Use." Other stone material, primarily chipping debris from the manufacture of stone artifacts, is considered in chapter 6.

I have identified certain artifact materials as "coarse-grained igneous rock" and "fine-grained igneous rock." More precise identifications would be misleading without petrographic analysis. Almost all the raw material could have been obtained from the Mancos River gravels. Materials not available locally will be noted.

MILLING OR GRINDING IMPLEMENTS

Stone artifacts that were clearly used for grinding or milling food and other material are described under this functional category.

Metates

A metate has been defined generally as "A stone slab on which food has been ground by means of a smaller upper stone. The grinding motion is reciprocal (back and forth) and not rotary or in varying directions" (Woodbury, 1954, p. 50).

The metates excavated at Big Juniper House are of three types: (1) troughed, open at both ends; (2) plain-faced, with a plain grinding surface and no trough or margins; and (3) plain/troughed, which does not seem to have been described previously in the literature.

Troughed metates, open at both ends. These are the most common metates at Big Juniper House (fig. 97a–e). The five complete specimens of this type were all made of local, fine- to medium-grained, brown to yellow-bluff sandstone of which the cliffs of Mesa Verde are primarily composed. Included under this type are 24 fragments. Three have both ends open, and 11 corner or end fragments have one end open and the other end missing. The remaining 10 side sections lack both ends. It is not possible to say definitely what type of metate these fragments belong to, but it is a fairly safe assumption that they came from troughed metates with both ends open. No other type of troughed metate was found at the site. (Troughed metates with one open end are characteristic of Basketmaker III, Pueblo I and early Pueblo II in the Mesa Verde area.)

Twenty-three fragments were made of the same kind of sandstone as the whole metates. The other fragment was of coarse-grained, gray-white sandstone also found locally. It is "self-sharpening," this is to say, its grinding surface did not need to be roughened to keep it an efficient milling tool. Metates usually became glassy smooth in the milling process and constantly needed "sharpening" by pecking. Almost all metates of fine- to medium-grained sandstone show evidence of sharpening.

One complete metate (fig. 97b) and two fragments had localized concave grinding surfaces on the back and may have served both as metates and "unspecialized milling stones" (described subsequently).

Generally, troughed metates are irregular to subrectangular in outline. Shaping was normally rough, bifacial spalling followed by pecking. Grinding surfaces show varying degrees of concavity and backs are frequently ground or pecked to remove irregularities. One complete metate (fig. 97a) is unusually well finished.

TABLE 9.—*Distribution of stone artifacts by type, Big Juniper House.*

PROVENIENCE	MILLING OR GRINDING IMPLEMENTS																													
	Troughed metates	Plain-faced metates	Plain/troughed metates	Type 1a manos	Type 1b manos	Type 1c manos	Type 1d manos	Type 2a manos	Type 2b manos	Mortars	Type 1 unspecialized milling stones	Type 2 unspecialized milling stones	Type 3 unspecialized milling stones	Type 4 unspecialized milling stones	Handstones	Crushers	Flat tabular abraders	Flat irregular abraders	Abrader from a mano fragment	Saws	Whetstone	Narrow-grooved abraders	Medium-grooved abraders	Broad-grooved abraders	Combination-grooved abraders	Rubbing stone				
South Trash Mound	1			12	10	4				1	1						8	1		1		2			1	1				
East Trash Mound												1					1													
East House Mound				1							1						1					1								
Test Trench 2											1																			
Test Trench 4																														
Test Trench 5																														
Test Trench 13				1		1																								
Test Trench 15	1			1	1	1									1															
Area A						1											1													
Area D	1																													
Area 11																														
Area 12	1			4	1										1		1						1							
Cist 2				3	1																									
South Trash and Cist 3					1																									
Cist 3		1		1																										
Rooms 1a and 1b, cross-wall	1																													
Rooms 1a and 1b, Level 1		1																												
Room 1a, upper fill				1	2	1										1														
Room 1b, upper fill						1																								
Room 1b, lower fill				3												1														
Room 2, fill				1	1	1					1									1			2							
Room 2, floor				2																										
Room 2, subfloor				1																										
Room 3, fill				2													1													
Room 3, subfloor						1		1																						
Area 6 (Rooms 4, 5, 24, Level 1)						1																								
Room 4, fill																														
Room 5, fill															1															
Room 5, Cist 1				6		1										1														
Room 6, fill				2		1																								
Room 6, floor																														
Room 6, subfloor																														
Room 7, fill					1											1				2	1									
Room 7, subfloor				2							1																			
Room 7, subfloor cist	2																													
Room 8, fill				1																										
Room 8, floor						1																								
Room 8, subfloor	1				2								1																	
Room 9, fill					2												2													
Room 9, west wall										1																				
Room 10, upper fill	1			1	1				1																					

FABRICATING IMPLEMENTS																												ORNAM. AND PAINT STONES				ARTIFACTS OF UNCERTAIN USE								
Notched and grooved hammers	Type 1 rough hammerstones	Type 2 rough hammerstones	Type 3 rough hammerstones	Discoidal hammerstone	Pitted hammerstones	Axes	Bitted stones	Notched and grooved stones	Large core chopper	Small core choppers	Flake choppers	Other tools re-used as choppers	Scrapers	Planes	Knives or projectile points	Drills	Utilized flakes: cutting	Utilized flakes: cutting, scraping	Utilized flakes: scraping	Utilized flakes: cutting, chopping	Utilized flakes: chopping	Utilized flakes: cutting, pounding	Utilized flakes: sawing	Utilized flakes: drilling, cutting	Utilized cores	Anvils	Pendants and pendant blanks	Beads	Paint stones	Tiponi	Tabular slabs	Manolike slabs	Roughly rounded slabs	Jar lids	Tether weight	Concretions	Fossil	Other indeterminate objects	Total
		50	7	1	1		3	8		6	2	1	13	8			64	25	2	1	2				5				1		4			1		18	1	1	272
																	1				1																	4
1		7															4								1													17
																	1																					2
																	1																					1
		1																																				1
																																1						3
		7	1		1		1	1		1			2	1			8	3			1				1		1		1					1				36
		2																													1							5
																	2																					3
																	1																					1
		11				1							1				6				1				4						2				6			41
																															1							5
																																						1
	1																																					3
																																						1
										1																												2
		1			1												3														1							11
																	1																					2
2	1	2	1															1																				11
		4	1					1									1																					15
		6			1												1																					11
		2	1							1							1								1													7
																																						3
																																						2
		1											1					2													1							6
	1																1																					2
																	3														1							5
1						1																									2							12
1	1	3								1			1			1	3																					14
																	1	1																					2
		1																																				1
	1	1											3				4								1		1				3				1				21
		1	1																																			5
		1																																					3
															1		2														2						1		7
																																							1
		1															2										1										1		9
		2															2	1																					9
																																							1
1		1															5		1												1								13

TABLE 9.—*Distribution of stone artifacts by type, Big Juniper House.* (*continued*)

PROVENIENCE	MILLING OR GRINDING IMPLEMENTS																										
	Troughed metates	Plain-faced metates	Plain/troughed metates	Type 1a manos	Type 1b manos	Type 1c manos	Type 1d manos	Type 2a manos	Type 2b manos	Mortars	Type 1 unspecialized milling stones	Type 2 unspecialized milling stones	Type 3 unspecialized milling stones	Type 4 unspecialized milling stones	Handstones	Crushers	Flat tabular abraders	Flat irregular abraders	Abrader from a mano fragment	Saws	Whetstone	Narrow-grooved abraders	Medium-grooved abraders	Broad-grooved abraders	Combination-grooved abraders	Rubbing stone	
Room 10, lower fill					1																						
Room 10, Floor 2																											
Room 10, sub-Floor 2 cist				1																							
Room 10, sub-Floor 2																											
Room 11, fill	1			6	3	3	1							1			1										
Room 11, floor			1	1		1																					
Room 12, fill											1																
Room 13, fill																											
Room 14, fill	1				1																			1			
Room 14, north wall	1																										
Room 15, fill				1		1											1										
Room 15, cist	1																										
Room 16, fill				1																							
Room 19, fill				1	1	1																					
Room 19, subfloor pit				1																			1				
Rooms 21 and 22, fill													1		1	1											
Room 21, hearth																											
Room 25, north wall	1																										
Room 28, fill																											
Hearth 1				2												1											
Kiva A, fill	2		2	1	1	2			1		2				1		1					1	1	1			
Kiva A, banquette			1	2																							
Kiva A, floor and floor fill	2	1		1													2										
Kiva A, pit																											
Kiva A, floor ventilator	1			1							1				1										1		
Kiva A, subfloor ventilator	1		2	1												1		1					1				
Kiva B, fill, and South Trash						1																					
Kiva B, fill, and Room 11, fill						1																					
Kiva B, fill	6	1		4		1		1					1			1	1							1			
Kiva B, banquette																									1		
Kiva B, floor				2							2			1													
Kiva B, Cist 1				2																							
Kiva C, fill	3			5	7	2		1			2				1	1	3		1					3			
Kiva C, banquette		1		1																							
Kiva C, floor								1			1	1		1	1												
Kiva C, firepit																											
Associated with Burial 3																											
Associated with Burial 5																											
Associated with Burial 8																											
Associated with Burial 21																											
General																											
Total	29	5	6	79	37	28	1	4	2	2	14	2	3	3	8	9	24	2	1	4	1	4	6	6	3		

FABRICATING IMPLEMENTS																																ORNAM. AND PAINT STONES				ARTIFACTS OF UNCERTAIN USE								
Notched and grooved hammers	Type 1 rough hammerstones	Type 2 rough hammerstones	Type 3 rough hammerstones	Discoidal hammerstone	Pitted hammerstones	Axes	Bitted stones	Notched and grooved stones	Large core chopper	Small core choppers	Flake choppers	Other tools re-used as choppers	Scrapers	Planes	Knives or projectile points	Drills	Utilized flakes: cutting	Utilized flakes: cutting, scraping	Utilized flakes: scraping	Utilized flakes: cutting, chopping	Utilized flakes: chopping	Utilized flakes: cutting, pounding	Utilized flakes: sawing	Utilized flakes: drilling, cutting	Utilized cores	Anvils	Pendants and pendant blanks	Beads	Paint stones	Tiponi	Tabular slabs	Manolike slabs	Roughly rounded slabs	Jar lids	Tether weight	Concretions	Fossil	Other indeterminate objects	Total
		2													1			1													1								5
																															1								1
	1	1												1																									4
																	1														1								2
3	1	18	5							2	1		1				2	1				1			1	1			1		3	1			1			59
																																								3
																																								1
		2															2			1																			6
																																								3
																																								1
1		2															1																						8
																																								1
		2	2														1	1																				1	9
		2									1			1			1	1																				1	12
1		2				1											1			1																		1	9
		1																																							5
																1																								1
																																								1
																	1																							1
																																								3
1		5				1				1	1				1	1		11	2		1														2	1		2			46
1		2													1																				1					9
		4				3										1		1											2									1		18
		1																																							1
		1															1														1									8
		1	1															1		1														1						13
																																									1
																																									1
1	2	9	1			1									3			4	5			1												2			2		1	49
		1																2			1																			6
	1	2				1	1																													3			13
		1																																							3
1	1	3	1						1		2	2	1	2				11	1									1		4						2		1	65
																																									2
		3																1															1				3			11
																																					3			3
																											1													1
																		1																						1
		1																1										1									3			4
																											1													1
																										1								1						2
15	11	171	22	1	11	3	4	11	1	15	6	2	24	16	4	3	161	45	4	5	5	1	1	2	14	4	6	3	8	1	31	4	3	4	1	42	1	5	964


a
b
c
d
e
f
g
h
i
j
k

The borders along the grinding surface are usually well defined but some of them, reflecting either intensive use or lack of care taken in the manufacture of the metates, are very poorly defined (fig. 97e). The parts next to the grinding surface are polished, probably as the result of constant wear by the ends of the manos.

Most of the metates are made from relatively thick sandstone slabs. Two specimens, much thicker than usual, are made from blocks or boulders of sandstone (fig. 97d and e). Another is much thinner than normal (fig. 97b) and may be related to Morris' "thin-slab" type of closed-end troughed metate with a suggested ceremonial function (Morris, 1939, p. 133, pl. 149).

No troughed metates open at both ends were found in grinding position. Room 11, which seems to have been a workroom designed for corn grinding, had several slab bins without metates; however, each bin had metate supports in place.

Troughed metates with both ends open occur primarily in late Pueblo II and probably early Pueblo III. Evidence from the sites excavated by the Wetherill Mesa Project indicates that this type of metate replaced the closed-end troughed metate at least by A.D. 1000 and probably somewhat earlier.

Plain-faced metates. Three whole plain-faced metates and two fragments were found during the excavation (fig. 97f–h). They are blocky and not as well shaped as most plain-faced metates found in later sites. Two whole metates and one fragment were made of the fine- to medium-grained sandstone. The other two specimens were made of volcanic breccia found in several dikes at Mesa Verde (fig. 97f). This material is coarse-grained and self-sharpening.

These metates are generally oval in outline. They were shaped by edge spalling or overall bifacial spalling. The grinding surface is concave excpt in one fragment, which is concave in transverse section and nearly flat in longitudinal section. Only one specimen (fig. 97g) was ground on the back. The three complete metates range in size as follows: length 32 to 41 cm.; width 23 to 24 cm.; thickness 6 to 12 cm.; and weight 7.5 to 15.8 kg.

No plain-faced metates were found in grinding position. One metate (fig. 97h) lay on the south banquette of Kiva C, and another (fig. 97f) may have been used as a deflector in Kiva A.

Plain-faced metates were probably first made in late Pueblo II or early Pueblo III, and by middle Pueblo III (around A.D. 1200) they largely replaced the troughed metates open at both ends.

Plain/troughed metates. There are three complete and three fragmentary metates of this type, all made of sandstone. Apparently, they are troughed metates, with both ends open, remodeled in the plain-faced pattern. The three complete metates show possible steps in this process. One has a well-defined border on one side of the grinding surface, with the other border spalled off (fig. 97i). Another has a poorly defined and partially ground-down border on one side, while the other border has been spalled and ground off (fig. 97j). The third metate has only a slightly raised edge along each side of the grinding surface (fig. 97k).

Two of these metates are similar in shape and size to open-ended troughed metates. The other complete metate (fig. 97k) is thin and bifacially spalled and pecked around the perimeter to a rectangular outline. It may be another example of Morris' thin-slab type.

One fragment was on edge in the floor of a mealing bin (Bin 2) in Room 11 and probably served as a metate support. The other fragments and the whole specimens were found in Kiva A. The restricted distribution of this type may indicate a ceremonial function.

97 *Metate types: troughed metates, a–e; plain-faced, f–h; and plain/troughed, i–k. Length of a is 43.2 cm.*

Manos

A mano has been defined by Woodbury (1954, p. 66) as "The tabular piece of stone held in the hands and rubbed back and forth on a metate for grinding. . . . stones used with a rotary motion are excluded."

The manos from Big Juniper House are of two types: those used on troughed metates, and a new type used both on troughed and plain-faced or plain/troughed metates. With one possible exception (fig. 98a), there were no manos used exclusively on plain-faced metates.

These tools generally show more care in manufacture than do the metates. Shaping was donc by spalling and pecking and a few were ground on the sides and ends and sometimes on the backs.

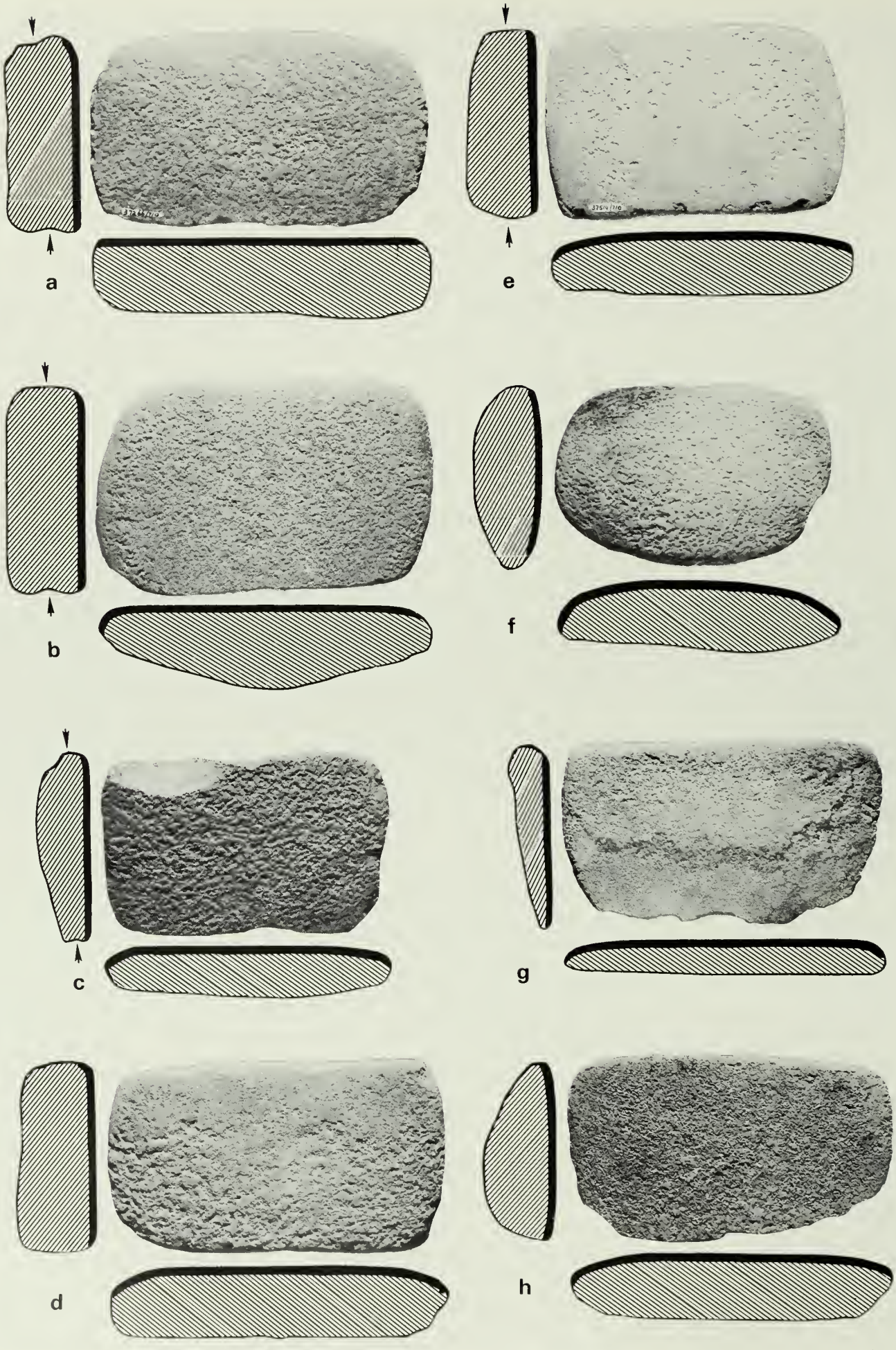
Some of the manos from Big Juniper House could have been manipulated best with two hands and many more could have been used more efficiently with one hand, but I found no consistent length groupings, coupled with other observable features, to justify setting up "two-handed" and "one-handed" varieties. (The "hand-stones," described later, were undoubtedly used with one hand only.)

Type 1—Unifacial or bifacial, with grinding surface convex from end to end. Ends are usually beveled or canted from the grinding surface as a result of wear on the borders of troughed metates, which show complementary wear. Four subtypes are recognized.

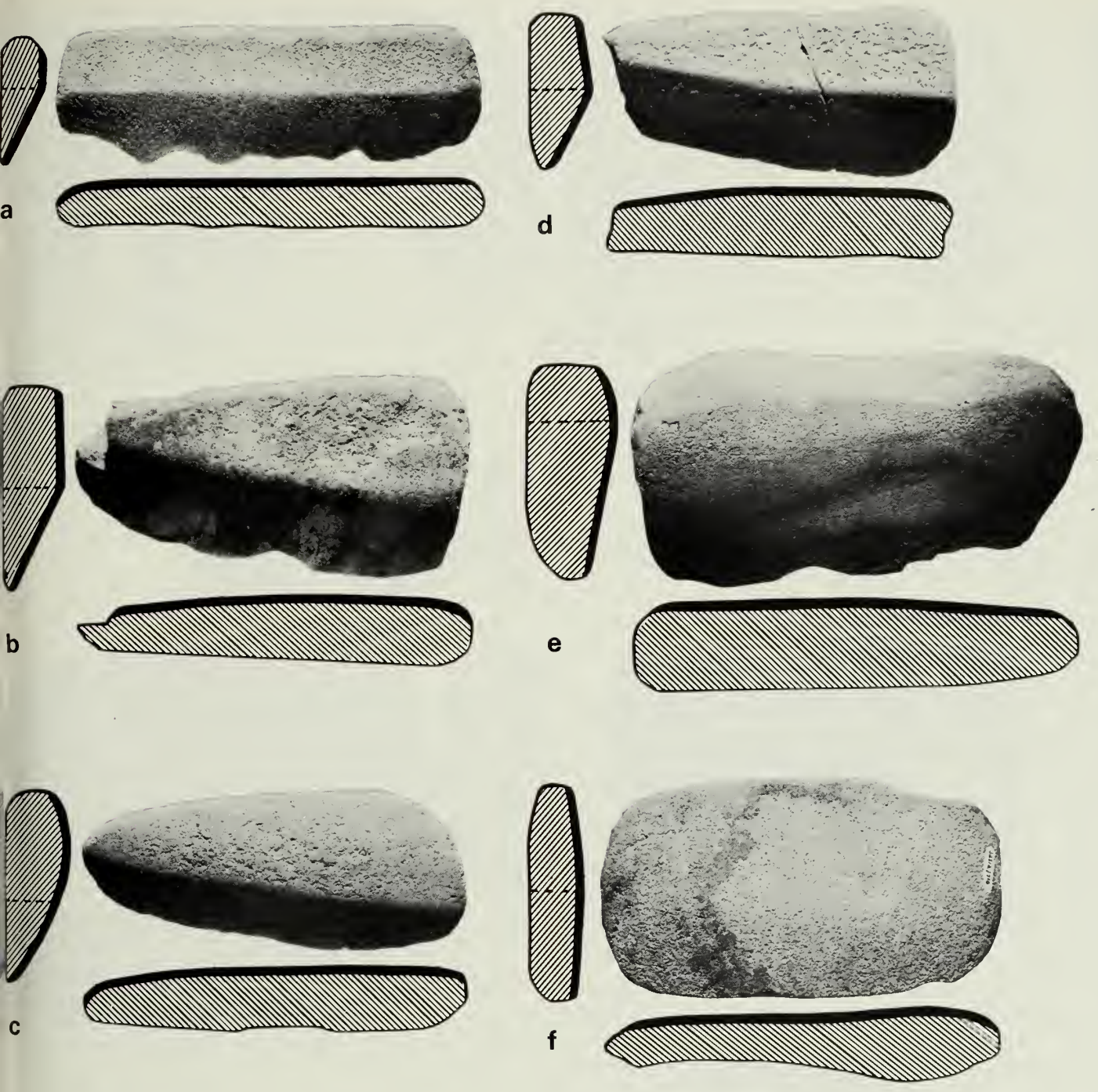
Subtype 1A manos are unifacial, with the single grinding surface convex from end to end and flat to slightly convex from side to side (fig. 98).

Forty-three whole and 36 fragmentary manos were classified as Subtype 1A. Eight whole manos had finger-grips, or small depressions pecked on each side and approximately opposite each other, and four fragments had one or two finger-grips extant (fig. 98a-c). There were never more than two finger-grips, and they were always paired. Finger-grips were more likely to occur on the thicker manos.

All but five manos of this subtype were made of fine-grained sandstone, including five river cobbles. The other five manos were made from granular igneous rock (2), conglomerate (1), coarse-grained sandstone (1), and quartzite (1), and all of these are considered to be self-sharpening.



98 *Subtype 1A manos. Arrows indicate location of finger-grips, heavy lines on sections represent grinding surface. Length of a is 21.5*



99 *Subtype 1B manos. Dashed line indicated juncture of two grinding surfaces. Length of a is 24.2 cm.*

Subtype 1A manos are subrectangular, suboval, or subtriangular in outline. Cross sections are generally tabular or rectangular, and a few are wedge-shaped and "humpback." The humpbacks are usually not loaf-shaped—the shape typical of many late Pueblo III manos used on plain-faced metates. Almost all the manos of fine-grained sandstone were sharpened by pecking in order to make them effective grinding tools.

The following are dimensions and weights of Subtype 1A manos:

	Length (cm.)	*Width (cm.)*	*Thickness (cm.)*	*Weight (kg.)*
Maximum	23. 8	13. 9	5. 9	2. 6
Minimum	17. 6	8. 5	1. 6	. 6
Average	20. 8	11. 7	3. 2	1. 3

Subtype 1B manos are unifacial, with two adjacent grinding surfaces convex from end to end and more or less flat from side to side (fig. 99). The line between the grinding surfaces is either parallel or oblique to the long axis of the mano; it is sometimes very poorly defined (fig. 99f).

There were 12 whole and 25 fragmentary specimens. One complete mano has a single finger-grip and another has a finger-grip on each side. One fragment has a finger-grip on one side.

One mano fragment of volcanic breccia was self-sharpening. The rest of the fragmentary and whole manos were made of the same kind of sandstone used for the majority of Subtype 1A manos. Almost all

Subtype 1B manos were sharpened by pecking. One of the grinding surfaces was often worn more than the other.

Subtype 1B manos range in outline from subrectangular to suboval to subtriangular. Cross sections are usually rectangular to oblong in longitudinal section and triangular or rounded in transverse section. Subtype 1B manos are generally much thinner than those of Subtype 1A.

The following are dimensions and weights of Subtype 1B manos:

	Length (cm.)	*Width (cm.)*	*Thickness (cm.)*	*Weight (kg.)*
Maximum	24. 7	12. 9	4. 5	1. 7
Minimum	15. 7	7. 5	1. 4	. 4
Average	20. 4	10. 3	2. 6	. 8

Subtype 1C manos are bifacial, with the single grinding surface on each face convex from end to end and more or less flat from side to side (fig. 100). They are rectangular or, less commonly, suboval in outline. Longitudinal sections are primarily subrectangular and slightly biconvex, while the transverse sections are subrectangul or wedge-shaped.

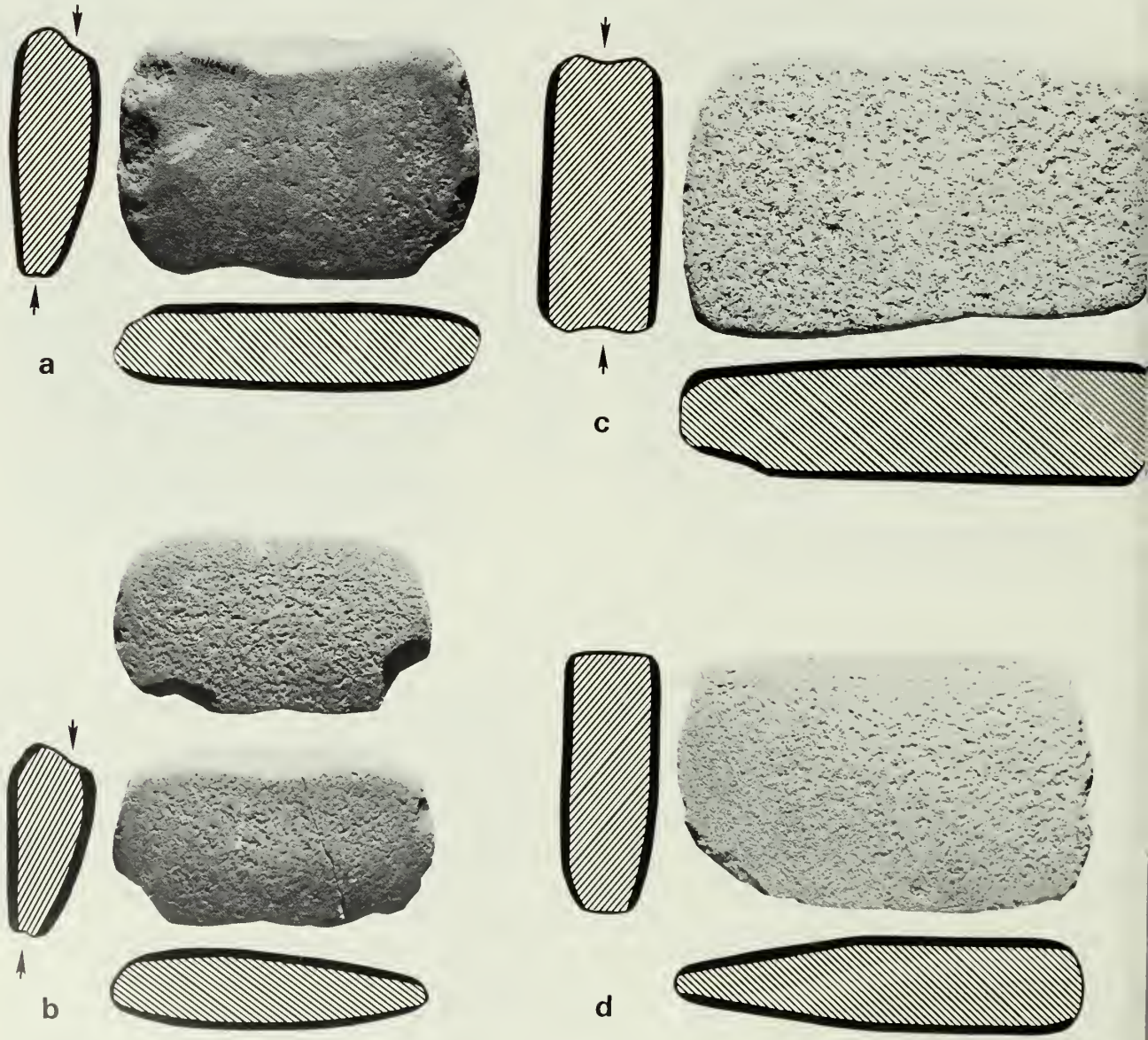
Of the 11 whole and 17 fragmentary manos of Su type 1C, 9 whole specimens and 14 fragments were fin grained sandstone. One whole mano and one fragme were made of quartzite, and one whole mano was mad from a coarse-grained igneous rock (fig. 100c). Tw fragments were made of volcanic breccia and self-shar ening sandstone.

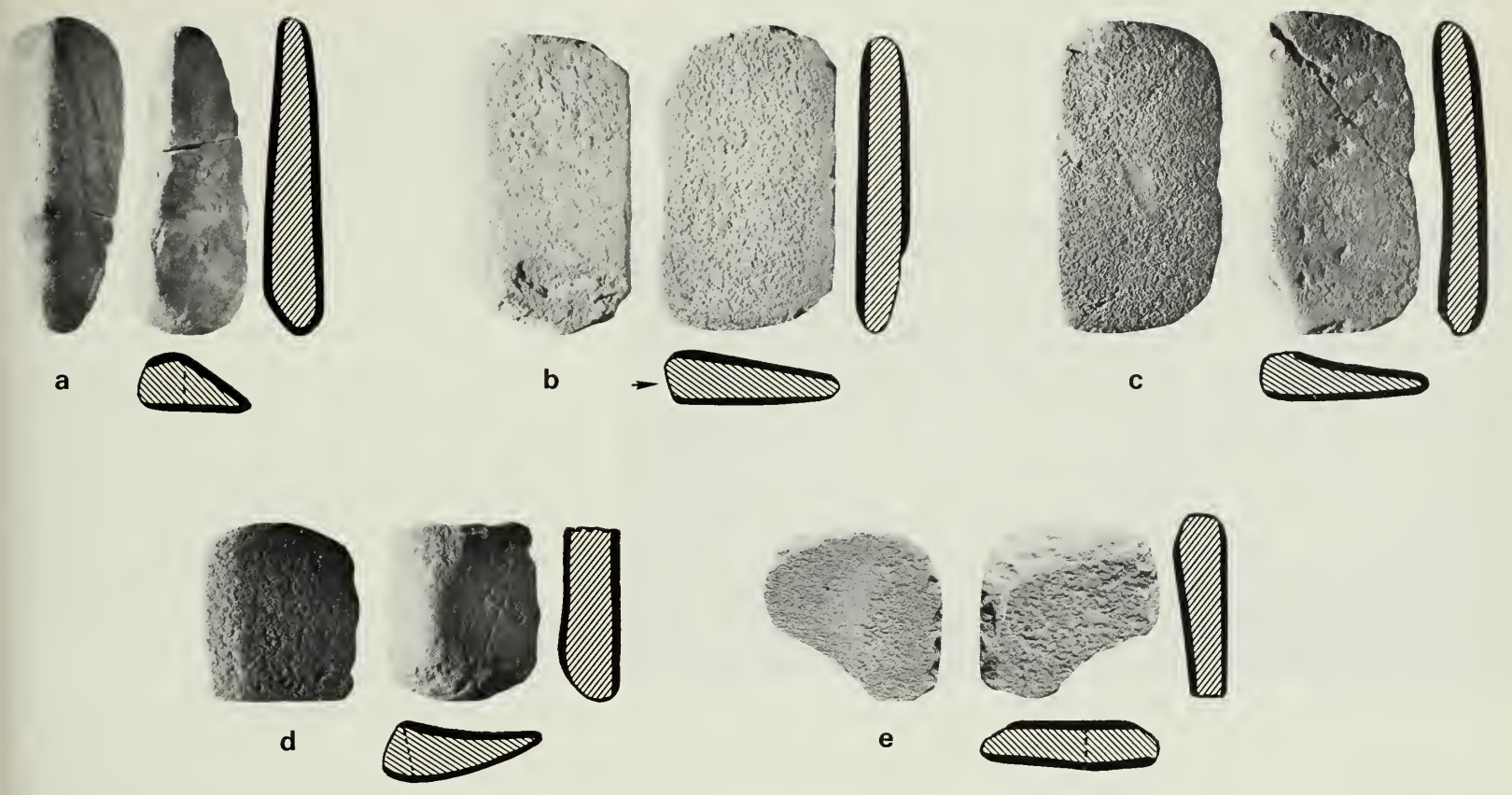
Four whole manos and one fragment had finger-grip One of the four complete specimens had three finger-grip two on one side and one on the opposite side (fig. 100a The fragment had a single finger-grip on the thicker sid Most Subtype 1C manos had been sharpened by peckin

The following are dimensions and weights of Subtyp 1C manos:

	Length (cm.)	*Width (cm.)*	*Thickness (cm.)*	*Wei (kg*
Maximum	23. 5	13. 5	5. 0	2
Minimum	11. 4	8. 9	2. 4	
Average	20. 1	11. 4	3. 5	1

100 *Subtype 1C manos. Arrows indicate location of finger-grips, heavy lines on sections represent grinding surfaces. Lengths: a, 11.4 cm.; b, 20.5 cm.; c, 22.3 cm.; and d, 20.1 cm.*





101 *Manos of Subtype 1D, a; Subtype 2A, b, c; and Subtype 2B, d, e. Arrow indicates location of finger-grip, heavy lines show grinding surfaces. Length of a is 21.8 cm.*

Subtype 1D is represented by one bifacial mano with two grinding surfaces on one face and one grinding surface on the opposite face (fig. 101a). It is convex in longitudinal section and flat to slightly convex in transverse section. The ends are markedly and slightly beveled or canted from the face with the single grinding surface but not from the other face.

Made of fine-grained sandstone, this mano is subtriangular in outline. Two of the grinding surfaces are worn fairly smooth and the third has been sharpened by pecking. A pecked area on part of the thicker side may have served as a finger-grip. Measurements are: length 21.8 cm., width 8.5 cm., maximum thickness 3.5 cm., and weight 0.6 kg.

Type 2—Bifacial, with grinding surfaces which are convex or concave from end to end. Two subtypes are recognized.

Subtype 2A manos have two grinding surfaces, each; one of these is convex from end to end, and the other is concave from end to end (fig. 101b and c). The four manos of this subtype may have started as unifacial manos used on troughed metates, and were later turned over and used on plain-faced or plain/troughed metates. There is reason to believe that the three metate types were used simultaneously during the latter part of the occupation of Big Juniper House. It follows that all the mano types were used simultaneously during this time.

Three of the manos were made of the sandstone apparently preferred in the majority of manos and metates. The fourth was made of the self-sharpening variety of sandstone (fig. 101c). One mano had a single finger-grip (fig. 101b) on the thicker side, and may have had one on the other side before it was worn thin.

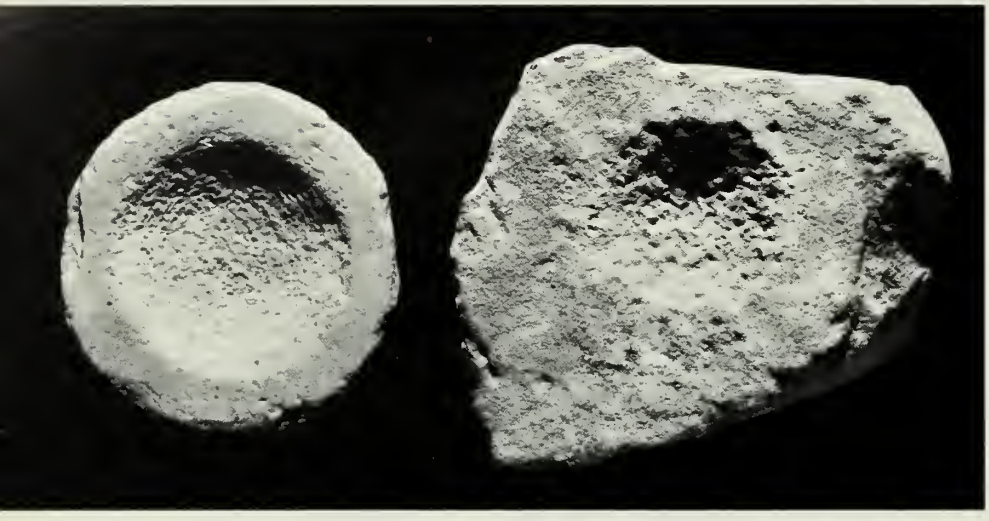
One grinding surface is convex longitudinally and flat to convex transversely; ends are beveled or canted from use on troughed metates. The opposite grinding surface is concave longitudinally and flat to slightly concave to slightly convex, from use on plain-faced or plain/troughed metates; ends are not beveled or canted. All grinding surfaces show sharpening by pecking. The ranges of dimensions and weights of Subtype 2A manos are: length 16.3–22.2 cm.; width 8.8–12.0 cm.; thickness 2.4–3.3 cm.; and weight 0.6–1.1 kg.

Subtype 2B manos, represented by two fragments, had three grinding surfaces, two on one face and one on the opposite face (fig. 101d and e). The two grinding surfaces on one face are convex from end to end and flat to slightly convex from side to side, from use on troughed metates. The single grinding surface on the opposite face is concave longitudinally and slightly concave transversely, from use on a plain-faced or plain/troughed metates.

Both specimens are made of the common fine-grained sandstone. They had been sharpened by pecking, and they lacked finger-grips. Measurements are: 12.8 and 12.0 cm. wide and 2.4 and 3.5 cm. thick, respectively.

Two manos of this subtype were found at Badger House and a number of Type 2 manos were excavated by the Awatovi Expedition at Antelope Mesa sites in northeastern Arizona (Woodbury, 1954, p. 68). Some of these manos have one flat grinding surface opposite the convex one, but they were found in contexts earlier than flat metates (classified as plain-faced metates here). Wood-

bury suggests that these manos were used on grinding slabs, or that they were ground on one face, either to provide an area to be used as a whetstone or to improve their appearance. However, he believes that manos with two flat grinding surfaces opposite the convex one were used first on troughed metates and then on flat metates.



102 *Mortars. Mortar at left is 10.1 cm. in maximum diameter; one at right is 21 cm. in length.*

Mortars

Two stone artifacts, with one circular, pecked and ground depression, each, were classified as mortars. One of these (fig. 102, left), a possible sandstone concretion, measures 10.1 by 9.8 by 3.1 cm., and weighs 5 kg. The depression is 6.5 cm. in diameter and 0.9 cm. deep. The other mortar (fig. 102, right) is a sandstone block measuring 21 by 16.8 by 8.7 cm., and weighing 4.2 kg. The depression is 7.5 cm. in diameter and 1.1 cm. in depth.

Unspecialized Milling Stones

Twenty-two grinding tools from Big Juniper House that were obviously used as netherstones are designated as "unspecialized milling stones." Their function was not necessarily restricted to food preparation, as metates are thought to have been, and, unlike metates and mortars, their shapes are purely fortuitous. Suggested functions for these artifacts, aside from possible use in grinding food, are preparation of pigment and grinding rocks or sherds for pottery temper. Four types are recognized on the basis of their grinding surfaces.

Type 1—Unifacial or bifacial, with concave grinding surface. Of the 14 specimens of this type, 11 complete

103 *Unspecialized milling stones, Type 1. Side fragment of a metate, e; possible basin metate, g; bifacial unspecialized mill stone with paint stain on visible face, h. Length of a is 22.5 cm.*

and 2 fragmentary examples are unifacial and one complete specimen is bifacial (fig. 103h). Twelve are made of the common sandstone; half of these were sharpened by pecking, and the others were worn smooth. The remaining two specimens were made of self-sharpening, coarse-grained igneous rock (fig. 103d) and volcanic breccia.

These milling stones are subrectangular or suboval in outline. They could be held in the lap or, in the case of several of the smaller ones, in one hand of the person doing the grinding.

The single bifacial milling stone has a red paint stain on one grinding surface, and a fragmentary specimen, the modified side fragment of a plain/troughed metate, also has a paint stain on the grinding surface (fig. 103e).

One Type 1 specimen has a deep concave grinding surface and may have been a "basin metate"—a type of milling stone that is rarely found in the Mesa Verde area (fig. 103g).

One complete troughed metate and two troughed metate fragments had small concave grinding surfaces on the face opposite the grinding surface.

The following are dimensions and weights of Type 1 unspecialized milling stones:

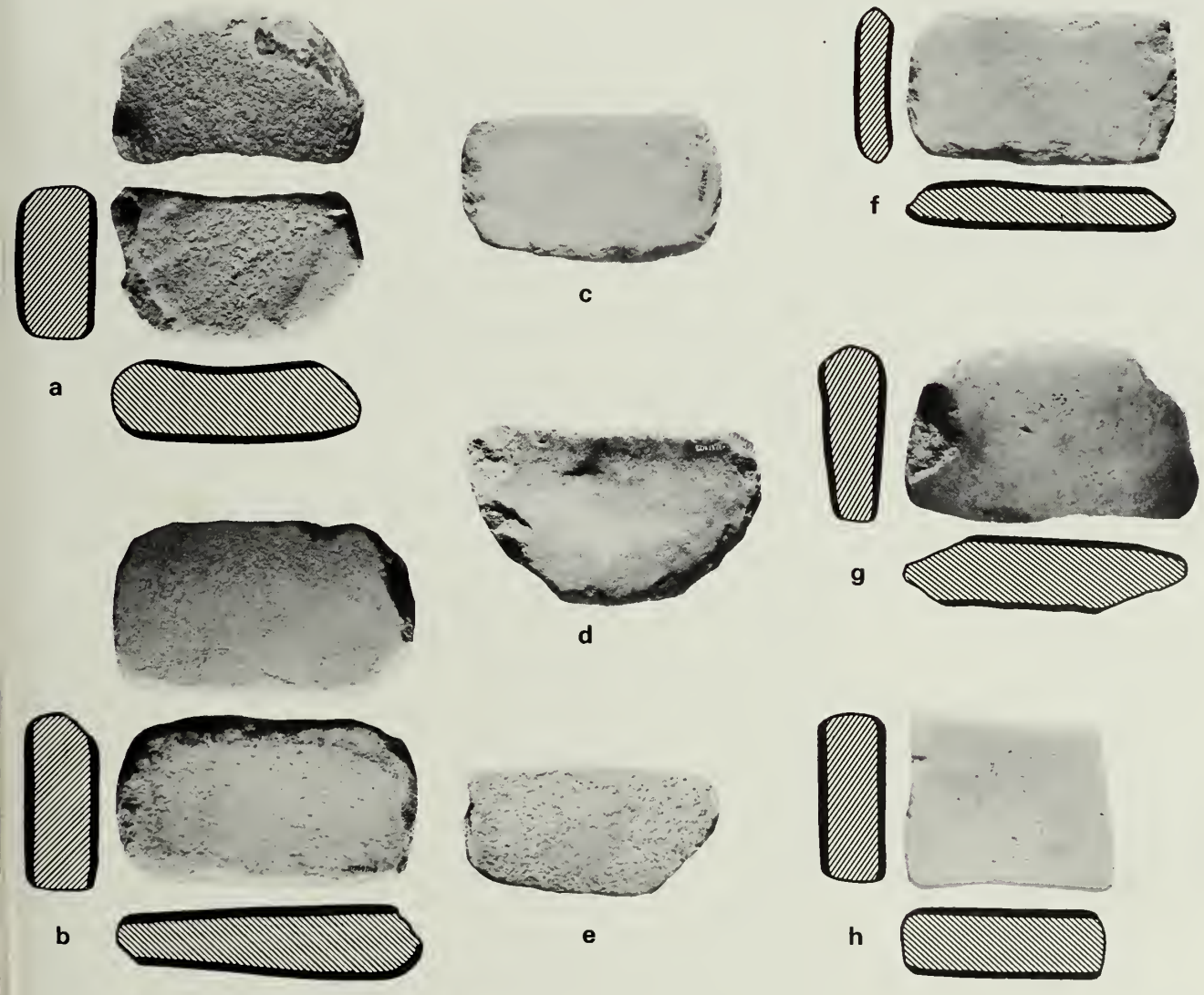
	Length (cm.)	*Width (cm.)*	*Thickness (cm.)*	*Weight (kg.)*
Maximum	28. 3	20. 4	9. 0	20. 2
Minimum	14. 2	11. 0	2. 2	. 7
Average	22. 1	14. 1	4. 9	6. 3

Type 2—Re-used manos, with concave grinding surface. The two specimens, both complete, were originally Subtype 1A manos (fig. 104a and b). Both were made of the common sandstone and were sharpened by pecking. They could have been held in the lap or in one hand during use.

Type 3—Unifacial, with flat grinding surface. The three complete examples were made of the common sandstone (fig. 104c–e). Two are subrectangular and one is semicircular in outline. They were worn smooth or fairly smooth with use. One of the rectangular specimens was carefully ground on the sides, ends, and back (fig. 104c). The other rectangular milling stone had a red paint stain on the grinding surface (fig. 104e).

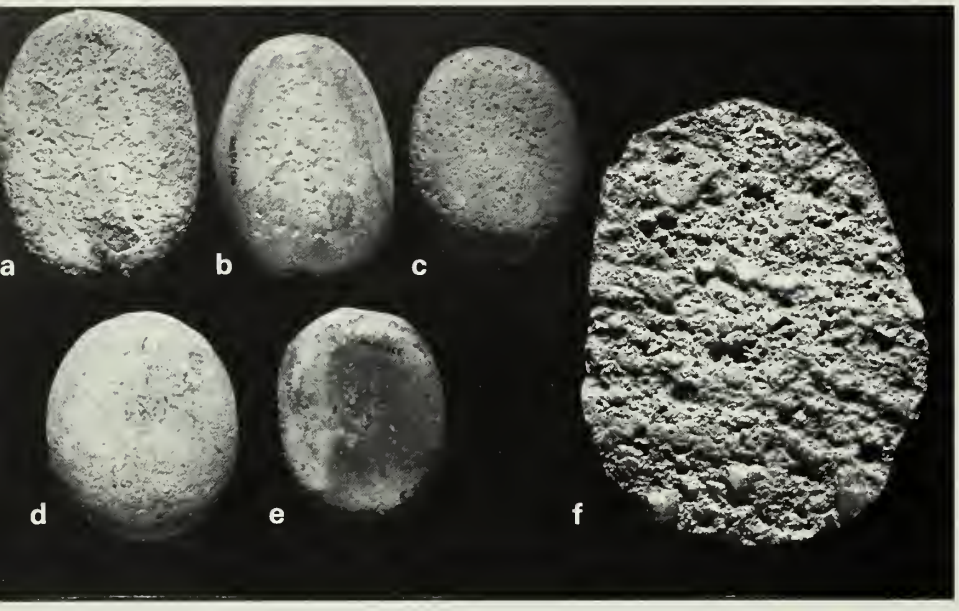
Type 4—Bifacial, with flat and concave grinding surfaces. The three specimens, subrectangular in outline, were made of the common sandstone (fig. 104f–h). One is ground on all edges and faces (fig. 104h), and another is bifacially spalled and ground on the perimeter (fig. 104f).

104 *Unspecialized milling stones. Type 2, a, b; Type 3, c–e; Type 4, f–h. Length of a is 18.7 cm; length of g, not to scale, is 21.5 cm.*



Handstones

Eight oval grinding implements were classified as handstones (fig. 105). It is assumed that they were used primarily with unspecialized milling stones. However, the discovery of a handstone in association with a troughed metate at Two Raven House on Wetherill Mesa suggests that handstones were used, at least part of the time, with metates.



105 *Handstones. Cobble handstones, a–e. Length of a is 12.8 cm. Braccia handstone, f, is 13.9 cm. in length.*

Seven of the handstones are complete and one is fragmentary. Six of them are quartzitic sandstone; one is of a sandstone which is much harder than that of most metates and manos; and one is a very coarse-grained igneous breccia (fig. 105f). The sandstone specimens are stream cobbles showing little modification. The breccia handstone is from quarried material and has been shaped by spalling.

Since grinding striations on the handstones are usually not alined in one direction, it seems likely that most of these tools were used with a rotary motion. None of the handstones show much wear and most of them show secondary use as hammerstones, with the perimeter lightly battered and pecked. One specimen has a possible finger-grip in the middle of each side (fig. 105e). Two handstones are unifacial, the other six are bifacial. There is only one grinding surface on a face. Their sizes suggest they were used with one hand.

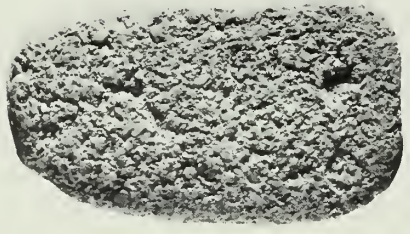
The following are dimensions and weights of handstones:

	Length (cm.)	*Width (cm.)*	*Thickness (cm.)*	*Weight (kg.)*
Maximum	13. 9	10. 3	6. 2	0. 85
Minimum	10. 2	7. 7	2. 2	. 54
Average	11. 5	8. 8	4. 1	. 63

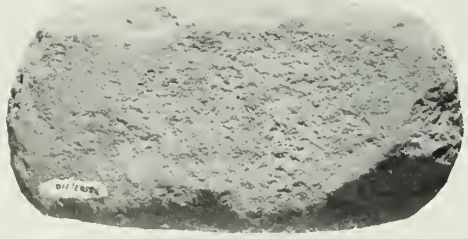
Crushers

Nine subrectangular grinding tools—eight complete and one fragmentary—are distinguishable from manos and handstones by their greater massiveness (fig. 106). They have been tentatively designated as "crushers" on the assumption that they were used to pulverize hard materials for tempering.

106 *Crushers. Length of a is 23 cm.*



a



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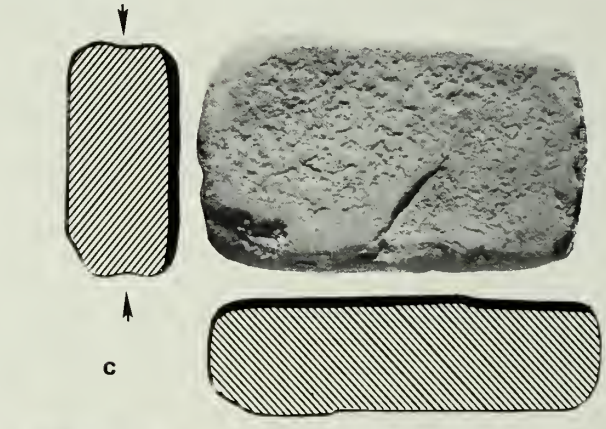
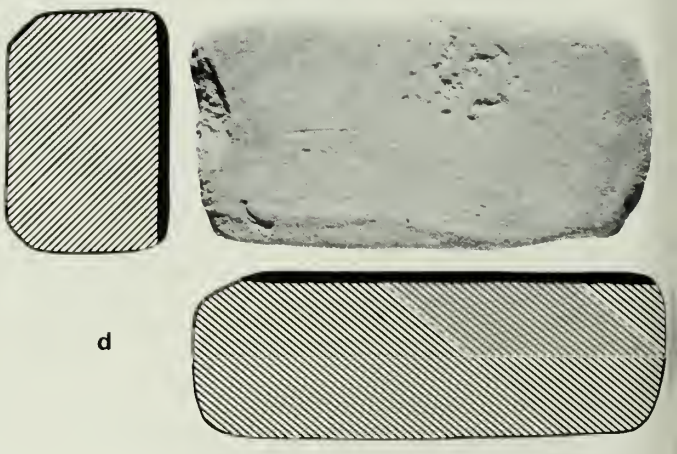


c



d

Seven specimens are of hard-grained sandstone, one of quartzite, and one of sedimentary conglomerate (fig. 106a). They were shaped by spalling and pecking. One is bifacial and the rest are unifacial. The grinding surfaces vary from slightly convex to flat, and most of them show evidence of sharpening by pecking. One complete crusher (fig. 106c) has one finger-grip on each side. The bifacial crusher has a finger-grip on one side. None of them show the characteristic wear facet at the ends of the grinding surface typical of manos used on troughed metates.

The following are dimensions and weights of crushers:

	Length (cm.)	*Width (cm.)*	*Thickness (cm.)*	*Weight (kg.)*
Maximum	25. 6	14. 2	7. 6	4. 5
Minimum	18. 5	11. 2	4. 7	2. 4
Average	22. 7	12. 9	6. 4	3. 3

FABRICATING IMPLEMENTS

Stone artifacts were presumably used in the manufacture or preparation of other tools, or in the shaping of building stones. These have been categorized as fabricating implements.

107 *Abrading stones. Tabular flat abraders, a–e, h–j; irregular flat abraders, f, g; and abrader from mano fragment, k. Length of a is 12.2 cm.*

Abrading Stones

A fairly large number of small, gritty pieces of sandstone and occasionally other material were probably used as abraders in shaping or polishing other tools. They have been classified according to the character of the working surface and overall shape.

Flat, tabular abraders. These have one or more flat to slightly concave or convex faces (fig. 107a–e and h–j). The following shapes occurred: rounded (8), oblong (7), subsquare (4), and irregular (5). The dimensions and weights of these abraders are:

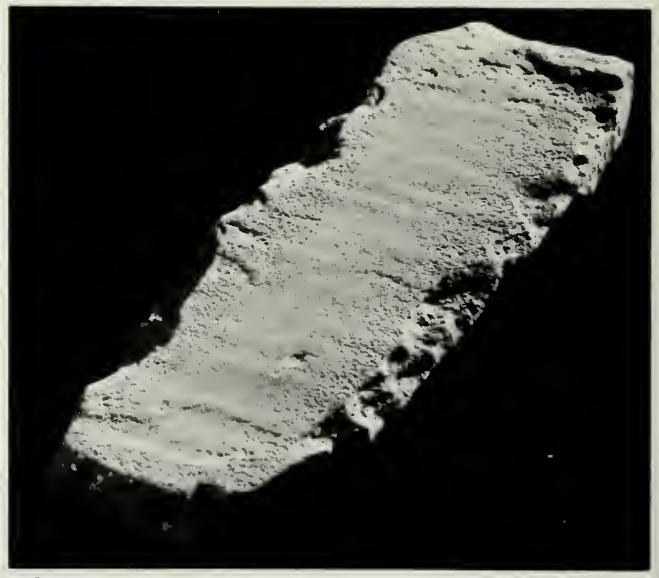
	Length (cm.)	*Width (cm.)*	*Thickness (cm.)*	*Weight (kg.)*
Maximum	12.8	11.5	4.3	0.7
Minimum	7.4	5.1	1.4	.06
Average	10.1	8.0	2.5	.3

Flat, irregular abraders. The two examples, one complete and one fragmentary, do not show intentional shaping, but were shaped as a result of wear. One is cone-shaped, the other triangular, with wear on more than one surface (fig. 107f and g).

Abrader from a mano fragment. The end fragment of a Subtype 1A mano was re-used as an abrader (fig. 107k). The broken edge had been partially ground smooth and the opposite face of the mano had a grinding facet similar to those of flat abraders. Its larger size, in addition to being a fragment of another tool, sets it apart from the typical flat abrader.

Saws. Four fine-grained, poorly cemented pieces of sandstone have one or more beveled sides or ends with V-shaped edges that could have been used as saws (fig. 108). One or more of the faces may also be worked or ground and could have been used as flat, tabular abraders. Judd (1954, pp. 124–125) reports similar artifacts from Pueblo Bonito. The range in measurements is: length 5.6 to 9.3 cm; width 2.9 to 7.9 cm; thickness 0.4 to 0.8 cm; and weight 18 to 66 gm.

108 *Saws. Length of a 9.3 cm.*



109 *Whetstone.*

Whetstone. One relatively long, subrectangular abrader has been tentatively identified as a "whetstone" (fig. 109). It has a rippled surface with the ridges highly ground as if another tool had been rotated while being sharpened or ground in a reciprocal motion on it. The ripples are more or less at right angles to the long axis of the whetstone. The sides and ends have been shaped by bifacial chipping, followed by light grinding. The material is fine-grained, well-cemented sandstone, harder than most of the abraders.

The whetstone could have been held easily in one hand with whatever was being worked held in the other hand. It is tabular in form, but longer than the flat, tabular abraders. It measures 17.5 by 6.5 by 1.2 cm., and weighs 304 gm.

Grooved abraders. Pieces of gritty, poorly cemented sandstone with a variety of grooves have been divided into four groups: narrow-grooved, medium-width grooved, broad-grooved, and combination-grooved abraders.

Of the four artifacts in the narrow-grooved abrader group, two have two grooves and two have one groove each (fig. 110a–d). The widths of the grooves range from 0.2 to 1.5 cm., with most of the grooves about 0.3 cm. wide and tapering at the ends. The depth varies from 0.05 to 1.0 cm., the mode being about 0.2 cm. The groove lengths range from 3.3 to 14.4 cm., the average measuring about 6.3 cm. The longest is concave, and the others are flat, in longitudinal section. Three are V-shaped and three are rounded or U-shaped in transverse section. The paired grooves in two abraders are V-shaped and U-shaped in each case. Three of the grooves are open at both ends, and three are open at one end and closed at the other.

One of the grooved abraders (fig. 110d) was shaped by grinding both faces and three edges. It may have been used also as a flat, tabular abrader. This is similar to Woodbury's "transversely grooved shaftsmoother," but the groove width is narrower than in his type (Woodbury, 1954, pp. 107–109, fig. 22j–p).

The other narrow-grooved abraders are unshaped

110 *Grooved abraders. Narrow-grooved abraders, a–d; medium-grooved abraders, e, f; broad-grooved abraders, g, h; and combination-grooved abraders, i, j. Lengths: a, 18.2 cm.; b, 5.2+ cm.; c, 8.4 cm.; d, 8.8 cm.; e, 16+ cm.; f, 26.5 cm.; g, 21.9 cm.; h, 29+ cm.; i, 11.8 cm.; j (not shown completely), 52.7 cm.*

blocks of sandstone, two small and one large. The shaped, narrow-grooved abrader and the two smaller unshaped abraders could have been held conveniently in one hand. The large abrader could have been propped up on edge between the knees or with one end buried in the ground (fig. 110a). One of the abraders (fig. 110c) had a natural hole in one end, which showed some minor wear on its perimeter.

The narrow widths of most of the grooves suggest use in the manufacture of bone awls or needles. They were probably too narrow to be used as arrowshaft smoothers or for other wooden objects such as spindles or prayer sticks. The one groove (fig. 110a) that is wider than the others could have been used for such artifacts, but its concave long section would be unsuitable for shaping or smoothing artifacts which are straight, such as arrowshafts or spindles. Most of the wooden artifacts mentioned above, excavated from Wetherill Mesa sites, show

relatively little of the characteristic abrasion which would indicate they had been worked in grooved stone abraders. However, bone and wooden awls and bone needles show abrasion marks that indicate they were probably caused by narrow-grooved abraders.

As the term suggests, medium-grooved abraders are intermediate between the narrow- and broad-grooved abraders (fig. 110e and f). Six medium-grooved abraders with 10 grooves were found. Groove widths range from 3.0 to 7.0 cm., and average approximately 5.6 cm. Groove depths range from 0.3 to 0.8 cm., and average about 0.6 cm. Transverse sections are U-shaped and sometimes very shallow. Longitudinal sections are flat or concave. Groove lengths range from 9.3 to 25.5 cm. on the three specimens which have complete grooves.

Some of the medium-width abraders may have served as ax sharpeners and polishers, and others could have been used for shaping bone scrapers (ch. 5), as well as other bone and wooden objects.

The six specimens in the broad-grooved abrader group have one groove each (fig. 110g and h). Groove widths range from 8.8 to 12.0 cm., with the average approximately 10.4 cm. Groove lengths range from 11.5 to 26.0 cm., and average about 18.7 cm. Depths are from 0.7 to 2.1 cm., with the average approximately 1.4 cm.

The grooves are concave in transverse section with one side steeper than the other, and concave in the longitudinal section. Five of the broad-grooved abraders are irregular blocks or slabs of gritty sandstone. The sixth was ground into the working surface of a fragmentary troughed metate.

Broad-grooved abraders were probably used in shaping and polishing axes and possibly shaping some of the manos. These "portable" abraders are much more common at mesa-top sites than in the cliff ruins, where exposed sandstone and large boulders were often used.

Two specimens have narrow and medium grooves, and one specimen has narrow grooves and one broad groove (fig. 110i and j). The latter has five narrow grooves, four of which were at the open end of a broad groove (fig. 110j). One of the other abraders has three narrow grooves, one of which is 1.3 cm. wide and the other two are about 0.05 cm. wide. The medium groove next to them is partly broken but probably once measured about 5.0 cm. in width (fig. 110i).

The other abrader has a very shallow medium groove about 3.8 cm. wide in the middle and a shallow groove about 1.5 cm. wide in one corner. This specimen is unusual in being flatter and more regular than the other abraders in this group.

Rubbing and Polishing Stones

The fragment of an elongated cobble of feldspar amphibole was classified as a rubbing stone (fig. 111j). One face shows numerous striations with no apparent alinement, probably resulting from use; and the ends and one side are pecked and battered, suggesting that the object was also used as a hammerstone. Measurements are 8.9 by 4.0 by 2.8 cm., and 248 gm.

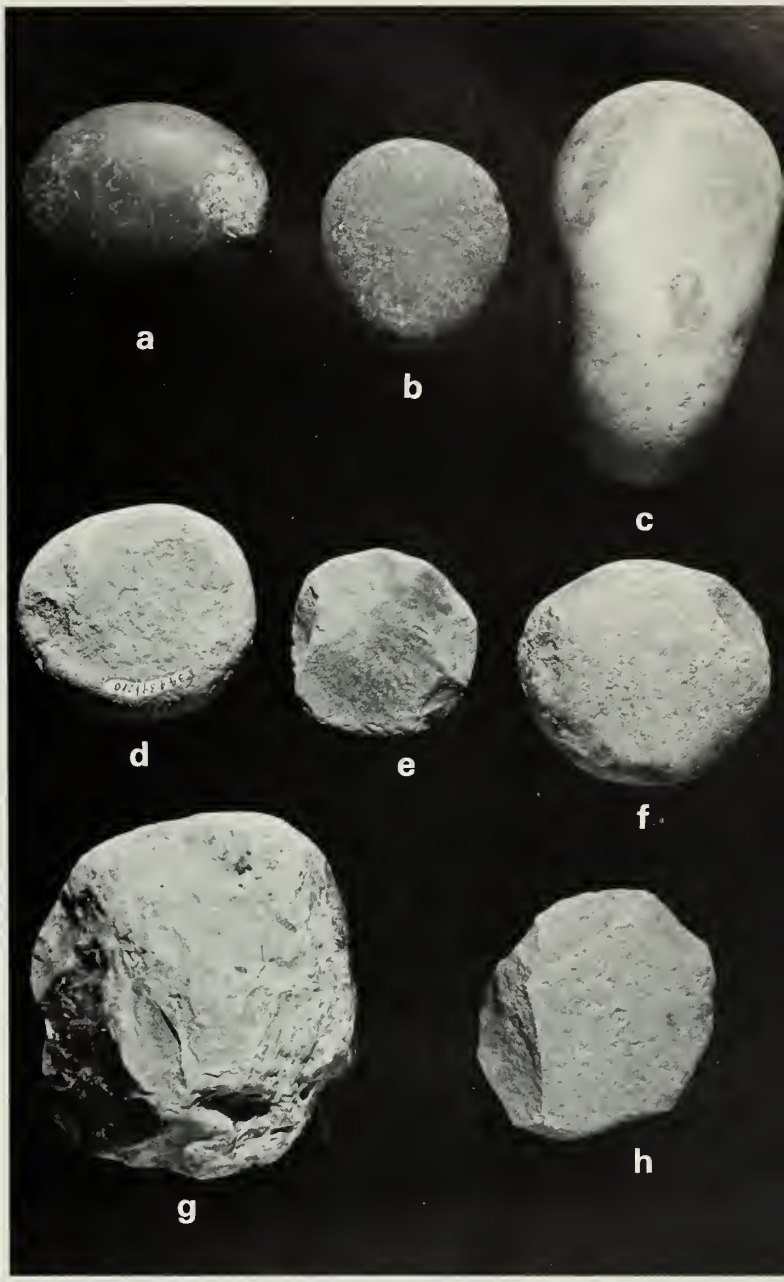
111 *Polishing stones, a–i, and rubbing stone, j. Length of e is 9 cm.*

Nine waterworn pebbles were identified as polishing stones (fig. 111a–i). Six of these show only very slight striations on one or more surfaces. A broken pebble has striations on one unmodified surface and a wear facet on one side of the broken edge (fig. 111d). One pebble is irregular and flat, with some chipping at the narrow end; all the surfaces show signs of wear, even over the chipping (fig. 111e). One stone is rectangular, with chipping on one end; all the surfaces and the chipped area are worn and faceted from polishing (fig. 111f). The materials are quartz (1), quartzite (2), and chert (6). These tools were probably used for polishing pottery and stone artifacts, such as axes or hammers, and possibly for grinding pigments.

Notched and Grooved Hammers

The 15 notched and grooved hammers in the collection (fig. 112) include the following varieties: notched

112 *Notched and grooved hammers. Length of f is 18.7 cm.*



113 *Rough hammerstones, Type 1, a–c; rough hammerstones, Type 2, d–g; and discoidal hammerstone, h. Length of a is 8.1 cm.*

at one side (2), of coarse-grained igneous rock; notched at both sides (6), three of sandstone, one of quartzite, and two of coarse-grained igneous rock; partially grooved (2), of sandstone; full-grooved (2), one of sandstone and one of fine-grained igneous rock; and dulled and wornout axes (3), one of quartzite and two coarse-grained igneous rock. All the specimens, with the possible exception of one of sandstone, were made of river cobbles.

The term "partially grooved" designates tools with a groove on part or all of one face only. Three-quarter grooved hammers and axes have not been found in any of the Mesa Verde sites and are absent or extremely rare throughout the rest of the Mesa Verde region. Side notches are usually directly opposite each other, and one of the notches is commonly wider than the other.

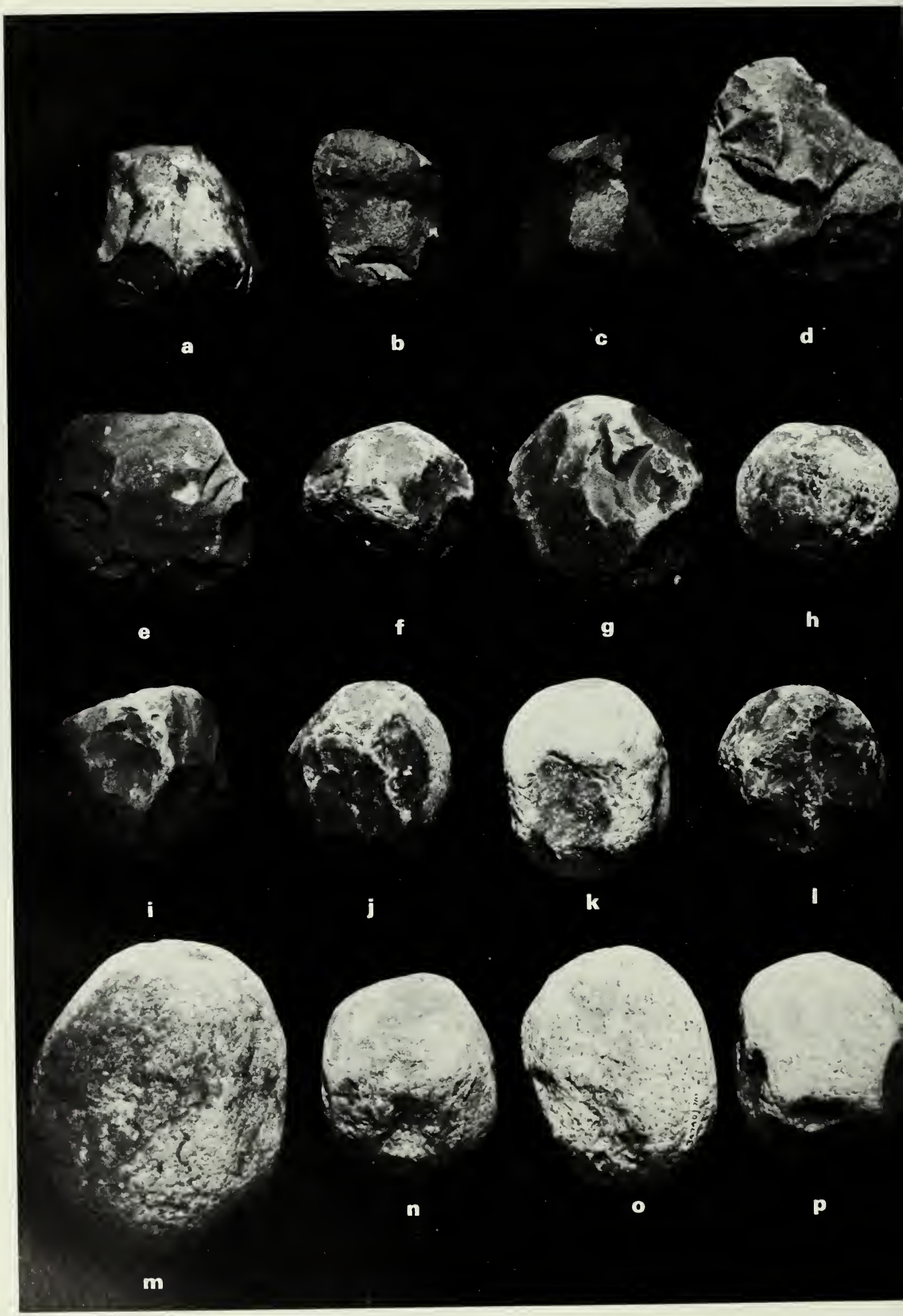
The following are dimensions of notched and grooved hammers:

	Length (cm.)	*Width (cm.)*	*Thickness (cm.)*	*Weight (kg.)*
Maximum	18. 7	10. 1	5. 4	1. 3
Minimum	8. 0	5. 0	2. 8	. 2
Average	12. 2	7. 3	3. 8	. 6

Hammerstones

A number of stone artifacts of various sizes and degrees of wear were classified as hammerstones, one of the ubiquitous stone tool types at Mesa Verde. I found no suitable method of classification of hammerstones on the basis of shape. Shape was primarily due to the amount and kind of wear, with gradations from extremely angular to an almost spherical shape with all of the original angularities battered and worn down.

Some 215 stone artifacts were classified as hammerstones. Five groups are recognized: rough hammerstones of three types, including re-used tool fragments; discoidal, and pitted hammerstones.



114 *Rough hammerstones, Type 2. Length of m is 9 cm.*

These tools were undoubtedly used for a variety of purposes, such as sharpening manos, metates, and unspecialized milling stones. They probably were used also in dressing masonry slabs and blocks for walls, in breaking up stones for various flake and core tools, and for shaping many stone tools such as axes, manos, and metates, many of which show traces of pecking.

Rough hammerstones, Type 1. Ten river cobbles with their basic shapes unchanged, and very little modification except for some pecking or battering at one or two ends or sides, were classified as Type 1 (fig. 113a–c). There were five cobbles of sandstone and five of quartzite. Two of these hammerstones would have been classified as handstones or discoidal hammerstones if they had possessed the characteristic striations from use in grinding or polishing operations.

The following are dimensions and weights of rough hammerstones, Type 1:

	Length (cm.)	*Width (cm.)*	*Thickness (cm.)*	*Weight (kg.)*
Maximum	15.5	9.3	7.9	4.8
Minimum	7.3	5.7	2.2	.2
Average	9.6	7.1	4.6	.6

Rough hammerstones, Type 2. The 171 hammerstones in this group (figs. 113d–g, and 114) were made of the following materials: quartzite (35), quartz (1), sandstone (20), coarse-grained igneous rock (19), fine-grained igneous rock (1), chert or claystone (95). Most of the hammerstones were black or dark gray-brown. The others were yellow-buff to red-brown, with some banded-color cherts.

Shapes varied from almost spherical to irregular. Type 2 rough hammerstones were spalled to produce sharp and protruding edges which in turn were battered down to a varying degree of regularity, depending upon the amount of use. Fourteen were discoidal-shaped, but did not have any grinding surface or surface flattened by rubbing or grinding as did the "discoidal hammerstones" described by Woodbury (1954, p. 90) (fig. 113d–g). However, one discoidal hammerstone was excavated and will be described later. A sequence of varying degrees of wear is shown in figure 114.

The following are dimensions and weights of rough hammerstones, Type 2:

	Length (cm.)	*Width (cm.)*	*Thickness (cm.)*	*Weight (kg.)*
Maximum	11.4	10.5	8.0	1.2
Minimum	3.8	3.1	1.3	.05
Average	6.4	5.4	4.0	.2

Rough hammerstones, Type 3. Apparently a broken or wornout tool was not discarded if it could be used for another purpose. Twenty-two fragments of other tools were re-used as hammerstones (fig. 115). The following original tools are represented: hafted tools, probably predominantly hafted hammers (17), choppers (3), handstones (1), and scraper planes (1). The materials were: claystone or chert (5), sandstone (4), and coarse-grained igneous rock (13). Two fragments were originally a side-notched hammer which subsequently broke, both halves being re-used as hammerstones (fig. 115c and f).

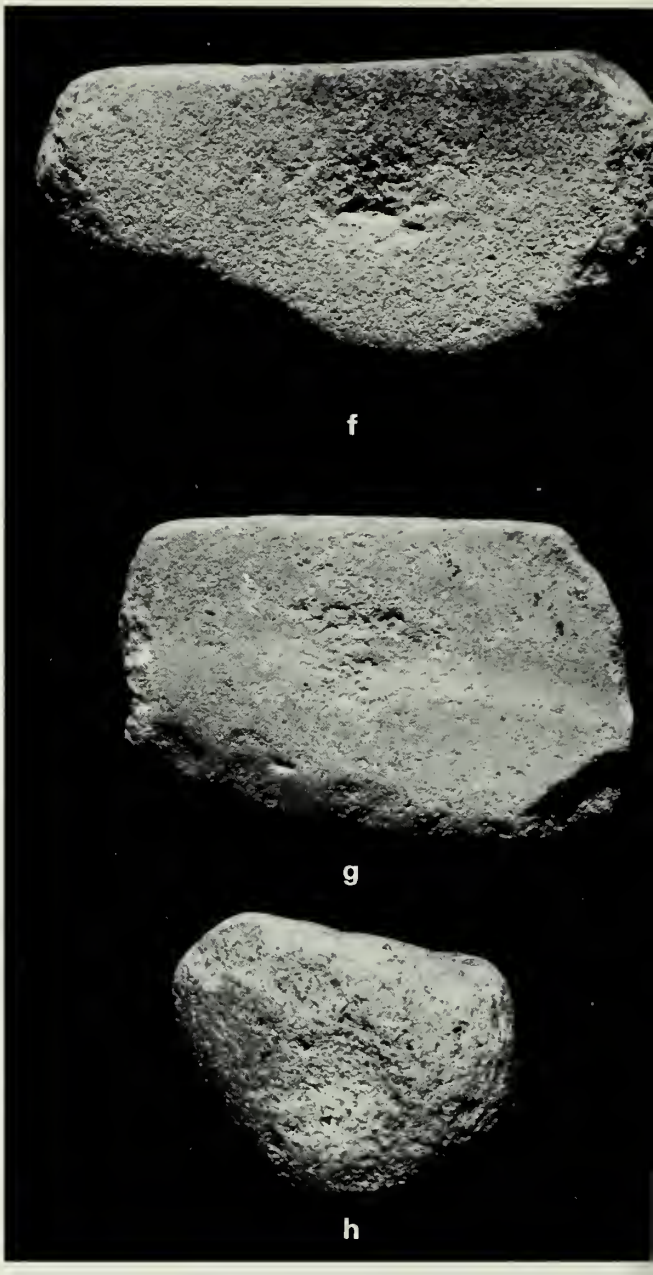
The following are dimensions and weights of rough hammerstones, Type 3:

	Length (cm.)	*Width (cm.)*	*Thickness (cm.)*	*Weight (kg.)*
Maximum	12.5	9.6	5.4	0.7
Minimum	4.5	4.5	1.9	.1
Average	7.6	6.4	3.6	.3

Discoidal hammerstone. One quartzite tool, measuring 8.6 by 6.9 by 3.0 cm. and weighing 0.3 kg. (fig. 113h), was identified as a discoidal hammerstone (Woodbury, op. cit.). It is suboval in outline and shaped by bifacial spalling. The perimeter has light battering or pecking over the spalling. One surface, convex in longitudinal section and flat in transverse section, shows striations resulting from use in grinding.

Pitted hammerstones. Nine whole and two fragmentary stone artifacts were designated pitted hammerstones (fig. 116). One was globular (fig. 116e), one irregular in shape (fig. 116h), and the rest were subrectangular. The globular and irregular specimens were coarse-grained igneous river cobbles. The rest, except for one, were hard, fine-grained quartzitic sandstone river cobbles. The exception was the typical sandstone preferred for manos and metates. Dimensions of the irregular and globular pitted hammerstones are, respectively: lengths 10.0 and 7.9 cm.; widths 8.0 and 7.2 cm.; thicknesses 7.1 and 6.3 cm.; and weights 8.8 and 4.8 kg.

115 *Rough hammerstones, Type 3. Re-used handstone, a re-used hafted tools, b, c, f, g; re-used plane, d; and re-used chopper, e. Length of e is 9 cm.*



116 *Pitted hammerstones: subrectangular, a–d, f, g; globular, e; and irregular, h. Lengths: b, 13.2 cm.; f, 18.7 cm.*

The following are dimensions and weights of subrectangular pitted hammerstones:

	Length (cm.)	*Width (cm.)*	*Thickness (cm.)*	*Weight (kg.)*
Maximum	18. 7	9. 9	7. 0	2. 1
Minimum	9. 6	8. 1	4. 0	. 5
Average	13. 2	8. 9	5. 4	1. 0

The number of pecked depressions, probably used as finger-grips, range from one, on one face of one specimen, to six, with pits on both faces and on the sides and ends (fig. 116b). Most of the pitted hammerstones can be held easily between the thumb on one face and the middle and fourth and fifth fingers on the other face, with the forefinger on one end as shown in figure 117, left. Those with pits on sides and ends could have been rotated between thumb and middle finger, with the forefinger resting in the pit on each side as it is rotated from one position to another. Figure 117, right, shows the probable method of holding the globular pitted hammerstone. Several have one or more faces or edges ground and probably were used also as handstones, rubbing stones, or abraders. One of them (fig. 116g) has a shallow, narrow groove ground on one face from the pit or finger-grip in the middle of the face to one end. All the pitted hammerstones show wear from hammering or battering, particularly on the corners. The globular and irregular pitted hammerstones have extensive wear on the projections.

Axes

Only three axes, two full-grooved and one side-notched, were found (fig. 118). Several others (mentioned previously) were used as grooved or notched hammers after they had lost their sharp bits. One full-grooved ax, made of a quartzitic sandstone cobble, was unfinished (fig. 118a). The bit was pecked from both faces but had not been finished to a sharp edge. Neither the bit nor the groove had any grinding over the pecking or any polishing characteristic of a finished ax.

117 *Probable method of grasping pitted hammerstones: subrectangular hammerstone at left; globular hammerstone at right.*

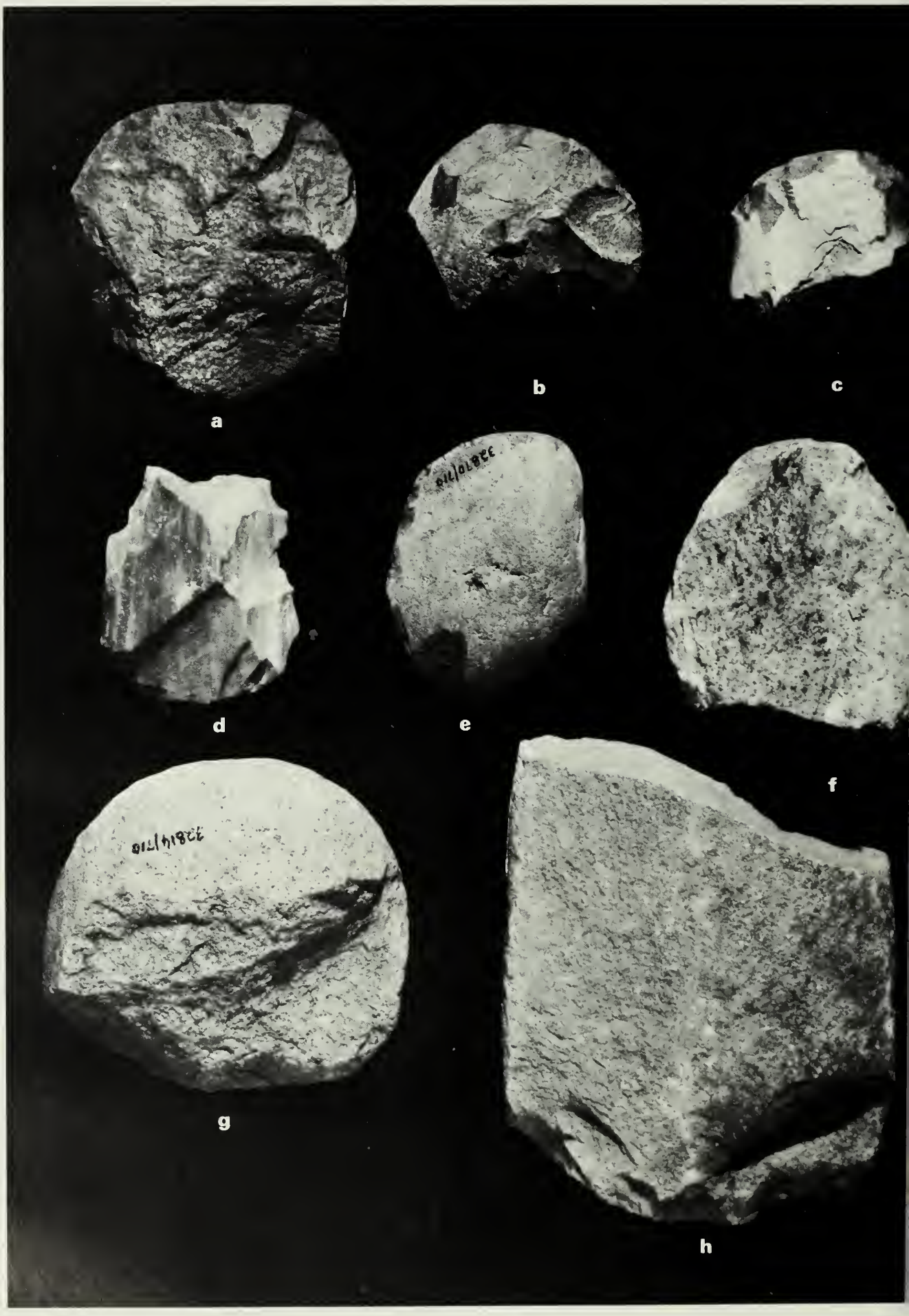
Another ax (fig. 118b), of metamorphosed black shale, was probably not suitable for cutting or chopping as the material is brittle and thin. It was also unusual in being shaped by chipping, probably because of its material and size. The bit was ground and polished, with some polishing on other parts of the surface. It is side-notched, with the notches set at an oblique angle to the long axis. There is another poorly defined notch on one side. The ax is crude and not typical of Mesa Verde axes.

The third ax (fig. 118c), made of a coarse-grained igneous river cobble, was nicely finished. It is a full-grooved ax, but the groove is very shallow and lightly ground over pecking on the faces and deep and well ground on the edges. The groove is at right-angles to the long axis. The bit is ground and polished to a sharp edge. The cobble surface has been polished, with the striations from the polishing alined along the long axis on the faces and sides. The ax shows very little evidence of use—only a few small nicks on the bit and very light pecking at the poll.

The following are dimensions and weights of axes:

	Length (cm.)	*Width (cm.)*	*Thickness (cm.)*	*Weight (kg.)*
Coarse-grained igneous ax	18. 4	9. 0	4. 3	1. 3
Quartzitic sandstone ax	14. 4	7. 4	6. 3	. 9
Shale ax	11. 7	5. 2	1. 4	. 2

118 *Axes. Length of c is 14.4 cm.*



119 *Choppers. Large core, a; small core, b–d; flake, e, f; re used handstone, g; and re-used mano, h. Length of h is 13.6 cm.*

Bitted Stones

Four bits, probably from axes, were found. All of them show more wear and use than the complete axes. All are of coarse-grained igneous rock.

Notched and Grooved Stones

Eight notched and two grooved artifacts were so fragmentary that it was not possible to determine whether they were parts of axes or hammers. Materials used were: claystone or chert (3), sandstone (2), and coarse-grained igneous rock (5). One of the grooved fragments may have had two full grooves adjacent to one another.

Choppers

The 24 choppers were of 4 types: large cores, small cores, flakes, and reshaped fragments of other tools.

Large core chopper. The single specimen, of dark-brown quartzite, measures 8.4 by 7.7 by 3.5 cm. and weighs 359 gm. (fig. 119a). It is roughly discoidal, and approximately one-third of the perimeter has been bifacially spalled and battered.

Small core choppers. The 15 choppers in this group (fig. 119b–d) are made of claystone or chert (13), quartzite (1), and coarse-grained igneous rock (1). They are all bifacially spalled and battered on at least a third or more of the perimeter.

The following are dimensions and weights of small core choppers:

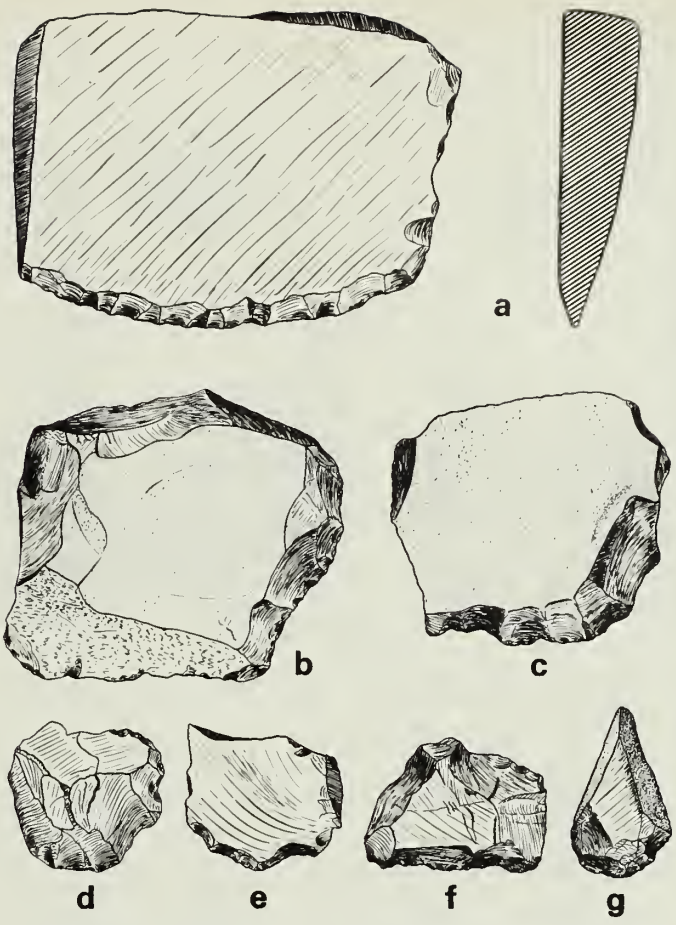
	Length (cm.)	*Width (cm.)*	*Thickness (cm.)*	*Weight (gm.)*
Maximum	8. 8	6. 8	5. 7	308
Minimum	5. 2	3. 5	1. 3	44
Average	6. 4	5. 4	2. 7	127

Flake choppers. The 6 flake choppers (fig. 119e and f) were made of chert or claystone (4) and quartzite (2), and were bifacially spalled on a third to two-thirds of the perimeter. Size and weight ranges are: length 5.5 to 9.5 cm., width 5.1 to 8.4 cm., thickness 2.0 to 2.6 cm., and weight 85 to 281 gm.

Other tools re-used as choppers. A mano fragment and a handstone of quartzitic sandstone were re-used as choppers (fig. 119g and h). They measure 13.6 by 11.5 by 3.8 cm. and 0.9 kg., and 10.4 by 9.9 by 4.7 cm. and 0.7 kg., respectively. The mano fragment was a Subtype 1A mano with a pair of finger-grips on opposite faces. Indications are that the handstone was probably originally bifacial and oval in shape.

Scrapers

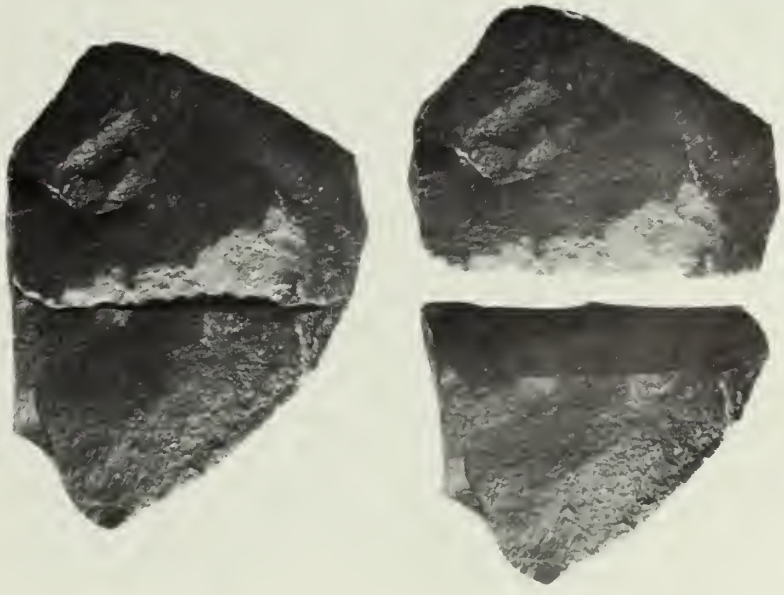
Twenty-five flake scrapers of various shapes were found (fig. 120); two were bifacially retouched, the rest unifacially retouched. In addition, all specimens were use-chipped on one or more edges. Seventeen scrapers are planoconvex in longitudinal and transverse sections. Three had irregular sections, two were biconvex, and one had flat or rectangular sections. One large scraper of fine-grained igneous rock had a wedge-shaped cross section and a rectangular long section (fig. 120a). Materials used for the scrapers were chert or claystone (22), fine-grained igneous rock (1), quartzite (1), and sandstone (1). All but one might be classified as side scrapers. One triangular-shaped scraper was evidently an end scraper, with a worn or blunted point suggesting additional use as a drill (fig. 120g).

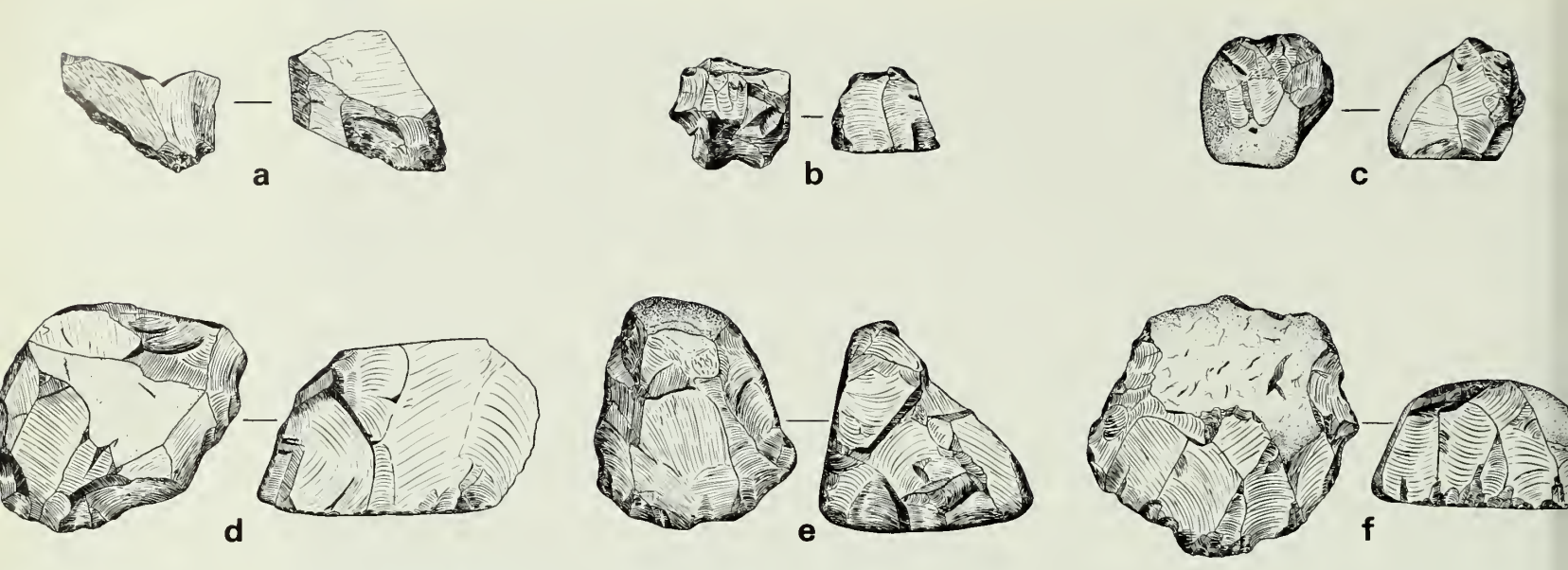


120 *Scrapers. Side scrapers, a–f; and end scraper, g. Length of a is 12 cm.*

A scraper and an unmodified flake of claystone from the subfloor fill of Room 7 were found to fit together (fig. 121). Evidently a flake had been picked up and struck in half; one piece was used (unifacially retouched along one edge) and the other was discarded.

121 *Large flake (left) struck in half to produce scraper (top right) and waste flake. Length of scraper is 3.6 cm.*





122 *Planes. Small planes, a–c; and large planes, d–f. Length of d is 9.1 cm.*

	Length (cm.)	*Width (cm.)*	*Thickness (cm.)*	*Weight (gm.)*
Maximum	11.9	8.0	2.4	346
Minimum	3.3	1.5	.5	10
Average	5.2	4.0	1.5	49

Planes

Sixteen planes (fig. 122) were made of claystone or chert (14), coarse-grained igneous rock (1), and quartzite (1). There is no consistency in shape, but the sections are usually triangular, planoconvex, or pyramidal. There is always at least one steep side which has unifacial edge retouching, and usually one face which is flat, presumably the face upon which the plane was moved. The planes were separated into two size groups: small (nine; fig. 122a–c) and large (seven; fig. 122d–f).

The following are dimensions and weights of planes:

	Length (cm.)		*Width (cm.)*		*Thickness (cm.)*		*Weight (gm.)*	
	Small	*Large*	*Small*	*Large*	*Small*	*Large*	*Small*	*Large*
Maximum	5.3	10.7	4.3	7.8	4.4	6.5	90	501
Minimum	3.8	7.2	3.0	4.3	2.1	3.1	26	154
Average	4.5	8.7	3.5	6.7	2.9	4.7	50	351

Several of the planes show evidence of additional use as hammerstones, with some of the projections and the retouched edges blunted from pecking or hammering.

Knives or Projectile Points

Four knives or projectile points were found. They are described individually.

Figure 123a. Length 2.9+ cm.; width 2.5 cm.; thickness 0.4 cm.; and weight 4.4+ gm. Translucent black obsidian. Triangular outline; biconvex transverse section and lenticular longitudinal section. Blade sides are convex; shoulder slopes toward the base. Stem expands toward the base. Base is convex with a notch in the middle. Bifacially chipped on the margins of the blade and the stem. Middle of both faces of the blade are unretouched. Tip broken. Small hafted knife or projectile point.

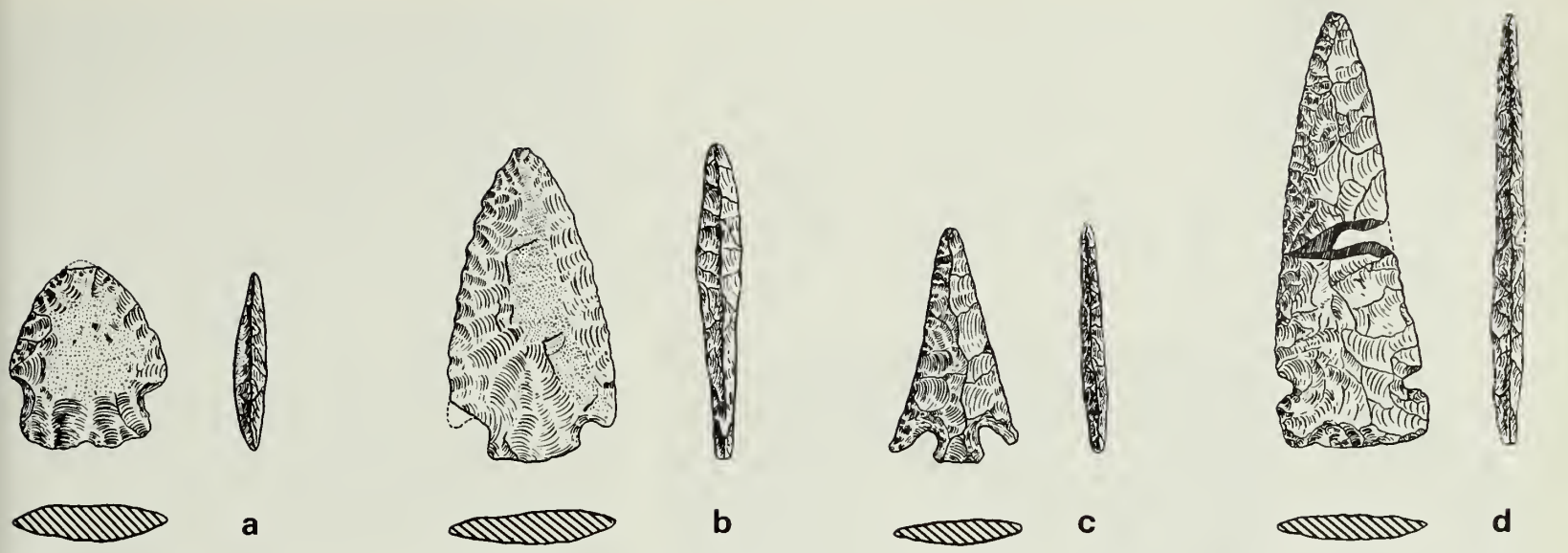
Figure 123b. Length 5.1+ cm.; width 2.7+ cm.; thickness 0.5 cm.; and weight, 18+ gm. Buff quartzite. Triangular shape, lenticular sections. Blade sides slightly convex, diagonally side-notched, barbed. Stem probably expands toward base, base broken, one barbed shoulder broken. Bifacially chipped on blade margins. Allover chipping on one face, part of opposite face unretouched. Tip broken. Probably a hafted knife.

Figure 123c. Length 3.8 cm.; width 2.1 cm.; thickness 0.4 cm.; and weight 23 gm. White chalcedony. Triangular shape, lenticular sections. Blade sides slightly concave, diagonally side-notched, barbed. Stem slightly expanding toward base, base is straight. Allover flaking and edge retouching. Probably a projectile point.

Figure 123d. Length 7.0 cm.; width 2.4 cm.; thickness 0.4 cm.; and weight 8.6+ gm. Mottled bluish-gray, brown, buff chalcedony. Triangular shape, lenticular sections. Blade sides straight, bilaterally side-notched at right angles to long axis. Sides below notches change direction and converge slightly. Base is straight; off-center notch in base probably result of accident. Allover flaking with bifacial retouch on the sides. Probably a hafted knife.

None of the points are typical of the period of occupation at Big Juniper House. Obsidian artifacts are rare at Mesa Verde and were probably traded in, or at least the material was brought in, probably from New Mexico. If the obsidian point had been traded in, its distinctiveness could be explained as the work of other people. This point is very similar to "Type 3, Subtype b" points from Pecos, which were predominantly obsidian (Kidder, 1932, p. 22, fig. 7a–f, esp. c).

The quartzite knife seems to be similar to the Basketmaker II points illustrated in Morris and Burgh (1954, figs. 29c and e; 81–2:1 and m; and 82–4:h). The barbed chalcedony point is typical of the Pueblo I points found in the Mesa Verde area (O'Bryan, 1950, p. 106; Morris, 1939, p. 126). The large, side-notched chalcedony knife is shaped like the much smaller late Pueblo II–III



123 *Knives or projectile points. Length of d is 7 cm.*

projectile points. No other knives from the Wetherill Mesa sites appear to be similar to this specimen. However, small side-notched points appear in late Pueblo II, and if this knife was made then, it would not be out of place at Big Juniper House as far as dating is concerned.

Drills

The three drills found are described individually.

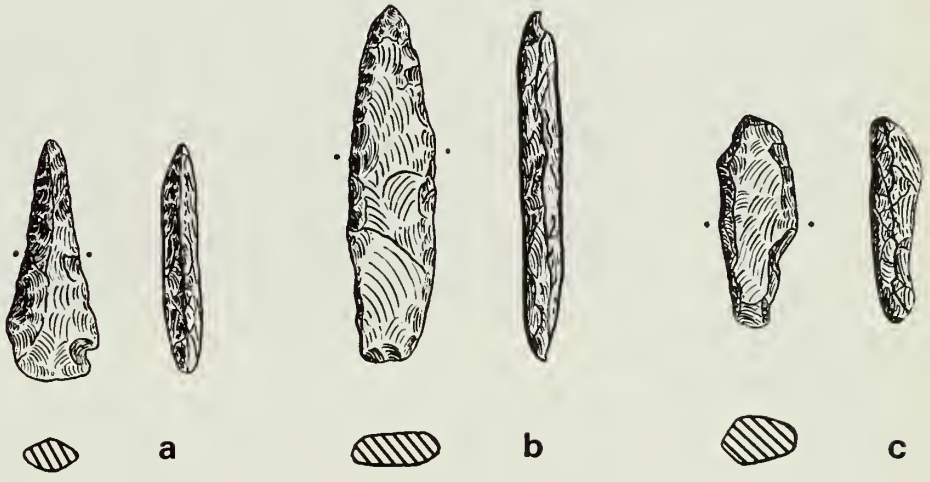
Figure 124a. Length 3.0+ cm.; width 1.1 cm.; thickness 0.5+ cm.; and weight 1.8+ gm. Translucent black obsidian. Subtriangular shape; diamond transverse section and lenticular long section. Sides slightly concave, side-notched; straight shoulder. Expanding stem toward base, base probably straight. Part of base broken, one shoulder broken. Allover flaking and bifacial edge retouching. Worn somewhat smooth on tip and upper edges. Tip is angular and may have been re-pointed after a break. Probably a hafted drill.

Figure 124b. Length 4.3 cm.; width 0.9 cm.; thickness 0.3 cm.; and weight 32 gm. Banded gray-brown chert. Ovate shape, lenticular sections. Convex sides, no notches, flat base. Allover flaking with bifacial edge retouching. Not much sign of wear on point or other parts of the drill.

Figure 124c. Length 2.7+ cm.; width 0.9 cm.; thickness 0.7 cm.; and weight 1.8+ gm. Grayish-brown chert. Suboval shape; wedge-shaped transverse section and lenticular long section. Single-shoulder, one straight side; slightly convex side above stem, stem tapers toward base from the shoulder side. Shoulder slopes toward base; base is flat. Allover chipping with bifacial edge chipping on shoulder side. Point broken but shows signs of wear.

Utilized Flakes

Two hundred and twenty-seven flakes in the collection are characterized by having one or more edges flaked or dulled by use. They have been classified into nine groups according to their probable function.

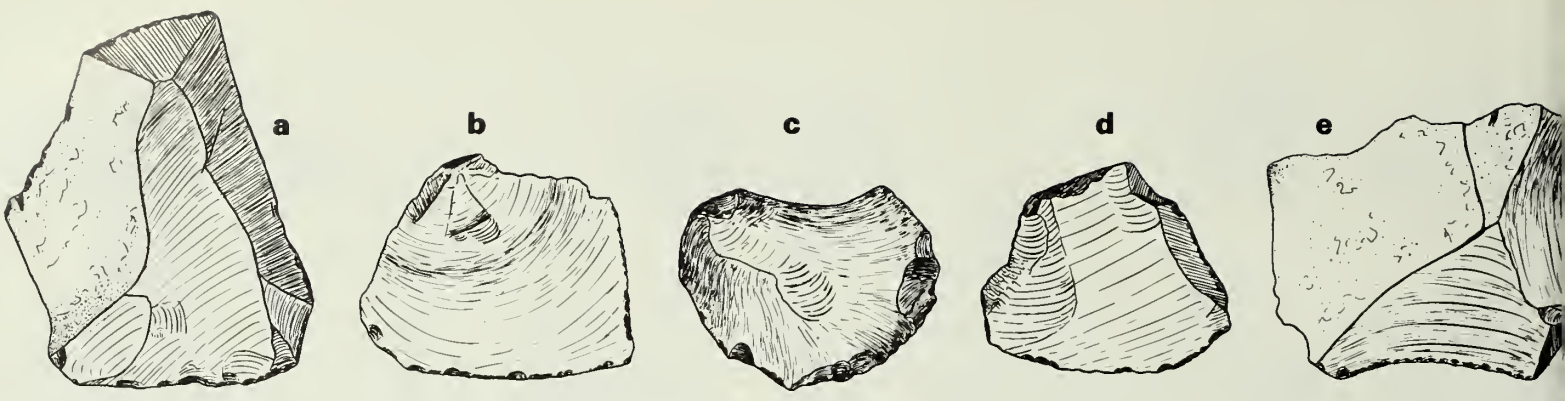


124 *Drills. Length of b is 4.3 cm.*

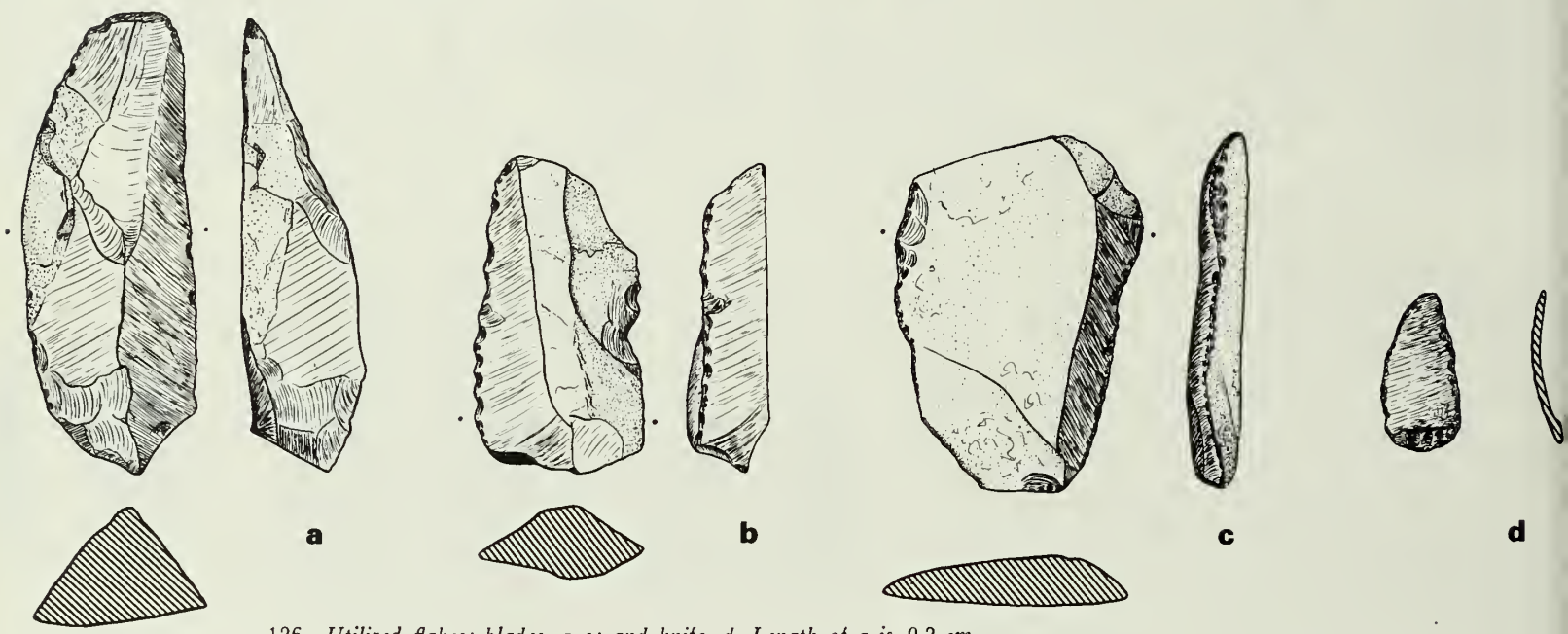
Cutting flakes. This group of 161 flakes is by far the largest (figs. 125 and 126a–c). The varied materials include chert (130); claystone (24); quartzite (4); sandstone (1); coarse-grained igneous rock (1); and concretionary sandstone (1). The shapes are rectangular (41); triangular (34); irregular (26); suboval (21); ovate (10); quadrilateral (9); and miscellaneous (20). Cross sections were predominantly planoconvex (96); others include wedge-shaped (18); flat (15); concavo-convex (12); biconvex (10); uneven (7); and triangular (3).

Thirty-four of the cutting flakes were singled out as being bladelike in the European use of the term (Burkitt, 1963, p. 49). They are relatively long and narrow, with more or less parallel sides and thin in cross section (fig. 126a–c). Cross sections are usually planoconvex or triangular. A bulb of percussion is always at one end and a hinge fracture occurs frequently at the opposite end. The sides are usually bifacially chipped and nicked by use.

One flake of yellow-red chert was classified as a knife (fig. 126d). It is subtriangular in outline and very thin, but wavy in cross section. It had been bifacially retouched on all three sides, but there is no evidence of modification on the faces.



125 *Utilized flakes, cutting. Length of a is 7.7 cm.*



126 *Utilized flakes; blades, a–c; and knife, d. Length of a is 9.2 cm.*

The following are dimensions and weights of cutting flakes:

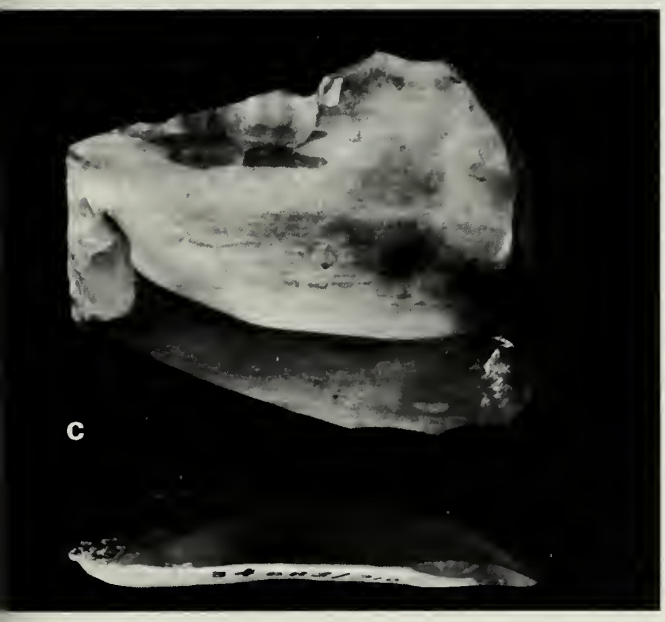
	Length (cm.)	*Width (cm.)*	*Thickness (cm.)*	*Weight (gm.)*
Maximum	9.2	6.6	3.9	99
Minimum	2.3	1.3	.2	2
Average	4.8	3.4	1.1	22

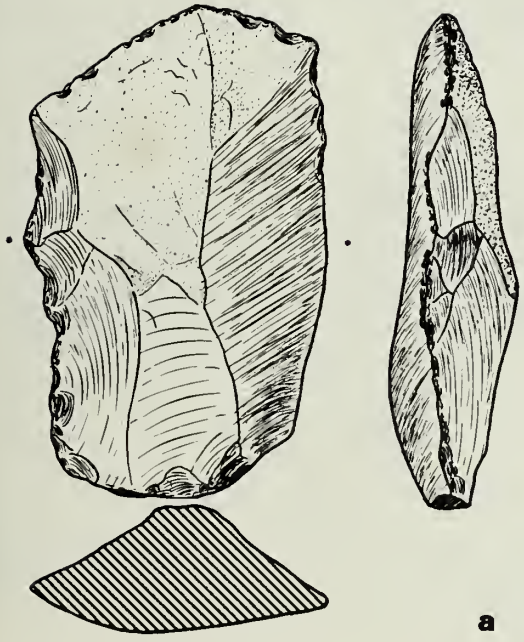
Cutting and scraping flakes. The 47 flakes, including 5 bladelike specimens, classified as cutting and scraping flakes were of chert or claystone (fig. 127). Shapes are subrectangular (13), subtriangular (11), suboval (5), irregular (5), ovate (4), five-sided (4), quadrilateral (3), lunate (1), and four-sided (1). Sections are: planoconvex (33), concavo-convex (5), wedge-shaped (3), biconvex (3), uneven (2), and flat (1). Fifteen specimens had nonlustrous, use-abraded edges (fig. 127b and c).

Experiments using sharp-edged flakes as cutting and scraping implements were conducted in the Wetherill Mesa Project laboratory. The edges of flakes used to cut or saw the soft, local sandstone became smoothly abraded with mat surfaces (Wheeler, 1965). The edges of flakes used to scrape the parenchyma from yucca leaves and expose the fibers—the material employed commonly in prehistoric times for thread and cordage—were dulled and striated as a result of contact with the hard cobble "anvils" placed beneath the leaves (C. Osborne, 1965).

Other aspects suggesting scraping are the concave

127 *Utilized flakes, cutting and scraping. Plan views: left side is nicked and chipped from cutting; right side is edge-abraded from scraping Edge view of a shows chipping; edge views of b and c show edge-abrasion. Lengths: a, 7.8 cm.; b, 4.1 cm.*





edges, which are more suitable for scraping than cutting, and the small notches with use-chipping, as if something had been scraped inside the notch.

The following are dimensions and weights of cutting and scraping flakes:

	Length (cm.)	*Width (cm.)*	*Thickness (cm.)*	*Weigh (gm.)*
Maximum	6. 8	5. 5	2. 2	67
Minimum	2. 8	2. 0	. 4	4
Average	4. 7	3. 4	1. 2	23

128 *Utilized flake, scraping. Side view shows edge-abrasion. Length is 5 cm.*

Scraping flakes. Only four flakes were classified as having the single function of scraping (fig. 128). All were of chert or claystone. Sections were biconvex (2) and planoconvex (2). Outlines are irregular (1), ovate (1), and subtriangular (2). Three of the four had the nonlustrous, abraded edges described previously. The ranges in measurements are: length 3.4 to 5.0 cm.; width 2.1 to 4.4 cm.; thickness 1.0 to 1.6 cm.; and weight 9 to 38 gm.

Cutting and chopping flakes. Five flakes were used for cutting and chopping (fig. 129c). Chopping is inferred from battered and blunted edges and projections. Materials include claystone (2), quartzite (2), and quartzitic sandstone (1). All sections are planoconvex and shapes are quadrilateral, subrectangular, four-sided, subtriangular, and ovate. The ranges in measurements are: length 4.8 to 7.5 cm.; width 2.9 to 5.1 cm.; thickness 1.6 to 2.3 cm.; and weight 31 to 75 gm.

Chopping flakes. Five flakes were used for chopping only (fig. 129a and b). Materials are claystone or chert (4), and sandstone (1). Sections are planoconvex (4) and wedge-shaped (1). Outlines are subrectangular, four-sided, discoidal, suboval, and ovate. Ranges in measurements are: length 4.3 to 6.3 cm.; width 4.0 to 5.7 cm.; thickness 1.5 to 2.0 cm.; and weight 37 to 74 gm.

Cutting, scraping, and pounding flake. One flake of claystone, 6.7 by 5.0 by 2.6 cm. and weighing 88 gm.,

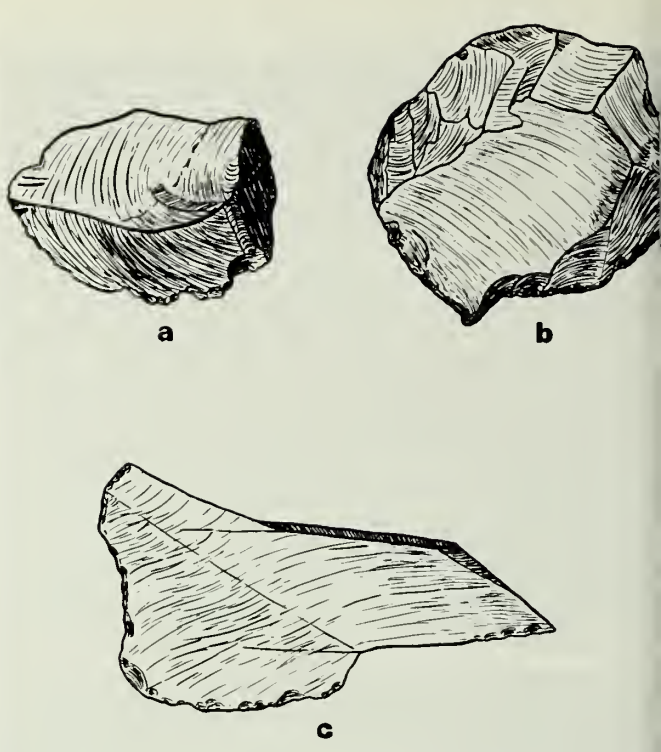
129 *Utilized flakes: chopping, a, b; cutting and chopping, c; and cutting, scraping, and pounding, d. Length of a is 6 cm.*

had been chipped by use in cutting and scraping, and blunted through use in pounding (fig. 129d).

Sawing flake. One chert flake with a serrated edge indicated a sawing function (fig. 130a). The "teeth" were slightly worn, as would be expected if the flake had been used for sawing. It is suboval in outline and planoconvex in longitudinal and transverse sections. Measurements are 3.7 by 2.5 by 1.1 cm., and weight is 67 gm.

Drilling and cutting flakes. Two chert flakes had worn and dulled points in addition to chipped edges, indicating use for drilling as well as cutting. The upper margins next to the points were also worn and slightly polished as if used for drills. A quadrilateral-shaped flake had an irregular cross section and measured 3.8 by 2.1 by 1.0 cm., and weighed 6 gm. A discoidal-shaped flake (fig. 130b) had planoconvex sections; it measured 4.6 by 3.7 by 1.2 cm., and weighed 21 gm.

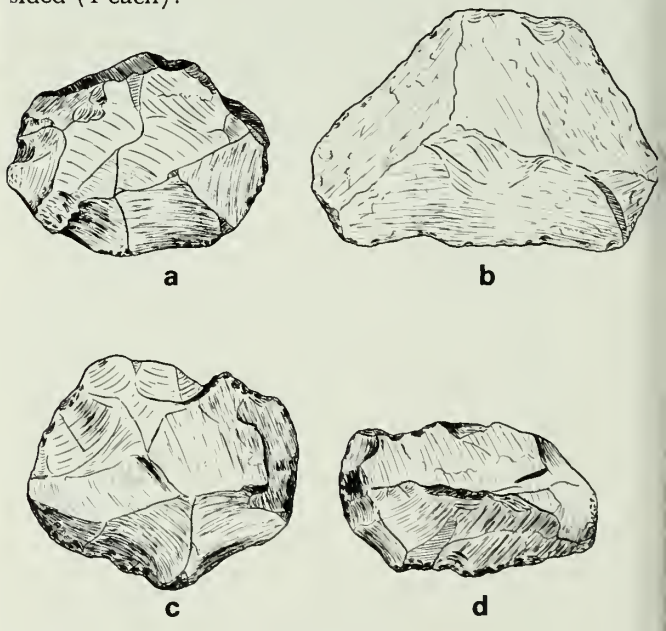
Cutting and punching flake. One chert flake, irregular-shaped with flat sections, had a sharp point which was probably used for punching in addition to having edges for cutting purposes (fig. 130c). It measures 6.1 by 2.9 by 0.6 cm., and weighs 13 gm.



130 *Utilized flakes: sawing, a; cutting and drilling, b; and cutting and punching, c. Length of c is 6.1 cm.*

Utilized Cores

Fourteen cores were utilized for cutting, chopping, and scraping, or combinations of these functions (fig. 131). Materials used were chert or claystone (13), and quartzite (1). Sections are planoconvex (7), biconvex (3), triangular (1), irregular (1), wedge-shaped (1), and flat (1). Outlines are suboval (4), subtriangular (3), irregular (2), discoidal (2), and pyramidal, ovate, and five-sided (1 each).



131 *Utilized cores. Length of b is 8.4 cm.*

The following are measurements and weights of utilized cores:

	Length (cm.)	*Width (cm.)*	*Thickness (cm.)*	*Weight (gm.)*
Maximum	8.4	5.9	3.5	127
Minimum	3.1	3.1	1.7	23
Average	5.4	4.2	2.7	67

132 *Anvils. Length of lower artifact is 20.5 cm.*

Anvils

Three irregular-shaped cobbles of quartzitic sandstone were classified as anvils (fig. 132). The faces were pecked and battered (one had scratches in a restricted area), as if they had been used as platforms. Measurements are: lengths 11.7, 13.4, and 20.5 cm.; widths 10.2, 11.2, and 8.8 cm.; thickness 6.1, 5.2, and 5.5 cm.; and weights 1.0, 1.2, and 1.5 kg.

ORNAMENTS AND PAINT STONES

Ornaments

Rectangular pendants, perforated at one end. Three pendants, with a perforation drilled through one end (fig. 133a–c), and one pendant, with a hole started in one end (fig. 133d), are rectangular. The first three were ground on both faces and all edges. The perforations were biconically drilled, with the apices meeting in the center. All are made of orange to red shale.

Subcircular pendant. One pendant of buff travertine, subcircular in outline, has a perforation at the center (fig. 133g). Both faces and the perimeter were ground smooth. The perforation was biconically drilled.

Pendant blanks. Two ground, red shale specimens of approximately rectangular shape are probably pendant blanks (fig. 133e and f). One (fig. 133e) was ground on both faces and all edges. The other was ground on one face and one side only. Neither was perforated.

Beads. Three beads of three different styles were found. One is an annular bead of brown stone, 0.6 cm. in diameter and 0.4 cm. thick. It is polished and ground on both faces and around the perimeter. The biconically drilled hole is 0.2 cm. in diameter.

Another is made of azurite, oval in outline, with a narrow, V-shaped groove around the middle. It is ground over the entire surface. The dimensions are 0.6 by 0.4 by 0.4 cm.

The third bead, also of azurite, is spheroidal, with dimensions of 0.7 by 0.6 by 0.4 cm. It is ground over the entire surface. This may have been an inlay piece, as there is no groove or perforation for stringing. The two azurite beads were found together in the floor fill of Kiva A (table 9).

Paint Stones

Eight mineral stones are classified as paint stones (fig. 134). One or more surfaces have been chipped or ground to obtain pigment, probably for use in decorating pottery or other artifacts, or for wall painting or body decoration. Several unspecialized milling stones and pottery sherds described previously have traces of pigment, probably from the grinding of paint stones and mixing the pigment.

The paint stones are: hematite (6), two purple, three red, one red-brown; limonite (1), yellow-orange; limonite and hematite (1), yellow-red. Shapes are oblong (1), subtriangular (4), and variable (1). Measurements are: length 3.1 to 4.2 cm.; width 2.5 to 4.0 cm.; thickness 1.4 to 2.6 cm.; and weight 36 to 122 gm.

CEREMONIAL OBJECT

Only one stone artifact was identified, with any degree of certainty, as a ceremonial object (fig. 135). It is a conical sandstone block. Similar objects have been called *tiponis,* corn goddess symbols, corn ears, earth mothers, and, by Judd (1954, p. 295), "Mountain Lion, hunter of the north."

The specimen from Big Juniper House has an oval, relatively flat base that was ground and pecked. The rest of the surface was ground smooth except for part of the surface near the apex, which had been spalled off. It measures 24.0 cm. long by 23.0 cm. maximum width by 17.2 cm. thick, and weighs approximately 10.3 kg. It was found on its side on the floor of the floor-level ventilator tunnel of Kiva A, and was apparently placed there intentionally.

Roberts (1932, p. 143, pl. 55 d and e) illustrates several conical stone objects that were found in the Village of the Great Kivas in New Mexico. These appear to be quite similar to the one found at Big Juniper House and to others found on Wetherill Mesa and elsewhere in Mesa Verde National Park (Fewkes, 1911, p. 67). Morris (1939, pp. 129–130, pl. 137) reports finding "Corn Goddess" symbols from Sites 39 and 41 on the La Plata River

133 *Pendants and pendant blanks. Length of a is 6.4 cm.*

which are the same type of artifact as the one from Big Juniper House. Parsons (1939) makes several references to the use of *tiponis* in the ceremonial life of the present-day Pueblos. Although the construction of these specimens is not described, most of them are of clay or wood, sometimes of hide, with perforations for attaching prayer sticks or feathers. They have the conical shape of the prehistoric stone objects.

Slabs

Slabs were classified according to shape. The four types recognized are tabular, manolike, and roughly rounded slabs, and jar lids.

Tabular slabs. Thirty-two slabs are tabular and usually subrectangular in shape. Other shapes are trapezoidal (1), five-sided (1), and quadrilateral (1). Sixteen were interminate because of their fragmentary nature. All were of sandstone. Usually one face was ground, sometimes both, but rarely would neither face be ground. Sides were usually bifacially chipped, some were ground over the chipping.

Slabs of this type were probably used as door slabs, cist covers, cooking slabs, ventilator-tunnel doors in kivas, mealing-bin walls, and for other purposes. A probable door slab and a smaller slab that covered a cist in Kiva C are shown in figure 136a and b. Measurements are: length 12.0 to 60.4 cm.; width 8.1 to 42.0 cm.; thickness 0.6 to 3.0 cm.; and weight 0.7 to 10.9 kg.

Manolike slabs. Four sandstone slabs are manolike in thickness and shape but do not have the grinding surfaces or beveled ends of manos (fig. 136c). One or both faces are ground on the high spots, giving an uneven appearance to the faces. Only one slab is complete. Measurements are: length 12.0 to 24.0 cm.; width 12.2 to 13.4 cm.; and thickness 3.4 to 5.1 cm. The complete specimen weighs 2.3 kg.

Roughly rounded slabs. Three fragmentary slabs were roughly rounded. They would seem to be too large to serve as jar lids and are not as well made (see below). Two of the specimens have one face ground and one face unmodified. The third slab has both faces unmodified. One fragment has the edge bifacially chipped and the other two have edges ground over spalling. All are made of sandstone. The most complete of the three specimens (fig. 136d) measures 26.1+ cm. long by 20.7 cm. wide by 2.8 cm. thick.

Jar lids. Three complete slabs and one fragment have been classified as jar lids because of their fine workmanship and generally discoidal shape (fig. 136e–g). One specimen is hexagonal. Usually both faces are ground flat and the edges are bifacially chipped with some grinding. Three of them are sandstone and one is mottled gray-black shale. Although I have termed them jar lids, actually none was found covering a jar, but similar slabs from other sites have been found in such associations. One of the jar lids (fig. 136g) may have covered the sipapu in Kiva C.

One irregular slab, unworked in any way except for the initial spalling, was found covering a jar set in the floor of Room 6.

Tether Weight

A soft, gritty, maul-shaped sandstone object has a pecked groove around the middle (fig. 137). It was roughly shaped by spalling on most of the surface; it

134 *Paint stones. Length of d is 3.9 cm.*

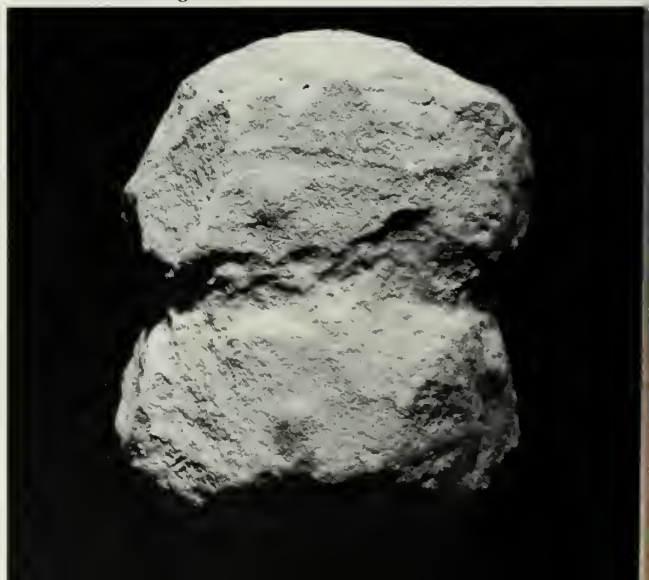
135 *Ceremonial object.*

136 *Slabs: tabular, a, b; mano-like slab, c; roughly rounded, d; and jar lids, e–g. Lengths: a, 60.4 cm.; b, 22.5 cm.; d, 26.1 cm., and f, 14.1 cm. (with e in same scale).*

measured 12.5 by 10.1 by 7.8 cm., and weighed 1.1 kg.

It may have been a weight for a turkey tether—enabling a turkey to walk about, but heavy enough to keep it from flying or running away.

137 *Tether weight.*



Concretions

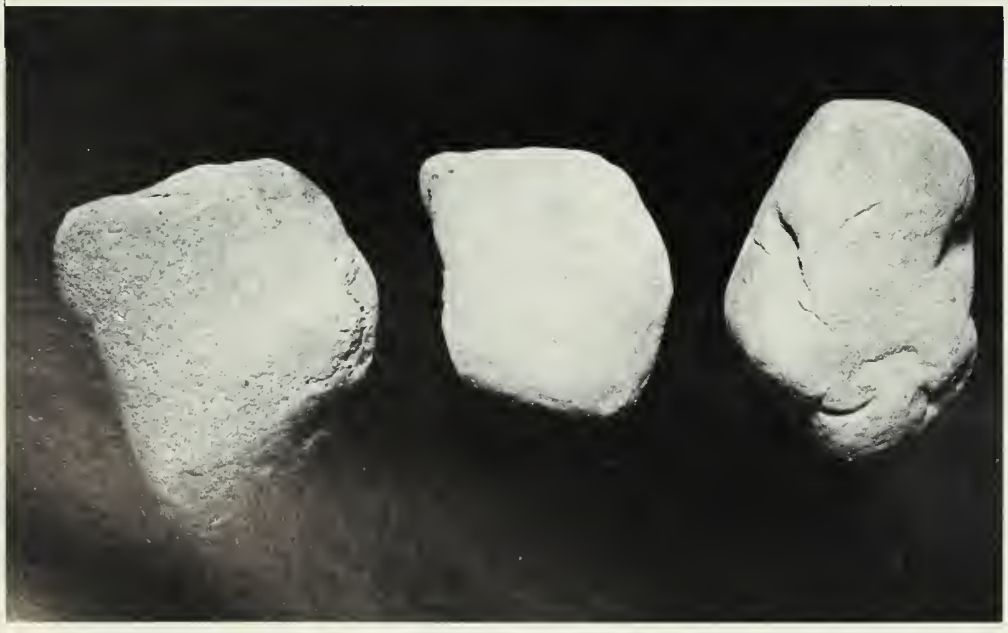
There are 42 sandstone concretions in the collection (table 9)— 33 of them were recovered from South Trash Mound and other parts of the site; 9 specimens were found in the 3 kivas.

Of varied natural form, usually unmodified, the concretions must have come from the exposed sandstone cliffs or talus slopes. Perhaps they were picked up because of their odd shapes, or possibly they served as fe-

38 *Concretions. Length of a is 31.8 cm.*

139 *Concretion balls. Length of a is 8.1 cm.*

140 *Concretions—possible pot supports. Length of concretion at left is 13.9 cm.*



tishes. Thirty-three concretions had the following shapes: cylinders or constricted cones (10), balls (8), lobate forms (5), disks (3), flat "bars" (3), dish-shaped (1), and irregular (3) (figs. 138 and 139).

Of the nine concretions found in the kivas, three were mudded in the walls of the Kiva C firepit (fig. 140, right), one was next to the firepit in the Kiva B floor (fig. 141, left), one was on the Kiva A floor (fig. 141, right), and the rest were in fill close to the floors of Kivas A and B. Two are "bird" or "foot and ankle" shapes; the others are more or less irregular.

The term "pot supports" has been suggested to describe stones similar to these nine concretions, but there is little or no evidence to suggest such a function. All have been burned to varying degrees and therefore may have been used in firepits. However, they were found only in kivas and there were firepits in other areas of the site. They may have served as firedogs, supports for wood in the hearths. Two of these objects supported a large slab in a kiva in Mug House.

Fossil

The fragment of a fossil mollusk, found in the South Trash Mound, appears to be unmodified.

Other Indeterminate Objects

The five objects of indeterminate use are illustrated and described individually.

Figure 142a. End fragment. Brownish-gray, coarse-grained igneous rock, probably from one of the exposed dikes in the park. One face ground flat, opposite face unmodified. Sides pecked, with possible finger-grip on one side. Width 16.4 cm. and thickness 6.6 cm. May be a broken handstone.

141 *Concretions—bird shaped "pot supports." Length of concretion at left is 16.9 cm.*

142 *Indeterminate objects.*

Figure 142b. Complete. Buff sandstone. Subtriangular in outline and subrectangular in sections. One face ground and pecked, opposite face spalled with some pecking on high spots. Narrower end and one side pecked, other end and side bifacially chipped and pecked. Measurements: 28.8 by 13.6 by 3.8 cm., and weight 2.1 kg.

Figure 142c. Complete. Reddish-brown sandstone. Suboval in outline. One face convex, ground and pecked (sharpened?); opposite face uneven, pecked on high spots. Sides pecked, ends are spalled and partly pecked. Measurements: 20.8 by 13.4 by 4.0 cm., and weight 1.9 kg. Possibly a mano, but it is definitely atypical in shape and workmanship.

Figure 142d. Complete(?). Petrified wood, yellow-buff in color. Subrectangular in outline and sections. Faces, sides, and one end have been ground fairly smooth and flat; other end possibly broken. Measurements: 5.0 by 3.3 by 1.2 cm., and weight 25 gm.

Figure 142e. Complete. Black, fine-grained chert or claystone. Subrectangular in outline and transverse section, and wedge-shaped in longitudinal section. Faces and one end ground and polished. "Bit" at other end partly flaked and partly ground and polished. Measurements: 6.1 by 3.1 by 1.3 cm., and weight 53 gm.

CHAPTER 5

bone artifacts and textile remains

Some 116 artifacts of bird and mammal bone were collected from Big Juniper House, but very little in the way of textile remains was discovered in our excavations.

BONE ARTIFACTS

Thirty artifacts, or 26 percent of the sample, were made from bird bones and 86 artifacts, or 74 percent, were made from mammal bones (table 10). The high proportion of mammal bone artifacts reflects a general pre-late Pueblo III picture at Mesa Verde. In late Pueblo III sites, the number of bird and mammal bone artifacts are more nearly equal. The increase in bird bones reflects a greater utilization of the turkey, which was used almost to the exclusion of other species of birds for bone artifacts and perishable artifacts employing feathers and down. The strong probability that the turkey was also used for food is evident from the number of turkey refuse bones found at the site. The reason for the predominance of turkey bones among the bird bone artifacts and refuse is that the turkey was domesticated (or at least held in captivity) by the prehistoric inhabitants.

Awls

Awls are the most common bone artifacts. These will be described on the basis of such features as bird or mammal, shape, size, and the bone or bone fragment from which they were made. Awls account for 72, or approximately 62 percent, of the bone artifacts.

Bird bone awls. Of the 17 bird bone awls in the collection, 16 were made of turkey (*Meleagris gallopavo*) and 1 of golden eagle (*Aquila chrysaetos*). Three types have been recognized.

Type 1 consists of whole shafts that retain an unmodified or largely unmodified joint at one end; the other end is cut and pointed (fig. 143b–e and g). The five awls are made from turkey bone: distal end of left tibiotarsus (2) (fig. 143d and e); proximal end of right ulna (fig. 143g); distal end of right radius (fig. 143b); and proximal end of right tarsometatarsus (fig. 143c). Lengths ranged from 7.4 to 9.7 cm., and averaged 8.5 cm. The maximum diameter below the joint ranged from 0.4 to 1.8 cm., and averaged 0.9 cm.

Grinding is most noticeable at the point. Four specimens are also polished on the shaft, the fine striations being readily observable around the circumference. One awl is too weathered to tell whether it had been polished.

Type 2 includes whole shaft segments with no joint remaining; one end is cut and pointed, the other it cut square and usually ground. The three specimens are made of three separate elements of turkey bone: left tibiotarsus, with the proximal head removed and the distal end pointed (fig. 143h); right ulna, with the proximal head removed and the distal end pointed (fig. 143f); and central section of a right tibiotarsus, with the proximal head removed and the distal end pointed (not illustrated). Lengths are: 8.8, 12.5+, and 16.6+ cm., and maximum diameters are 1.2, 1.3, and 1.4 cm., respectively. (The + signifies that a small segment, usually at the tip, is missing.) The three specimens were ground at the point and polished on the shaft.

Type 3 awls are shaft splinters, with no joint or part of a joint remaining. The two specimens of this type are an eyed awl or bodkin (fig. 143a), and a possible bipointed awl (not illustrated). The latter is not absolutely certain because part of one end is missing, but the shaft tapers from both sides and if projected it would come

143 *Bird bone awls. Type 1, b–e, g; Type 2, f, h; and Type 3, a. Length of a is 8.7 cm.*

to a point. Both artifacts are turkey tibiotarsi with lengths of 8.7+ and 4.5+ cm. and maximum diameters of 0.8 and 0.9 cm., respectively.

The eyed awl was ground and polished over its entire surface, and the hole was biconically drilled. The other tool was similarly polished, and was ground at the point.

Six fragments of whole shaft awls, not assignable to types, and one fragmentary splinter awl were found. One of the six whole shaft fragments was the left radius of a golden eagle; the other five were turkey bones: tibiotarsus (3), tarsometatarsus (1), and radius (1). The splinter awl fragment was made from a long bone, probably a tibiotarsus of turkey.

Mammal bone awls. Fifty-five or 64 percent of the mammal bone artifacts were classified as awls. In contrast to the bird bone awls, only one awl of mammal bone is a whole shaft awl; the remainder are split shaft awls and one rib awl. These awls are much more varied in shape, form, and size than the bird bone specimens. Also, unlike the bird bone awls, they show, in many cases, transverse grooves near the point. These normally shallow grooves have been interpreted as the result of use in straightening cords or thongs by drawing them between the implement and the thumb or fingers (Morris, 1919, p. 39, fig. 23b), or in weaving or sewing (Hodge, 1920, pp. 102, 104, and pls. XVI, XVII).

Grooves occur in most of the mammal bone awl types I have set up and therefore are not considered as a separate type. Instead, their frequencies will be noted under the type descriptions below.

Type 1 includes whole shafts that retain an unmodified or largely unmodified joint at one end; the other end

is cut and pointed (like Type 1 bird bone awls). The single awl of this type (fig. 144) was made from the left radius of a bobcat (*Lynx rufus*) with the distal head present. There are several faint, shallow grooves near the point, which was dulled by use. The shaft is well polished, and there is also some grinding on the joint. The awl measures 13.0 cm. in length and 1.2 cm. in maximum diameter below the joint.

144 *Mammal bone awl, Type 1.*

Type 2 consists of split shafts retaining a split but unmodified or largely unmodified joint at one end; the other end is pointed. Three subtypes are recognized on the basis of form, size, and the various elements from which they were made.

Six specimens, classed as Subtype 2A, were made from metapodials of mule deer (*Odocoileus hemionus*) (fig. 145). They are relatively long. In each case, the shaft tapers evenly from both sides to a rather flat, daggerlike point. The shaft retains some of the interior cavity in the split surface; the outer surface is polished, and the split surface is both ground and polished. The split joint shows "use-polish" but no grinding. Three awls have grooves (fig. 145a–c) and one has a biconical hole drilled diagonally through the joint (fig. 145c).

Lengths range from 10.6 to 15.7 cm., and average 12.4 cm. Widths below the joint range from 1.4 to 2.2 cm., and average 1.7 cm. Thicknesses below the joint range from 0.7 to 1.2 cm., and average 1.0 cm.

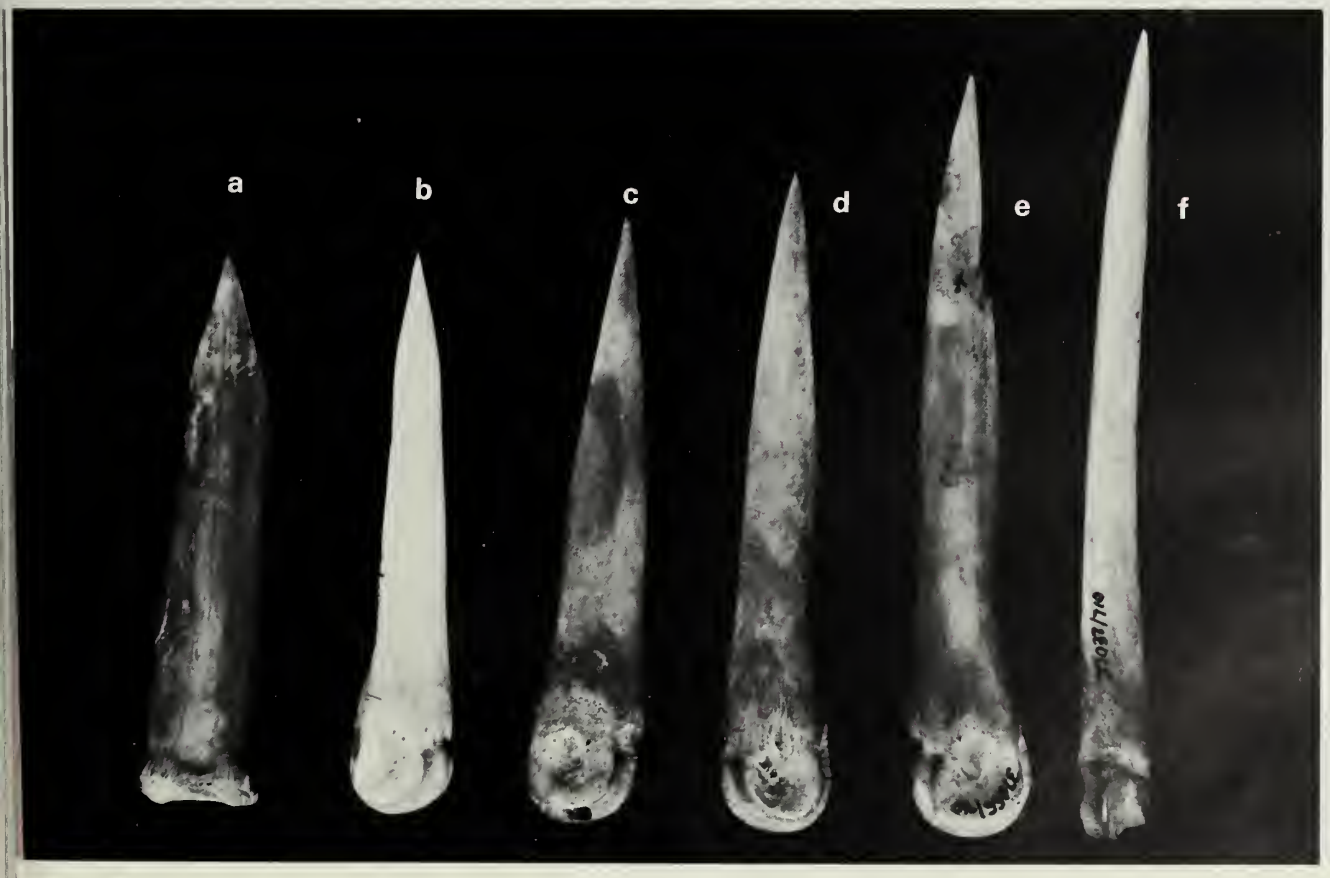
The six metapodials include right metacarpal 3–4 (2), left metacarpal 3–4 (1), metacarpal 3–4, side unknown (1), right metatarsal 3–4 (1), and metatarsal 3–4, side unknown (1).

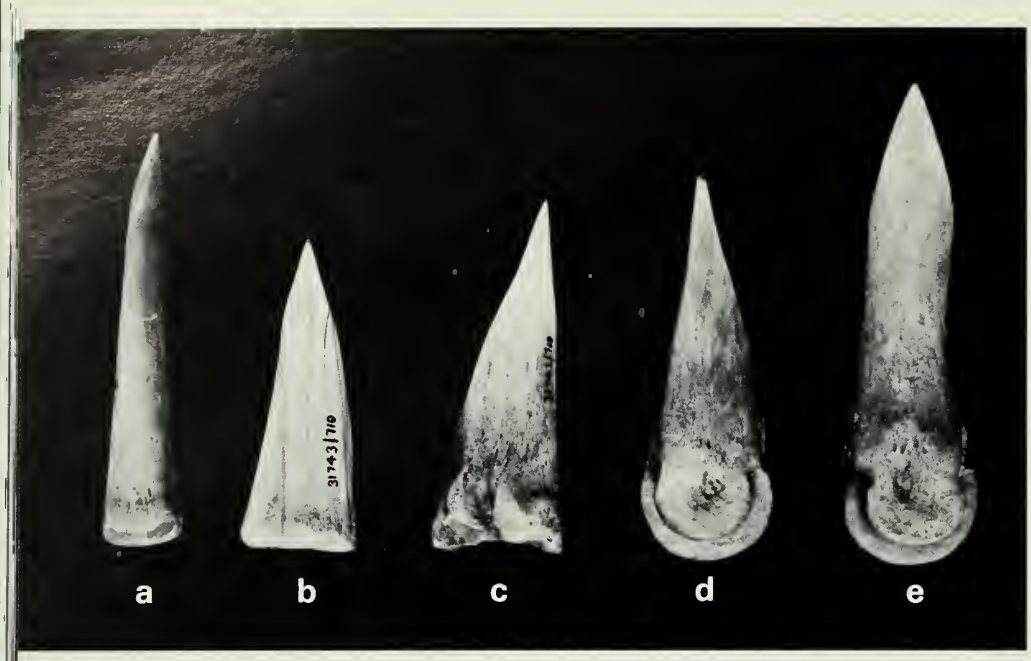
The seven mule deer bone awls in the Subtype 2B group are stubby. Five are split metapodials (fig. 146a, b, d and e), one is the distal end of a left tibia (fig. 146c), and one is a left femur fragment. The tibia awl is slightly ground on the joint; the rest are largely unmodified except for the original splitting. In every case, the shaft is polished. The joint in several instances shows high use polish. One awl is fairly round at the point (fig. 146a); the others are flat in cross section.

Lengths range from 6.0+ to 8.3 cm., with an average of 6.6 cm. Widths below the joint vary from 1.2 to 3.0 cm., and average 2.1 cm. Thicknesses below the joint range from 0.7 to 1.1 cm., with an average of 0.9 cm. The five metapodial awls are made from the following elements: right metacarpal 3–4 (1); left metacarpal 3–4 (1); and right metatarsal 3–4 (3).

The only awl classified under Subtype 2C (fig. 147) was made from the right radius of a bighorn sheep (*Ovis canadensis*). It is a split-shaft awl with the split section

145 *Mammal bone awls, Subtype 2A. Length of f is 15.7 cm.*





146 *Mammal bone awls, Subtype 2B. Length of a is 7.2 cm.*

147 *Mammal bone awl, Subtype 2C.*

148 *Mammal bone awls, Type 3. Length of e is 18.8 cm.*

of the proximal head retained and unmodified. It differs from the other Type 2 awls in being the only one not from a mule deer bone and the only awl made from a radius. It is more massive and more irregular in shape than the other awls in the group.

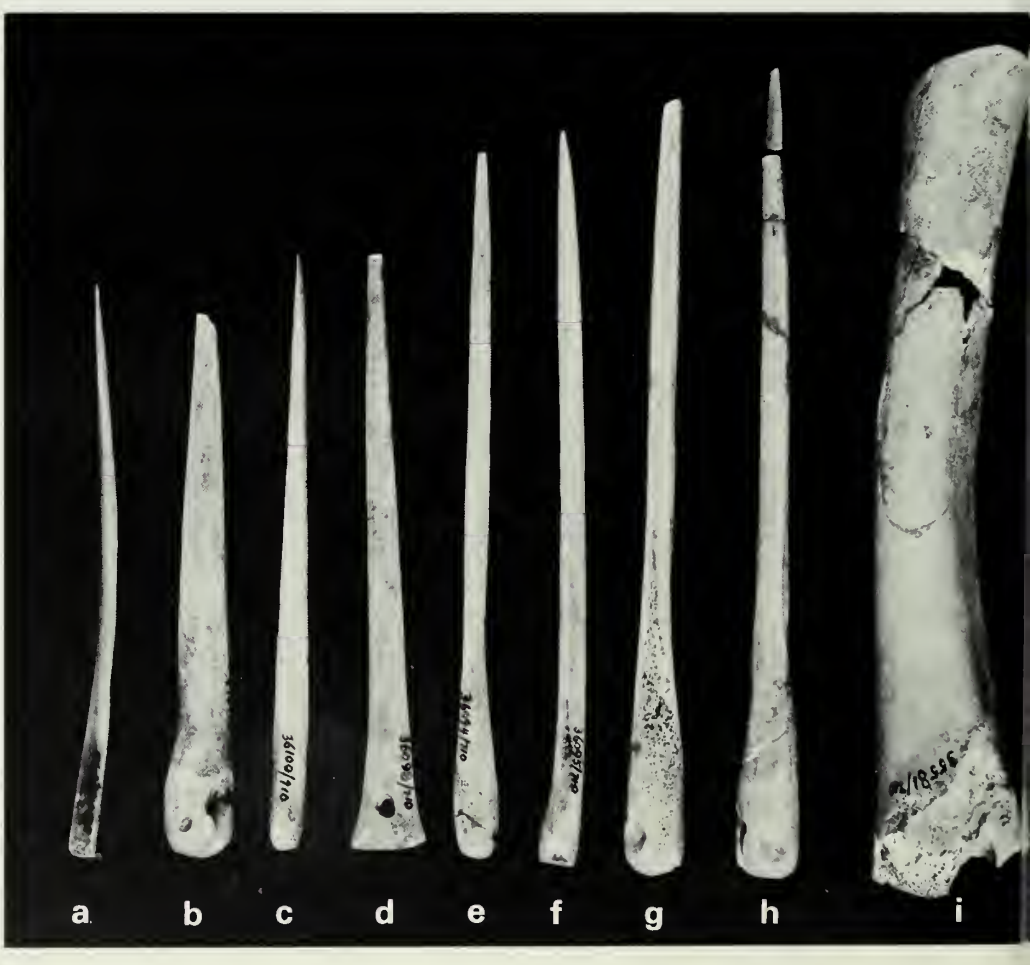
This awl is 18.1 cm. long and 1.9 cm. in maximum width below the joint. The unsplit surface is highly polished and sections near the point are round and also highly polished. The interior cavity is present for a distance of about 5.8 cm. above the point. There are two grooves on the convex surface and both lie 2.3 and 3.7 cm. above the point.

Type 3 awls include split elements with the joint at one end reduced by grinding to a knobby butt (fig. 148).

The eight mammal bone awls of this type were derived from the following species: two mule deer and one mule deer or bighorn (fig. 148d and e); one definite and two probable bighorn (fig. 148a-c); one unknown deer (*Odocoileus* sp.); and one unknown artiodactyl. The elements from which these awls were made are: metapodial 3–4, side unknown (3; right metatarsal 3–4 (1); metatarsal 3–4, side unknown (2); left metatarsal 3–4 (1); and metacarpal 3–4, side unknown (1).

Five of the awls are long and three are short. The long awls were parts of a probable tool kit in Kiva B (fig. 149). They range in length from 12.6+ to 18.8+ cm., and average 16.6 cm. The widths below the joint range from 0.9 to 1.6 cm., and average 1.3 cm. The fact that these awls were closely similar, were found to-

149 *Kit of bone tools in Kiva B.*



gether, and were unlike any others found at the site suggests that they were made by one person and probably served a special function.

The three short awls have lengths of 5.5, 7.2, and 8.7 cm., and widths below the point of 0.9, 1.2, and 1.5 cm., respectively. One of these awls has four shallow grooves on the split face which continue onto the unsplit face; another has two shallow grooves on both faces near the point; and the third has one groove on the unsplit face near the point. These awls, like the five long ones, were found in Kiva B (table 10).

Type 4 consists of shaft splinters that possess no recognizable joint, or a joint so reduced that it retains few distinctive features. These awls are the most numerous in the collection. The type has been divided into three subtypes on the basis of size and regularity of shape.

Awls of Subtype 4A are long and evenly shaped, with round and flat cross sections. The nine awls in this group represent the following mammals: one deer (fig. 150a); one bighorn (fig. 151d); two unknown (fig. 150e); four artiodactyls (fig. 150b–d and f); and one cervid (fig. 151e). The elements from which the awls were made are: metapodial 3–4, side unknown (4); long bone (3); and metatarsal 3–4, side unknown (2). Two of the awls have a biconically drilled hole or "eye" placed near the head (fig. 151d and e).

Generally, the entire surface of these awls was ground and polished to a high gloss. In the awl shown in figure 150e, the very nearly round shaft is polished to a high gloss and the butt is rounded and highly polished.

Two specimens possess grooves (fig. 150a and d). One of them has four shallow grooves on one face near the point and two V-shaped notches on one edge near the butt.

TABLE 10.—DISTRIBUTION OF BONE ARTIFACTS BY TYPE, BIG JUNIPER HOUSE

PROVENIENCE	Types																								
	Bird bone awls				Mammal bone awls										Scraper				Orna-mental		Others				
	Type 1	Type 2	Type 3	Fragmentary	Type 1	Subtype 2A	Subtype 2B	Subtype 2C	Type 3	Subtype 4A	Subtype 4B	Subtype 4C	Type 5	Fragmentary	Femur scraper	Humerus scraper	Tibia scraper	Possible scrapers	Perforated mammal tibias	Tubular beads	Knifelike object	Tool blank	Problematical objects	Misc. worked mammal bone	Misc. worked bird bone	Totals
South Trash Mound	2	1	...	2	...	1	5	...	...	...	2	1	...	4	...	...	1	...	2	4	...	...	1	4	...	30
Test Trench 15	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	2
Area 12	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1
Room 1a, upper fill	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Room 1b, upper fill	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Room 2, fill	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1
Room 2, subfloor fill	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Room 5, fill	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1
Room 5, Cist 1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	2
Room 6, fill	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1
Room 7, fill	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	3
Room 7, subfloor cist	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1
Room 10, upper fill	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Room 19, fill	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Room 21, fill	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
Kiva A, fill	...	...	...	2	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	4
Kiva A, floor fill	1	...	...	...	...	...	1	...	...	2	...	...	...	...	...	...	...	...	1	2	...	...	2	1	...	10
Kiva A, subfloor vent. fill	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	2
Kiva B, fill	1	...	...	1	...	2	...	...	1	2	3	1	...	4	...	...	...	1	1	1	...	...	...	1	...	19
Kiva B, floor fill	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	2
Kiva B, tool cache	...	...	...	...	...	...	...	...	5	3	1	1	...	...	1	...	...	...	...	...	...	...	...	...	...	11
Kiva B, banquette	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Kiva C, fill	1	2	1	...	1	1	...	1	...	1	...	...	...	...	...	1	...	1	...	...	...	1	...	2	1	14
Kiva C, floor fill	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	2
Kiva C, floor	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1
Cist 2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1
Totals	5	3	2	7	1	6	7	1	8	9	9	3	1	13	1	1	1	3	6	9	1	1	5	10	3	116

150 *Mammal bone awls, Subtype 4A. Length of f is 17.4 cm.*

151 *Mammal bone awls, Subtype 4B, a–c, and Subtype 4A, d, e. Length of e is 25 cm.*

The other awl has nine shallow grooves on the two faces near the point.

Lengths range from 11.9 to 25.0+ cm., and average 15.7 cm.; maximum widths range from 0.6 to 1.9 cm. and average 1.0 cm. The "eyed" specimen shown in figure 151e is the longest awl in the collection.

The nine short, flat awls in the Subtype 4B group are ground and polished all over, but they are somewhat less evenly shaped than those of Subtype 4A. Three are from unknown mammals and six are from artiodactyls. The elements from which the awls were made are: metapodial 3–4, side unknown (6) (figs. 151a and c, and 152b, c and e); long bone (2) (figs. 151b and 152a); and possible rib (1) (fig. 152d).

Two awls have a hole drilled near the butt end (fig. 152b and c), and one has a natural perforation through the cancellous tissue (fig. 151a). One specimen has nine shallow grooves on both faces and one edge near the point (fig. 151a), and another has a deep groove on one face and edge (fig. 152a). One awl, constricted and circularly worn near the point, may have been used for reaming (fig. 152c).

Lengths range from 4.9 to 9.6 cm., and average 7.2 cm.; and maximum widths range from 0.8 to 1.6 cm., and average 1.0 cm.

The three awls in the Subtype 4C group (fig. 153) are less regular in shape than the awls of Subtype 4A and Subtype 4B. They are generally flat in section, and the point area is round. The grinding and polishing on these specimens are most clearly visible at the point.

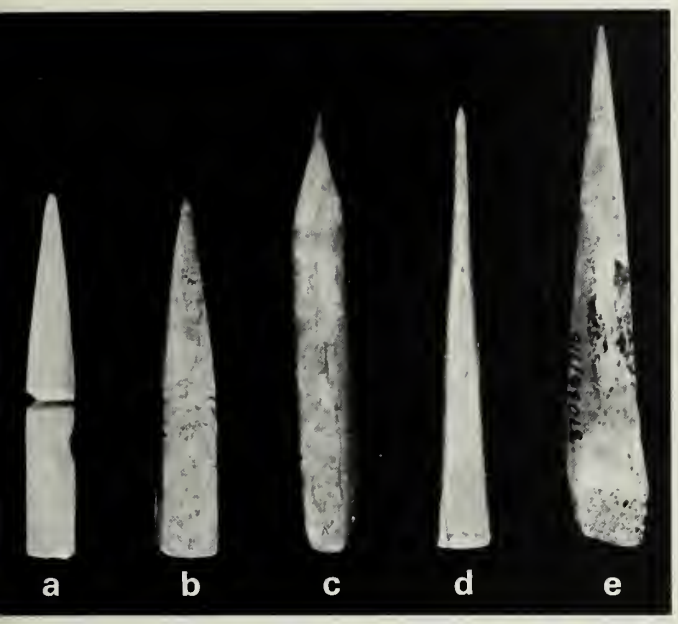
The bones were identified as a metapodial 3–4, side unknown, from an unknown artiodactyl (fig. 153a); a metatarsal 3–4, side unknown, from a mule deer (fig. 153b); and a right tibia from a large mammal, possibly a cervid (fig. 153c).

Lengths are 7.9, 8.0, and 16.6 cm., and maximum widths are 1.0, 1.2, and 2.0 cm., respectively.

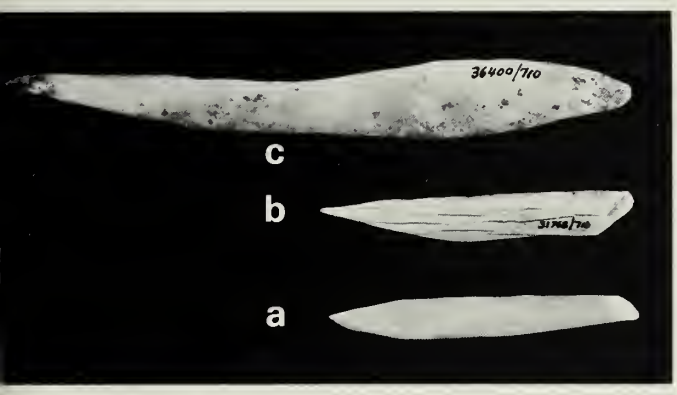
The single awl of Type 5 (fig. 154) is a split rib fragment and is similar in shape and size to the mammal-rib awls found at Pecos Pueblo (Kidder, 1932, p. 217, figs. 180–181). So far as I know, it is the only awl of its kind recovered from Wetherill Mesa. O'Bryan (1950, pl. XXXVC) has illustrated a rib awl from Site 102 on Chapin Mesa, but it is completely different in shape and size from the Big Juniper House specimen and the rib awls described by Kidder.

The rib fragment is from a large mammal, possibly bison. The exterior (convex) face was split or cut to cancellous tissue. Both faces are ground and the interior face and sides are highly polished. The rounded butt is ground and use-polished except at one broken corner. Nine shallow grooves occur on one side near the butt.

The point is unlike the point on other awls in the collection. The sides, instead of tapering more or less even-



152 *Mammal bone awls, Subtype 4B. Length of e is 8.2 cm.*



153 *Mammal bone awls, Subtype 4C. Length of c is 16.6 cm.*

154 *Mammal bone awl, Type 5.*

155 *Mammal bone scrapers: tibia scraper, a; and femur scraper, b (two views of each). Length of b is 19 cm.*

156 *Possible scrapers of mammal bone. Length of a is 21 cm.*

ly toward the tip, incurve sharply to a narrow projection that tapers to the tip. The projection is rounded on the split face and flat on the intact face. Lengthwise striations on the point indicate that this tool was probably not used for reaming.

Thirteen fragmentary mammal bone awls could not be assigned definitely to any type. Five split shafts with an unmodified or largely unmodified joint at one end are possibly Subtype 2A awls. Four of these are mule deer bones and one is an unknown artiodactyl. The elements are: left metatarsals 3–4 (2); left metacarpal 3–4 (1); metapodial 3–4, side unknown (1); and right tibia (1). Another fragment without a joint may be a Subtype 4B awl. It was made from the long bone of an unknown large mammal.

One probable awl fragment was a midportion of a shaft. It was probably a splinter awl made from an unknown artiodactyl metapodial 3–4, side unknown. It has six grooves in the convex face.

Six tips belong to split-shaft or splinter awls. Five were from unknown species of Artiodactyla and one was from an unknown mammal. The elements from which they were made are: long bone (2) and metapodial 3–4, side unknown (4). Three of the tips have grooves.

Scrapers

Three mammal long-bone artifacts were classified as scrapers. Two are complete (fig. 155), and one is a working end fragment. Three mammal-rib fragments are considered to be possible scrapers (fig. 156).

Femur scraper. A scraper made from the left femur of an immature mule deer was found in Kiva B, as part of the probable tool kit mentioned previously (fig. 149i). The cancellous bone of the femoral crest was ground smooth and the surfaces of the shaft were polished. The curved working end was worn and use-polished, and the diagonal cut on the anterior was ground and use-polished (fig. 155a, lower). Striations on the long axis indicate the use was forward and backward. The scraper is 19.0 cm. long and 3.3 cm. in diameter below the joint.

This is the only femur scraper found by the Wetherill Mesa Project. The usual scraper of this form is made from a bighorn or mule deer humerus and retains the joint as a grip.

Humerus scraper. This scraper, made from a section of the left humerus of an adult mule deer, is represented by part of the working or leading edge showing striations on the vertical axis. The shaft was polished, and it was worn by use on the cut anterior side. No measurements of it were taken.

157 *Knife-like object, a, and problematical objects, b–d, of mammal bone. Length of a is 15.7 cm.*

Tibia scraper. A scraper was made from the right tibia, minus the epiphysis, of a large immature mule deer (fig. 155b). The split shaft retains part of the distal articular head. Except for the original splitting and some use-polish, the joint is unmodified. The split surface of the shaft is sharply beveled toward the leading edge, and shows extensive use-polish and wear. The unsplit surface has a low bevel, and the leading edge is highly use-polished and worn. The scraper is 8.8 cm. long and 2.8 cm. wide at the joint. The leading edge is 1.1 cm. wide and 0.4 cm. thick. The shaft is 1.3 cm. thick just below the joint.

Possible scrapers. Three mule deer rib artifacts—a left central rib (fig. 156a), a left fourth or fifth rib (fig. 156b), and a right fourth rib (fig. 156c)—were classified as possible scrapers. The ribs are whole; one end is cut and the other is ground.

Two specimens (fig. 156a and c) show cancellous tissue on both edges, probably from use-grinding. One of these is ground from the ground end about two-thirds of the way along the shaft on one edge and about one-fourth of the way on the opposite edge. The other is ground on the edges about a third of the way along both edges and use-polished elsewhere. The surfaces are not modified. They may be side scrapers.

The other specimen (fig. 156b) shows a bevel from both surfaces at one end and wear on one edge (left edge in the figure). The bevel is ground into the cancellous tissue and the edge is worn just into the cancellous tissue. The opposite end has been cut diagonally and ground. There are several striations with no apparent alinement on both surfaces near the beveled end. This is a possible end scraper.

The longest artifact measures 21.0 by 1.8 cm., and is 0.4 to 0.6 cm. thick. The others measure 16.7 by 2.1 cm. and 15.0 by 1.9 cm., and are 0.5 to 0.6 cm. thick.

Knifelike object. The split shaft of the left tibia of a large adult mule deer has been classified as a knifelike object (fig. 157a). One end, cut and worn obliquely, was beveled on both surfaces. The other end was broken or cut and use-polished. The beveled end shows a high degree of wear and use-polish. The split surface and edges and the unsplit surface show some use-polish.

The object is 15.7 cm. long, 2.4 cm. wide, and 0.2 to 0.5 cm. thick. It is somewhat similar to the "skinning tool(?)" from Pecos described and illustrated by Kidder (1932, p. 242 and fig. 202i).

Probable Ornaments

Perforated mammal tibias. Three left and three right tibias of black-tailed jackrabbit (*Lepus californicus*), found in the fill of Kiva B, belong to a class of artifacts encountered at many sites in the Mesa Verde area. The artifacts are referred to, noncommittally as "perforated mammal tibias." Three of the present specimens are nearly complete (fig. 158); however, the other three are fragmentary.

Perforated mammal tibias exhibit three features. The proximal joint is ground horizontally and cored verti-

158 *Perforated mammal tibia. Length is 13.4 cm.*

cally down to the marrow cavity; the shaft has a small hole drilled into the marrow cavity below the proximal end; the shaft, except for the perforation, and the distal joint are unmodified. In our group, the shaft hole is drilled in the dorsal surface in three cases, the ventral surface in two cases, and in the lateral ridge in one instance. The illustrated specimens range from 12.3 to 13.4 cm. in length and measure about 0.8 cm. in diameter between the joints.

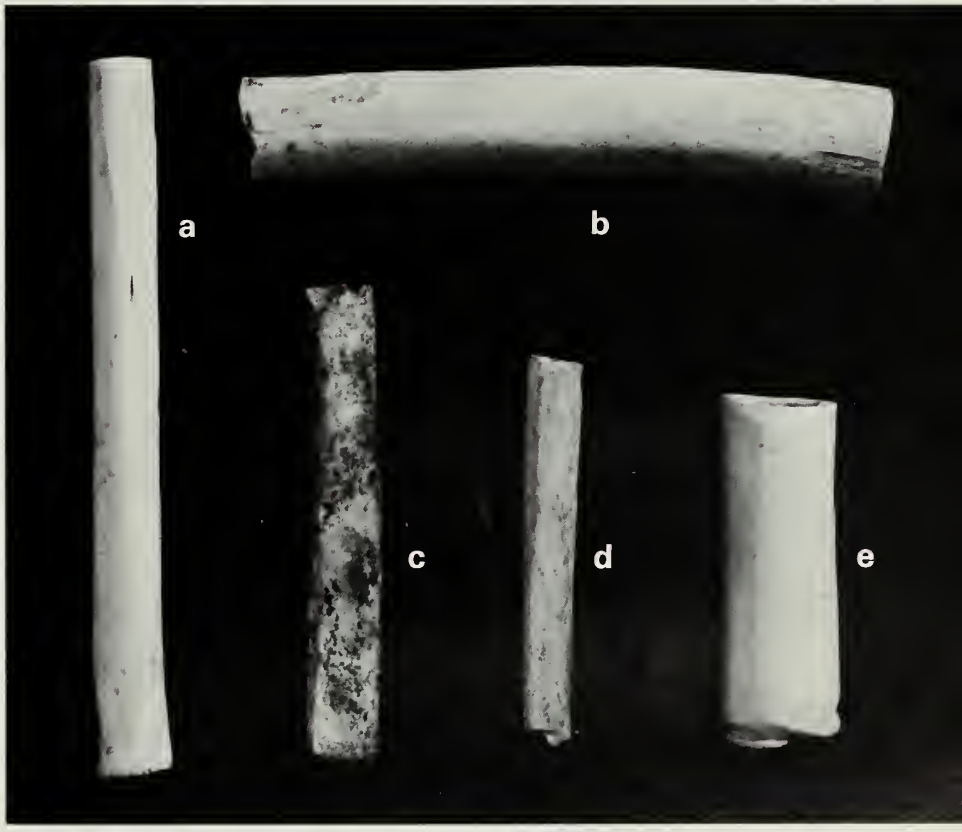
A perforated tibia in the Mesa Verde Museum collections has a knotted piece of yucca cord passing through the shaft perforation and up through the reamed end. Possibly all such artifacts were similarly equipped with cords. There is no telling whether, as has been suggested, they functioned as ornaments or tinklers. But their frequent association with kivas implies some ceremonial purpose (table 10).

Tubular beads. Nine bone beads were found (fig. 159). Seven of them were made of turkey bones, one of a bone from an unidentified species of the order Galliformes (fig. 159c), and one from the left tibia of an unidentified species of rabbit. The bird bone specimens were made from the following elements: left ulna (3); right ulna (1); left radius (2); left tibiotarsus (1); right tibiotarsus (1). The nine beads range from 3.1 to 7.4 cm. and average about 4.9 cm. in length, and vary from 0.6 to 1.2 cm. and average 0.9 cm. in maximum diameter.

The beads were made of whole shaft sections without retention of joints. The shaft surface is polished and both ends are cut and ground, and usually polished. Three beads show cut marks near one end. The rabbit bone bead is, as far as I know, unique to this area.

Tool Blank

The right metatarsal 3–4 of mule deer shows grooves cut or sawed on the dorsal and ventral surfaces, beginning near the distal foramen and running through the proximal joint. Cut marks just below the dorsal foramen of the distal joint indicate that the ligaments were served before the grooves were made (fig. 160). The specimen measures 23.7 cm. in length and 1.3 to 2.3 cm. in diameter between the joints. Presumably the shaft would have been split and tools would have been fashioned from the sections.



159 *Tubular beads of turkey bone. Length of a is 6.3 cm.*

160 *Tool blank of mammal bone.*

Problematical Objects

Several artifacts of bird and mammal bones cannot be placed in the preceding categories.

1. A cervical vertabra of turkey, measuring 3.6 by 2.4 by 1.4 cm., from the floor fill of Kiva A (fig. 161). Modified only by grinding at one end, this object may have been an unusual form of bead. Lyndon L. Hargrave, who has studied bird bone artifacts from many Southwestern sites, has never seen a comparable specimen.

2. The right tibiotarsus of a small adult turkey (fig. 162). It measures 16.5 cm. in length and 0.8 to 1.1 cm. in diameter between the joints. Both ends were ground, but there are no other modifications. The purpose of this object, which also came from the floor fill of Kiva A, is unknown.

161 *Problematical object of turkey bone.*

162 *Problematical object of turkey bone.*

3. A longitudinally split mammal rib with one intact end (fig. 157b). The face shown is polished and the reverse, with some cancellous tissue exposed, is slightly ground. The intact end is bifacially ground to a sharp edge, and the rounded sides are ground or worn smooth. The right side, as shown in the illustration, has three shallow but well-defined grooves along the edge. The sharply constricting sides may indicate that there was a point at this end.

4. A longitudinally split mammal long bone with one partially intact end and contracting sides (fig. 157c). The face shown is ground and partly polished, and the reverse, with considerable cancellous tissue exposed, is ground fairly smooth. This object, like (3), is broken where the sides sharply constrict, presumably to form a long, tapering point.

The two artifacts just described were found in Room 5. They may be fragmentary awl spatulas (Kidder, 1932, p. 222 and fig. 187).

5. A longitudinally split mammal rib with a partly intact pointed end, found in Test Trench 1 (fig. 157d). Both the face shown and the reverse (with cancellous tissue exposed) are partly ground. The rounded sides are ground or worn smooth, and the edge of the pointed end is rounded by grinding or wear except at the very tip, which is bifacially ground and sharp. Worn grooves or notches along both sides suggest that this object may have been a weaving tool.

Fragmentary Artifacts

A number of bone artifacts in the collection were too fragmentary to be classified.

Bird bone. Three incomplete bird bone artifacts include two splinter fragments of turkey tibiotarsi and one whole shaft fragment of the left radius from an unknown species of Galliformes.

Mammal bone. Ten fragmentary artifacts of mammal bone consist of: unknown artiodactyl (3), unknown mammal (2), mule deer (4), and unknown deer (1). Three are split-shaft fragments retaining joints—a right metatarsal 3–4, with the proximal head; a metatarsal 3–4, side unknown, with the distal head; and a metacarpal 3–4, side unknown, with part of the lateral condyle. Six specimens are split-shaft sections or splinters of the following elements: right tibia (1); right metacarpal 3–4 (1); metapodial 3–4, side unknown (1); long bone fragment (2); and right rib (1). The remaining artifact is a section of the right innominate of mule deer.

TEXTILE REMAINS

The only textile remains recovered from Big Juniper House consisted of some burned fragments of matting found with Burial 6 on the floor of Room 8 (ch. 7). The matting was an over 2, under 2 twilled fabric of rush (*Scirpus* sp.), with the elements measuring 0.4 cm. in width. No selvage sections were present. Burial 6 is probably early Pueblo III, and dates about A.D. 1100.

CHAPTER 6

refuse material

Numerous unmodified stone flakes and cores, unworked bird and mammal bones, and burned corncobs were recovered from Big Juniper House. Remains of other food staples thought to have been common at the time the site was occupied, such as beans and squash, were not found. By far the greatest quantity of refuse was recovered from South Trash Mound, and lesser amounts were obtained from kiva and room fills. East Trash Mound, a shallow trash area, yielded very little. Sheet trash occurred near the rooms.

South Trash Mound was excavated by six parallel trenches and one trench intersecting the north edge of the mound (fig. 163). The maximum depth, in the center of the mound near Test Trench 1, was approximately 3 feet and the average depth was about 1.5 feet.

The inhabitants of West House Mound, the architectural unit associated with Kiva A, probably discarded their trash in South Trash Mound, and the people of East House Mound presumably deposited their refuse in East Trash Mound, in Kivas B and C (after they were abandoned), and in the sheet trash area designated Area 12, East, and Test Trench 15 (fig. 5).

CHIPPING DEBRIS

A total of 731 unmodified flakes and 36 cores from stratified areas within the site were analyzed by Douglas Osborne (1965) in a comparative study of the chipping debris from excavated sites on Wetherill Mesa representing different time periods. (Approximately equal numbers of flakes and cores, obtained mostly from the unstratified South Trash Mound, were not analyzed.)

It was hoped that the Big Juniper House flake and core collections would show differences correlated with time. Little success was obtained in this regard, evidently because of the churning of the deposits within a short time span. Still, the flake sample as a whole differed significantly from samples from other sites studied by Osborne. The core sample was too small for a comparison with the other sites.

Attributes most clearly showing change with time are color, material, and striking platform—the last probably related to the nature of the material. Flakes and cores from mid-Pueblo II and earlier are generally brown or black, coarse-grained claystones or siltstones with artificial heels, while late Pueblo III flakes are predominantly gray-green, fine-grained cherts with natural heels.

It appears that Big Juniper House, a site occupied principally in late Pueblo II and early Pueblo III, illustrates transitional attributes in regard to the unmodified flakes. Claystones or siltstones and cherts were about equally preferred, and the darker colors are slightly favored over light ones. However, the presence of flakes of light, mottled color in considerable numbers may be a good time marker of late Pueblo II-early Pueblo III unmodified flakes. The artificial heel is slightly more common than the natural heel, but there is not the clear-cut difference usually seen in unmodified flakes from earlier sites.

UNMODIFIED ANIMAL BONES

Bird Bones

Of the 129 unmodified bird bones collected at the site, 119 were turkey, *Meleagris gallopavo* (table 11). Of the other 10 bones, 5 belonged to a single Scaled Quail, *Callipepla squamata,* and 5 were not identifiable to species.

Clearly, the turkey was the most important species of bird for the inhabitants of Big Juniper House. The turkey was used almost to the exclusion of other birds for bird bone artifacts (ch. 5) and probably also for food, although I did not find definite evidence of butchering on any of the refuse bones.

TABLE 11.—UNWORKED TURKEY BONES BY AGE GROUPINGS AND ELEMENTS, BIG JUNIPER HOUSE

AGE GROUPINGS	Elements																														
	Left tibiotarsus	Right tibiotarsus	Tibiotarsus (side unknown)	Left tarsometatarsus	Right tarsometatarsus	Tarsometatarsus (side unknown)	Left carpometacarpus	Right carpometacarpus	Left femur	Right femur	Femur (side unknown)	Right fibula	Left humerus	Right humerus	Left ulna	Right ulna	Left radius	Right radius	Left scapula	Right scapula	Left coracoid	Right coracoid	Pelvis	Sternum	Toe and foot bones	Furculum	Cervicle vertebrae	Total bones	Minimum faunal count [1]	Maximum faunal count [2]
Very juvenile	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	1
Juvenile	2	...	1	...	...	...	...	...	...	1	...	...	...	...	1	1	...	...	1	...	...	...	...	...	...	...	...	7	2	7
Young	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	1
Immature	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	3	2	3
Large immature	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	2	1	2
Very small adult	...	...	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	2	3
Small adult	4	3	...	...	...	...	1	1	4	1	...	...	...	3	...	...	...	...	...	...	...	1	...	...	[3] 8	...	...	26	4	18
Average adult	...	5	4	1	...	1	2	2	2	1	1	1	5	8	2	2	1	2	4	2	...	1	1	1	3	1	[4] 6	59	8	56
Large adult	2	2	...	...	...	...	...	...	2	1	...	...	...	...	3	1	1	1	1	...	1	2	...	...	...	...	...	17	3	17
Totals	8	10	6	3	2	1	4	4	8	4	1	1	5	11	6	6	2	3	7	2	1	4	1	1	11	1	6	119	24	108

[1] In this study, the minimum faunal count records the smallest possible number of individuals of a species represented by the remains of that species in the sample. Age, sex, and size categories are the criteria used.

[2] The maximum faunal count equals the total number of individuals of a species represented by the remains of that species in the sample, less those additional elements which can be demonstrated to be part of any single individual represented in the sample.

[3] One individual.

[4] Three individuals.

TABLE 12.—DISTRIBUTION OF UNWORKED TURKEY BONES BY ELEMENTS, BIG JUNIPER HOUSE

PROVENIENCE	Elements																														
	L. Tibiotarsus	R. Tibiotarsus	? Tibiotarsus	L. Tarsometatarsus	R. Tarsometatarsus	? Tarsometatarsus	L. Carpometacarpus	R. Carpometacarpus	L. Femur	R. Femur	? Femur	R. Fibula	L. Humerus	R. Humerus	L. Ulna	R. Ulna	L. Radius	R. Radius	L. Scapula	R. Scapula	L. Coracoid	R. Coracoid	Pelvis	Sternum	Toe and foot bones	Furculum	Cervicle vertebrae	Totals
South Trash Mound	2	2	1	...	2	...	1	1	1	2	...	1	4	4	2	3	1	...	1	...	...	1	1	...	1	...	...	31
Area 12	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	2
Test Trench 15	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	2
East House Mound	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1
Room 3, fill	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
Room 7, fill	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1
Room 8, subfloor fill	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Room 11, fill	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Room 14, fill	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
Room 15, fill	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1
Room 16, fill	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1
Room 19, fill	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Room 19, subfloor cist fill	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	2
Rooms 21 and 22, fill	...	...	2	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	3
Room 24, fill	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Kiva A, fill	2	2	...	...	...	...	...	2	...	1	...	...	1	1	2	...	...	2	4	...	...	1	...	...	...	...	...	18
Kiva A, floor fill	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	1	...	[1] 2	7
Kiva A, pit fill	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1
Kiva A, subfloor ventilator fill	1	1	1	1	...	1	...	1	1	1	...	...	...	2	...	...	...	...	1	...	...	...	...	...	[1] 8	...	[1] 2	21
Kiva B, fill	1	3	...	1	...	...	1	...	2	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	9
Kiva B, floor fill	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	[1] 2	3
Kiva B, Cist 1 fill	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1
Kiva C, fill	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	1	1	1	1	1	...	...	...	...	...	...	...	7
Totals	8	10	6	3	2	1	4	4	8	4	1	1	5	11	6	6	2	3	7	2	1	4	1	1	11	1	6	119

[1] One individual.

TABLE 13.—DISTRIBUTION OF UNWORKED MAMMAL BONES AND SKELETONS BY SPECIES, BIG JUNIPER HOUSE

PROVENIENCE	Species																		
	Lepus californicus	*Lepus* sp.	*Sylvilagus audubonii*	*Sylvilagus* sp.	*Sylvilagus* sp.—skeletons	*Odocoileus hemionus*	*Odocoileus* sp.	*Artiodactyla* sp.	*Citellus variegatus*	*Citellus* sp.	*Neotoma cinerea*	*Neotoma* sp.	*Dipodomys ordii*—skeleton	*Mustelidae* sp.	*Canis familiaris*	*Canis latrans*	*Urocyon cinereo-argenteus*	*Mammalia* sp.	*Mammalia/Aves*	Totals
South Trash Mound	2	....	1	6	....	5	....	1	1	....	....	1	....	1	2	1	1	2	....	24
Area 12	1	....	....	....	....	1	....	....	....	....	....	....	....	....	1	....	....	....	....	3
Area 2, upper fill	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1
Room 1b, lower fill	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	1
Room 1b, sub-Floor 2, cist fill	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	1
Room 8, fill	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1
Kiva A, fill	5	....	....	1	....	1	1	....	2	....	....	....	....	....	....	....	....	6	1	17
Kiva A, ventilator shaft	1	1	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3
Kiva A, floor fill	5	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	9
Kiva A, subfloor ventilator	12	....	....	2	....	....	....	....	2	1	2	....	....	....	....	....	....	....	1	20
Kiva B, fill	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1
Kiva B, floor fill	1	....	....	5	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	7
Kiva B, floor	....	....	....	....	1	....	....	....	....	....	....	....	1	....	....	....	....	....	....	2
Kiva B, Cist 1, fill	2	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	1	....	4
Kiva C, fill	....	....	....	1	....	1	....	2	....	....	....	....	....	....	....	....	....	....	....	4
Kiva C, floor fill	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1
Totals	29	1	1	19	2	10	2	4	6	1	2	1	1	1	3	1	1	12	2	99

Most of the turkey refuse bones came from South Trash Mound and the kiva fills (table 12). A relatively high percentage of these bones came from the subfloor ventilator fill in Kiva A. This provenience also had a disproportionate number of refuse mammal bones (table 13). It is possible that when the subfloor ventilator was filled during the remodeling of Kiva A, the Indians inadvertently scraped up a particularly "rich" part of the trash for fill material. On the other hand, it may be that they had a "ceremonial" purpose in placing parts of animals in this remodeled architectural feature.

Mammal Bones

The 94 unmodified mammal bones, and 3 mammal skeletons found during the excavation represented a much greater variety of species than did the bird bones. Of the 17 groups of mammals identified, black-tailed jackrabbit (*Lepus californicus*) was by far the most numerous (table 13).

Although bighorn sheep (*Ovis canadensis*) and bobcat (*Lynx rufus*) are represented in the mammal bone artifacts, these species are missing among the unworked mammal bones. Seemingly, these animals were considered only as sources of raw materials for tools.

We can assume that some of the mammals represented by unworked bones were not related to the Indians' activities. Rock squirrel (*Citellus variegatus*), wood rat (*Neotoma* sp.), and cottontail (*Sylvilagus* sp.) abound in the area today, and these animals could have moved into Big Juniper House shortly after the people left. On the other hand, black-tailed jackrabbit is rare on the mesa today (and probably in the past also), although it is common in the Mancos Canyon to the south of Mesa Verde. It seems likely that this species was hunted both for food and materials for tools (ch. 5).

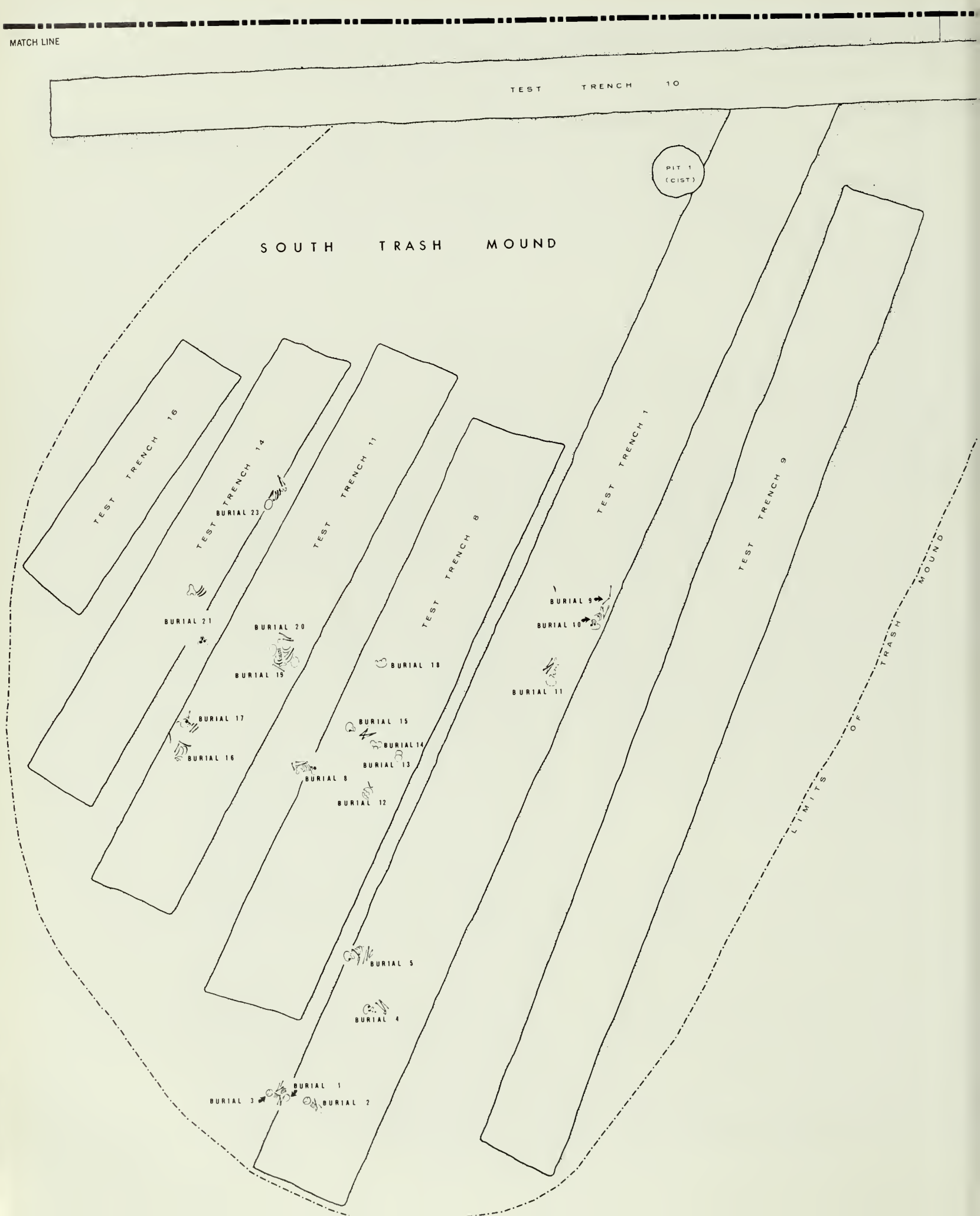
Skeletons of a cottontail (*Sylvilagus* sp.) and of a kangaroo rat (*Dipodomys ordii*) were found on the floor of Kiva B (table 13). I tend to believe that these creatures were not associated with the kiva's use but died there shortly after the kiva was abandoned.

The unworked mammal bones, like the unworked bird bones, showed no definite evidence of butchering. Several of the mammal bones were burned, but whether this was unintentional or the result of roasting is not known.

OTHER MATERIAL

Seventeen charred corncob fragments were found. The few identifiable specimens include 8-rowed (1), 10-rowed (2), and 12-rowed (2) cobs. These varieties were also discovered at other Wetherill Mesa sites (Cutler and Meyer, 1965).

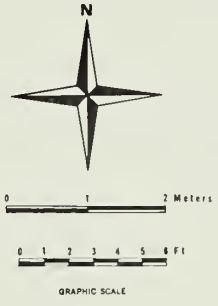
Also found were several small, polished bits of chert or other stone. They are probably turkey gizzard stones. Similar objects were collected from other sites excavated on Wetherill Mesa.


MATCH LINE
TEST TRENCH 10
PIT 1 (CIST)
SOUTH TRASH MOUND
TEST TRENCH 16
TEST TRENCH 14
TEST TRENCH 11
TEST TRENCH 8
TEST TRENCH 1
TEST TRENCH 9
LIMITS OF TRASH MOUND
BURIAL 23
BURIAL 21
BURIAL 20
BURIAL 19
BURIAL 18
BURIAL 17
BURIAL 16
BURIAL 15
BURIAL 14
BURIAL 13
BURIAL 8
BURIAL 12
BURIAL 9
BURIAL 10
BURIAL 11
BURIAL 5
BURIAL 4
BURIAL 1
BURIAL 3
BURIAL 2

MATCH LINE

TEST TRENCH 12

EAST TRASH MOUND



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BURIAL & TRASH AREA

WETHERILL MESA ARCHEOLOGICAL PROJECT

MESA VERDE NATIONAL PARK

COLORADO

CHAPTER 7

burials

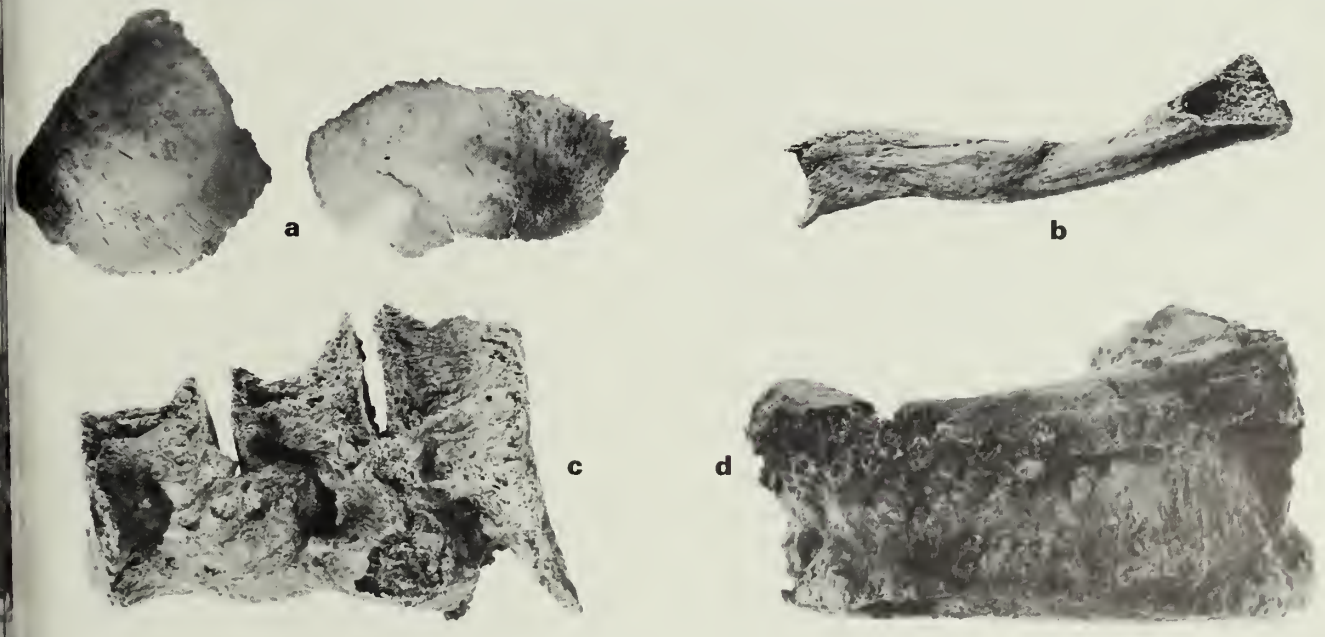
Almost every scrap of human bone encountered during the excavation of Big Juniper House was saved for pathological and dental as well as morphological study. Figure 163 gives the burial locations in South Trash Mound and the schematic positions of the burials.

Several of the 23 burials and some of the 45 scattered human bones showed signs of disease. The most common was degenerative arthritis. All except six individuals judged to be of adult age had arthritis. Of these six, four were in fragmentary condition with most of the vertebrae missing—the most common area in which arthritis is observed. One adolescent (Burial 23) also exhibited this disease.

Three fractures were noted: a left clavicle, Burial 8 (fig. 164b); a wedge compression fracture of a lumbar vertebra, Burial 11 (fig. 164d); and a severe fracture dislocation of the lumbar vertebrae, Burial 9 (fig. 164c). All of these fractures were healed, the last showing extreme osteophytic bridging of the three vertebral bodies.

A common pathological condition observed in infants and children is osteoporosis, where the bone is absorbed so the tissue becomes porous and fragile. Two of the four infant burials had porosis of the skull (Burial 12, fig. 164a). One isolated child skull also showed evidence of porosis.

Table 14 shows the pathologies observed on the Big Juniper House burials by etiologic groups. Nine of the 23 burials, or approximately 39 percent, exhibited bone pathologies. Burials 8 and 11, which were males of about the same age, had the greatest number of abnormalities, with three each.



4 *Abnormalities in human bones: a, osteoporosis in skull, Burial 12; b, fracture of left clavicle, Burial 8; c, fracture dislocation lumbar vertebrae with subsequent fusion, Burial 9; and d, wedge compression fracture of a lumbar vertebra, Burial 9.*

TABLE 14.—HUMAN BONE PATHOLOGIES, BIG JUNIPER HOUSE

BURIAL	Etiologic Grouping					Abnormality	Sex	Age
	Prenatal	Growth	Degenerative	Trauma	Unclassified			
Burial 1						None	?	Adolescent.
Burial 2						None	♀	Adolescent.
Burial 3		x				50° bilateral anteversion of the femora	♀	Early teens.
Burial 4						None	♀	Adult.
Burial 5						None	♂	30–35.
Burial 6						None	?	Adult.
Burial 8	x		x	x		Scapula, perforation of the blade; arthritis of lumbar vertebrae; healed fracture of the right clavicle.	♂	30–35.
Burial 9			x	x		Arthritis; fracture dislocation of lumbar vertebrae	♂	35–40.
Burial 10						None	♀	Adolescent.
Burial 11	x		x	x		Perforation of 5th lumbar vertebral isthmus; arthritis of vertebrae; lateral compression fracture of a lumbar vertebra.	♂	35–40.
Burial 12					x	Porosis of the skull	?	Infant.
Burial 13					x	Porosis of the skull	?	Infant.
Burial 14						None	♂	Adolescent.
Burial 15						None	♀	Late teens.
Burial 16						None	?	Infant.
Burial 17		x	x			External torsion of the tibia, 30°; glenoid arthritis; arthritis of elbow; arthritis of vertebrae.	♂	30–35.
Burial 18						None	?	Infant.
Burial 19						None	♀	Adolescent.
Burial 20						None	♀?	Adult.
Burial 21						None	?	Adult.
Burial 22						None	♀?	Adult.
Burial 23			x			Acetabular arthritis	♂	Adolescent.
Burial 24			x			Acetabular arthritis	♀	Over 40.
Miscellaneous (31767/710)			x			Arthritis of the vertebrae	?	Adult.
Miscellaneous (31775/710)			x			Patellar arthritis	?	Adult.
Miscellaneous (33554/710)					x	Porosis of the skull	?	Child.
						Total prenatal abnormalities=2. Total growth abnormalities=2. Total degenerative abnormalities=8. Total trauma abnormalities=3. Total unclassified abnormalities=3.		

In the burial descriptions and in table 15, the following terms describing body position will be used:

Flexed burial: Burial is tightly flexed with knees drawn up to the chest and the arms usually sharply bent at the elbows, the elbows at the chest region.

Semiflexed burial: Knees at about right angles to the trunk; arms either tightly flexed or partialy flexed in the same manner as the legs. Sometimes the arms are extended.

Extended burial: Legs fully extended and straight; arms usually more or less straight, but may be bent or flexed.

No clear pattern emerged as to orientation of the body, or the side upon which the head or body rested (table 15). Most of the burials were either flexed or semiflexed. One was probably extended and eight were too scattered or fragmentary to determine body position.

Sixteen of the 23 burials had associated grave goods. The number of objects ranged from one (seven burials) to nine (Burial 4). Three burials had two artifacts, two burials had three, and three burials had four, each. The usual grave offering was pottery. Burial 4 had a "killed" bowl over the skull. To my knowledge, this is the only killed-bowl burial recorded in the Mesa Verde region.

All crania that were sufficiently preserved showed asymmetrical lambdoidal deformation, probably produced by cradleboard pressure. Unfortunately, there is no information as to which side of the skull was flattened. Occipital deformation, observed on crania at several Wetherill Mesa sites, was not found at Big Juniper House.

In three burials, most of the teeth were missing and those remaining were heavily worn. Moderate to heavy tooth wear was also noted in all individuals with perma-

TABLE 15.—BURIAL PATTERNS, BIG JUNIPER HOUSE

BURIAL	Orientation					Head Position					Body Position						Grave goods associated	Sex	Age [1]
	Head to south	Head to north	Head to east	Head to west	Undetermi-nable	Left side	Right side	Face down	Face up	Undetermi-nable	Flexed, left side	Flexed, right side	Semiflexed, left side	Semiflexed, right side	Extended, on back	Undetermi-nable			
1			x					x				x						?	Al
2	x							x						x			x	♀	Al
3	x							x						x			x	♀	Et
4				x		x							x				x	♀	Ad
5	x						x							x			x	♂	30–35
6		?				?							x				x	?	Ad
8				?		?					x						x	♂	30–35
9	x								x					x			x	♂	35–40
10	?									x					x			♀	Al
11	x					x					x						x	♂	35–40
12					x					x						x	x	?	I
13					x					x						x		?	I
14					x		x									x		♂	Al
15	x						x					x					x	♀	Lt
16					x					x						x		?	I
17					x		x									x	x	♂	30–35
18					x				x							x	x	?	I
19				x				x				x					x	♀	Al
20			?							x				x				♀ ?	Ad
21					x					x						x	x	?	Ad
22					x					x						x	x	♀ ?	Ad
23	x					x							x					♂	Al
24			x			x							x				x	♀	40+
Totals	8	1	3	3	8	6	4	4	2	7	2	3	4	5	1	8	16	23	

[1] (I=infant; Al=adolescent; Ad=adult; Lt=late teens; Et=early teens)

nent teeth except three adolescents, who showed only slight tooth wear. It is assumed that the wear was produced by the gritty particles unintentionally added to the staple food, cornmeal, when it was being ground on sandstone metates.

Caries and abscesses are fairly common in Mesa Verde burials, but they were observed only in Burial 9 at Big Juniper House. There is no explanation for this rarity.

The poor condition of most of the bones may have been due to the shallowness of the trash mound. Disturbance of many of the burials was probably caused by rodents and badgers burrowing into the deposits.

Following are descriptions of the 23 burials:

Burial 1 (fig. 165, center)

Location—Test Trench 1, South Trash Mound.

Sex—Indeterminate.

Age—Adolescent.

Condition—Badly disturbed and fragmentary; trunk, arms, and hands and feet missing.

Deformation—Pronounced asymmetrical lambdoidal deformation.

Pathology—None.

Position—Head partly on right side, face-down. Leg bones suggest a flexed burial on the right side.

Associated artifacts—None.

Comments—No evidence of excavated grave. Base of skull 1.3 feet below surface and 0.6 foot above sterile earth.

Burial 2 (fig. 165, right)

Location—Test Trench 1, South Trash Mound; same general location as Burial 1.

Sex—Female.

Age—Adolescent.

Condition—Humeri, left ulna, and hands and feet missing.

Deformation—Pronounced asymmetrical lambdoidal deformation.

Pathology—None.

Position—Semiflexed; head face-down; trunk is breast-down, legs flexed on right side, left leg over right; knees at about right angles to the trunk; arms probably extended on both sides of the trunk.

Associated artifacts—Turkey bone tubular bead near right side of radius of right arm; one Type 3 worked sherd of Mancos Black-on-white in area of burial.

Comments—No evidence of excavated grave. Burial is 1.6 feet below surface, and rested on sterile soil. All deciduous teeth present and heavily worn; no permanent teeth have erupted.

Burial 3 (fig. 165, left)

Location—Test Trench 1, South Trash Mound, same general location as Burials 1 and 2.

Sex—Female.

Age—Early teens.

Condition—Left forearm, and hands and feet missing.

Deformation—Moderate asymmetrical lambdoidal deformation.

Pathology—50° bilateral anteversion of the femora.

165 *Burials 3, 1, and 2 (left to right), Test Trench 1, South Trash Mound.*

Position—Semiflexed; head face-down, but turned slightly on the right side; trunk is breast-down, but slightly on the right side; legs flexed on right side, left leg over right; knees at about right angles to the trunk; arms extended along both sides of the trunk, right forearm under right side of pelvis.

Associated artifacts—Two corrugated body sherds, probably from a Mancos Corrugated jar, at left side of head, with smaller sherd inside larger one; rectangular red shale pendant (fig. 133a) in the area of the burial.

Comments—No evidence of excavated grave; resting on sterile soil, with the skull overlain by about 0.6 foot of trash. All permanent teeth have erupted with the exception of the third molars; little tooth wear, moderate tooth crowding, but no caries or abscesses.

Burials 2 and 3 were similar in burial position and orientation; they may have been interred at the same time. The legs of Burial 3 are overlain by (later) Burial 1.

Burial 4 (figs. 166 and 167)

Location—Test Trench 1, South Trash Mound.

Sex—Female.

Age—Adult.

Condition—Generally poor; skull very fragmentary; trunk and right arm mostly missing; hands and feet missing.

Deformation—Not determinable by physical anthropologist, due to fragmentary condition, but field observations suggest lambdoidal deformation.

Pathology—None.

Position—Probably semiflexed; head on left side; trunk probably on left side; legs flexed on left side, right leg over left; knees at about right angles to the body; arms probably extended on both sides of body, but left elbow bent away from body.

Associated artifacts—A "killed" Piedra Black-on-white bowl inverted over skull (fig. 45); the base of a large corrugated jar, probably Mancos Corrugated, worked

166 *Burial 4, Test Trench 1, South Trash Mound. "Killed" bowl covers skull.*

into a bowl form (Type 9, Worked Sherds, fig. 87, bottom), next to head and right shoulder; a Mancos Black-on-white bowl (fig. 56a), upright and 0.6 foot above skull; three Cortez Black-on-white sherds (figs. 49a and 54m) and one corrugated jar body sherd inside the Mancos Black-on-white bowl; a Mancos Black-on-white sherd in the area of the lumbar vertebrae; and one Type 1D worked sherd and other sherds in the area of the burial (table 3).

Comments—No evidence of grave; burial 2.7 feet below surface, resting on or slightly in sterile soil.

As mentioned earlier, Burial 4 seems to be the only killed-bowl burial recorded in the Mesa Verde area to date. The hole was broken from the inside. It is interesting that the bowl represents an heirloom piece, since Piedra Black-on-white is confined to Pueblo I, a time when Big Juniper House was not occupied. The decay and fragmentation of the skull was probably hastened by soil moisture retained in the bowl. (Burial 83 in the Aztec Ruin had a pot broken and scattered over the burial and is thought to represent a ceremonial breaking of pottery [Morris, 1924, pp. 193–194, 223]. This may be considered a killed bowl, but a pot with a hole in the base is generally regarded as a "true" killed vessel.)

Killed-bowl burials are typical of the Mimbres region of southwestern New Mexico, part of the Mogollon culture province (Cosgrove and Cosgrove, 1932, p. 28). This mortuary practice is so restricted to the Mimbres region that its single known occurrence in the Mesa Verde is probably the result of influence from that direction.

Burial 5 (fig. 168)

Location—Test Trench 1, South Trash Mound.

Sex—Male.

Age—30 to 35.

Condition—Skull crushed on both sides, probably from earth pressure; forearms, and hands and feet mostly missing.

167 *Burial 4, with killed bowl removed from skull.*

168 *Burial 5, Test Trench 1, South Trash Mound.*

Deformation—Pronounced asymmetrical lambdoidal deformation.

Pathology—None.

Position—Semiflexed; head on right side; trunk mostly missing, probably on right side; legs flexed on right side, left leg over right; knees at about right angles to the trunk; arms probably flexed, left arm over right.

Associated artifacts—One Mancos Black-on-white pitcher (fig. 59c), resting on two large Mancos Black-on-white sherds (one bowl rim and one jar body) next to the forehead; one Mancos Black-on-white tubular ladle handle under the left tibia; and one use-modified flake and miscellaneous sherds in the vicinity of the burial (tables 3 and 9).

Comments—No evidence of excavated grave; burial level (in trash) about 0.3 foot above sterile soil and about 1.8 foot below surface. Teeth showed no crowding, caries, or abscesses. Stature estimated at 164.3 cm. or approximately 5 feet 5 inches.

Burial 6 (fig. 169)

Location—Room 8, floor.

Sex—Indeterminate because of fragmentary condition.

Age—Adult.

Condition—Elements scattered from center of room to west wall.

Deformation—Not determinable because of fragmentary condition.

Pathology—Same as above.

Position—Uncertain; head possibly on the left side; legs apparently semiflexed on left side, right leg over left; knees at about right angles to the body.

Associated artifacts—Burned twill 2/2 rush matting in center of burial; one large Mancos Black-on-white bowl (fig. 57c) near the knee and against the south wall of the room; one unclassified black-on-white sherd to the west of the bowl; and one large Mancos Black-on-white bowl sherd in the same area (Type 8, vessel sherd worked into a "plate"; fig. 86, center).

Comments—Since Burial 6 was heavily burned and fragmented by heat, and the room in which it was found had not burned, the burial is a secondary one. It seems probable that the individual, wrapped in rush matting, was burned in a room fire elsewhere in the site and was later placed in a slight depression in the floor of Room 8.

It is doubtful if the burial represents an actual cremation, for it showed some degree of articulation unlike true cremations found in other areas of the Southwest where the fragments were scraped together, placed in a vessel or bundle, and then buried. The only instance of cremation in the general Mesa Verde area that I am aware of is a multiple cremation of two adults at Aztec Ruin (Morris, 1924, pp. 186–187). Fewkes (1910, pp. 154–156) states that multiple cremations occurred at Cliff Palace and other sites in the park, but the remains have since been identified as various mammal and bird bones (Jean M. Pinkley, personal communication). Also, a pit filled with ash and other material in Step House, which was described by Nordenskiöld (1893, pp. 41–42) as a possible cremation has recently been found by Robert F. Nichols to be a probable storage cist containing non-human remains associated with one of the Basketmaker III pithouses at this cliff house.

Some of the skull fragments of Burial 6 overlay a Mancos Black-on-white olla buried in the room floor, with the mouth of the vessel opening at floor level. This pot, as noted in chapter 2, was probably associated with the room rather than with the burial.

When it was found, the burial was thought to consist of two individuals; they were labeled Burials 6 and 7. Subsequent examination showed that only one individual was represented and the designation "Burial 7" was dropped.

169 *Burial 6, in floor of Room 8.*

Burial 8 (fig. 170)

This burial represents three individuals; the most complete one is described below.

Location—Test Trench 8, South Trash Mound.

Sex—Male.

Age—30 to 35.

Condition—Skull, legs, and hands and feet missing.

Deformation—No data.

Pathology—Arthritis of the lumbar and thoracic vertebrae; healed fracture of the left clavicle in the midportion of the shaft (fig. 164b); large hole in the scapula directly beneath the coracoid process and medial to the glenoid fossa.

Position—Probably flexed burial on the left side; although skull was missing, position of the trunk indicated the head was on the left side; arms tightly flexed against chest with right forearm over left forearm, upper arms against each side of the body; trunk on left side; legs missing, but position of the pelvis suggested the legs were flexed.

Associated artifacts—Mancos Corrugated jar sherds and plain sherd of a black-on-white jar adjacent to the pelvis; one annular bead in the area of the burial(s); miscellaneous sherds in the burial area (table 3), and various stone artifacts in the vicinity of Burial 8 (table 9).

Comments—The three burials were near the surface of the trash mound (about 0.2 foot to top of burial) and erosion probably accounts for their fragmentary condition. Age, sex, and position of two individuals could not be determined because of scarcity of the remains. Stature of burial described above estimated at 160 cm., or about 5 feet 3 inches.

170 *Burial 8, Test Trench 8, South Trash Mound.*

Burial 9 (fig. 171)

Location—Test Trench 1, South Trash Mound.

Sex—Male.

Age—35 to 40.

Condition—Most of left arm, and hands and feet missing.

Deformation—Pronounced asymmetrical lambdoidal deformation.

Pathology—Arthritis of the vertebrae. Almost complete fusion of three lumbar vertebrae as a result of a severe fracture dislocation of the lumbar spine (fig. 164c). Also wedge compression fracture of a lumbar vertebra (fig. 164d).

Position—Probably semiflexed; head slightly on left side; trunk on back and partly on left side; legs semiflexed on right side, right leg under left; knees drawn up to chest area; right upper arm extended along trunk, right forearm crossed over abdomen area at nearly right angles to the upper arm; position of left arm, mostly missing, probably similar to right arm.

Associated artifacts—About half of a Mancos Black-on-white pitcher adjacent to the back of the skull (fig. 58b).

Comments—No evidence of prepared grave; bottom of skull 0.5 foot above sterile earth and top of burial 0.6 to 0.9 foot below surface. There was a marked loss of teeth. All molars and left first and second premolars in maxillae, and all dentition except canines and left first premolar in mandible are missing. Caries in right lateral incisor and left canine, abscesses in lateral incisors and left canine in maxillae. Remaining teeth heavily worn.

Burial 10 (fig. 171)

Location—Test Trench 1, South Trash Mound.

Sex—Female.

Age—Adolescent.

Condition—Elements largely missing.

Deformation—No data.

Pathology—Not determinable because of fragmentary remains.

Position—Orientation of the leg suggests extended burial.

Associated artifacts—None.

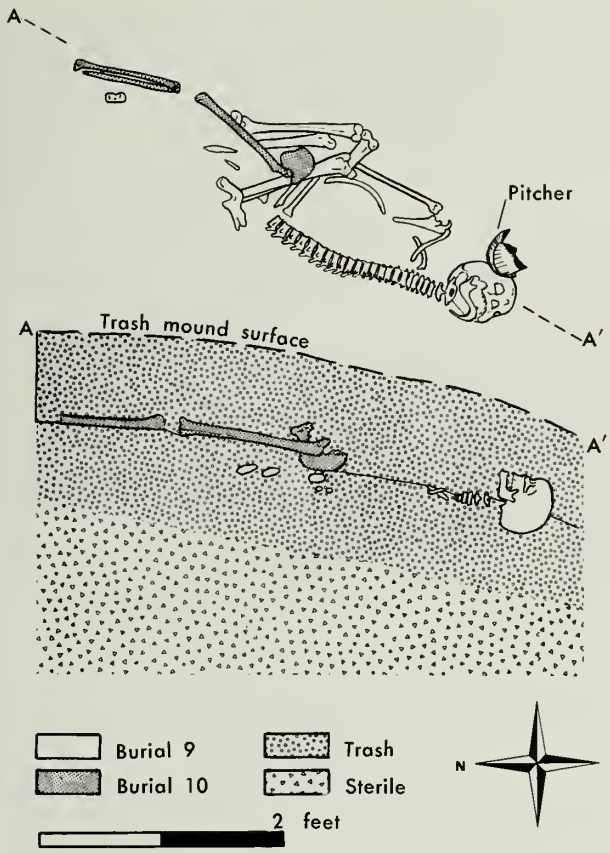
Comments—Rests on Burial 9. Top of tibia 0.8 foot below surface of the trash mound; pelvic area somewhat closer to surface. Most of burial probably eroded away.

Burial 11 (fig. 172)

Location—Test Trench 1, South Trash Mound.

Sex—Male.

Age—35 to 40.



171 *Burials 9 and 10, Test Trench 1, South Trash Mound.*

Condition—Midsection of trunk, arms, and hands and feet missing. Other bones fragmentary and eroded.

Deformation—Pronounced asymmetrical lambdoidal deformation.

Pathology—Arthritis of vertebrae, facets and bodies; perforation of the fifth lumbar vertebra isthmus; healed lateral compression fracture of one lumbar vertebra.

Position—Probably flexed; head on left side; trunk on left side; legs flexed on left side, right leg over left, legs at about 25° angle to trunk.

Associated artifacts—Two large unclassified black-on-white jar sherds from the base and body of the same vessel over the skull; a Cortez Black-on-white ladle, minus the handle, near the knees (fig. 46c).

Comments—No evidence of prepared grave. Burial rests on sterile soil and is overlain by 1.3 feet of trash. Extremely fragmentary condition of the remains probably due to the activity of rodents whose numerous burrows were observed in the immediate area of this burial.

Burial 12 (fig. 173)

Location—Test Trench 8, South Trash Mound.

Sex—Indeterminate.

Age—Infant.

Condition—Incomplete, fragmentary.

Deformation—No data.

Pathology—Osteoporosis of the skull, particularly the parietals (fig. 164a).

Position—Not determinable because of incomplete remains.

Associated artifacts—Approximately half of a small Mancos Black-on-white bowl or ladle (not illustrated) and various sherds in the area of the burial (table 3).

Comments—No evidence of prepared grave. Burial 0.5 to 0.6 foot above sterile earth and 1.0 foot below the surface. Extremely fragmentary condition undoubtedly resulted from rodent activity.

Burial 13 (fig. 173)

Location—Test Trench 8, South Trash Mound—area of Burials 12, 14, and 15.

Sex—Indeterminate.

Age—Infant.

Condition—Extremely fragmentary.

Deformation—No data.

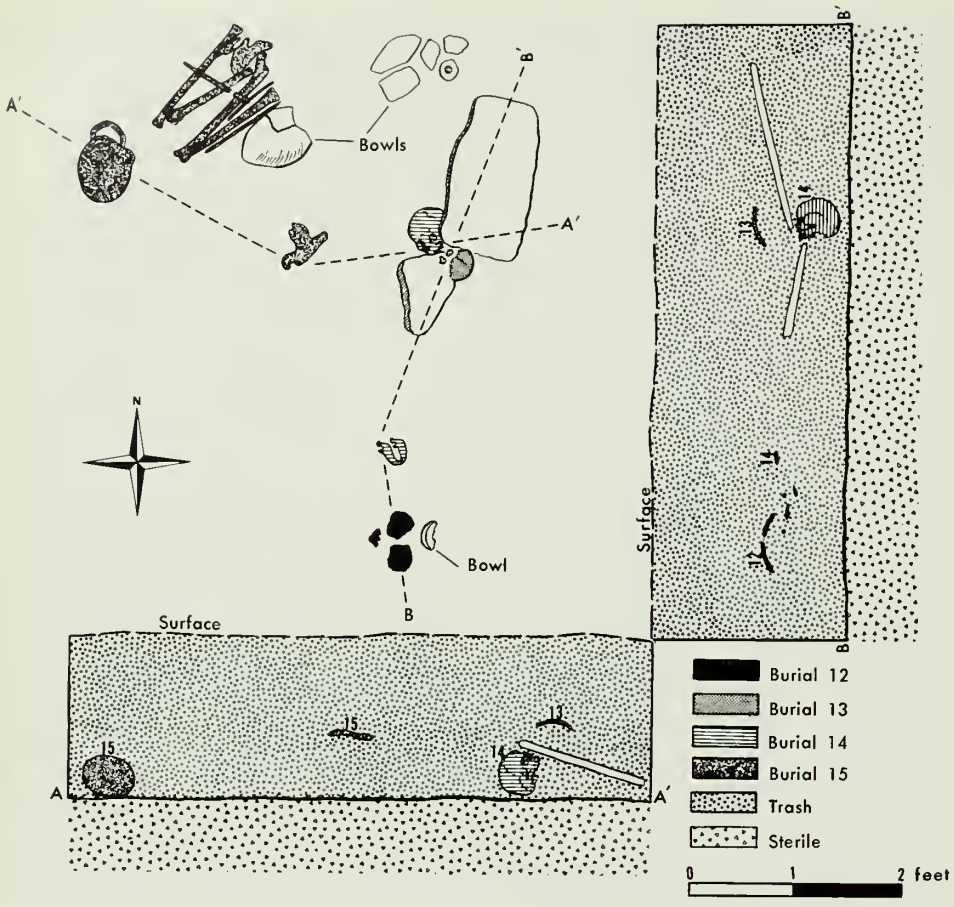
Pathology—Osteoporosis of the skull.

Position—Not able to determine due to fragmentary condition.

Associated artifacts—None.

Comments—No grave observed. Burial 1.1 feet above sterile soil, 0.8 foot below surface, and 0.4 foot above the slab covering Burial 14. Poor condition undoubtedly due to rodent activity.

172 *Burial 11, Test Trench 1, South Trash Mound.*



173 *Burials 12, 13, 14, and 15, Test Trench 8, South Trash Mound.*

Burial 14 (fig. 173)

Location—Test Trench 8, South Trash Mound—same area as Burials 12, 13, and 15.

Sex—Male.

Age—Adolescent.

Condition—Only skull and mandible present.

Deformation—Pronounced asymmetrical lambdoidal deformation.

Pathology—None.

Position—Skull was on the right side and facing slightly upward; mandible, southwest of skull, inverted.

Associated artifacts—None.

Comments—No grave observed. Two unworked, rectangular slabs had been placed around the skull: the larger one, 1.7 feet long by 1.5 feet wide by 0.3 foot thick, covered the left side of the skull; and the smaller slab, 1.1 feet long by 0.7 foot wide by 0.3 foot thick, was placed next to the right side of the skull. Cranial capacity is 1,110 cc. Only permanent teeth erupted were the maxillary central incisors; no tooth loss, caries, or abscesses. Burrows in the area suggest rodents removed or contributed to destruction of other bones of this burial.

Burial 15 (fig. 173)

Location—Test Trench 8, South Trash Mound, areas of Burials 12, 13, and 14.

Sex—Female.

Age—Late teens.

Condition—Trunk and arms missing.

Deformation—Pronounced asymmetrical lambdoidal deformation.

Pathology—None observed.

Position—Skull to southwest, on right side; legs flexed on right side with left leg slightly over right leg at ankle area and left knee to the east of the right knee. Not possible to determine degree of flexion due to missing bones, but probably a tightly flexed burial.

Associated artifacts—About half of a Mancos Black-

174 *Burials 16 and 17, Test Trench 11, South Trash Mound. Arrows point to scattered remains of Burial 16.*

175 *Burial 18, Test Trench 8, South Trash Mound.*

on-white bowl (fig. 56d) next to lower left tibia and fibula; about a third of a large Mancos Black-on-white bowl (fig. 56e) to the east of the first.

Comments—No grave observed. Burial resting on sterile soil, 1.1 feet below surface. Rodent burrows in the area suggest probable reason for fragmentary remains. All permanent dentition had erupted except third molars; no tooth loss; no caries or abscesses; and little tooth wear.

Burial 16 (fig. 174)

Location—Test Trench 11, South Trash Mound.
Sex—Indeterminate.
Age—Infant.
Condition—Disturbed and fragmentary; skull missing.
Deformation—No data.
Pathology—Not possible to determine due to fragmentary remains.
Position—Not observable because bones were not in articulated position.
Associated artifacts—None.
Comments—No evidence of prepared grave. Burial, 0.3 foot above sterile soil and 0.5 foot below surface, may have been a secondary one.

Burial 17 (fig. 174)

Location—Test Trench 11, South Trash Mound, next to Burial 16.
Sex—Male.
Age—30 to 35.
Condition—Elements scattered.
Deformation—Pronounced asymmetrical lambdoidal deformation.
Pathology—Arthritis of the vertebrae, elbow, and glenoid; 30° exterior torsion of tibia.
Position—Not determinable. Skull on right side, facing slightly upward; mandible to right of skull, inverted.
Associated artifacts—A fragmentary Bluff-La Plata Black-on-red Type 6 worked sherd in skull area.
Comments—No grave observed. Top of skull 0.5 foot below surface and bottom of skull 0.2 foot above sterile soil. Tooth loss: all permanent dentition erupted; antemortem loss of all mandibular teeth with exception of both canines and left first premolar; loss of maxillary dentition with exception of right central incisor, premolars 1, canines, molars 1 and 2. No caries or abscesses; teeth heavily worn. Cranial capacity is 1,320 cc. Stature estimated (from tibia) at 166.7 cm., or about 5 feet 4 inches.

Burial 18 (fig. 175)

Location—Test Trench 8, South Trash Mound.
Sex—Indeterminate.
Age—Infant.
Condition—Fragmentary.
Deformation—Pronounced asymmetrical lambdoidal deformation.
Pathology—None.
Position—Not possible to determine due to partial remains; skull face-up and turned slightly to one side.
Associated artifacts—About half of a McElmo Black-on-white bowl (fig. 73b) next to the left side of the skull.
Comments—No evidence of prepared grave; top of skull 1 foot below surface; bottom of skull 0.2 foot above sterile soil.

176 *Burials 19 and 20, Test Trench 11, South Trash Mound. Pitcher at left associated with Burial 19.*

177 *Burial 22, Kiva A.*

Burial 19 (fig. 176)

Location—Test Trench 11, South Trash Mound.
Sex—Female.
Age—Adolescent.
Condition—Arms, hands and feet missing.
Deformation—Pronounced asymmetrical lambdoidal deformation.
Pathology—None observed.
Position—Flexed, face-down; legs flexed on right side, left leg over right and knees drawn up to the chest area.
Associated artifacts—Mancos Black-on-white pitcher (fig. 58d) at left shoulder; one corrugated jar body sherd and one Mancos Black-on-white bowl body sherd next to left hip (table 3).
Comments—No grave observed. Top of skull 1 foot below surface; burial resting on and slightly in the sterile earth. No permanent dentition; all deciduous dentition present except second molars.

Burial 20 (fig. 176)

Location—Test Trench 11, South Trash Mound, area of Burial 19.
Sex—Probably female.
Age—Adult.
Condition—Scattered; skull missing.
Deformation—No data.
Pathology—None.
Position—Probably semiflexed on right side, with knees at right angles to trunk.
Associated artifacts—None.
Comments—No grave observed. Top of right ilium 0.1 foot below surface; burial 0.7 foot above sterile soil and 0.4 foot above Burial 19.

Burial 21

Location—Test Trench 14, South Trash Mound. This burial represents two individuals; the more complete one is detailed below.
Sex—Indeterminate.
Age—Adult.
Condition—Fragmentary and scattered; skull missing.

Deformation—No data.
Pathology—None.
Position—Not determinable.
Associated artifacts—Probably a rectangular red shale pendant (fig. 133c) found in the burial area.
Comments—No grave observed; bones near the surface.

The second burial is represented only by the skull. Sex is indeterminate, age is adolescent; pronounced asymmetrical lambdoidal deformation; all deciduous dentition erupted except the second molars; no caries or abscesses, and no tooth wear (incisors missing). Skull was 3 feet from the first burial; it was 0.7 foot below the surface and rested on sterile soil. There were no associated artifacts; no evidence of a prepared grave was found.

Burial 22 (fig. 177)

Location—Kiva A, Level 6 (bottom), near ventilator shaft.
Sex—Probably female.
Age—Adult.
Condition—Fragmentary and scattered.
Deformation—No data.
Pathology—The distal portion of the right humerus shows perforation of the olecranon fossa.
Position—Not determinable.
Associated artifacts—Possibly a restorable Mancos Black-on-white jar (fig. 57b), the sherds of which were scattered on the floor and around the ventilator shaft, near the burial.
Comments—No excavated grave. Burial 2.2 feet below top of banquette and 1 foot above the floor of the kiva. Fragments of a skull (adult, of indeterminate sex) were below rest of bones and may represent another burial.

The existence of other scattered human bones, numerous sherds, and miscellaneous trash in the lower fill of Kiva A suggests the kiva was used as a dump and perhaps also as a convenient burying place.

Burial 23 (fig. 178)

Location—Test Trench 14, South Trash Mound.
Sex—Male.
Age—Adolescent.
Condition—Left side of skull missing.
Deformation—Pronounced asymmetrical lambdoidal deformation.
Pathology—Acetabular arthritis.
Position—Semiflexed, on left side; head partially face-down; arms tightly flexed, with elbows next to chest; right arm flexed over left; legs flexed with knees at about right angles to the trunk, right leg over left.
Associated artifacts—None.
Comments—No evidence of grave; burial near surface. All deciduous dentition erupted, no permanent tooth eruption; no tooth wear.

Burial 24 (fig. 179)

Location—Bottom of Cist 2, Room 18.
Sex—Female.
Age—Over 40.
Condition—Nearly complete except for most of arms.
Deformation—Pronounced asymmetrical lambdoidal deformation.
Pathology—Moderate acetabular arthritis.
Position—Semiflexed, on left side; head on left side; trunk on left side and curved; right arm over left, probably flexed; legs flexed on left side, right leg over left; knees at about right angles to the trunk; elbows may have been at knees.
Associated artifacts—Partially restorable Mancos Corrugated jar next to pelvis; sherds and stone artifacts in the fill (tables 3 and 9) possibly associated.

178 *Burial 23, Test Trench 14, South Trash Mound*

Comments—Burial rested on floor of cist, 4.7 feet below surface. Most of dentition lost; oldest individual found at site. The cist was probably used originally for storage.

179 *Burial 24, at bottom of Cist 2, Room 18.*

CHAPTER 8

summary and conclusions

Big Juniper House was occupied primarily in late Pueblo II and early Pueblo III. There is some evidence that the site was also inhabited intermittently, or by a small group of people, in early Pueblo II.

Components A and B, the first occupations of the site, are represented by only a few structures, possibly built by one or two families. The two components may be parts of a single component, assignable to the latter half of the 10th century.

The next occupation, Component C, dates from the 1050's to about 1080. The number and kinds of architectural features, which include Kiva A, suggest a population of 20 to 30 individuals. Jacal structures are the most notable features of this component.

Component D, dating from about 1080–1100 to 1130, comprises the most extensive remains at Big Juniper House. The three kivas and nearly all the surface masonry rooms are associated with this component. The population probably numbered between 50 and 75 people. During this occupation, changes from the Pueblo II to the Pueblo III pattern occurred.

Component E, dating from about 1130 to 1150, is represented by the "later walls" built over Kivas A and B by the compound wall north of Rooms 5 and 24. It is possible that Component D rooms remained in use during this terminal occupation. If such was the case, the population may have remained relatively constant. The peculiar "later walls" are featured at other sites on Wetherill Mesa. They may have had some ceremonial purpose.

Trade or contact with areas outside of the Mesa Verde area is indicated by the presence of obsidian artifacts, foreign pottery, and the killed-bowl burial. Obsidian was probably obtained from New Mexico or the San Juan Mountains near Pagosa Springs, Colorado. Puerco and Wingate Black-on-red pottery came from the upper Little Colorado drainage and Tusayan Polychrome pottery from the Kayenta area in northeastern Arizona and southeastern Utah. The killed-bowl burial suggests culture contact with the Mimbres area of southwestern New Mexico. Generally speaking, contact with regions outside the Mesa Verde seems to have been slight.

The excavation of Big Juniper House is of importance mainly for the information it provided regarding the transitional stage from Pueblo II to Pueblo III in the Mesa Verde area. This stage is represented in Components D and E and dates between A.D. 1080 and 1150. Certain traits were introduced during this stage, and some of these were apparently limited to it (see table 16).

TABLE 16.—TRAITS MARKING THE PUEBLO II–PUEBLO III TRANSITION

TRAITS	Introduced during this period	Most common in this period	Limited to this period
Architecture:			
Double walls	x		
Pecked-faced masonry	x		
Kivas integrated with rooms	x		
Later walls over kivas		x?	
Flared pilasters	x		
Set-back pilasters	x		
Southern recess	x		
Liner above banquette	x		
Six-pilaster kiva	x?		
Ceramics:			
Mummy Lake Gray		x	
Mesa Verde Corrugated	x		
Early McElmo Black-on-white	x	x	x
Stone Artifacts:			
Plain/troughed metate	x	x	x
Plain-faced metate	x		
Type 2 mano	x	x	x
Bone Artifacts:			
Humerus scraper	x		

ARCHITECTURE

The integration of kivas with surface rooms begins during the transitional stage or shortly earlier. This relationship is shown most clearly at Big Juniper House in the placement of Kiva B, the kiva with probably the latest construction date at the site. The detached position of Kiva A exemplifies the older, "pure" Pueblo II layout.

The kivas of Big Juniper House have two features indicative of the transition: (1) six pilasters that are flared and set back from the edge of the banquette, and (2) a liner above the banquette. Another transitional feature of kivas, not found at Big Juniper House, is the southern recess, the deepened interpilaster space in the southern part of the banquette over the ventilator tunnel.

Walls over kivas, double-wall construction, and pecked-face masonry undoubtedly appear first during the transitional stage. Double walls and pecked-face masonry seem to be most common in late Pueblo III.

CERAMICS

Several features of the ceramics of Big Juniper House are indicative of the transition from Pueblo II to Pueblo III. The early style McElmo Black-on-white was introduced at this time. On present evidence, this pottery seems to be limited to this stage, and to be superseded after 1150 by other styles of McElmo, or "proto-Mesa Verde Black-on-white," and by "classic" Mesa Verde Black-on-white. The absence of the latter two kinds of pottery is important negative evidence for the Pueblo II–III transition.

The increasing use of carbon paint on Mancos Black-on-white is indicative of the change to the Pueblo III habit. The evidence indicates that Mancos Black-on-white, still the dominant decorated pottery type of the transitional stage, declined after 1150.

In the realm of utility pottery, Mummy Lake Gray reached the zenith of its popularity during this time. Mesa Verde Corrugated began to be made, but Mancos Corrugated was the principal corrugated type until about 1150. The greater percentage of flaring rims, as opposed to straight rims, on Mancos Corrugated pottery may be an indicator of the change to Pueblo III style of sharply everted rims on Mesa Verde Corrugated.

STONE ARTIFACTS

Two stone artifact types appear to be limited to the Pueblo II–III transition: the plain/troughed metate and the Type 2 mano. Perhaps these should be regarded not as new types but as older types remodeled to fit the new grinding pattern.

Plain-faced metates also originated during the Pueblo II–III transition and were the dominant type in Pueblo III. Although no manos made specifically for use with these metates were found at Big Juniper House, they were probably introduced during this stage.

BONE ARTIFACTS

The humerus scraper, represented by only one fragment at Big Juniper House, is a common type in Pueblo III components in the Mesa Verde area and may have been made initially during the transitional stage. Comparative studies now under way may disclose that other types of bone artifacts are definitely associated with cultural stages in this area.

Artifacts and refuse from sites in the Mesa Verde show that turkeys became increasingly important as time passed. It is evident, from the findings at Big Juniper House, that mammals were still preferred during the transition to Pueblo III, and also that the more equal utilization of mammals and birds (mainly turkeys) did not occur until after A.D. 1150.

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appendix

TABLE 17.—TREE-RING DATES FROM BIG JUNIPER HOUSE[1]

Specimen [2]	Provenience	Dates, A.D.[3]	
		Inside	Outside
MV–1637	Room 1b, lower fill	915	1008vv
MV–1640	Room 1a, lower fill	908p	1006vv
MV–1642	Room 1a, lower fill	828p	1027vv
MV–1645	Room 1a, lower fill	652	750+vv
MV–1646	Room 1a, lower fill	791	1017vv
MV–1649	Room 1a, lower fill	777±	1045vv
MV–1650	Room 1a, lower fill	803	1054vv
MV–1651	Room 1a, lower fill	886	1035vv
MV–1653	Room 1a, lower fill	755	1052vv
MV–1655	Room 7, subfloor fill	824	1025vv
MV–1659	Kiva B, Level 3	823	1048vv
MV–1660	Room 10, lower fill	893±	1007vv
MV–1666	Room 10, lower fill	879p	985r
MV–1667	Room 10, lower fill	931p	1022+vv
MV–1668	Room 10, lower fill	921	1039vv
MV–1670	Room 10, lower fill	925	1027vv
MV–1672	Room 10, lower fill	859p	947vv
MV–1673	Room 10, lower fill	933p	1028vv
MV–1677	Room 10, lower fill	924	992vv
MV–1678	Room 10, lower fill	910	1018vv
MV–1679	Room 10, lower fill	814	886vv
MV–1680	Room 10, lower fill	893	1041vv
MV–1685	Room 10, lower fill	800	1008+vv
MV–1686	Room 10, Floor 2, Post 1	855±	993vv
MV–1687	Room 10, Floor 2, Post 2	812p	1028+vv
MV–1688	Kiva B, Level 3	897	1062+vv
MV–1692	Kiva B, floor fill	927	1130B
MV–1694	Room 8, subfloor fill	925	990vv
MV–1695	Room 8, subfloor post	873	1000vv
MV–1700	Room 1a, Floor 2, Post 1	837±	1031r
MV–1701	Room 1a, Floor 2, Post 2	710	1039vv
MV–1702	Room 1a, Floor 2, Post 3	832p	971vv
MV–1703	Room 1a, lower fill	790	945vv
MV–1704	Room 1a, lower fill	824	890vv
MV–1705	Room 1a, lower fill	886	1031vv
MV–1707	Room 1a, Floor 2, jacal wall, Post 3	876	990vv
MV–1709	Room 1a, Floor 2, jacal wall, Post 5	875	974vv
MV–1710	Room 1a, Floor 2, jacal wall, Post 2	669	773v
MV–1712	Room 1a, Floor 2, jacal wall, Post 7	877	949vv
MV–1713	Room 1a, Floor 2, jacal wall, Post 8	636	770vv
MV–1715	Room 1a, lower fill	637	774vv
MV–1716	Room 1a, lower fill	933	990vv
MV–1718	Room 19, fill	782	891+vv
MV–1725	Room 7, subfloor cist, Post 1	886	983+vv
MV–1726	Room 7, subfloor cist, Post 2	827	988+vv
MV–1730	Room 7, subfloor cist fill	928	992vv
MV–1732	Room 7, subfloor, Post 2	914p	1021vv
MV–1733	Room 19, subfloor cist fill	908	977vv
MV–1735	Room 10, Floor 2, Cist 1 fill	911	1024vv
MV–2133	Room 1b, lower fill	915p	952vv
MV–2138	Room 5, Cist 1 fill	990p	1047vv

[1] All dates listed derive from juniper charcoal or charred wood (*Juniperus*).
[2] Specimen numbers assigned by Laboratory of Tree-Ring Research, University of Arizona.
[3] Key to symbols: p—pith ring present; v—outside shows erosion, outermost ring variable around circumference; vv—outside shows extreme erosion, outermost rings very variable; r—outer ring constant over significant portion of circumference; B—bark present on outside.

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