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MESA VERDE

NATIONAL PARK • COLORADO • 1950

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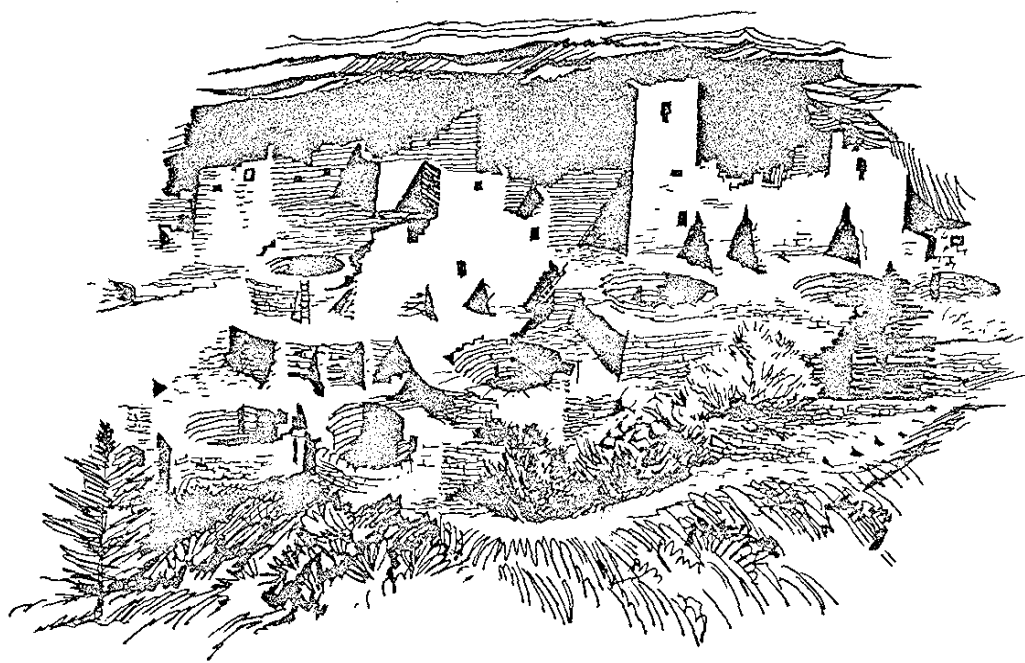
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ARCHEOLOGICAL EXCAVATIONS IN
MESA VERDE
NATIONAL PARK • COLORADO • 1950

By James A. Lancaster, Jean M. Pinkley, Philip F. Van Cleave, and Don Watson



ARCHEOLOGICAL RESEARCH SERIES NUMBER TWO

NATIONAL PARK SERVICE • U. S. DEPARTMENT OF THE INTERIOR • WASHINGTON • 1954

THIS PUBLICATION is one of a series of research studies devoted to specialized topics which have been explored in connection with the various areas in the National Park System. It is printed at the Government Printing Office and may be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D. C. Price \$1.



UNITED STATES DEPARTMENT OF THE INTERIOR

Douglas McKay, *Secretary*

NATIONAL PARK SERVICE

Conrad L. Wirth, *Director*

NATIONAL PARK SERVICE

Archeological Research Series

No. 1 Archeology of the Bynum Mounds

No. 2 Archeological Excavations in Mesa Verde National Park

THE NATIONAL PARK SYSTEM, *of which Mesa Verde National Park is a unit, is dedicated to the conservation of America's scenic, scientific, and historic heritage for the benefit and enjoyment of the people.*

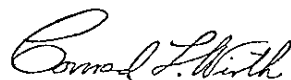
Foreword

During the summer of 1950, six Mesa Verde ruins were excavated by members of the local staff. The results of this research are included in three separate reports which, with the "Introduction to Mesa Verde Archeology," comprise this volume:

1. Excavation of Two Late Basketmaker III Pithouses.
2. Excavation at Site 16 of Three Pueblo II Mesa-top Ruins.
3. Excavation of Sun Point Pueblo.

These excavations, and others previously carried out in the park, have done much to clarify the archeology of Mesa Verde. The investigations are not yet complete, but, with the research which has so far been accomplished, it is now possible to reconstruct, in some detail, the archeological events of the long period of prehistoric occupation.

In the following papers the authors have presented a summary of the archeological data as it exists today for the Mesa Verde area, as well as a detailed and painstaking analysis of the three special excavations mentioned above. The excavations and the analysis of findings add materially to our knowledge of this area, which is so extraordinarily rich in reminders of the long-vanished inhabitants.



Director.

Acknowledgments

The Service and the authors wish to express their sincere appreciation to the following for technical assistance and advice: Dr. J. O. Brew, director, Peabody Museum, Harvard University; Dr. E. W. Haury, director, Arizona State Museum, University of Arizona; Dr. P. S. Martin, chief curator, Department of Anthropology, and Dwight Davis, curator of vertebrate anatomy, Chicago Natural History Museum; Earl H. Morris, archeologist, Carnegie Institution of Washington; Stanley Stubbs, curator, Laboratory of Anthropology, Santa Fe, and Dr. Edmund Schulman, Laboratory of Tree-Ring Research, University of Arizona.

The reconstruction drawings, showing the pithouses and pueblos as they may have looked when occupied, were prepared by Per Ernst Guldbeck.

Appreciation also is expressed to Mrs. Virginia T. Cotter who checked the final proof and prepared the index.

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CHAPIN MESA

Mesa Verde National Park, Colorado.

Section Showing Location of Mesa-Top Ruins Excavated in 1950
Also Other Excavated and Named Sites

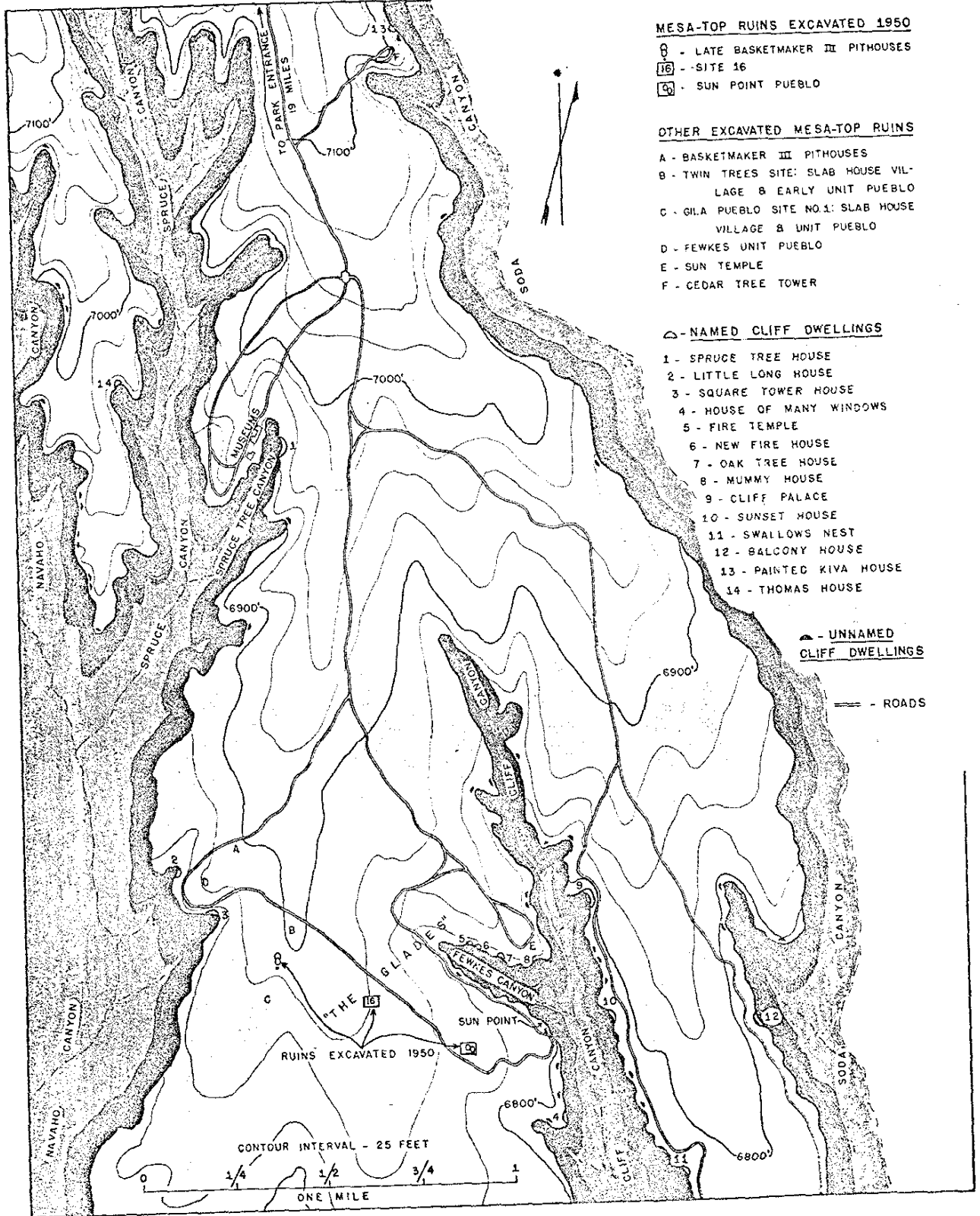


PLATE 1—Map of Chapin Mesa

Introduction to Mesa Verde Archeology

BY DON WATSON

EARLY HISTORY OF THE MESA VERDE

MESA VERDE NATIONAL PARK comprises one-half of a great tableland, or mesa, in the southwestern corner of Colorado, only a few miles from the "Four Corners," where the States of Colorado, Utah, Arizona, and New Mexico meet at a common point. The mesa, measuring 15 by 20 miles, rises from 1,000 to 2,000 feet above the surrounding country. Its flat top, which slopes gradually to the south, is cut by a score of rugged canyons, dividing the large mesa into many smaller mesas. Because of its heavy forests of piñon and juniper, the mesa is perpetually green, and at some early date, probably during the 1765-1848 period, when there was much Spanish activity in the area, it was given the name Mesa Verde, or "green table."

First knowledge of the archeological treasures of the Mesa Verde came in 1874, when W. H. Jackson, the famous "Pioneer Photographer," discovered small cliff dwellings in the Mancos River Canyon which borders the Mesa Verde on the east and south (Jackson, 1876, pp. 367-381). In 1888, the major cliff dwellings were discovered, and this date marks the beginning of the tragic period in the history of the Mesa Verde. Shortly after the discovery of the large cliff dwellings, it was learned that there was a ready market for the artifacts which they contained. The cliff dwellings were so thoroughly ransacked in the following 18 years that, so far as is known today, little material of scientific value remains in them. Only one archeologist worked in the Mesa Verde during this period. Baron Gustav Nordenskiöld excavated in a number of cliff dwellings in 1891 and, considering the time, published a most excellent report on his work (Nordenskiöld, 1893).

ARCHEOLOGICAL RESEARCH

Early research, 1908-22. In 1906, a portion of the great mesa was set aside as Mesa Verde National Park. The first research was done 2 years later when Dr. Jesse Walter Fewkes, of Smithsonian Institution, Bureau of American Ethnology, excavated Spruce Tree House, one of the larger cliff dwellings (Fewkes, 1909). During the years between 1908 and 1922, Fewkes excavated a number of cliff dwellings and mesa-top ruins but modern scientific methods were not used and the results leave much to be desired.

More recent research, 1923-38. Following the Fewkes period, research was, of necessity, neglected. The park was created to preserve the ruins and make them accessible to the public. From the time the first roads were built, travel to the area increased year after year. The number of visitors increased

more rapidly than the size of the local staff, and consequently research was delayed.

During the summer of 1923, the First National Geographic Beam Expedition, under A. E. Douglass, collected tree-ring specimens in the park (Douglass, 1929, p. 750), and in 1932-33, H. T. Getty, of the Tree-Ring Laboratory, continued this work (Getty, 1935, pp. 21-23). In 1926, Superintendent Jesse L. Nusbaum excavated three early seventh century pithouses in Step House Cave and, during the winters of 1926-29, did a small amount of salvage excavation in the previously disturbed refuse of several cliff dwellings. In 1929, H. S. Gladwin, of Gila Pueblo, surveyed 103 mesa-top and canyon-head sites. Sporadic testing and probing during stabilization of cliff and mesa-top ruins and removal of burials encountered, comprise the only other research for this period.

Research outside the park. Although research lagged in the Mesa Verde itself, the general archeology was comparatively well understood because of extensive work which was done in the surrounding area. Over the past 50 years the reports of many investigators have given us a general overall picture of the archeology of the Mesa Verde region. Outstanding in this regard is the work of the following: E. H. Morris in the Durango, La Plata, Red Rock, and Canyon de Chelly areas to the east, south, and southwest (Morris, 1919b, 1939, 1941); J. A. Jeancon and F. H. H. Roberts, Jr., in the Piedra district to the east (Jeancon, 1922; Jeancon and Roberts, 1923-24; Roberts, 1922, 1925, 1930); E. K. Reed in the Mancos Canyon to the south (Reed, 1943, 1944); S. G. Morley and A. V. Kidder in the McElmo drainage to the west (Morley, 1908; Morley and Kidder, 1917); T. M. Prudden, P. S. Martin, and J. B. Rinaldo in the Montezuma Valley to the northwest (Prudden, 1905, 1914, 1918; Martin 1929, 1930, 1936, 1938; Martin and Rinaldo, 1939; Rinaldo 1950); B. Cummings and his students, A. V. Kidder, N. M. Judd, and J. L. Nusbaum in southeastern Utah to the west (Kidder, 1910); and later, J. O. Brew's excavations in the same area (Brew, 1946).

Recent research in the park, 1939-53. While the general archeological story of the region was relatively well known, it was to be expected that the Mesa Verde would present certain variations. Since 1939, a program of organized research has been carried out in the park in an effort to determine these local manifestations.

(a) *Excavation by park staff, 1939-41.* In 1939, T. L. Smiley excavated an A. D. 700 pithouse (Smiley, 1949 pp. 167-171) and, in 1941, J. A. Lancaster excavated two pithouses dated about A. D. 600 (Lancaster and Watson, 1943, pp. 190-195) and tested other pithouses and early pueblo structures.

(b) *Gila Pueblo Tree-Ring Expedition, 1941.* In the fall of 1941, Gila Pueblo collected tree-ring specimens in the park. Dates obtained are included in O'Bryan's recent publication on the Mesa Verde (O'Bryan, 1950, Appendix A, pp. 112-115).

(c) *Excavations by Gila Pueblo, 1947-48.* During these years, D. O'Bryan excavated an extensive series of ruins in the park (O'Bryan, 1950):

- 1 shallow pithouse, dating about A. D. 572.
- 1 deep pithouse, dating about A. D. 664.
- 2 slabhouse villages, dating about A. D. 840.
- 1 small pueblo, dating about A. D. 950.
- 1 small pueblo, dating about A. D. 1024.
- 1 large canyon-head pueblo, dating about A. D. 1025 to 1200.

(d) *Recent excavations by park staff, 1950.* In the summer of 1950, members of the local staff excavated six ruins:

- 2 pithouses, dating about A. D. 700.
- 1 post and adobe village, dating about A. D. 900.
- 1 masonry pueblo, dating about A. D. 1000.
- 1 masonry pueblo, dating about A. D. 1074.
- 1 masonry pueblo, dating about A. D. 1200.

Reports on these excavations are included in this volume.

(e) *Archeological survey by local staff, 1951.* An intensive archeological survey of the Mesa Verde was started in the fall of 1951 and will continue for many years. When completed, this survey should provide an overall picture of the prehistoric occupation of the Mesa Verde. All archeological features are included: cliff dwellings, mesa-top ruins, canyon-head ruins, dams, reservoirs, shrines, pictographs, etc. Sherd collections are made, all pertinent data recorded, ruins marked, and, whenever possible, individual ruins are mapped. To date, this survey has been confined to Chapin Mesa south of park headquarters (pl. 1), and in an area of approximately 4 square miles, 472 sites have been surveyed. The only cliff dwellings so far surveyed are those in the head of Cliff Canyon, north of Cliff Palace. In one-half mile of this small canyon, 15 cliff dwellings have been located.

SUMMARY OF THE ARCHEOLOGY OF THE MESA VERDE

As a result of the excavations and survey within the park and the extensive work which has been done in surrounding areas, the archeology of the Mesa Verde itself is becoming somewhat clearer, although there are still gaps in the story which must be filled through continuing research. It should be mentioned also that, except for some of the early work, all excavation to date has been in the Chapin Mesa area and the remainder of the Mesa Verde is practically untouched. Chapin Mesa is in the center of the Mesa Verde, in an east-west line, and extends from the north rim to the Mancos River Canyon, on the south. It is the largest mesa and, while it appears to have the greatest number of ruins of all known local types, there is reason to believe that archeological variations may occur in other parts of the Mesa Verde.

Occupation of the Mesa Verde seems to have extended from the early part of the Christian Era to almost A. D. 1300. In summarizing this long occupation, the Pecos Classification will be followed as it is the best known and most widely used classification of culture periods (Kidder, 1927, pp. 554-561). The Roberts' Classification is employed in dealing with park visitors as its use of descriptive names, and the fact that it has one less period makes it easier for the uninitiated visitor to whom such classifications are, to say the least, baffling (Roberts, 1935, p. 32 and this volume, table 1).

The following brief summary is an effort to present the archeology of the Mesa Verde as it is known today and to point out some of the problems yet to be solved. Few comparisons will be made with findings in nearby areas, for this has been done in past publications and in the three reports included in this volume. Dates vary somewhat from those which have been given for other areas. It must be borne in mind that there was constant progress throughout the entire occupation, and it is impossible to draw sharp lines and set exact dates for the various periods. Many different dates have been used by archeologists, but those used below seem best for the Mesa Verde as the archeology is known at present.

The presentation of each of the following periods is divided into two parts. First, a general summary is given of the period, as known throughout the Mesa Verde region. Following this is a summarization of the known aspects of the period in the Mesa Verde itself.

Basketmaker I

This is a postulated, preagricultural stage set up at the first Pecos Conference, since it was obvious that a hunting-gathering culture must have preceded the later farming cultures.

Basketmaker II

Dates: From about the beginning of the Christian Era to A. D. 450. Dates obtained indicate that by the first century A. D., agricultural people were well established in the Four Corners region. Corn and squash were cultivated and there was also great use of wild plant foods and game. Pottery was absent and excellent baskets and bags were made in profusion. Slab-lined storage cists were characteristic, but houses have been found only in the Durango area, where there is evidence of crude, early structures. The atlatl and dart, and curved sticks served as weapons for the bow and arrow were not known. Other traits were woven bands; square-toed sandals; string aprons; fur-string blankets; soft, padded cradles; troughed metates; jewelry of stone, bone, seeds and shells; and wide use of animal skins. Dogs were present. This widespread culture served as the base out of which the later, more highly developed cultures grew.

No remains dating from this period have been found in the Mesa Verde, but there is reason to believe they will be found when the necessary, difficult excavation can be performed. Material dating from this period has, except in

one area, been found in caves. Since Mesa Verde caves contain cliff dwellings it will be necessary to excavate under these structures in order to establish this early occupation. Basketmaker II remains have been found to the east of the park in the Durango area, to the west in southeastern Utah and to the southwest in Arizona, and it would be surprising if the Mesa Verde were not occupied during this period. Investigation of lower cave levels, deep under cliff dwellings, is high on the priority list of future research projects.

Basketmaker III

Dates: A. D. 450 to 750. This period saw marked development and is characterized by the advent of pottery, widespread use of pithouses of a standardized nature, appearance of the bow and arrow and the first use of hafted axes and mauls. Beans were first grown, turkeys apparently were domesticated, and turquoise came into use. Except for these new items, other material traits remained much the same as listed for Basketmaker II. However, fur-string blankets declined in favor of feather-string blankets, and sandals with notched or scalloped toes replaced the square-toed variety.

The Mesa Verde contains abundant remains dating from the latter part of this period. Twelve pithouses dating from A. D. 572 to 700 have been excavated in the park but no work has been done, as yet, in the A. D. 450-572 period. Because of the lack of work in the earlier part of this period the dates and types of the earliest houses and pottery are unknown. Seven houses dating at about A. D. 600 have been excavated. The common structure at this time appears to have been a large, shallow pithouse with a comparatively large, connected antechamber (Lancaster and Watson, 1943, pp. 190-198; O'Bryan, 1950, pp. 55-58). The three pithouses excavated in Step House Cave were somewhat different. Instead of having antechambers they had ventilators which were much too small to have served as entrances. This variation may have resulted from the cave location.

Five pithouses dating from the late seventh century show definite changes. These pithouses were deeper, averaging 4 to 5 feet in depth. The antechambers were smaller than at an earlier date, and certain features of the later ceremonial rooms, or kivas, such as bench, sipapu, deflector, and ventilator, were well established (Lancaster and Watson, "Excavation of Two Late Basketmaker III Pithouses" in this volume; Smiley, 1949, pp. 167-171; O'Bryan, 1950, pp. 58-61).

Present evidence indicates that during this period, at least after A. D. 600, the bulk of the population lived on the mesas. The three structures found in Step House Cave show there was some cave occupation, but surface evidence of innumerable pithouses points to a preference for the open mesas. These mesa-top pithouses were grouped into villages but, to date, only individual pithouses have been excavated and the plan of the village is unknown. Testing has located as many as 9 pithouses in an area less than 300 feet in diameter.

The earliest Mesa Verde pottery, to date, came from a pithouse which gave a bark date of A. D. 572 (O'Bryan, 1950, pp. 55-58). The dominant pottery was Lino Gray, with a small amount of Lino Black-on-gray. At this site, and in an A. D. 664 pithouse, O'Bryan reported considerable Lino-like pottery which shows some degree of polishing. To this he gave the name Twin Trees Plain, and for a similar but decorated type, the name Twin Trees Black-on-white (O'Bryan, 1950, p. 91). In two late seventh century pithouses which are reported in this volume, Lino Gray was still the dominant type, while the decorated ware was La Plata Black-on-white. This pottery is basically like Lino Black-on-gray except that the paint is inorganic, rather than organic. There is strong support for the belief that La Plata Black-on-white was far more common in the Mesa Verde at this time than Lino Black-on-gray, but some earlier reports have lumped the two together under the more widely used latter name. The difficulty of drawing a line of demarcation between polished and unpolished pottery and the presence of crushed rock temper in the five above mentioned types, rather than sand temper as specified in published descriptions, indicate the need for an intensive study of the pottery of this period.

The minor traits of the period appear to be the same in the Mesa Verde as in the surrounding area.

Pueblo I

Dates: A. D. 750 to 900. It is difficult to draw a definite line between this and the preceding period as the differences, for the most part, are a matter of continuing development rather than abrupt change. One radical change did occur, however, for at about the beginning of this period the soft, padded cradle was discarded and a rigid, wooden cradle was adopted. This was responsible, in part, for the cranial deformation which was prevalent after this time.

This period is characterized by important developments in architecture and ceramics. Surface living rooms of stone-slab, post and adobe construction developed and were joined together in long, curving rows. In front of the rows of living rooms were pitrooms which grew very deep and began to lose their domiciliary functions as they became more kiva-like. Villages were sometimes very large. By the end of the period experiments with stone masonry had started. Ceramic improvement came with the introduction of the slip and decorated types were polished. Banded-neck vessels are diagnostic of the period. Red wares were made in some areas. Minor arts and crafts continued much as in the preceding period but sandals changed from a scalloped to a rounded toe. Cotton was in use by the end of the period.

In the Mesa Verde this period as well as the end of the preceding period is not well understood for there has been no excavation of ruins dating between A. D. 700 and 825. O'Bryan excavated 2 slabhouse ruins, 1 with deep pitrooms, which produced bark dates ranging from A. D. 829 to 845. (O'Bryan, 1950, pp. 37-43 and 51-53). Neither was completely excavated but they were, in general, typical of the

slabhouse villages with associated pitrooms, mentioned above. The date for the advent of the first surface living rooms in the Mesa Verde is unknown. Slabhouses are believed to have developed from slab-lined storage cists which, in some areas, have been found associated with Basketmaker III pithouses. No slab-lined storage cists were found associated with any of the five late Basketmaker III pithouses which have been excavated in the Mesa Verde, however, so the date and manner of development of surface structures awaits further research.

Pottery of the preceding period continued in use in the Mesa Verde with Lino Gray common. Kana-a Gray, essentially the same as Lino Gray but with banded necks, appeared and is a period diagnostic. The dominant Pueblo I decorated pottery of the Mesa Verde is undetermined. Lino Black-on-gray practically disappeared but La Plata Black-on-white continued in use and may, eventually, prove to be the common decorated type. La Plata Black-on-red accounted for 2.0 percent of the sherds in the two Pueblo I sites excavated by O'Bryan (O'Bryan, 1950, p. 92). There has been some question as to whether this pottery was actually made in the Mesa Verde, but its prevalence on the surface in some parts of the park indicates local manufacture.

Pueblo II

Dates: A. D. 900 to 1100 This period is characterized by wide experimentation and rapid improvement in architecture, and marked changes in pottery. At the beginning of the period post and abode villages were still being built, and crude stone masonry had also come into use in some areas. Once stone masonry was accepted it quickly supplanted all other types of construction and this period saw it develop from its crude beginning of rough stones laid in excessive amounts of mud mortar to good, double-coursed, horizontal masonry. The villages usually were small, consisting of a few rooms, in front of which was an isolated kiva. The kiva saw its real development in this period, advancing from a deep pitroom almost to its final Classic stage (Lancaster and Pinkley, *Steps in the Development of the Mesa Verde Kiva*, in "Excavation at Site 16", in this volume). The dominant decorated pottery of the area was a black-on-white, iron paint type. Corrugated ware, which grew out of the earlier banded-neck variety, came into use and was widely accepted. Red ware declined rapidly in popularity and disappeared. Flat metates came into use as well as large stone blades, or *tchamabias*, and the so-called sandal-lasts. Other minor traits changed little.

Three Pueblo II ruins have been excavated in the Mesa Verde by members of the park staff and are reported in this volume. Two more were excavated by O'Bryan and portions of a third ruin which he excavated, Site 34, may also date from this period (O'Bryan, 1950, pp. 32-36; 44-51; 79-80). The findings indicate that Pueblo II in the Mesa Verde followed closely the pattern for Pueblo II in the general region, as described above.

The three ruins excavated at Site 16 illustrate clearly the architectural changes (Lancaster and Pinkley, "Excavation

at Site 16," in this volume). The first consists of post and adobe living rooms and a crude, four-post kiva with earthen walls. Sitting directly on this ruin is a small pueblo of single-coursed masonry, accompanied by a six-pilastered kiva with masonry below the bench. On top of this ruin is a pueblo built of double-coursed masonry with an eight-pilastered kiva which has masonry lining to the top of the pilasters. This kiva has a southern recess which marks the advent of this feature in the Mesa Verde. In this one site are illustrated the important stages in Pueblo II architecture. One new feature, the circular tower, appeared during the last occupation of Site 16, which gave bark dates of A. D. 1074.

Although small quantities of Lino Gray pottery were still made, Mesa Verde pottery of the Pueblo II period consisted almost entirely of two types: Mancos Black-on-white and corrugated. The former was the only decorated pottery associated with the three ruins at Site 16, which covered the entire span of A. D. 900 to 1100. Minor traits show little change except that the flat-slab metate appeared during this period.

Pueblo III

Dates: A. D. 1100 to 1300. The beginning date assigned to this period in the Mesa Verde is somewhat later than that usually given for the region in general. Some archeologists have placed it at 1050, others at 1000, and even A. D. 950 has been suggested as a beginning date. The matter of dividing the period is merely a matter of definition, and it is possible to use any of these dates and develop a perfectly logical classification. As far as the Mesa Verde itself is concerned, the late date seems best from present knowledge. This climax stage is often called the "Great" or "Classic" Pueblo Period. In interpretive work with park visitors, these terms are used and for that reason there is a tendency to lean rather heavily on the term "classic." If the "classic" stages of architecture, ceramics, village layout, and many of the minor crafts serve as the criteria, A. D. 1100 is not too late for the beginning of this period in the Mesa Verde.

This was the climax period, marked by large communities, extensive local specialization and high development of arts and crafts. Multistoried pueblos were built, masonry was superior and kivas were numerous and standardized, although there were variations. Structures with unusual ground plans were also built. Pottery of two types, black-on-white and corrugated, characterize the period. The iron paint of earlier types lost favor and was supplanted by carbon paint. The decorated pottery was of excellent quality with high polish and with skillfully executed black designs on a white background. Excellent cotton cloth was produced and most of the minor traits exhibit superior workmanship. Sandals continued to change and the jog-toe shape appeared.

During the earlier part of the period, most of the villages were small and the population was widely dispersed. Later there were a shifting and, apparently, a decline of the population. Toward the end, the people concentrated in

certain areas and large communities were built, many with an obvious defensive intent. Small villages were still present but this later period is characterized by the development of large, compact pueblos, often with defensive aspects.

As far as the Mesa Verde itself is concerned, this is the most confusing and confused period. Two different shifts of the population occurred and much work must be done in 12th century sites before they can be understood.

At the beginning of the period the villages were small and widely dispersed over the mesa tops. Single and double-coursed walls were built and pecked-faced building stones were just coming into use as well as the use of small spalls in the adobe mortar. Round towers had appeared, as evidenced by the finding of three at Site 16 (Lancaster and Pinkley, "Excavation at Site 16," in this volume). In plan the villages consisted of a few rooms in a compact group, to the south of which was an isolated kiva. The kivas themselves had practically reached their classic form and usually contained their standard features: ventilator, deflector, firepit, sipapu, wall niches, bench, southern recess, and six pilasters.

As the period progressed the plan of the villages changed. The kiva was placed inside the house block so that it was surrounded by the houses. Often a round tower was constructed beside the kiva and connected to it by a tunnel, as at Sun Point Pueblo (Lancaster and Van Cleave, "Excavation of Sun Point Pueblo," in this volume). Still farther into the period, and the date for this is unknown, many of the villages grew larger and the population appears to have concentrated in certain areas near the north rim of the mesa. An excellent example of this is the Far View House group where 1 large, three-storied pueblo was closely surrounded by at least 15 smaller ones. Several canyon heads also contain groups of large and small pueblos.

About A. D. 1200, a movement to the caves began. In the many canyons of the Mesa Verde are hundreds of caves, and during the 13th century cliff dwellings were built in almost every cave. The majority of tree-ring dates obtained from cliff dwellings fall in the 1230-60 period, indicating that this was a time of great building activity. In size the cliff dwellings range from 1 room to the largest, Cliff Palace, which has about 200 rooms and 23 kivas.

Cliff dwellings, in general, show no definite plan, for the builders were forced to fit the structures to the available cave space. Architecturally there were no radical changes. Few double-coursed walls were built and single-coursed walls average somewhat thinner than in the earlier mesa-top pueblos. This may have been an effort to save space, or possibly the thick walls were not needed since the caves provided shelter against the destructive forces of the elements. Masonry varied greatly with rough and superior types side-by-side. The finest examples of walls contain well shaped, evenly sized stones which have smoothed or pecked faces, the latter being more common. Many rooms were plastered and bore painted designs. Wide use of small chinking stones was characteristic.

At the beginning of the period Mancos Black-on-white was the common decorated pottery in the Mesa Verde. A radical change came at about this time when iron paint was supplanted by carbon paint. The earliest type of carbon paint pottery has been called McElmo Black-on-white, but Brew stated it mildly when he said, ". . . the definitions of McElmo and the illustrated specimens labelled McElmo vary so that the safest procedure at present seems to be to call it early Mesa Verde" (Brew, 1946, p. 285). The origin of this carbon paint pottery is not clear but further study probably will show wider use of carbon paint during Pueblo II than has been suspected. It seems not to appear in the Chapin Mesa area until after A. D. 1100, although O'Bryan dated it much earlier in other parts of the Mesa Verde (O'Bryan, 1950, p. 26). This early carbon paint type is simply the beginning of Classic Mesa Verde Black-on-white which, apparently, was well developed by A. D. 1200 (Lancaster and Van Cleave, "Excavation of Sun Point Pueblo," in this volume). Typical forms of this finest Mesa Verde pottery are bowls, ladles, water jars, kiva jars, and mugs. Corrugated pottery continued in wide use throughout the period.

Since artifacts have been preserved in the caves, the minor crafts of the 13th century are well represented in collections. In general they are much like those of earlier periods but exhibit superior workmanship. Baskets and sandals, however, had declined somewhat in quality since Basketmaker times. The jog-toe sandal was typical of this period.

The events of Pueblo III in the Mesa Verde are puzzling and lack of excavation of 12th century mesa-top ruins makes this a difficult period to understand fully. However, it is possible to point out certain trends and emphasize the problems yet to be solved.

The first problem is the change in the layout of the villages which has already been mentioned. At the beginning of the period the plan was similar to that of earlier periods, with the kiva separated from the houses. Early in the period the plan changed and the kiva was drawn into the village and surrounded by the houses. Very often a round tower was built beside the kiva and the two were connected by a tunnel. It is difficult not to interpret this change as resulting from a defensive need. The kiva was used chiefly by the men, and this isolated, underground room would have been a death-trap in case of a quick raid. Placing the kiva inside the house structure and connecting it with a tall watch tower certainly hints at a need for defense.

The next problem is an apparent shift of the population. Prior to the early 12th century there was a dense population in a wide belt running east and west across the mesa. On Chapin Mesa, this area of dense population ranges in altitude from about 6,700 to 7,200 feet. Hundreds of ruins ranging from Basketmaker III through Pueblo II times are in this area.

Sometime during the 12th century the population seems to have shifted to the north and there are few Pueblo III mesa-top ruins at the 6,700-7,200 foot elevation. Sun Point

Pueblo is one of the few examples on Chapin Mesa (Lancaster and Van Cleave, "Excavation of Sun Point Pueblo," in this volume). The movement evidently was up the mesa for the bulk of the late surface ruins is in the northern part of the Mesa Verde. On Chapin Mesa this is above the 7,500 foot level. Large groups of late pueblos are found on the mesa top and in the broad canyon heads near the north rim. This shift of population is difficult to explain and only one suggestion will be made. The higher portions of the mesa receive more rain and much more snow than the lower elevations. Many summer rains miss the lower sections entirely. Tree-ring records show that from A. D. 1090 through 1101 there were 12 consecutive years during which precipitation was below normal (Schulman, 1947, p. 6). This drought was more severe than in any period of the same length during the great drought of A. D. 1276-99. One can only wonder whether this period of drought may have caused a significant portion of the population to shift to the higher elevations where there was more rainfall.

The second population shift, a movement to the caves, is even more puzzling. Lack of tree-ring dates for mesa-top pueblos makes the beginning date for this shift uncertain but it appears to have been under way by A. D. 1200. As has been mentioned, cliff dwellings were built in practically all Mesa Verde caves during the 13th century. Some people may have remained in surface pueblos, but certainly it was a small percent of the total population.

This move to the caves must have resulted from a need for security. If one accepts it as an effort to provide for easier defense of the villages, it is possible to see the beginning of this defensive trend late in Pueblo II times. Circular towers appeared before A. D. 1100. If these were watchtowers, it means there was some threat to the security of the people. A little later, the kiva was placed within the village walls and was connected to the tower by a tunnel. Still later the population concentrated in certain areas and many large, multistoried pueblos were built. The final step was to move to the caves and certainly this must have resulted from a need for defense. Many of the cliff dwellings were located high on the cliff faces and often they were additionally fortified with defensive walls.

To explode this entire theory one might suggest that the towers were not watchtowers and that the kiva-tower combination was merely a "psychological unit." If the latter is true, it is surprising that the feature was not continued in the cliff dwellings. Connected kivas and towers have not been found in any cliff dwelling in the Mesa Verde.

If the "defense" theory is accepted, another question rises immediately. Against whom were the people defending their homes? It has been suggested that in Pueblo III times there was strife within the pueblo group and that the people were warring among themselves. A more widely held theory, however, is that at this time nomadic Indians entered the area and the people were forced to defend them-

selves against an outside enemy. Only further research will solve the problem.

It must again be pointed out that the 12th century is confused period in the Mesa Verde. There has been almost no excavation of ruins dating from this century and solutions for the problems will come only through intensive excavation.

Occupation of the Mesa Verde ended just before A. D. 1300. This was the period of the great drought of 1276-99. Since abandonment seems to have occurred at the time of the drought, it is considered the chief cause for the desertion of the Mesa Verde by the agricultural Indians. Internal strife, enemy trouble and other unknown factors may have been contributing causes for the abandonment of the area. As the people left the Mesa Verde they seem to have moved southeast to the Rio Grande. There they merged with other Pueblo groups and soon lost their Mesa Verde identity.

Table I.—Southwest Classificatory Systems as They Relate to the Mesa Verde Region

| Dates | Pecos Classification | Roberts' Classification | Gila Pueblo Phase System |
|---|-------------------------------|--|--|
| ? 1 B. C. | Basketmaker I (postulated) | | Basketmaker root San Juan stem Mesa Verde branch |
| 1 A. D. 50 100 150 200 250 300 350 400 450 | Basketmaker II | Basketmaker period | |
| 500 550 600 650 700 750 | Basketmaker III | Modified Basketmaker period | Four Corners phase |
| 800 850 900 950 | Pueblo I | (Early) Developmental Pueblo period | Chapin Mesa phase |
| 1000 1050 1100 | Pueblo II | (Late) | Mancos Mesa phase McElmo phase |
| 1150 1200 1250 1300 | Pueblo III | Great or Classic Pueblo period | Montezuma phase |

Pecos Classification based on Kidder, A. V., 1927.

Roberts' Classification based on Roberts, F. H. H., Jr., 1935, p. 32.

Gila Pueblo Phase System based on Gladwin, W. and H. S., 1934, pp. 28-29, fig. 8, and O'Bryan, D., 1950, pp. 103-111.

Excavation of Two Late Basketmaker III Pithouses

BY JAMES A. LANCASTER AND DON WATSON

INTRODUCTION

Although the cliff dwellings are the most spectacular and the latest ruins of the Mesa Verde, it has long been known that earlier, though less spectacular, ruins exist. In 1891, Nordenskiöld suspected earlier cultures were present because of crude pottery found in Step House Cave (Nordenskiöld, 1893, p. 82). In 1926, Nusbaum, digging in the south end of Step House Cave, found three early seventh century pithouses under a deep layer of trash left by the 13th century occupants of a cliff dwelling in the north end of the cave.

Thus, in a single cave, were found the extremes in the architectural types now known for the Mesa Verde. The builders of the early pithouses were considered to have been ancestral to the people who built the cliff dwellings, so it was obvious that other ruins should be present in the Mesa Verde that would show the architectural progression from pithouses to cliff dwellings.

In 1919, Linton excavated one of the early pithouses, Pithouse A, on the mesa top near Square Tower House (Fewkes, 1920, p. 58). Thus it became evident that the earlier ruins were present in the Chapin Mesa area where they might be made accessible to visitors. During the past 10 years an effort has been made to excavate ruins in the proper sequence along the Square House-Sun Temple Road to show the various stages in architectural development in the Mesa Verde.

Pithouse A, excavated by Linton, was in a poor state of preservation, so, in 1941, the senior author excavated an excellent pithouse, Pithouse B, in the same area (Lancaster and Watson, 1943). This ruin produced tree-ring dates indicating a construction date of about A. D. 600. In 1947, O'Bryan excavated 2 pueblo ruins in the Twin Trees area, 1 mile beyond Pithouse B on the Square Tower House-Sun Temple Road (O'Bryan, 1950). One of these, a slabhouse village, dated at approximately A. D. 840, while the other, a small unit pueblo, dated at about A. D. 950. These pueblos were in an excellent position for use in the interpretive scheme, but a long gap, both in time and architectural type, existed between the pithouses of A. D. 600, and the slabhouse village of A. D. 840.

In order to bridge this gap, a ruin dating about A. D. 700 was excavated in 1950, and this ruin, now referred to as the "Deep Pithouses," is the subject of this report. Approval for the excavation was granted by the Director of the National Park Service on February 24, 1950, and the work was done by the senior author and two Navaho laborers in June of that year.

Selection of the Twin Trees Site

Previous excavations have indicated that during the latter part of the seventh century and the early part of the eighth, pithouses of a characteristic type were common in the Mesa Verde and surrounding areas. Three of these pithouses had been excavated in the Mesa Verde but none were so located that they could be used in the interpretive program. One was excavated in 1939, after it had been cut by a pipeline trench (Smiley, 1949, p. 167). This pithouse gave tree-ring dates at about A. D. 700. A second was excavated by O'Bryan in 1948 (O'Bryan, 1950). This ruin, located one-fourth mile south of the Twin Trees Site, gave tree-ring dates at about A. D. 664. A third pithouse of this type was partially excavated by the senior author in 1948, when it was encountered under the edge of the pavement at the Twin Trees Site during road widening operations.

Although none of these pithouses were suitably located for interpretive use, they indicated that at the end of the seventh century deep pithouses of rather uniform type were more or less common in the Mesa Verde. Since these deep pithouses were a distinct advance in type and time over the shallow pithouses of the Pithouse B type, and were definitely earlier than the slabhouse villages, it was decided to excavate one if it could be found in the proper location on the Square Tower House-Sun Temple Road.

Because of the need for fitting the ruin into the interpretive scheme it was necessary to find a suitable pithouse in a very limited area. The most desirable location would be near Pithouse B, or near the slabhouse village at the Twin Trees Site. If a suitable pithouse could not be found at either site, a location anywhere along the road between the two would serve almost as well.

The first testing was done in the Pithouse B area. Six shallow pithouses of the Pithouse B type were found but no deep pithouses were located. Testing in the Twin Trees area revealed nine shallow pithouses and finally, a deep pithouse. Preliminary testing indicated that the latter was of the desired type and charcoal from the burned roof beams gave dates in the latter part of the seventh century. Since this pithouse seemed to meet the requirements as to type, age, and location, it was selected for excavation.

Location and Physiographic Conditions

The ruin is located at the Twin Trees Site, 2½ miles south of park headquarters (map, p. 1). The site is so named because two large piñon trees growing nearby have formed a natural graft. The slabhouse and unit pueblo ruins

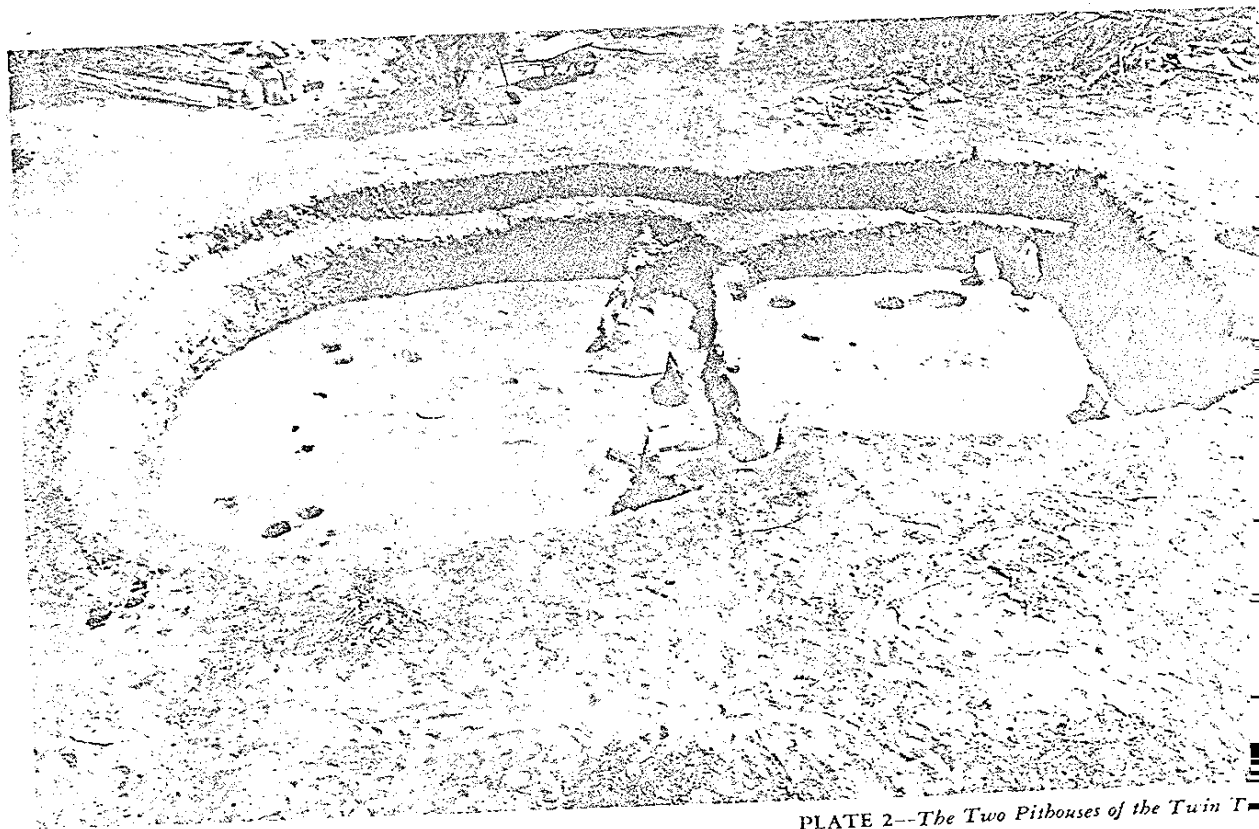
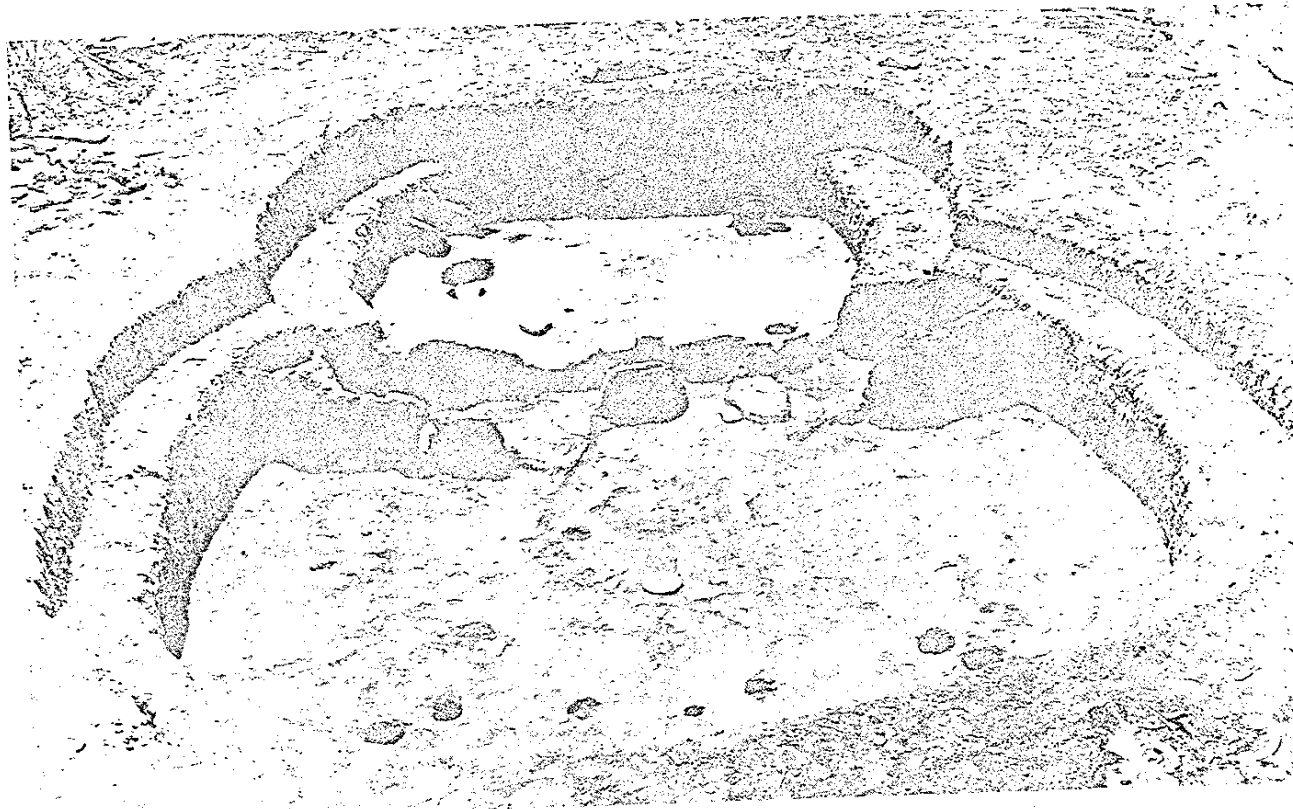


PLATE 2--*The Two Pithouses of the Twin T*

Excavated by O'Bryan in 1947 are located at this site and the "deep pithouses" are 200 feet south of these ruins (O'Bryan, 1950). The Twin Trees Site is readily accessible to visitors and the 3 ruins are less than 100 yards from the Square Tower House-Sun Temple Road, at a point one-fourth mile east of Square Tower House.

The Twin Trees Site is on the highest part of Chapin Mesa in an east-west line, the elevation being 6,885 feet. At this point the mesa is 1 mile in width and the heavy concentration of ruins indicates that it was a favorable area for the ancient people. A dense piñon-juniper forest covers the mesa except for small areas that were cleared of trees by a forest fire about 100 years ago. These cleared areas now support a dense growth of sage, a positive indication of rich soil. The mesa top is covered with a deep layer of heavy, red soil and with the average rainfall of 18 inches and a long growing season there can be little doubt that it was a favorable area for agricultural people. In the nearby canyons are a number of springs and it may be assumed that there were as many, possibly more, in ancient times.

Excavation Methods

Preliminary testing had indicated the nature of the fill and it was evident that nothing was to be gained by removing this fill in a series of thin layers. The structure had burned and as a result the floor was covered with the burned roof materials. The rest of the fill was made up of ashes and trash with some red earth near the top. Since the structure had burned, it was obvious that all artifacts which were in it at the time of destruction would be on the floor and bench or immediately above them.

The upper fill was removed in one operation until the burned roof materials were encountered at an average of 1 foot above the floor. This material was removed to a point 3 inches above the floor. This last layer was then removed and all artifacts found in actual contact with the floor and bench, or slightly above them, were considered to have been in the structure when it burned. The three layers were designated as upper fill, lower fill and floor contact.

When excavation started, it was assumed that the ruin consisted of a single pithouse. It was further assumed that the pithouse would be similar to others of the same period which had been excavated previously and would consist of a large main room with a smaller southern antechamber. As the excavation progressed and the ruin was outlined, it became evident that it varied radically from this plan.

Upper photograph—Viewed from the north

The larger room was built first and is designated as the first pithouse. The smaller, which was built after the first house burned, is designated as the second pithouse.

The hole just to the right of the sipapu (pl. 3, f) is a rodent burrow.

Lower photograph—Viewed from the west

These pictures were taken before the ashes were removed from the firepits and before the sand had been removed from the large floor cist (pl. 3, e) in the first pithouse.

Instead of a large pithouse with a small antechamber, the ruin seemed to consist of two rooms, a very large one on the north, and a second room, almost as large, adjoining it on the south (pl. 2, 3, and 4).

When the floor features were finally exposed, the picture immediately became clear—the ruin consisted of 2 pithouses instead of 1. The evidence for this will be presented after the architectural features have been discussed.

ARCHITECTURAL FEATURES

The north, or earlier, pithouse is the larger of the two. It is a D-shaped room, measuring 18 by 23½ feet, with an average depth of 4 feet. Around the east, north, and west walls is a bench averaging 18 inches in width and 30 inches in height. The walls are of native red earth with the face of the bench and the floor heavily plastered with gray clay. The walls and floor show the effects of intense heat.

When the second pithouse was constructed, its north wall cut the south wall of the first for a distance of 8 feet, removing all evidence of the antechamber and connecting passageway. Remaining traces of the south wall indicate that it was straight and that the room was D-shaped. The floor features; wingwalls, bin, firepit, deflector, sipapu, pot rests, floor cist, and post holes are typical, for the most part, of those commonly found in structures of this age and type. For details of the features see plates 2 and 3.

The second pithouse measures 13½ by 18½ feet, with an average depth of 45 inches. It was also D-shaped with a bench, averaging 23 inches in height and ranging from 15 to 30 inches in width, on the east and west walls. No bench was present on the north side. Seven sandstone slabs had been erected along the north wall where this room cut into the first pithouse. It is probable that these slabs were installed to hold back the loose ashes and fill of the burned structure. If the north wall originally had a bench it is possible that it disintegrated because of the loose, unconsolidated ash fill on which it rested. The walls are of native earth and no traces of plaster were found. Only the west wall shows evidence of burning and this is very slight.

The ventilator which enters the south room in the center of the south wall is a tunnel 18 inches wide, 2 feet high and 20 inches in length, which opens into a circular pit, 32 inches in diameter. The ventilator probably served also as an entrance, although the small deflector slab, which stood only 10 inches in front of the tunnel opening, constricts the space.

Floor features of the second pithouse are similar to those in the first but are, in general, less elaborate. For details of these features see plate 2 and 3.

One Pithouse or Two?

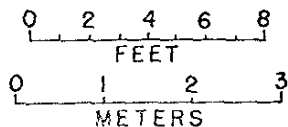
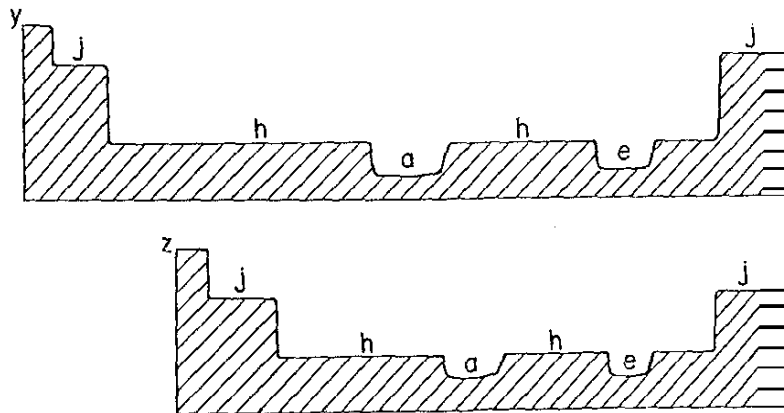
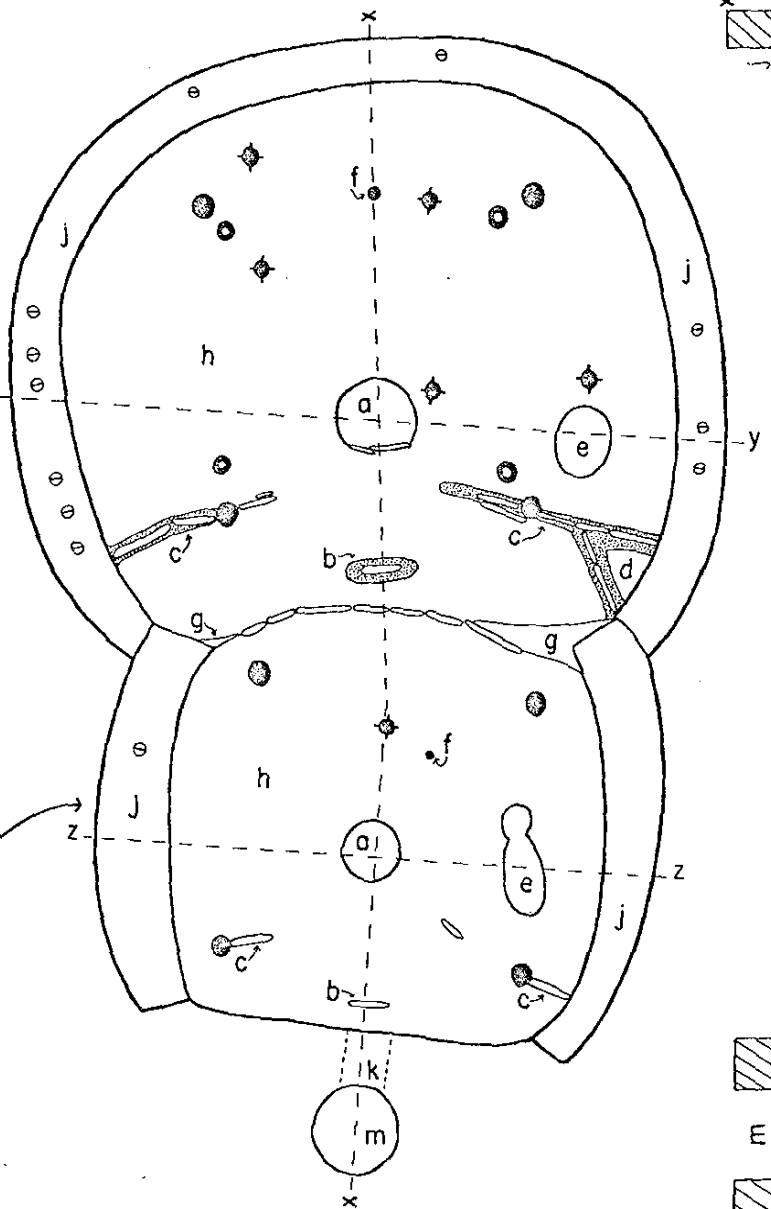
As has been indicated above, it was not until all floor features had been brought to view that it was realized the ruin consisted of 2 pithouses instead of 1. During the early stages of excavation it appeared that the pithouse varied

FIRST PITHOUSE

- a firepit
- b deflector
- c wing wall
- d bin
- e floor cist
- f sipapu
- g section of original south wall
- h floor
- j bench
- ◆ potrest
- ⊙ end of burned roof beam
- ⊙ holes for four original roof supports
- ⊙ holes for four roof supports after remodeling
- sandstone slab
- adobe

SECOND PITHOUSE

- a firepit
- b deflector
- c wing wall
- e floor cist
- f sipapu
- h floor
- j bench
- k ventilator tunnel
- m ventilator shaft
- ◆ potrest
- ⊙ holes for four roof supports
- sandstone slab



LATE BASKETMAKER III PITHOUSES

MESA VERDE NATIONAL PARK

Ground plan and profiles

ically from others of the same age which had been excavated in the park. The three previously excavated had consisted, in each case, of a large pitroom with a small southern antechamber, or entrance-way. This ruin, on the contrary, appeared to have a southern room almost as large as the main room. When the excavation was completed it was immediately evident that the ruin consisted of 2 pithouses, 1 built a short time after the destruction of the other.

As shown in the ground plan (pl. 3), the two rooms have a duplication of certain features that previously has not been found in any pithouse and its antechamber. These duplicate features; firepit, deflector and sipapu, together with other

important characteristics, make it impossible to consider the structure as a single unit.

As far as is known, all pithouses that have been excavated in this region have contained firepits. Equally as definite is the fact that a firepit has not been found in a southern antechamber. In some of the earlier pithouses the antechambers were very large, sometimes almost as large as the main room itself. Certainly these large antechambers provided an abundant amount of extra living, work and storage space, but no case is known where the antechamber was provided with a firepit.

The same is true for the deflectors (pl. 3, b). These were obstructions, at this stage usually stone slabs, set in front of the tunnel entrance to the antechamber or ventilator, which served to break the draft of air that came into the main room. During cold weather the deflector, no doubt, was a most important fixture. The fire burning in the central firepit would have sent a large volume of smoke and warm air out through the smokehole in the roof. This would have, in turn, drawn a considerable draft of cold air in through the tunnel entrance to the antechamber. The deflector, standing directly in front of the tunnel, not only would have kept this draft from blowing directly on the fire, but would have kept the cold air from sweeping across the room to the discomfort of people sleeping on the floor. The deflector in the north room indicates that this room originally had an antechamber or ventilator of its own.

Each room also contains a sipapu (pl. 3, f), a small hole in the floor that in many modern Pueblo kivas serves as a ceremonial entrance to the underworld. No cases are known in this region where sipapus have been found in antechambers. The fact that each room contains these three features, firepit, deflector and sipapu, indicates that each was a complete unit.

Even more conclusive evidence that the two rooms did not exist at the same time is offered by the benches (pl. 3, j). The benches of the 2 rooms are radically different in height, that of the southern room being 7 inches lower than that of the northern room. The north room, or first pithouse, was destroyed by a fire that generated intense heat. As a result the surface of the bench and the walls below it were heavily burned. The south room, or second pithouse, burned only slightly and the bench and walls show only slight evidence of heat. Being lower, the bench of the south room cut through the bench of the north room and at this point the difference is radical. While the bench and walls of the north room show intense burning, the adjacent portions of the bench of the south room present clean, unburned surfaces. It is obvious that the south room was not in existence when the north room burned.

Further evidence of two separate pithouses is offered by the locations of the artifacts, other than potsherds, found in them. On the floor and bench of the north room were found 21 stone and bone artifacts. This large number of artifacts may indicate the structure burned while still occupied. In the south room only two artifacts, a broken stone knife and a small bone awl, were found in contact with

First pithouse (see also plate 2)

Shape.—D-shaped. Antechamber and most of straight south wall destroyed when second pithouse was built. Dimensions, $23\frac{1}{2}$ by 18 feet.

Orientation.—West of north.

Walls.—Native earth above bench; slightly burned.

Bench (j).—On east, north, and west sides. Native earth plastered with adobe. Average width, 18 inches. Average height, 30 inches. Heavily burned.

Wingwall (h).—Hard packed adobe. Average depth below ground level, 4 feet.

Partition (c).—Discontinuous. Two wingwalls, each incorporating a roof support post: stone slabs covered with adobe. Average height, 27 inches.

Firepit (d).—Triangular. Stone slabs covered with adobe. Depth, 30 inches.

Deflector (a).—D-shaped. Depth, 12 inches. Filled with ashes.

Deflector (b).—Stone slab covered with adobe. Height, 17 inches.

Sipapu (f).—Diameter, 5 inches; depth 6 inches. Lined with plaster.

Par rests.—Five saucer-shaped, plastered depressions filled with fine sand. Di-

ameters range from 5 to 7 inches; depths from $1\frac{1}{2}$ to 3 inches.

Cist (e).—Oval-shaped cist, 11 inches deep. Filled with sand.

Post holes.—Two sets of four each; each set arranged in a square. Holes in inner set had been filled with earth and plastered over, indicating the roof had been rebuilt. Holes in outer set contained charred posts. Diameters range from 7 to 9 inches.

Beam ends.—Shallow depressions on bench contain ends of charred beams.

Second pithouse (see also plate 2)

Shape.—D-shaped. Dimensions, $18\frac{1}{2}$ by $13\frac{1}{2}$ feet.

Orientation.—West of north.

Walls.—Native earth above bench. Not burned.

Bench (j).—On east and west sides. On north side bench had rested on loose ashes and fill of burned pithouse and had disintegrated. No plaster remained on walls below bench. Bench and lower walls only slightly burned. Average height of bench, 23 inches; width, 15 to 30 inches.

Wingwall (h).—Sandy plaster. Depth below ground level, 45 inches.

Partition (c).—Discontinuous. Two wingwalls, each incorporating a roof support post. Remaining portions consist of one stone slab in each wing. Height of slabs, 1 foot. Small slab halfway between firepit and post hole may have been part of eastern wingwall.

Firepit (a).—Circular. Diameter, 2 feet; depth, 8 inches.

Deflector (b).—Stone slab, 10 inches from south wall. Height, 13 inches.

Sipapu (f).—Diameter, 3 inches; depth, 7 inches.

Par rest.—Plastered depression filled with sand. Depth, 2 inches.

Post (e).—Figure-3-shaped. Length, 42 inches; width, 16 inches; depth, 9 inches.

Beam end.—Shallow depression on west bench containing end of charred beam.

Ventilator (k, m).—Tunnel 18 inches wide, 2 feet high, connecting with vertical shaft, 32 inches in diameter and 42 inches deep. May have served as entrance but deflector only 10 inches from wall constricted the space.

Slab wall.—On north side, 7 sandstone slabs filled the space between the 2 fragments of the south wall of the first pithouse (g). Slabs ranged in height from 9 to 16 inches and from 11 to 28 inches in width. Probably erected to hold back loose ashes and fill of first pithouse.

If the first pithouse had a large antechamber it is possible that the second pithouse was constructed merely by enlarging this room.

Tree-Ring Dates and Construction Sequence

In September 1950, Dr. Edmund Schulman, of the Tree-Ring Laboratory, University of Arizona, visited the park and made a preliminary inspection of a large number of fragments of charcoal from the pithouses. The datable specimens seemed to represent only eight different trees and when they were studied at the laboratory, the following dates were obtained (Schulman, 1951, pp. 28-29; Smiley, 1951, No. 88x, p. 23):

| Specimen number | Site | Species | Inner ring, A. D. | Outer ring, A. D. |
|-----------------|---------------------|------------------|-------------------|-------------------|
| MV-486 | First pithouse..... | Piñon..... | 419 p | 574 vv |
| MV-487 | " " | " " | 454 | 570 vv |
| MV-488 | " " | Douglas-fir..... | 548 | 636 vv |
| MV-489 | " " | Piñon..... | 506 p | 625 vv |
| MV-490 | " " | " " | 578 p | 674 c |
| MV-491 | " " | Douglas-fir..... | 601 p | 674 v |
| MV-493 | " " | Piñon..... | 585 p | 667 vv |

Note: p—pith ring present; c—outside ring constant along outer face of specimen, probably few or no lost rings; v—outside date variable, probably several rings lost; vv—outside date very variable, probably many rings lost.

Since the outer ring of specimen MV-490 was constant, a cutting date of A. D. 674 probably is indicated, unless it was a dead timber. Specimen MV-491 had lost a few rings and MV-493 had lost even more, so a construction date somewhat later than 674 is suggested.

During occupation the roof was remodeled, for two sets of post holes were found in the floor (pl. 3). In this operation the four main roof supports were taken from their holes and the holes were filled with earth and plastered over at floor level. A new hole was dug beside each original hole, the distance between the new and old holes ranging from 5 to 11 inches. In each case the new hole was closer to the outer wall of the room and it was in these holes that the burned posts were found during excavation. Whether the two sets of post holes indicate a mere remodeling of the roof, or whether the entire pithouse was enlarged, could not be determined.

After a period of occupation, probably rather short, the pithouse burned and the presence of the artifacts on the floor and bench may indicate that it was still in use at the time of its destruction. The surface and face of the bench, as well as the floor, show the effects of intense heat.

Sometime later the second pithouse was built, its north wall cutting the south wall of the first. A construction date for this structure can only be estimated. The two pithouses are similar in type and all artifacts found in them were of common types which were in use over such a long period of time that they do not aid in exact dating. It appears, however, that the second pithouse was built shortly

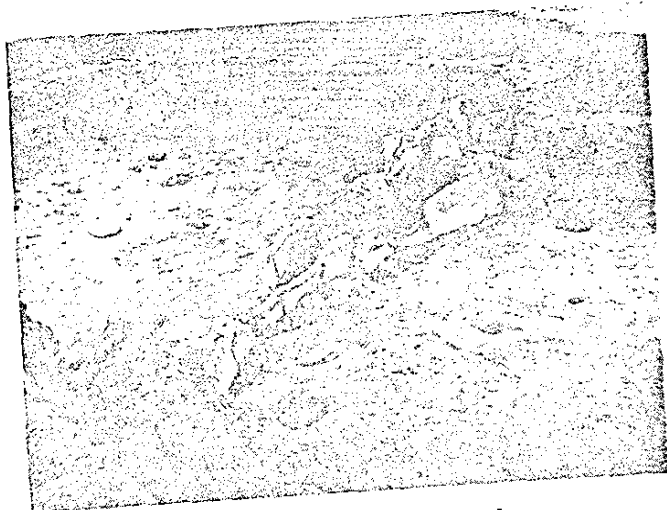


PLATE 4—Slab Wall of Second Pithouse

Across the north side of the room, seven sandstone slabs filled the space where the wall cut the first pithouse. These slabs probably served to hold back loose ashes and fill.

the floor and bench. This probably indicates that the structure had been cleaned out and deserted. This pithouse showed evidence of only light burning. No large pieces of charcoal were found and there were no charred posts in the four postholes. Also, 7 sherds were found at the bottom of 1 post hole, indicating that the post had been removed before the structure burned. It is entirely possible that the four roof supports and the larger roof beams had been carried away for use elsewhere and that only the small sticks and brush of the roof cover remained when the burning occurred.

Final evidence for 2 separate pithouses is the row of stone slabs between the 2 rooms (pl. 4). At each end of this row of slabs are small portions of the original south wall of the first pithouse (pl. 3, g). The north face of these portions shows intense burning while the south face is only slightly burned. The seven slabs, ranging in height from 9 to 16 inches, were erected in a curving line across the north wall of the second pithouse. When the second pithouse was being constructed the builders no doubt encountered the loose ashes and fill of the burned pithouse to the north and in all probability the slabs were installed to hold back this loose material. The south face of several of the slabs shows evidence of burning while the north face does not. This indicates the slabs were not in place when the first pithouse burned. No evidence of a bench was found above the slabs. If one ever existed it had disintegrated, probably because of the loose, unconsolidated ashes on which it rested.

When the ground plan of the 2 pithouses is studied (pl. 3), one cannot but wonder what circumstance caused the north-south alignment of the 2 to be so nearly perfect. It is entirely possible that the first pithouse had a large antechamber and that the second was merely an enlargement of it. Earlier pithouses often had antechambers of considerable size. That of Pithouse B, which was built about A. D., 600, measured 9 by 12 feet, while that of Pithouse C, of the same date, was 10 feet in diameter (Lancaster and Watson, 1943).

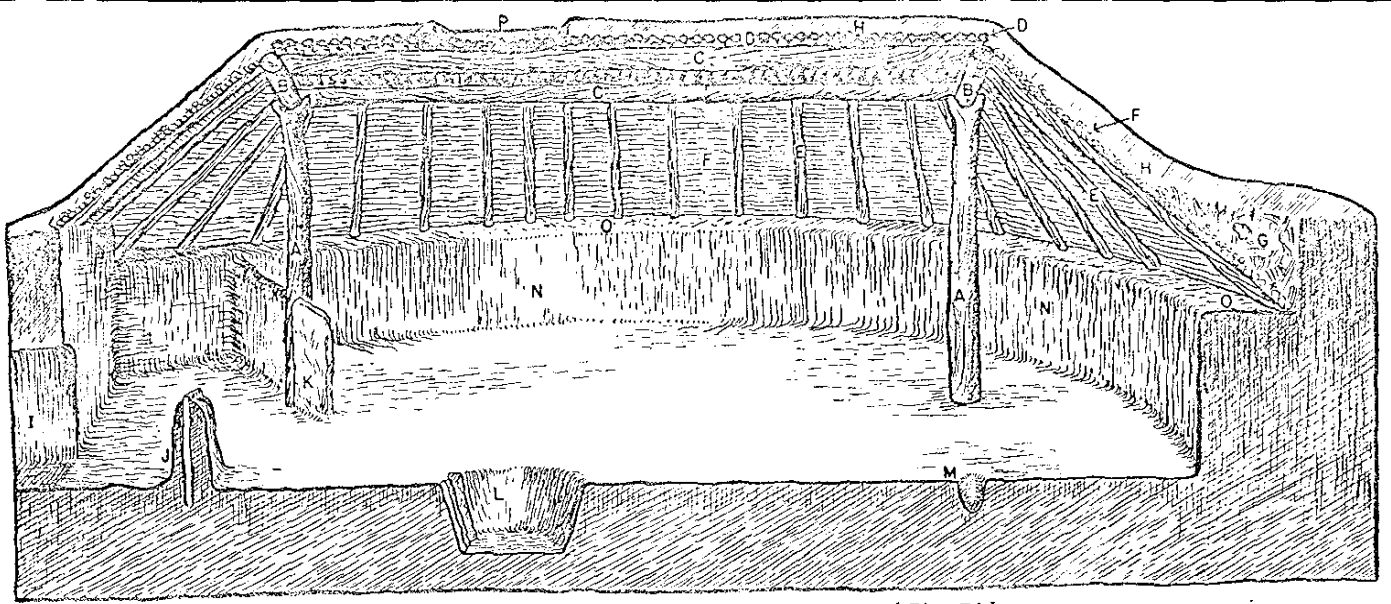


PLATE 5—Postulated Method of Roof Construction of First Pithouse

- | | | | |
|-----------------------------|----------------------------|---------------------------|----------------------------|
| A. Main support posts. | E. Sloping side poles. | I. Tunnel to antechamber. | M. Sipapu. |
| B. Main stringers. | F. Poles, brush, or reeds. | J. Deflector. | N. Plastered walls. |
| C. Secondary stringers. | G. Bark and trash fill. | K. Wingwall. | O. Bench. |
| D. Slender poles or wiches. | H. Earth covering. | L. Firepit. | P. Smokehole and hatchway. |

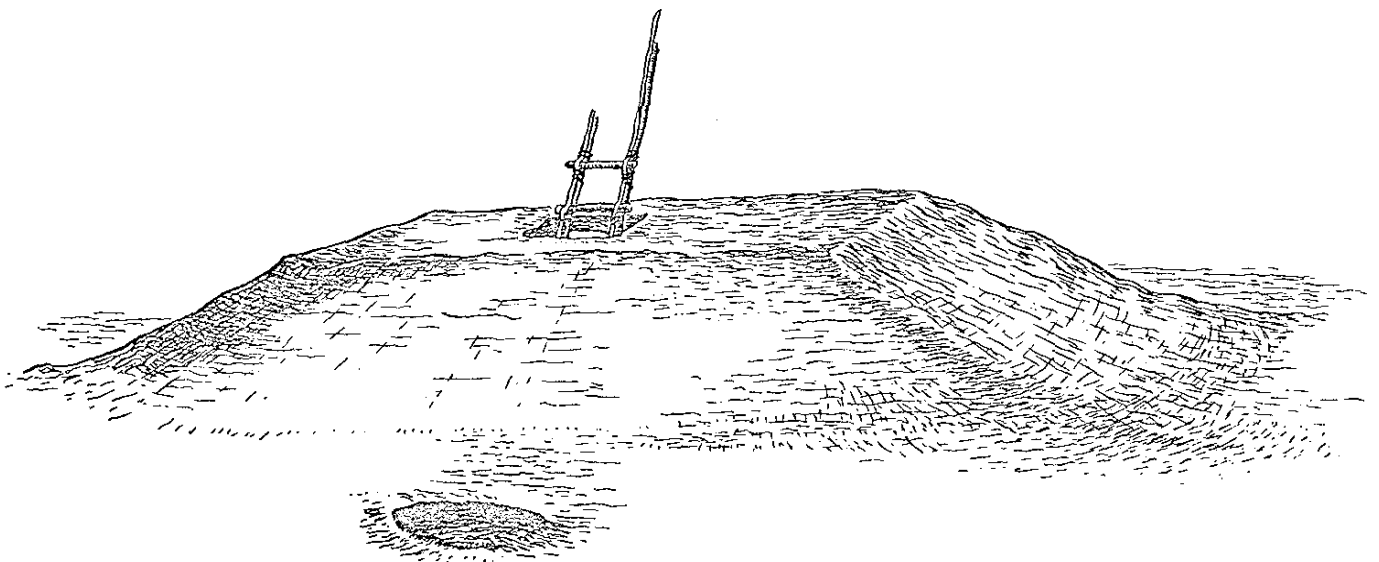


PLATE 6—Reconstruction of the Second Pithouse

after the first was destroyed by fire. The floor of the first was covered with charcoal, ashes, and fire-hardened adobe from the burned roof. Above this, the fill consisted of ashes and trash and there was no evidence of water-laid clay. *It is not difficult to imagine that the occupants of the second pithouse dumped their trash in the shallow pit which remained after the first pithouse burned.*

In all probability, the entire site was not occupied for any great length of time and the second pithouse presumably was built only a short time, not more than a few years at most, after the first one burned. The entire occupation of

the site may have occurred within the last quarter of the seventh century.

Roof Construction

No pithouse of this type, or of any similar type, has been found with the roof intact. Reconstruction of the roof is, therefore, conjectural, but actually it is not too difficult. When the roof of the first pithouse burned, many of the roof timbers were turned to charcoal and were found where they had fallen. From their arrangement, the design of the roof can be reconstructed with fair accuracy.

The roof was supported by four upright posts set in holes in the floor (pl. 5). In all probability, the tops of these posts were forked, and four stringers, resting in these forks, formed a square framework. Additional stringers were placed across this framework to support the roof above this section. Support for the sloping side walls was provided by a number of slender poles, the lower ends of which rested on the bench, while the upper ends rested against the square framework. Eleven of these poles were found where they had fallen, and the space between poles ranged from 12 to 15 inches. The lower ends of these poles were not buried in the bench as has been found elsewhere (Martin, 1939, p. 380). They merely rested on the bench, several inches in front of the back wall.

After the framework of the roof was completed, it was covered with a layer of small sticks and brush, and to this was applied a covering of adobe, several inches thick. No evidence of the smokehole was found, but it was, no doubt, above the firepit. In all probability, a ladder was placed in the smokehole and it served as an entrance. The ventilator tunnel from the antechamber served as a second entrance. The height of the roof is uncertain, but it would seem safe to assume that the rectangular section between the four posts was high enough to clear the heads of the occupants. Reconstructions of the roof are shown in plates 5 and 6.

ARTIFACTS

Objects of Stone

Objects of stone recovered from the 2 pithouses numbered 26, all being of types common to the period. Of these, 23 were found in the first pithouse and 3 in the second. Their locations as summarized here, strengthen the belief that the first pithouse burned while still in use, and that the second pithouse may have been cleaned out and deserted before it burned.

| Site | Upper fill | Lower fill | In contact with floor or bench | Total |
|----------------------|---------------------------|------------|--------------------------------|-------|
| First pithouse..... | | 3 | 20 | 23 |
| Second pithouse..... | 2 (fragments of metates). | | 1 | 3 |

Details of the objects are given in table 2, and all, except the 2 metate fragments, are pictured in plates 7 to 13.

Objects of Bone

Only two worked bone objects were found, a bone awl and a perforated toe bone of a deer.

Bone awl.—This awl was made from the split metatarsal of a young deer: the head had separated from the shaft. The head end was unworked; the other end was sharpened. Length, 2.7 inches. See plate 13, bottom row, right.

Perforated bone.—The hole in this deer toe bone was made, not by drilling, but by grinding across the sides of the bone

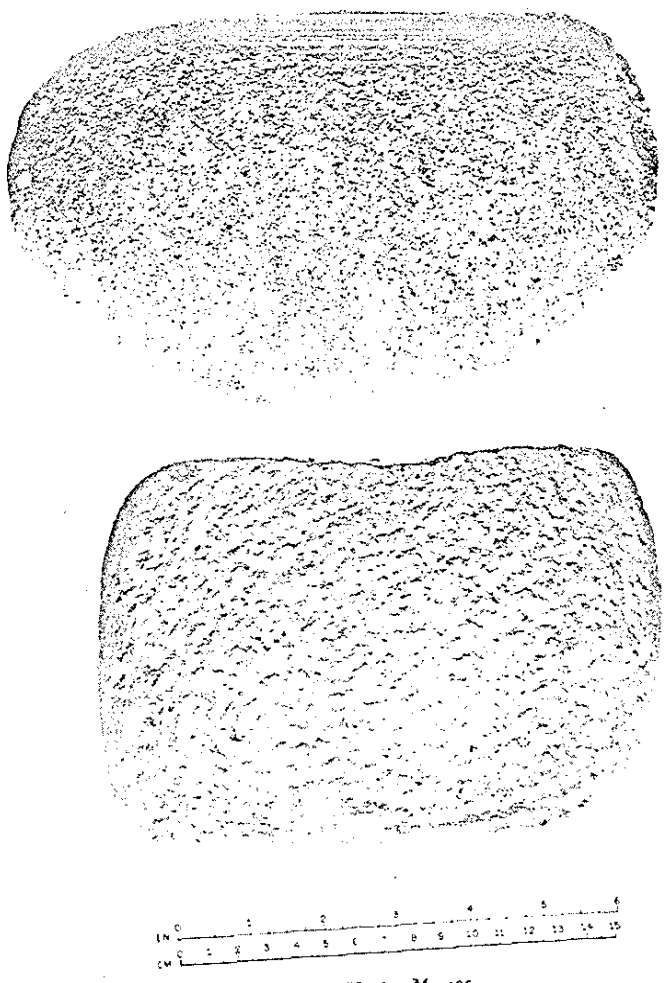


PLATE 7—Manos

Upper.—River pebble of fine-grained sandstone. One edge chipped to produce the mano shape, but shows no evidence of use. Wedge-shaped, but not through use. Maximum thickness: 2 inches. Floor of first pithouse.
Lower.—Fine-grained sandstone. One well-pecked, convex grinding surface. Finger grip on one edge. Upper surface flat; surfaces parallel. Maximum thickness: 1.25 inches. Floor of first pithouse, beside metate (pl. 8).

until the thin shell was perforated. The edges of the holes were bevelled by the grinding action. Plate 13, bottom row, left.

Unworked Bone

Fifty-one fragments of mammal bone, 2 bird bone and 4 pieces of deer antler were found on, and just above, the floor of the first pithouse. The two bird bones were turkey tarsometatarsi. The mammal bones were too badly burned and too fragmentary for identification, but they appear to be from a large mammal, probably deer. The bones were unworked and probably were food bones which were in the pithouse when it burned.

Perishable Objects

As this was an open site and, since in addition, the structures burned, no perishable objects could be expected. However, 1 small fragment of charred fabric, amounting to about

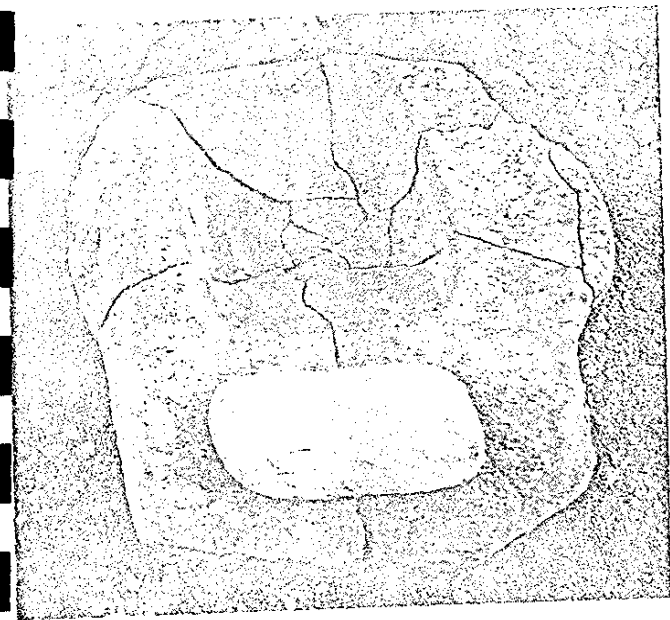


PLATE 8—*Metate and Mano*

Metate.—Irregular sandstone slab.

Length, 25.5 inches. Width, 18.0 inches.

Thickness, 3.5 inches.

Trough dimensions:

Length, 16.0 inches. Width, 9.5 inches.

Maximum depth, 3.0 inches.

The trough is not open at the end.

Mano.—Fine-grained sandstone; one convex grinding surface which fits the trough of the metate.

Length, 8 inches. Width, 5.25 inches.

Thickness, 1.25 inches.

The metate was found upside-down on the floor of the first pithouse, 2 feet west of the deflector. The mano was beside it. A similar upside-down metate was found in exactly the same spot in Pithouse B (Lancaster and Watson, 1943).

1 square inch, was found on the bench of the first pithouse.

The fragment appeared to be a portion of a finely woven sandal, and, since Mr. Earl H. Morris has studied basketmaker sandals extensively, it was submitted to him for analysis. His findings are so revealing they are quoted in full:

"The charred fragment of textile is from the forward end of a Basketmaker III cloth sandal. The remaining bit of selvage is part of the somewhat scalloped toe margin. Relatively heavy, stiff warps and much finer, softer weft threads, well exhibited in this specimen, are typical features of all better varieties of Basketmaker III footgear. These warp-weft proportions, strengthened by the doubling of the warps, provide sufficient evidence to establish the identity of the object, because in no other known class of contemporaneous textiles do double warps occur.

"An excellent reconstruction of the steps of manufacture of the double-warp toe has been given by Kidder. The warps were first laid out side by side, or more probably were suspended in such a way that they hung parallel to each other, with the proper intervals between them. Then, at

the place where the toe of the finished sandal was to be, there were run in ten rows of twilled over-two-under-two twined weaving. . . . Thus was produced a strip of web not quite one-half inch wide running across the warps near their upper ends, and holding them firmly together at the correct distance apart. The doubling now took place. A two-ply yucca cord of about the same weight and stiffness as the warp strings was laid across the middle of the strip of web on what was to be the under side of the sandal and the strip was closely creased over it, thus bringing the shorter end of each warp into parallel juxtaposition with its longer end. . . . The twilled over-two-under-two twined weaving was now continued, but instead of being over pairs of single warps, it took in the doubled warps and so bound the turned-down shorter end firmly to the longer ones. Where the doubling took place there was left running across the toe of the sandal, a narrow tunnel or tube in the fabric. In the tube there remained the yucca cord over which the crease was made. In the dissection of the sandal this cord was found still in place, closely clipped off at either end of the tube. I think there is little doubt that the cord was originally a long one whose free ends served to attach the growing sandal to a rigid support in order that there might be something to pull against while the weaving progressed. I also think it possible that the curving or scalloped form of the toe is due to the pull of this string during the first stages of the weaving" (Kidder, 1926, pp. 618-632).

"In the present specimen, the end of the suspending cord lying in the tunnel of the folded fabric may be discerned at one corner of the selvage. As far as can be determined without picking the wisp to pieces, the warp is not twined as in Kidder's specimen, but seems to be done in simple over-under stitch. This difference need be no cause for concern because examination of a large series of Basketmaker III sandals shows that the weavers of the time used the twining and under-over techniques rather indiscriminately, even in a single specimen. Thus is dispelled the generally accepted notion that all Basketmaker III sandals have twined wefts. The fact is that both twining and over-under treatment are found in the early sandals, whereas in Pueblo III cloth sandals from the Aztec Ruin and Pueblo Bonito, the wefts are, without noted exception, twined" (Morris, personal communication, Mar. 21, 1953).

Pottery

During the excavation of the 2 pithouses, 1,322 sherds, 1 unbroken jar (pl. 16, left, and table 3), and crushed fragments of an unfired mud platter were found. These divided into seven named types, plus a small number of unfired sherds which could not be typed. Of the named types, probably only 3 were made by the original occupants of the pithouses; the other 4 types are generally considered to be later and they no doubt came from nearby later sites. Sherd counts and percentages are in table 3.

The predominant pottery was Lino Gray. This is a convenient catch-all for it includes not only Lino Gray sherds,

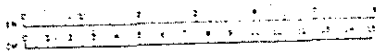


PLATE 9—Pot Covers

Upper.—Sandstone disk; edges chipped and ground. Average thickness, $1\frac{1}{4}$ inches. From floor of first pithouse.
Lower.—Sandstone; edges roughly chipped. Average thickness, $\frac{3}{4}$ inch. From bench of first pithouse.

ard, in Morris, 1939, p. 251). In this respect, the pottery differed from the published description of Lino Gray which gives sand as the tempering material (Colton and Hargrave, 1937, p. 191).

Surface finish varied from very rough through all degrees of scraped, to some which were smoothed and, to a certain extent, polished. Sherds which indicated the greatest degree of smoothing were from bowls, and in each case, it was the inner surface which was smoothed. Some of this smoothness on the inside of bowls may well have resulted from long use. In the surface finish, some sherds approach

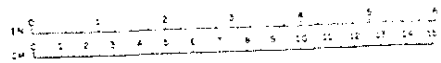


PLATE 10—Hammerstones and Maul

Upper left.—Full-grooved maul. Made from fine-grained sandstone river pebble. From floor of first pithouse.
Upper right.—Igneous river pebble. One end slightly pecked from use. From floor of first pithouse.
Lower left.—Igneous river pebble. Ends heavily pecked, indicating use as a hammerstone. From lower fill of first pithouse.
Lower right.—Igneous river pebble. Ends pecked and broken, indicating use as hammerstone. These tools were no doubt used in shaping metates, manos, slabs, and other stone artifacts. From lower fill of first pithouse.

but unpainted sherds of Lino Black-on-gray and La Plata Black-on-white, body sherds of Kana-a Gray, and sherds of Lino Fugitive Red from which the color has disappeared. These plain gray sherds comprised 91.5 percent of the pottery from the site, but because of the fact that the plain sherds of the various types cannot be separated, the figure has little meaning.

The sherds show the usual variations found in Lino Gray pottery. The thickness ranged from $\frac{1}{8}$ to $\frac{1}{2}$ inch; color from light to dark gray. Temper consisted of crushed rock with minor amounts of sand in some specimens. Mica flecking was present in all sherds and tempering materials probably were crushed diorites and andesites, common local rocks which were widely used as temper during this period (Shep-

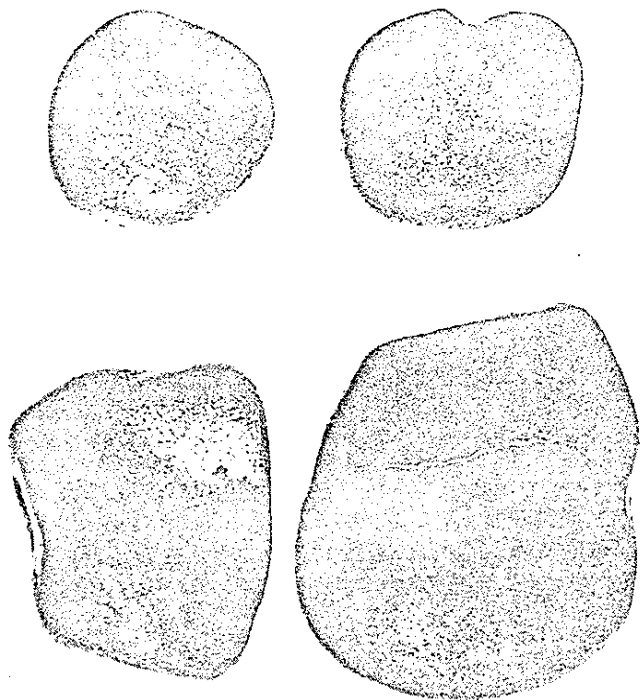


PLATE 11—*Rubbing, Pounding, and Polishing Stones*

Upper left.—Igneous river pebble. Chipped edges and polished surface indicate use as a pounding and rubbing stone. Bench, first pithouse.

Upper right.—Igneous river pebble. One face slightly ground by rubbing. Possibly a one-hand mano. Floor, first pithouse.

Lower left.—Igneous river pebble. Surfaces smooth, showing no abrasion or pecking. Bench, first pithouse.

Lower right.—Igneous river pebble. Surfaces smooth, showing no abrasion or pecking. Stones of this type are often called floor polishers. Floor, first pithouse.

Twin Trees Plain, a pottery type described by O'Bryan in 1950 (O'Bryan, 1950, p. 91), but in this group of sherds it is not possible to draw a line of demarcation. It is easy to select the roughest examples and equally easy to select those which show the highest degree of smoothing or polishing. Between these extremes, however, the variations are so imperceptible that no two people would divide them in the same manner, and it is extremely doubtful if one person could divide them twice in the same manner.

Fugitive Red, which is simply Lino Gray pottery to which a red wash was applied after firing, accounted for 1.6 percent of the sherds. The 13 unfired sherds (0.9 percent) were roughly made of gray clay and contained no temper. They may well represent a child's first efforts at pottery making. Fragments of a crushed vessel of unfired, vegetable-tempered clay were also recovered but were not included in the sherd count as they had, for the most part, disintegrated into innumerable tiny particles. Crudely made, unfired platters and bowls, tempered with plant fibers, occasionally were made even after superior pottery was being produced.

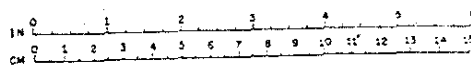
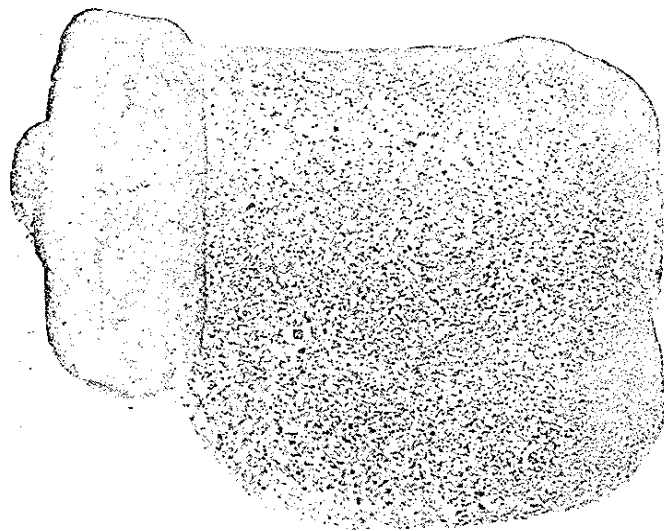


PLATE 12—*Miscellaneous Stone Objects*

Top

Mortar or paint grinder

The upper surface of the larger stone is concave, the depression being one-half inch deep. The lower face of the smaller stone is convex, its curve fitting the depression in the larger stone.

The two stones were found side by side on the floor of the first pithouse.

Center

Left.—Pecking stone. Igneous pebble, heavily fractured and chipped, indicating use as pecking and pounding stone. Floor of first pithouse.

Right.—Cup-shaped concretion; edges smoothed. Probably used as a container. Floor of first pithouse.

Bottom

Left.—Hematite. Color, bright red. Probably used for paint. Floor of first pithouse.

Right.—Polishing pebble. Small, igneous river pebble. Bench of first pithouse.



PLATE 13—Miscellaneous Artifacts

- Top row, left.—Highly polished stone pendant. Thickness, one-sixteenth inch. From lower fill of first pithouse.
- Top row, right.—Cannel coal. Drilled on opposite faces but not quite enough to perforate. From floor of first pithouse.
- Second row, left.—Roughly chipped point: chert. From bench of first pithouse.
- Second row, center.—Chert point; very roughly chipped. From bench of first pithouse.
- Second row, right.—Knife; basal portion missing; quartzite. From bench of second pithouse.
- Bottom row, left.—Perforated deer toe bone. From floor of first pithouse.
- Bottom row, right.—Awl; made from split distal end of a deer metatarsal. From bench of second pithouse.

From the Lino Gray rims that were found, it would appear that the common shapes were bowls, globular jars, commonly called "squash pots," and globular jars with short necks. Two vessels were partially restorable, a large, small-mouthed water jar (pl. 14) and a crude miniature bowl (pl. 16, right). Five handles and one possible handle were found and are pictured in plate 15.

Two small vessels with lateral spouts were found, one in each pithouse (pl. 16, left and center). These unusual vessels appear to have had a wide distribution during Basketmaker III times, Roberts having found them in the Chaco (Roberts, 1929, p. 117), and Morris in Canyon del Muerto, at Red Rock and along the La Plata (Morris, 1939, p. 147). The two found during the excavation are small, globular vessels, each one having a small mouth and a lateral spout (pl. 16, left and center). In each specimen the spout is broken so the original length is unknown.

The spouts are perforated, but the perforations in the two specimens are radically different. In one specimen the spout diameter is one-half inch while the perforation is one-eighth of an inch in diameter. This spout appears to have been made by molding the clay around a smooth stick, or

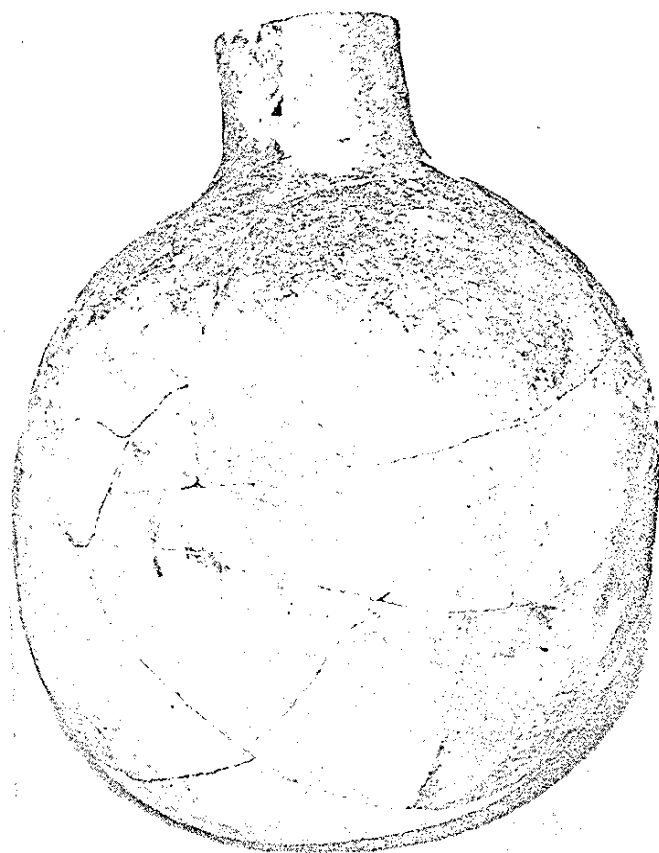


PLATE 14—Lino Gray Jar

From floor of first pithouse.

reed, which was then withdrawn, leaving a smooth hole. The bowl of this vessel was about two-thirds full of tiny charred seeds, which probably are of some local species of *Sophia* (Mustard). This charring could have occurred when the first pithouse burned as the vessel was sitting on the bench. The entire vessel, inside and out, was heavily smudged.

The spout of the second vessel is so short that it is difficult to reconstruct. Where it joins the vessel, the spout is seven-eighths of an inch in diameter and the perforation has a diameter of five-eighths of an inch. This perforation probably was formed by a simple molding of the clay. Above this perforation and parallel to it, is a second perforation, three-sixteenths of an inch in diameter. This small hole was formed by molding the clay around a slender stick, as described above. Whether the two perforations extended the full length of the spout cannot be determined. This vessel was not smudged, either inside or out.

The use of these vessels with the lateral spout is unknown, but it has been suggested that they were pipes or clod



PLATE 15—Jar Handles

Top row—Pierced lug handles. Bottom center—Pinched lug handle.
Bottom left—Fragment of strap handle. Bottom right—Possibly a handle.

blowers. The first vessel described above, because of its heavily smudged interior and the small bore of its spout perforation, suggests this use. However, the smudging of the interior may have been occasioned by the charring of the

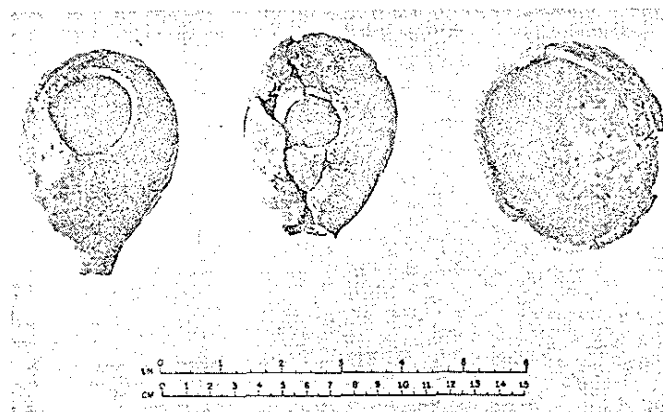


PLATE 16—Miniature Vessels

Left: Lino Gray Vessel With Lateral Spout

Spout perforated; diameter of perforation, one-eighth inch. Spout broken. Surface finish very rough. This small vessel was two-thirds full of charred seeds which resemble those of Tansy Mustard (*Sophia*). From bench of the first pithouse.

Center: Lino Gray Vessel With Lateral Spout

Spout has two perforations. The larger is five-eighths of an inch in diameter; the smaller, three-sixteenths. The smaller perforation is above and parallel to the larger hole. From floor of the second pithouse.

Right: Lino Gray Miniature Bowl

Exceedingly crude. From bench of the first pithouse.

seeds it contained. It is difficult to see the second vessel as a pipe. The interior is not smudged and the spout with its two perforations does not suggest a pipe stem. It is entirely possible that this specimen represents one-half of a double vessel, a form occasionally found in this area at a later date. In these double mugs the 2 halves were joined together by 2 short rolls of clay, 1 or both of which was perforated to allow passage of liquids from 1 side to the other. The vessel under discussion may represent an early form of these double mugs.

The only decorated pottery which can be considered, without doubt, to have been made by the occupants of this site was La Plata Black-on-white, which accounted for 4.3 percent of the sherds (pl. 17). This type has the same basic makeup as the plain gray pottery described above. In having crushed rock temper it varies from the published description of La Plata Black-on-white which gives coarse sand as the tempering material (Hawley, 1936, p. 23). The paint is inorganic, probably iron, with the color ranging from black to rusty brown. It is surprising that no Lino Black-on-gray, a similar type but with organic paint, was found. In a nearby, similar pithouse of approximately the same age, O'Bryan reported Lino Black-on-gray pottery, but no La Plata Black-on-white (O'Bryan, 1950, p. 92).

Some sherds show considerable smoothing, even polishing, on the inner surface, but none meet O'Bryan's specifications for Twin Trees Black-on-white, which is described as being "highly polished, inside and out" (O'Bryan, 1950, p. 91).

The remaining four types of pottery recovered from the pithouses probably do not date from the occupation, as they are considered to be later and probably came from nearby, later sites. La Plata Black-on-red is considered a Pueblo I type, although Morris considered it also as terminal Basketmaker III in the La Plata district (Morris, 1939, p. 156). Only 6 sherds were found, 5 of which were in the ventilator shaft of the second pithouse. This hole no doubt remained open for some time as no roof debris fell into it, and the sherds probably came into this position at a later date. Kana-a Gray is diagnostic of Pueblo I, although it no doubt had its beginnings late in Basketmaker III, as suggested by Morris (Morris, 1939, p. 145). The nine sherds of Kana-a were in the upper fill so probably were of later origin. Kiatuthlanna Black-on-white is a Pueblo I type and corrugated pottery is characteristic of Pueblo II. The presence of these later types is not surprising, for only 200 feet north of the pithouses are 2 ruins which were excavated by O'Bryan in 1947. One is a Pueblo I ruin; the other, Pueblo II (O'Bryan, 1950, pp. 28-43).

SUMMARY AND CONCLUSIONS

The two pithouses, which are the subject of this report, were excavated for the dual purpose of providing an interpretive exhibit showing the architectural style of about A. D. 700, and to gain additional knowledge of the period.

From the interpretive angle the ruins are good, although

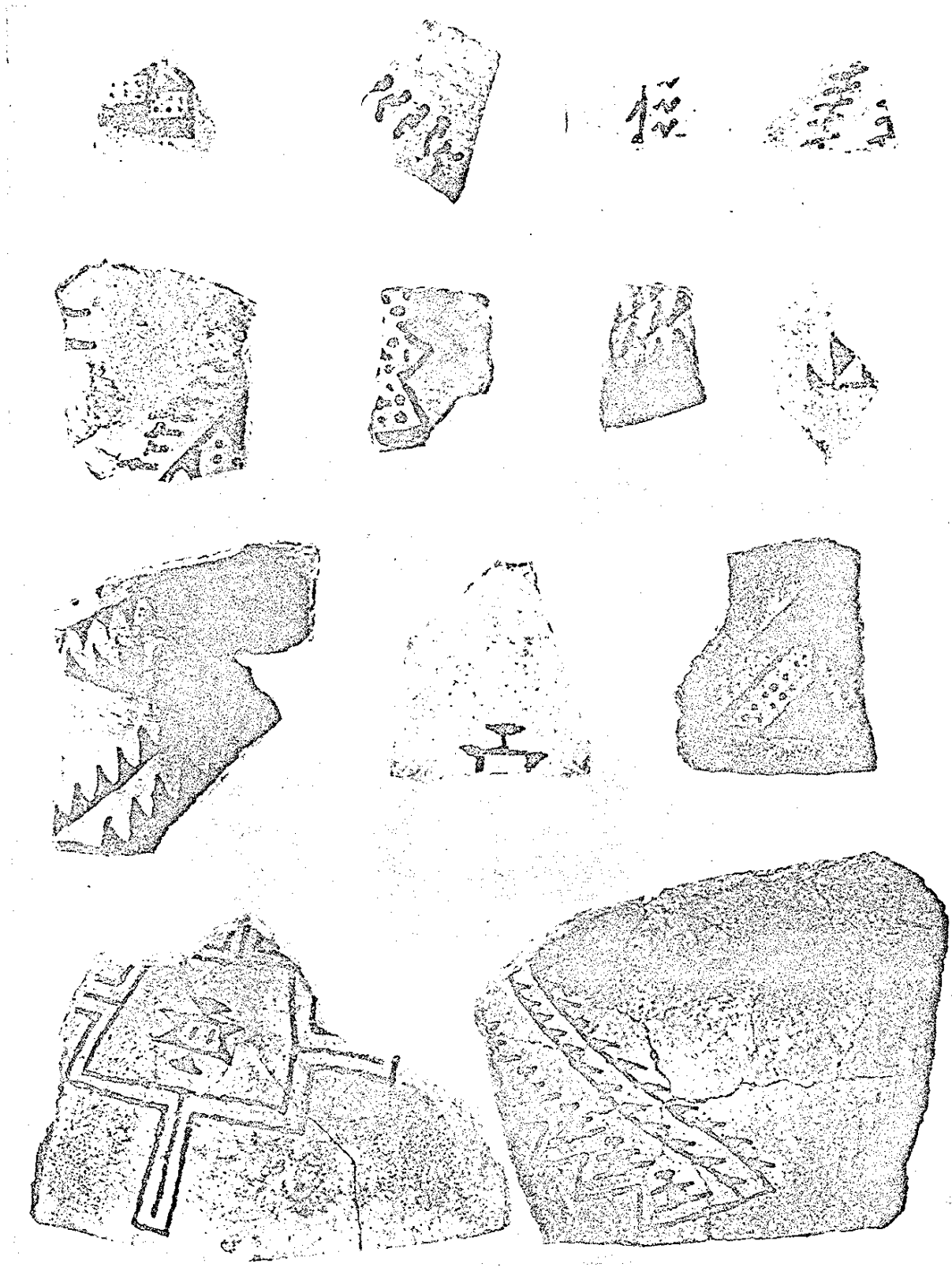


PLATE 17—Sherds of La Plata Black-on-white →

the story is somewhat complicated by the fact that the second pithouse cut into the first, destroying its antechamber. At first glance, the uninitiated visitor does not realize that the ruin consists of two individual pithouses. Both pithouses are excellent examples of late seventh century structures and serve to bridge the gap between the shallow pithouses of A. D. 600, and the slabhouse villages with deep pitrooms, of about A. D. 800. The deepening of the pithouses is an important step in their development into kivas, as has been set forth in detail by Brew (Brew, 1946, p. 203).

Except for potsherds, few artifacts were found and most of these were river pebbles which were used, without altering their natural shape, for pounding, rubbing, and polishing.

In considering the results of this excavation, and other excavations of ruins of the same period, the following points can be drawn:

1. At the end of the seventh century it appears that the prevailing structures being built in the Mesa Verde were pithouses, 4 to 5 feet in depth.

2. Isolated, slab-lined storage cists, such as have been found in some areas and which later developed into slabhouse villages, have not been found associated with any of the Mesa Verde pithouses of this period.

3. The pithouses were noticeably deeper than at A. D. 600, and certain features of the later kivas; bench, sipapu, deflector, and ventilator were well established.

4. The southern antechamber was much smaller than in earlier pithouses. In the second pithouse of this report, the antechamber was merely a slight enlargement of the end of the ventilator-entrance tunnel.

5. The dominant pottery of the period was Lino Gray. Decorated types were Lino Black-on-gray and La Plata Black-on-white, although the former was missing in the present excavation.

6. Lino Gray and La Plata Black-on-white pottery recovered in this excavation vary from published descriptions of these types, indicating the need for an intensive study of Mesa Verde pottery.

Table 2.—Stone Artifacts—Pithouses

| Artifact | Location | Material | Size ¹ (inches) | Description | Plate |
|---------------|-----------------------------|------------------------|-------------------------------|---|-------|
| Mano | Floor, first pithouse | Fine-grained sandstone | L. 9.0 W. 5.0 T. 2.0 | River pebble. Roughed into shape but faces not ground from use as a mano. | 7 |
| Do | do | do | L. 8.0 W. 5.25 T. 1.25 | Single, convex grinding surface. Upper surface, flat and rough. | 7, 8 |
| Metate | do | do | L. 25.5 W. 18.0 T. 3.5 | Rough sandstone slab; trough with closed ends. Trough: L. 16; W. 9.5; depth, 3.0. | 8 |
| Do | Upper fill, second pithouse | do | Small fragment. | Trough; remaining end closed. | |
| Do | do | do | Small fragment. | Trough; remaining end closed. Trough width, 8.5. | |
| Pot cover | Floor, first pithouse | Sandstone | Dia. 10.0 T. 1.25 | Disk of sandstone; probably used as lid for pots. | 9 |
| Do | Bench, first pithouse | do | Dia. 9.5 T. .75 | One-half of sandstone disk. | 9 |
| Maul | Floor, first pithouse | Fine-grained sandstone | L. 5.5 W. 4.25 T. 3.5 | River pebble. Full-grooved for hafting. | 10 |
| Hammerstone | Lower fill, first pithouse | Igneous rock | L. 6.0 W. 4.25 T. 3.25 | River pebble. Ends pecked from use. | 10 |
| Do | do | do | L. 8.0 W. 3.75 T. 3.0 | River pebble. Ends heavily pecked from use. | 10 |
| Do | Floor, first pithouse | do | L. 6.5 W. 4.0 T. 3.0 | River pebble. Slight evidence of use as hammer. | 10 |
| Rubbing stone | Bench, first pithouse | do | L. 4.75 W. 4.25 T. 2.25 | Smooth, river pebble. | 11 |
| Do | Floor, first pithouse | do | L. 5.0 W. 4.25 T. 1.75 | Smooth, river pebble. One face slightly ground from rubbing. | 11 |

¹ L.—Length W.—Width T.—Thickness

Table 2.—Stone Artifacts—Pithouses—Continued

| Artifact | Location | Material | Size ¹ (inches) | Description | Place |
|------------------|----------------------------|--------------|-------------------------------|--|-------|
| Rubbing stone | Bench, first pithouse | Igneous rock | L. 6.25 W. 5.0 T. 2.5 | Smooth, river pebble | 11 |
| Do | Floor, first pithouse | do | L. 7.5 W. 7.0 T. 2.0 | do | 11 |
| Do | do | do | L. 4.8 W. 2.1 T. 1.2 | River pebble. One face fits mortar below. The 2 were found side by side on floor. | 12 |
| Mortar | do | do | L. 9.0 W. 6.5 T. 1.4 | River pebble with concave face. Depth of concavity, 0.5. Possibly a paint grinder. | 12 |
| Pecking stone | do | do | L. 2.6 W. 2.5 T. 2.0 | Heavily fractured and chipped from use as pecking stone. | 12 |
| Stone bowl | do | Concretion | L. 3.5 W. 2.75 T. 1.75 | One-half of hollow concretion. Depth of bowl, 0.9. | 12 |
| Polishing pebble | Bench, first pithouse | Igneous rock | L. 1.7 W. 1.25 T. 0.8 | Small, polished river pebble | 12 |
| Paint stone | Floor, first pithouse | Hematite | L. 3.75 W. 2.4 T. 1.0 | Irregular fragment of hematite. Some surfaces ground. Probably used as paint. | 12 |
| Knife | Bench, second pithouse | Quartzite | L. 1.4 W. .75 T. .12 | Broken; base missing. Shaped flake with sharp cutting edges. | 13 |
| Projectile point | Bench, first pithouse | Chert | L. .9 | Notched; expanding stem | 13 |
| Do | do | do | L. .85 | Straight stem | 13 |
| Pendant | Lower fill, first pithouse | (?) | L. 1.0 W. .75 T. .06 | Highly polished; perforated | 13 |
| Drilled stone | Floor, first pithouse | Cannel coal | L. 1.25 W. 1.0 T. .5 | Drilled from opposite sides with holes 0.2-inch diameter. Holes do not quite meet. | 13 |

¹ L.—Length W.—Width T.—Thickness

Table 3.—Sherd Types and Percentages—Pithouses

| UPPER FILL | | | BENCH AND FLOOR, SECOND PITHOUSE | | |
|---------------------------------|--------|---------|----------------------------------|--------|---------|
| Types | Sherds | Percent | Types | Sherds | Percent |
| Lino Gray | 497 | 90.8 | Lino Gray | 92 | 77.9 |
| La Plata Black-on-white | 22 | 4.0 | La Plata Black-on-white | 8 | 6.7 |
| Kana-a Gray | 9 | 1.6 | Fugitive Red | 13 | 11.0 |
| Kiatuthlanna Black-on-white | 3 | .5 | La Plata Black-on-red | 5 | 4.2 |
| Corrugated | 2 | .3 | | | |
| La Plata Black-on-red | 1 | .1 | | 118 | |
| Unfired, no temper | 13 | 2.3 | | | |
| | 547 | | | | |
| LOWER FILL | | | TOTAL SHERDS, BOTH PITHOUSES | | |
| Lino Gray | 317 | 91.0 | Lino Gray | 1,209 | 91.5 |
| La Plata Black-on-white | 22 | 6.3 | La Plata Black-on-white | 57 | 4.3 |
| Fugitive Red | 9 | 2.5 | Fugitive Red | 22 | 1.6 |
| | 348 | | Kana-a Gray | 9 | .6 |
| | | | Kiatuthlanna Black-on-white | 3 | .22 |
| | | | Corrugated | 2 | .15 |
| | | | La Plata Black-on-red | 6 | .45 |
| | | | Unfired, no temper | 13 | .9 |
| | | | | | |
| BENCH AND FLOOR, FIRST PITHOUSE | | | | 1,321 | |
| Lino Gray | 303 | 98.3 | | | |
| La Plata Black-on-white | 5 | 1.6 | | | |
| | 308 | | | | |

Excavation at Site 16 of Three Pueblo II Mesa-Top Ruins

BY JAMES A. LANCASTER AND JEAN M. PINKLEY

INTRODUCTION

Mesa Verde National Park, in the southwestern corner of Colorado, is famous for the hundreds of cliff dwellings spectacularly located in high shallow caves and on narrow ledges of its many canyon walls. These cliff pueblos, with their well-preserved masonry, specialized ceremonial rooms (kivas) and varied structural features are a splendid tribute to the architectural craftsmanship of the people who built them. Such craftsmanship was not acquired in a day, a year, or many years. It was the outgrowth of centuries of trial, experimentation and progress by primitive people working with the simplest of implements, struggling all the while with a not too favorable environment to maintain existence. The story of this progress is as fascinating in its way as the ultimate achievement is spectacular.

Less well known, as they were often disregarded in the early exploration of the Mesa Verde, are hundreds of ruined structures dotting the mesa tops. Unspectacular as compared to the cliff dwellings in their dramatic settings, they are easily overlooked. Yet the story of the architectural progress which culminated in construction of the cliff dwellings of the late Classic Pueblo period (table 1) can be derived only through a study of these mesa-top ruins.

There are few clues to betray the location of the earliest structures. Later remains, however, are more obvious, ranging in size from a small area marked by a handful of sherds or a few pieces of fire-reddened sandstone, through innumerable low, nondescript mounds to large piles of tumbled masonry overgrown with brush and trees. Through excavation of these mesa-top ruins the archeologist is able to trace architectural progress from single family dwellings of the A. D. 400's to great communal structures of the A. D. 1200's.

It is regrettable in the interests of science and from the standpoint of interpretation that excavation of these mesa-top ruins was so long delayed. Comprehension of the progressive stages of advancement resulting in the Classic Pueblo period is needed for appreciation of the cultural achievement of the people, as well as understanding of the architectural features of the structures they built.

The aim and purpose of the National Park Service is a dual one: protection and interpretation. In order to interpret the cliff dwellings, and thereby create for the public a real appreciation for these features and a sympathetic understanding of the imperative need for their protection, it is necessary to be able to exhibit, and thus recreate, each successive step which led to the construction of the cliff pueblos.

Prior to 1948, the interpretive program of this park was handicapped by lack of excavated and stabilized exhibits of the architectural types intermediate between single-roomed, semisubterranean pithouses of Modified Basketmaker times (table 1), and the many-roomed multistoried pueblos of the Classic period. Visitors shown simple houses dating in the A. D. 500's and 600's, then taken to complex villages and ceremonial structures dating in the A. D. 1200's, could not readily grasp the relationship of the two. Without exhibits of the intervening steps, or stages, interpretation was difficult and while museum exhibits helped bridge the gap, nothing could take the place of actual excavated ruins.

For the benefit of the layman, the years between the Modified Basketmaker and Classic Pueblo periods are usually referred to as the Developmental Pueblo period. This simplified interpretive term adequately describes the span of approximately 400 years, from A. D. 700 to 1100, during which Pueblo architecture and culture evolved toward their climax in the Great or Classic period of approximately A. D. 1100 to 1300 (Roberts, 1935, p. 32). The archeologist, using the more precise Pecos Classification, refers to the early part of this period, A. D. 700 to 900, as Pueblo I, and the latter part, A. D. 900 to 1100, as Pueblo II (Kidder, 1927, pp. 554-561). Referring to these dates, it should be pointed out that excavation in the past few years indicates that Pueblo I probably did not start over a large part of the northern San Juan area until about A. D. 750, and while Pueblo II is considered as beginning about A. D. 900, there is a feeling it may not have ended until some time after A. D. 1100.

Many architectural changes characterize Pueblo I and II. Between approximately A. D. 750 and 900, pithouses were gradually deserted in favor of above ground rooms as living quarters. This 150 year interval saw the beginning of the Southwestern Indian "pueblo" (village), in the sense in which the term is used at the present time. Houses were no longer individual units, set apart one from another, for with the introduction of upright, above ground walls it was possible to join rooms together in contiguous rows or blocks, thus forming the pueblo. The people began to experiment with various architectural mediums, combining posts, poles, adobe, and stone in many different combinations.

Actually, the pithouses were never abandoned; they merely underwent a change in character and function. These chambers were made deeper, gradually developing into completely subterranean pitrooms. From about A. D. 750 to 900, one or more pitrooms were built to accompany each group of above ground living rooms. During these

150 years, the pitrooms became invested with more and more ceremonial character, finally evolving into true kivas with the beginning of Pueblo II.

The period from A. D. 900 to 1100 was characterized by extreme experimentation in architecture, especially in architectural style. By approximately A. D. 1000, the people had settled on the almost exclusive use of coursed stone masonry, and toward the end of the period there was a growing tendency to use double-coursed masonry in the construction of compact pueblos. The years A. D. 900 to 1100 saw the development of the kiva from a simple, four-post structure into a highly standardized ceremonial room, closely resembling in most respects the kivas of the Classic period.

The impossibility of attempting to describe, successfully and intelligibly, such a progression without field exhibits is immediately apparent. Interpreter and visitor alike were severely handicapped. Then came the proposal by the Gila Pueblo Archeological Foundation, of Globe, Ariz., to excavate a Developmental Pueblo site in Mesa Verde National Park during the summer of 1947. A permit for the work was granted by the Secretary of the Interior, March 26, 1947. This instituted the first of recent steps undertaken to provide for visitor use and interpretation a series of exhibits of excavated sites representing basic stages in the development of Pueblo architecture and culture.

Gila Pueblo excavated two ruins at the Twin Trees Site, located just beyond the shallow Modified Basketmaker pit-houses on the Square Tower House-Sun Temple loop of the ruins road (pl. 1). One ruin at this site is a Pueblo I village of small, surface slabhouses associated with deep pitrooms, dating approximately A. D. 840, while the other is a Pueblo II village, consisting of a 2-room, crude masonry unit associated with a 4-pilastered kiva, dating approximately A. D. 950 (O'Bryan, 1950, pp. 28-43). These two ruins spanned the worst break in the interpretive series: that existing between earthen-walled, semisubterranean pithouses and masonry-walled, above ground pueblos.

These two ruins pointed up the need for other excavated sites which would illustrate further progressive stages toward the development of the multistoried pueblos and complex ceremonial rooms of the Classic period. As has been pointed out, Pueblo II was characterized by extreme experimentation in architecture. However, excavation in the areas surrounding the Mesa Verde has shown that most pueblos built between A. D. 950 and 1100 were, generally speaking, units of a few to several rooms constructed of fairly good masonry. These rooms were associated with one kiva, and sometimes more, which, while often developmental in style, was more advanced than the 4-pilastered kiva at the Twin Trees Site. A step urgently needed for the interpretive program was a pueblo such as described above.

In the spring of 1950, a survey was made of the area east of the Twin Trees site for a pueblo which would seem, on the basis of surface indications, to represent a step in advance of the Twin Trees village. Gila Pueblo Site No. 16 (the Glad-

win Survey of Gila Pueblo Archeological Foundation, conducted in Mesa Verde National Park, 1929) was chosen, as a result of the survey and tests, as the best available example in the desired location of a small, masonry, unit-type pueblo which would probably date in the A. D. 1000's. (pl. 1 and 18).

LOCATION AND HISTORY OF SITE 16

Site 16, at an elevation of 6,875 feet, is located on the east slope of the ridge of Chapin Mesa between Square Tower House, in Navaho Canyon, on the west, and Sun Point, on the canyon rim at the junction of Cliff and Fewkes Canyons, on the east (pl. 1). This location is on the southern edge of an open sagebrush-covered area known as The Glades. The ruin lies 100 feet to the south of the Square Tower House-Sun Temple loop of the present ruins road system and is situated midway between the Developmental Twin Trees Site (O'Bryan, 1950, pp. 28-43), three-tenths of a mile west, and the early Classic Sun Point Pueblo, excavated in 1950 (Lancaster and Van Cleave, "Excavation of Sun Point Pueblo" in this volume), three-tenths of a mile east (pl. 1). The site, therefore, is in the correct chronological position for use in the present interpretive program of Mesa Verde National Park.

The location of the ruin is not a spectacular one (pl. 18), except for a view, to the northeast, of the rugged La Plata Mountains. This view, made possible by a forest fire of an undetermined date which created The Glades, breaks the monotony of the mesa top. A forest of piñon and juniper, the typical mesa coverage, extends south and east from the site, while the open area to the north and west is covered with low-growing sagebrush and yucca. The nearest water supply today, as well as in prehistoric times, is the spring at the head of Fewkes Canyon, one-quarter mile northeast (pl. 1). The land surrounding the ruin, cleared of trees and shrubs, would be adaptable to agriculture.

The site probably was known to the early cowboy explorers as it lay beside their trail up Chapin Mesa from the Mancos Canyon to the south. Either these cowboys or some later explorers paid particular attention to the ruin as the present excavation showed that the trash mound had been thoroughly pot-hunted sometime in the past.

Upper photograph—*Before Excavation*

The heavy stand of yucca and sagebrush effectively conceals the ruin beneath. Low area at extreme right, in front of the first tree, is the depression marking the location of Kiva 1.

Lower photograph—*Partially Excavated*

This photograph of Site 16 was taken in September 1950, prior to the excavation the following winter of Kivas 2 and 3. Kiva 1, the eight-pilastered, masonry-lined kiva, in the right foreground; Unit Pueblo No. II at the left; to the right of it, left center, is Unit Pueblo No. I. For a photograph of this site after completed excavation and stabilization, see plate 56.



← PLATE 18—Site 16

The location of the ruin was noted by the 1910-11 topographic survey party which mapped the Mesa Verde, and the location is shown on the 1915 edition of the United States Geological Survey Topographic Map of Mesa Verde National Park.

The first actual record of the site was made in 1929 by the Gladwin Survey, of Gila Pueblo, Globe, Ariz. (duplicate record sheets and survey map on file, Mesa Verde National Park Museum). At that time it was designated on their survey sheets and map as Site No. 16, and marked with a metal stake bearing the number. A sherd collection was made and notes recorded to the effect that the site probably consisted of 15 to 18 rooms with kiva remains to the south and a possible kiva depression on the northeast corner.

In 1941, Dr. Deric O'Bryan, of Gila Pueblo, working under secretarial permit to collect charcoal and wood specimens for dating purposes, sank a test pit in the well-defined kiva depression at the site (the one "to the south" referred to above, as it was the only kiva depression at the ruin). Specimen material obtained was poor and did not yield dates with sufficiently good correlation to warrant their inclusion in Dr. O'Bryan's recent report on the Mesa Verde (O'Bryan, 1950, appendix A).

In the fall of 1948, [the senior author] tested the kiva. The test indicated the ceremonial room was a well-developed type and large for a Mesa Verde kiva. The structure was masonry-lined, had a southern recess, and was somewhat unusual in that it obviously had 8 instead of the usual 6 pilasters.

Following routing justification and planning, a permit for excavation was applied for on February 5, 1950, and was granted by the Director, National Park Service, February 24, 1950. Excavation was started April 21, 1950, and continued until June 13, 1950. During this period 3 separate Pueblo II ruins, superimposed 1 on the other, were excavated. These ruins were a post and adobe village, a small, single-coursed stone masonry unit pueblo, and a larger, double-coursed stone masonry unit pueblo with three towers and the kiva referred to above (pl. 18, lower photograph). The work was accomplished by two Navaho laborers under the direction and supervision of the senior author. One hundred and ten man-days were spent in excavation at this time.

In the fall of 1950, the trash mound was tested in an effort to establish stratigraphy. One test located a very early type kiva, which was excavated. The excavation of this structure revealed the location of a developmental type kiva, so it was excavated also. This work was done by the senior author and other members of the interpretive staff in November of 1950 and January of 1951. Two days were spent in the excavation of each structure.

The ruin was stabilized, protective shelters were erected over the three kivas, and graveled paths were constructed to and around the various features of the site during the late summer and fall of 1950 and winter of 1950-51 (pl. 56). Self-guiding signs and explanatory exhibits have been installed for the use of visitors unaccompanied by a ranger.

The first step in the excavation at Site 16 was to clear the low mound of a heavy stand of sagebrush and yucca (pl. 18, upper photograph). The appearance of the ruin, stripped of its vegetative cover, was somewhat discouraging as little was left in the way of standing walls, and scattered groups of building stones indicated several small buildings rather than a compact pueblo. The presence of three, masonry-outlined, circular depressions which might be towers, coupled with the fact the kiva was unusually large and apparently well-developed, aroused the suspicion that the ruin was a later type than desired for exhibit at this particular location. However, there were two other possibilities: first, this might be one of the odd structures for which the Mesa Verde area is noted, but which are of little use to the interpretive program unless preceded by a pueblo of more standard pattern; or, secondly, the apparent confusion was the result of more than one occupation of the site. The latter would be desirable as it would offer the possibility of graphic illustration of architectural advancement.

It was necessary to determine at once if the ruin was adaptable at this time to the planned interpretive sequence. Therefore, it was decided to begin excavation of a centralized building group surrounding one of the circular depressions. This method of approach, starting in the middle of a ruin, is not considered an advisable procedure normally, but excavation of ruins for exhibit often presents a unique set of problems and approved archeological methods must sometimes be adapted to circumstances.

The approach chosen proved fortunate. Excavation showed the circular structure to be a double-coursed masonry tower superimposed on a single-coursed masonry unit pueblo, with little original stone work left of either structure. The small, 3-room unit pueblo was superior in every way to the 2-room unit pueblo at the Twin Trees Site and, judging by similar pueblos excavated elsewhere, would date about A. D. 1000. The tower was, in turn, architecturally superior to the pueblo on which it was built and apparently was constructed late in the Pueblo II period, probably toward the end of the 11th century.

The site offered far more than was expected. The unit pueblo followed in type and time the exhibit just preceding it, the Twin Trees Pueblo referred to above. The double-coursed masonry tower indicated the presence of a pueblo immediately preceding in type and time the Sun Point Pueblo, the following exhibit in the interpretive series.

Excavation of the 3-room pueblo and superimposed tower was completed. From now on these structures will be referred to as Unit Pueblo No. I and Tower B (pl. 19). It had been decided previously not to excavate the kiva until all danger of any spring rains damaging its exposed walls would be past, so the next step undertaken was the stripping of the area surrounding Unit Pueblo No. I, as evidence encountered during its excavation indicated the building was superimposed on some earlier structure.

The evidence was as follows: occupational fill continued well below the floor level of the pueblo rooms, and two corrugated jars, apparently used as floor cists, were found in such a position that there could be little doubt as to their use prior to the construction of the pueblo. One was under the northeast wall of Room 1. A tree which grew on top of this wall had to be removed, and the removal exposed the jar directly under the base of the broken wall. The other jar was found below the floor in the southeast corner of Room 1, its mouth flush with a hard-packed clay surface. This evidence pointed to the former presence of post and adobe houses, or jacal structures, such as Dr. Brew found on Alkali Ridge (Brew, 1946); Dr. Martin located in the Ackmen-Lowry area (Martin, 1930; 1938); Mr. Morris discovered in the La Plata area (Morris, 1939); and Dr. Roberts excavated in the Piedra District (Roberts, 1930).

The first operation was to strip the area northeast of Unit Pueblo No. I. Careful troweling located a row of 10 post holes extending outward from under the northeast corner of the pueblo (pl. 19, row G-G), and these holes still held the charred and rotted butts of upright posts. The debris in the area surrounding the posts consisted of burned adobe and bits of charcoal, all that remained of the walls and roofs of post and adobe rooms.

Stripping this northeast area also located a section where occupational fill continued below what would have been the floor level of post rooms. The fill was tested (pl. 19, Test 1) and found to be composed of heavily burned adobe, mixed with which were shreds of Lino Gray pottery. This material continued to varying depths of 22 to 30 inches, indicating the possible presence of a Basketmaker III structure. The test was backfilled as there was no intention of excavating a Basketmaker pithouse at the site at this time.

The next step was to trowel the area southwest of the pueblo, where careful troweling again located two rows of post holes (pl. 19, row H-H-H), with the decayed ends of posts in place. The partial outline of one room could be traced. Considerable depth of occupational fill encountered below the floor level of this room again indicated an earlier occupation. The debris on the floor of the room and surrounding it was heavy chunks of burned adobe packed with chinking stones, showing the casts of fairly large posts.

The remnant of a single-coursed masonry wall was uncovered in this area southwest of Unit Pueblo No. I. This wall when traced, though incomplete, indicated the room had been D-shaped. As the room was undoubtedly contemporaneous with Unit Pueblo No. I, it was designated as Room 4 of that unit. This room was built apparently in what had been another room of the post and adobe village (pl. 19).

The areas to the southeast and northwest of Unit Pueblo No. I were strip-troweled. No more post holes could be located and nothing of importance was found.

Excavation of the two remaining circular depressions, now known to be towers, and a rectangular building to the northeast of Unit Pueblo No. I was undertaken. The tower

southeast of the pueblo was designated Tower C, the one to the northwest Tower A, while the rectangular building was designated Unit Pueblo No. II (pl. 19). These structures, like Tower B, were constructed of double-coursed masonry. As Tower A was attached to the southwest corner of Unit Pueblo No. II, the pueblo walls were traced as soon as excavation of the tower was complete. Little was left of the massive walls of the pueblo or the towers, and very few building stones were encountered in the excavation. Everything indicated the structures had been robbed of all possible construction materials. Razing of abandoned structures seems to have been a common practice in prehistoric times.

The next step undertaken was excavation of the previously tested kiva, Kiva 1 as it was designated (pl. 19). This structure proved to be of late Pueblo II origin and somewhat large for a Mesa Verde kiva as it measures 23½ feet in diameter and 10 feet in depth.

Kiva 1 posed quite a problem. Architecturally advanced as it was, it could not be associated with any village other than Unit Pueblo No. II. Where then was the kiva, or kivas, to accompany the earlier villages? The usual location for such a structure, or structures, the area directly in front of Unit Pueblo No. I, was occupied by Tower C. The walls of the tower had not settled, as would be expected had they been built on kiva fill. As the site was excavated for exhibit, it was not possible to carry on extensive tests which might destroy the tower or any other feature. Since there was no depression in the area south of the pueblos or anywhere else at the site to indicate the presence of another kiva, the answer seemed to be that Kiva 1 was a remodeled structure, the last remodeling having successfully obliterated any indication of previous use.

Provided this was the answer, why was the kiva located southwest and to the side of all three villages when the usual location for a kiva in Pueblo II times was to the southeast in front of the village? The only suggestion proposed the site of Kiva 1 as the former location of a deep pithouse or pitroom, possibly both. Rather than expend the effort necessary to dig a kiva, the occupants of the post and adobe village had enlarged and modified the pitroom and the people who built the later two villages followed their example. This might also explain the size of Kiva 1, each remodeling having enlarged the structure to get rid of previous features. While the above explanations were not altogether satisfactory, they would have to suffice, as there was certainly nothing to indicate the presence of another kiva.

With the completion of the excavation of Kiva 1, no further work was done at the site during the summer with the exception of erecting a protective roof over the subterranean structure.

Study of the material from Site 16 was instituted in the fall of 1950, the pottery receiving first attention. With the exception of a few sherds of early wares, the pottery from the site was typical Pueblo II Corrugated and diagnostic Mancos Black-on-white. Nevertheless it presented a prob-

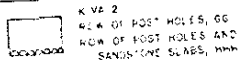
SITE NO. 16

CHAPIN MESA
Mesa Verde National Park
Colorado

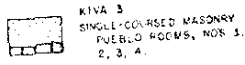
(1929 Gila Pueblo Survey Site No 16)

GROUND PLAN of Three Pueblo II Ruins

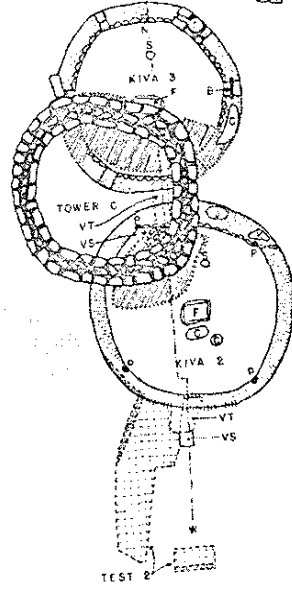
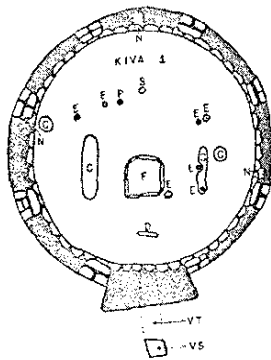
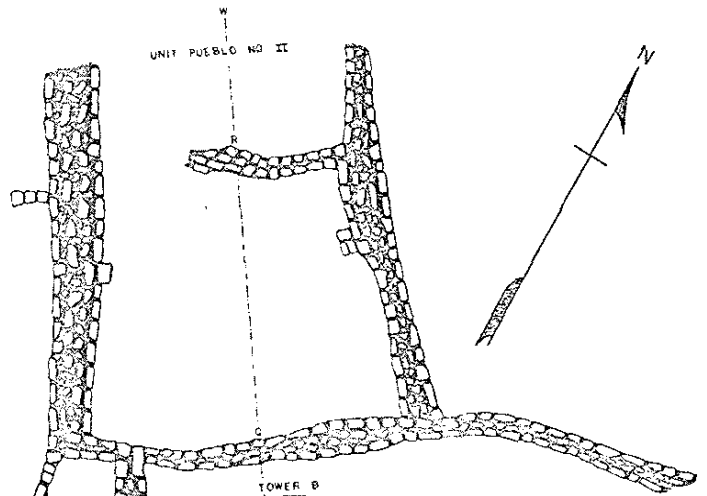
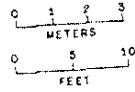
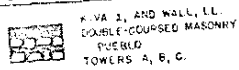
1. POST and ADOBE VILLAGE



2. UNIT PUEBLO NO I



3. UNIT PUEBLO NO II



- A - ASH PIT
- B - BEAM
- C - CIST
- D - DEFLECTOR GROOVE
- E - CYLINDRICAL FLOOR PIT
- F - FIREPIT
- GG - ROW OF POST HOLES
- HHH - ROW OF POST HOLES AND SANDSTONE SLABS
- J - CORRUGATED JAR CIST
- K - FLAT SANDSTONE SLAB
- LL - RETAINING WALL
- N - NICHE
- P - POST
- S - SIPAPU
- VS - VENTILATOR SHAFT
- VT - VENTILATOR TUNNEL
- SANDSTONE SLABS
- UNEXCAVATED BLOCKS OF FILL LEFT IN KIVAS 2 AND 3 TO SUPPORT WALLS OF TOWER C
- EVIDENCE OF A BURNED BASKET-MAKER III PITHOUSE
- LARGE QUANTITIES OF PLANNED ADOBE AND CHIMNEY WITH LINE POTTERY AT DEPTH OF 2'
- EVIDENCE OF A 3' DEEP PIT STRUCTURE CUT BY KIVA 2
- POSSIBLY A PUEBLO I PITHOUSE BANQUETTE OF THIS ROOM
- ORIGINAL WALL OUTLINE INDEFINITE DUE TO SLUMPING

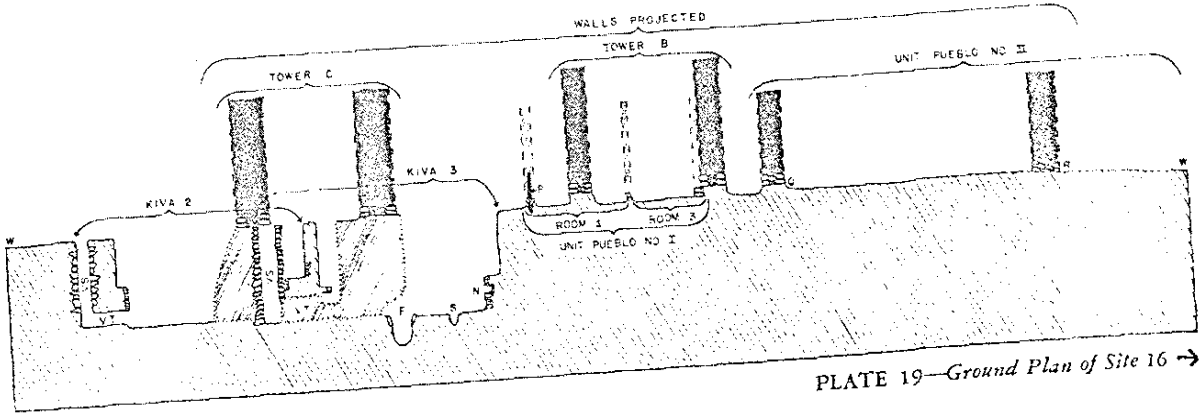


PLATE 19—Ground Plan of Site 16 →

lem, as analysis was not successful in establishing any stratigraphy for the three Pueblo II levels. It was felt that in the almost 200-year span of occupation indicated for the site, there certainly had been some advance in the techniques of manufacturing, finishing, and decorating pottery, but the sherds from the various structural units failed to indicate such an advance took place. However, in view of the various levelings and reoccupations, it was thought that the picture presented by the pottery might be distorted. Therefore, trenching of the trash mound was necessary to establish stratigraphy.

It was known the trash mound had been pot-hunted, but it was not until trenching was undertaken that it was realized how thorough the vandalism had been. Stray bones of adult, juvenile and baby burials were encountered, lying together in tangled masses. Holes continuing through the trash to the undisturbed soil beneath indicated the excavators had not been able to distinguish between the occupational debris and the native soil underlying it. There was every evidence of random, repeated and disorganized digging. Still the testing was continued in hopes of finding one undisturbed section. The area just south of Tower C seemed to be the least disturbed, so a test pit was sunk a few feet

This plan shows the location of the component structures of each one of the 3 Pueblo II villages excavated in relation to those of the other 2 ruins.

The profile at the bottom of the plate, taken through line W-W, illustrates the superimposition of structures encountered at this site. Kiva 2 is the earliest structure cut by the profile line, while Towers B and C, and Unit Pueblo No. II are the latest. The post and adobe village, associated with Kiva 2, burned. Later, Unit Pueblo No. I was constructed over the remains of the burned post rooms. The new pueblo was built of single-coursed, stone masonry, an improved type of construction. As radical changes had taken place in kiva design, the 4-post kiva was out of date. Rather than remodel it, the people chose to build a new ceremonial room. Custom demanded the kiva be built in front of the south-facing pueblo. Enough space was left between the masonry pueblo and the old kiva for construction of a new ceremonial chamber, but there was no room for the standard ventilator shaft with its intersecting tunnel into the kiva proper. The problem was ingeniously solved. The builders tore the roof from Kiva 2, dug under its banquette on the north side for a ventilator tunnel to the new kiva, and starting at floor level in front of the banquette of the old kiva, built a masonry ventilator shaft to connect with the tunnel. Then Kiva 3 was dug. The dirt from the excavation was thrown into Kiva 2, thus filling it and burying the ventilator shaft to the level of its mouth. Kiva 3, with its masonry-lined banquette and cribbed roof supported on 6 stone pilasters, was a great improvement over the 4-post Kiva 2.

Years later, Unit Pueblo No. I was abandoned and fell into ruin. At some still later date, the place was again selected for a building site. A new pueblo, Unit Pueblo No. II, was erected beside and just to the north of the ruined village. The old pueblo was leveled and a tower, Tower B, built over the remaining bases of its walls. Another tower, Tower C, was constructed over the filled-in Kivas 2 and 3, and in such a position it actually straddled the 2 earlier subterranean rooms. A new kiva, Kiva 1, was constructed. The people again employed the latest architectural methods, so the double-coursed masonry pueblo, 3 circular towers, and the masonry-lined, 8-pilastered kiva they built in no way resembled Unit Pueblo No. I and its associated structures.

The kivas are numbered in order of excavation, accounting for Kiva 2 accompanying the earliest village, Kiva 3 the second village, and Kiva 1 the last pueblo.

from the tower. This test struck occupational fill continuing well below what had been the bottom of the trash layer throughout the rest of the mound, indicating the possible presence of a subterranean structure. As this was the logical location for a kiva, the test was enlarged.

The enlarged test exposed three occupational levels in succession. Eighteen inches below the surface a crude bench, or structural ledge, apparently associated with some type of pithouse, was encountered. Thirty inches below ground level the test uncovered a narrow bench, much better defined than the one above, and at 51 inches the well-plastered banquette of a kiva was exposed. As this was the kiva to accompany one or the other, or both, of the earlier villages, its excavation was mandatory.

Kiva 2, as the structure was designated (pl. 19) proved to be a very early ceremonial structure. Posts were employed as roof supports, not pilasters, and as there were 4 this kiva was the prototype of the 4-pilastered kiva at the Twin Trees Site. Without doubt, the kiva was constructed by the occupants of the post and adobe village.

The south wall of the kiva was in poor condition and had slumped. The middle of the three ledges, or benches, described above, turned south where it met this wall, so it was apparent the kiva had cut the unstable fill of an earlier structure. It was decided to take a test through the upper kiva wall to determine what type of room was located to the south.

This test (pl. 19, Test 2) breached the kiva wall east of the southwest banquette post. Back of the banquette the test was carried down to 7½ feet below ground level. At this depth a hard-packed floor was encountered. In order not to damage any room features, trenching was continued above the bench level along the west wall. Thirteen feet south of the kiva the wall turned east, so trenching was discontinued. A secondary test located the wall again at a point behind the kiva ventilator shaft. This testing demonstrated Kiva 2 had cut an earlier pitroom. As Kiva 2 is the earliest structure which can be classified as a true kiva, the pitroom it cut must necessarily be of Pueblo I origin, and is undoubtedly the type of structure found associated with crescentic rows of slabhouses. If the pit is of Pueblo I origin, the crude ledge which was first exposed by the test must belong to a Basketmaker III pithouse.

With winter setting in there was not sufficient time to excavate both the kiva and the pitroom. The kiva was the more important structure at the time, for it was associated with at least the post and adobe village, so the test which located the pitroom was backfilled to preserve the structure for future excavation. It is desirable that this room be excavated as soon as possible for it will add immeasurably to the architectural sequence at Site 16.

Excavation of Kiva 2 was continued, but the work was complicated by the location of Tower C as this later structure had been built partially over the north side of the subterranean room. Tower C was important to the story of the last occupation of Site 16 and had to be preserved, so the problem was solved by leaving a block of the kiva fill in place to sup-

port the superimposed walls of the tower (pl. 19, profile; also pl. 23).

The unexcavated portion of Kiva 2 presented another problem. The north side of the banquette of the kiva evidently had been remodeled with the result that it appeared to run straight between the two north banquette posts. However, so much of the north section of the banquette lay under the block of fill that it could not be demonstrated conclusively this was the case, nor was it known if the remodeling involved more than the banquette. It was felt the extent of the remodeling and the reason for its having been done might be solved by tunneling the block of fill.

The fill seemed stable enough to warrant its being undermined without endangering the walls of the tower above. However, such a tunnel would have to be carried for quite a distance. To forestall the possibility of anyone being caught in a cave-in, the floor of Tower C was first breached to relieve the overload and expose as much as possible of the back wall and banquette of the kiva. In this way short tunnels could be brought in from either end of the block of fill to the exposed section and a long tunnel under the heavy fill need not be risked.

The excavation through the tower floor located the back wall, the banquette and the northwest roof support post of the kiva. It demonstrated that only the banquette had been remodeled, not the wall, but no logical reason could be discovered for the change.

The excavation through the floor of Tower C exposed a masonry pillar of roughly shaped stones laid in adobe mortar, arising from beside the banquette of Kiva 2 and ending squarely under the wall of the tower. This was an odd thing to encounter in a kiva, but despite its strange location it looked suspiciously like the ventilator shaft of another kiva. Tunneling the block of fill along the top and in front of the banquette definitely proved this column was the masonry-lined ventilator shaft of a third kiva. It had been constructed in Kiva 2, starting at floor level directly in front of the banquette (pl. 19, profile). The kiva to which it belonged lay to the north and under the other side of Tower C.

During the excavation of Kiva 2 it was noticed that the fill was material from some excavation, and it was supposed the material, despite its drift, probably came from Kiva 1. Instead the material was from the excavation for a third kiva which undoubtedly was built in connection with Unit Pueblo No. I, since the 4-post kiva was of the same constructional period as the post and adobe village, and Kiva 1 was too well advanced to be associated with any village other than Unit Pueblo No. II.

It was never suspected that a kiva to accompany the 3-room pueblo would be built so close to its front wall, and there was nothing other than the newly exposed ventilator shaft to indicate its presence. In view of the location of Kiva 2, this was the only space left, cramped as it was, for the building of another ceremonial room.

Excavation of the third kiva, designated as Kiva 3 (pl. 19), was undertaken since it was an integral part of the second

Pueblo II village at the site. Again the work was complicated by the location of superimposed Tower C, so it was necessary to leave a block of fill in this kiva, this time in the south half, to support the tower walls. Kiva 3 was smaller than Kiva 2 and the tower covered more of this structure than it had of the preceding one. For this reason the block of fill had to be cut straight to the floor in order to expose any floor features at all (pl. 19, profile). This so weakened the tower support that it was not deemed advisable to try to tunnel the fill to expose the banquette, for it was feared tunneling would not only endanger the lives of the excavators, but might result also in the collapse of the tower. Instead of tunneling, the breach in the floor of the tower was widened to locate the south wall of the kiva and as many of the southern features as possible.

Kiva 3 proved to be intermediate in type. Pilasters had replaced posts for roof support. As they were 6 in all, this kiva was the next step following the 4-pilastered kiva at the Twin Trees Site. Architecturally the kiva was of the same period as Unit Pueblo No. I, leaving no doubt as to its construction by the occupants of the first masonry village.

With the completion of the excavation of Kivas 2 and 3, the picture as regards the Pueblo II occupation of Site 16 was fairly complete; three villages in superimposed position, each with its own ceremonial chamber. It is known that these villages are superimposed in turn on even earlier structures, and the evidence indicates there were at least five different occupations of Site 16, occupations which covered a period of several hundred years.

An observer cannot help but wonder why this particular location was chosen as a homesite. What was its appeal to the first settler, or settlers, and even more baffling, what made it attractive to successive groups of people? As previously pointed out, the location is not a spectacular one, nor is there a particular view which would offer an irresistible appeal to man's aesthetic sense. A short distance to the north and east are canyon rim locations which offer far more exciting vistas, so appreciation of natural beauty obviously played no part in selection of the site.

The site offered nothing that could appeal to man's sense of comfort. Located as it is on the ridge of the mesa, it is fully exposed to the elements, to the biting winds and drifting snows of winter, to the long hot days and punishing sun of summer. There is little drainage, so the accumulating moisture of melting snow, and of prolonged rains in the spring or fall, would penetrate walls and roofs, bringing discomfort and forcing the expenditure of considerable effort in the repair of homes and kivas.

It is impossible to see that the site offered any particular convenience. The nearest water supply is, today, a quarter of a mile away, and geologic conditions are such that it is impossible for a spring to have existed any nearer than the present one in the head of Fewkes Canyon at any time during the occupation of Site 16. There is no depression in the surrounding area to indicate the people ever constructed a reservoir or catchment basin to conserve rain water or melting

SITE NO. 16

Mesa Verde National Park
Colorado

POST and ADOBE VILLAGE

Ground plan and Kiva profile



- C - CIST
- F - FIREPIT
- S - SIPAPU
- VS - VENTILATOR SHAFT
- VT - VENTILATOR TUNNEL
- 1, 2 } CORRUGATED JAR CISTS
- 3, 4 }
- 5 - FLAT SANDSTONE SLAB
- 6 - SHALLOW FLOOR PIT
- - POSTS
- - SANDSTONE SLABS
- ▒ { UNEXCAVATED: COVERED
BY LATER STRUCTURE
- ||||| { ORIGINAL WALL INDEFINITE
DUE TO SLUMPING

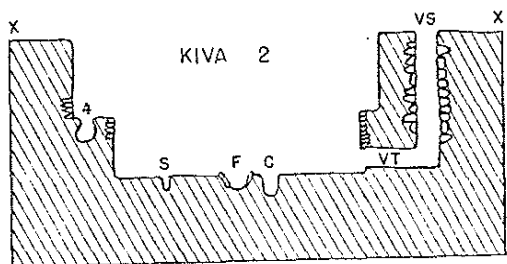
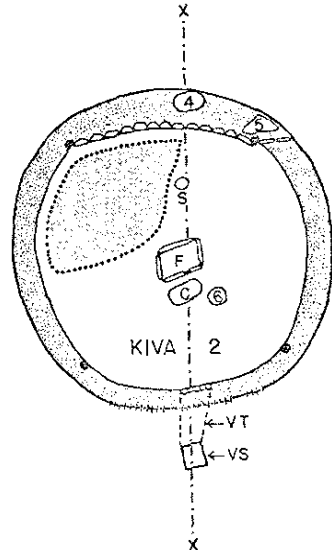
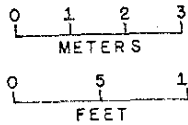


PLATE 20 - Post and Adobe Village Ground Plan and Kiva Profile

Little is left of the post and adobe village, but the few remaining posts suggest an L-shaped building. Corrugated jars (1, 2, and 3), used as floor cists, indicate the location of possibly three rooms.

The kiva is the earliest type so far excavated in the Mesa Verde. The south wall of the kiva had slumped. However, in the places marked by solid lines it was possible to trace the original wall for a few inches above the banquette.

The unexcavated block in the kiva is the column of fill left to support the superimposed walls of Tower C (see pls. 19 and 23).

snow. The fields which surrounded the village were close at hand, it is true, but this convenience is negligible since a location closer to the head of Fewkes Canyon would offer just as easy access to the farm lands. Furthermore, a site nearer the canyon would be close to a good supply of readily available building materials.

There is, today, no apparent logical reason why the site was chosen by the first settlers. Even more unfathomable is its appeal for succeeding groups of people. Why did people choose to build on the accumulated trash and debris left by their predecessors? A short distance away they could have settled on undisturbed ground where there would be no ruined walls to tear down, no debris to level, and no man-made obstructions with which to contend. What caused, or prompted these people to deliberately ignore better locations in favor of living on someone else's trash?

These questions cannot be answered. Such behavior is illogical, but throughout the history of man there has been a common, worldwide tendency on his part to build and live where others have built and lived before him. Sites in Asia are known, for example, which have been reoccupied, time and again, century after century since the paleolithic age until the last occupation—in some cases a modern village—is situated on top of an artificial hill composed of manmade debris. Epidemics, fires, floods, earthquakes, and wars have driven men from their villages and cities and have, as in the case of the recently bombed-out towns and cities of Europe and Asia, completely destroyed entire settlements, yet men always return to the same places to build anew. Why they should choose to do so is beyond comprehension, yet history, backed by archeology, demonstrates the trait is, and was, peculiar to man the world over. In this respect, the ancient inhabitants of the Southwest were no different from their fellowmen, and Site 16 is a graphic illustration that this trait was present in the Mesa Verde.

THE POST AND ADOBE VILLAGE

THE FIRST PUEBLO II VILLAGE BUILT AT SITE 16

(See pls. 19, 20, 21, 22, 23, 24)

Component parts.—Remains of post and adobe rooms to the northeast and southwest of Unit Pueblo No. I (pls. 19, 21, and 22). Kiva 2 (pls. 19, 20, and 23).

Taxonomic position.—Pueblo II, Pecos Classification (table 1, p. 6). Developmental Pueblo; Roberts' Classification (table 1, p. 6). Mancos Mesa Phase; Gila Pueblo Phase System (table 1, p. 6).

Tree-ring dates.—None.

Comparative dating.—On the basis of architecture, presumed to have been constructed early in the Pueblo II period. Considered on the basis of two dated ruins at the Twin Trees Site which precede and follow this village in architectural type (O'Bryan, 1950, pp. 28-43), to have been built around A. D. 900. Probably not constructed much before A. D. 900, or later than A. D. 925. For further discussion see Dating of Site 16, pages 77, 78.

The Village

Evidence as follows:

1. Rows of post holes, as seen in plates 19 and 20, the charred and rotted butts of posts still in place.
2. Heavily burned adobe, showing the casts of posts used in construction.
3. Occupational debris underlying the walls and floors of unit Pueblo No. I.
4. Three corrugated jars used as floor cists. Evidence confirmed by presence of Kiva 2.

This village apparently was composed of several vertical-walled, flat-roofed, single-storied post and adobe rooms, arranged in a rectangle, or "L," facing southeast toward Kiva 2. The village burned, as evidenced by the charred butts of wall posts and the fire-hardened adobe used in wall and roof construction. This burned adobe shows the method of wall construction. Heavy layers of the material were packed between upright posts and further compacted by shoving small and large chinking stones into the mud while it was still plastic. Several pieces of this burned adobe show casts of fairly sizable posts.

Only one room outline can be partially traced. This room, beside and just south of the D-shaped Room 4 of Unit Pueblo No. I, is indicated by rows of posts forming the southwest and northwest walls (pls. 19 and 20). The fireplace, in what appears to have been about the center of the room, is the only firepit other than the one in Kiva 2 which can be assigned to this occupation. It is a shallow depression in the floor and, when excavated, was full of ashes. A corrugated jar used as a floor cist was located northeast of the firepit (pl. 20, No. 1). As reference to plate 19 will show, Room 4 of Unit Pueblo No. I appears to be constructed in what was once another room of the post and adobe village. These two rooms indicate either a double row of rooms, or an "L" extension at the southwest end of the village (pl. 24). The small slabs located by the posts on the southwest side of the village do not seem to serve any particular purpose. It is suggested they were used as wedges to force and hold the posts upright until the adobe packed around them hardened.

The former presence of rooms to the northeast, and also beneath Unit Pueblo No. I, is indicated not only by the line of posts extending outward from under the pueblo, but also by two corrugated jars used as floor cists. One jar, found under the northeast wall of Room 1 of the unit pueblo (pls. 19 and 55, lower right), obviously was in position prior to the construction of Room 1. The other jar was found in the southeast corner of Room 1 (pls. 19 and 55, lower middle). However, the mouth of the jar was below the floor level of the masonry room and flush with another floor level, no doubt that of a former post and adobe room. These jars show as Nos. 2 and 3, plate 20.

The post and adobe construction used in this village was the direct successor to the slab, post and adobe construction of Pueblo I times. Large slabs were no longer used as the



PLATE 21—*Post and Adobe Village After Excavation*

This view from the northeast, taken prior to the excavation of Kiva 2, gives some idea of the extent of the village. Unit Pueblo No. I was built on top of the middle section of the block of leveled post rooms. Arrows point to the post holes found on either side of the masonry pueblo. Plate 22 pictures the 2 remaining sections of the village after stabilization.

bases of walls, but in other respects construction was similar. The important difference is in the floor levels of rooms: slabhouse floors are slightly depressed, being a few inches below the surrounding ground level, while post and adobe house floors are flush with ground level.

There are two significant differences between slabhouse and post and adobe villages. The rows of rooms in a slabhouse village are arranged in a crescent, while post and adobe rooms are aligned in rectangular blocks. The other and most significant difference between the two villages is the ceremonial chamber. Slabhouses are accompanied by deep pitrooms located in the area on the south side of the village between the arms of the crescent rows of rooms. All evidence points to these pitrooms being partially domiciliary, as well as partially ceremonial, in character. Post and adobe villages are associated with true, circular kivas, ceremonial in character, located in front and south of the house block.

The best preserved examples of post and adobe, or jacal structures are those excavated by Dr. Roberts in the Piedra District, just east of the Mesa Verde (Roberts, 1930). Dr. Roberts found three types of post houses which he designates as Classes A, B, and C. House construction in the Piedra District apparently followed somewhat different lines of

development than in the Mesa Verde, since Class A and B houses, though having certain features comparable to Pueblo I slabhouses of the Mesa Verde, are nevertheless so different as to constitute a separate architectural type. Class C houses, on the other hand, are very similar to post and adobe houses of this region. These houses are usually associated with one or more masonry rooms, however, and the rooms are often isolated units instead of being incorporated in a rectangular house block. The great difference between Class C villages and post and adobe villages is the ceremonial room, or kiva, of the latter. No Class C houses have been found associated with kivas. Instead, in the location where one would expect to find a kiva, the existing depression marks the site of a reservoir.

Because of the subsequent occupations of Site 16, little remains of the post and adobe structures. After they burned, the site was leveled preparatory to the construction of the first unit pueblo, and most of the debris from the burned rooms was carried away. Plate 21 shows the village as it looked after excavation.

Plate 22 shows the village after stabilization. Post holes in the open immediately fill in and all evidence of their presence is lost. Furthermore, they are never obvious to the

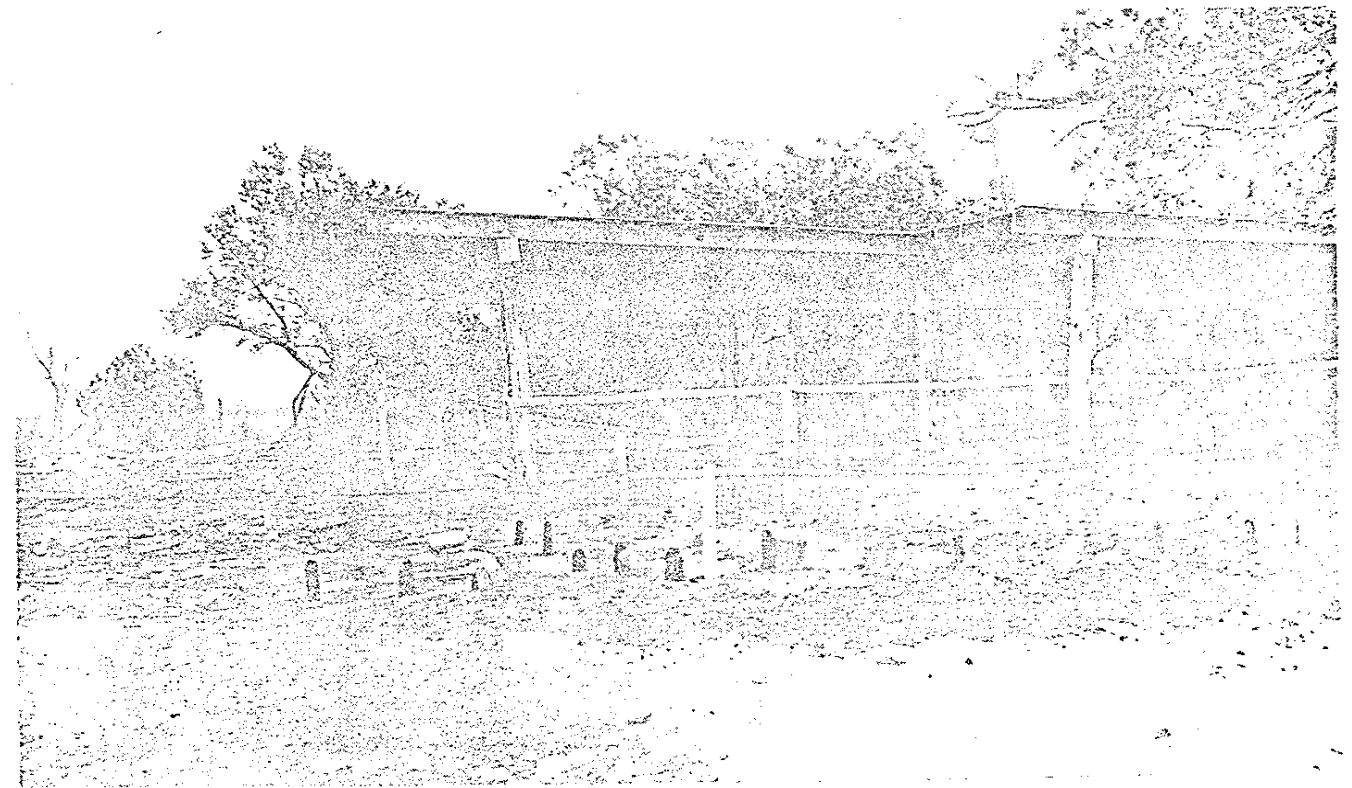


PLATE 22—*Post and Adobe Village After Stabilization* →

average visitor. In order to retain the outline of the former post rooms and thus be able to demonstrate the presence of the village, it was necessary to place short posts in the original post holes. Since the village originally burned, these replacement posts were charred so they would be in keeping with the story. Visitors are always told these posts are not the original ones, but modern substitutes, and the necessity for the substitution is fully explained.

Plate 24 shows the artist's reconstruction of the village as it is thought to have looked when occupied.

Kiva 2.

General features: earliest type; circular; 18 feet in diameter and 7½ feet deep; 4 posts in the banquette for roof support; a partially masonry-lined ventilator shaft located 2 feet back of south wall; no southern recess; no deflector; deep ashpit; slab-lined, box-type firepit; sipapu in alinement with firepit and ventilator tunnel, no banquette niches; banquette cist between 2 north posts; small amount of crude masonry; no evidence of method of roof construction; orientation 28½° east of south (magnetic reading).

This structure is an excellent example of the earliest type of kiva. Its predecessor, a subterranean pitroom with four roof support posts arising from the floor, was used as a dwelling and a ceremonial room. In Kiva 2 the four support posts have been moved from the floor to the banquette, thus clearing the floor space for the performance of ceremonial rites. Earlier rooms usually contain a certain number of household furnishings, but nothing was found in Kiva 2, such as metates, cooking vessels and the like, to indicate the room had any domiciliary function.

While the structure is crude in many respects, several basic kiva features are present: banquette, ventilator shaft and tunnel, firepit and sipapu, with the last four in a general north-south alinement (pl. 20). Certain features considered typical of well-developed kivas are lacking: pilasters, southern recess, deflector, masonry lining and a niche in the north face of the banquette in alinement with the sipapu, firepit, deflector, and ventilator tunnel.

This kiva has a small amount of crude masonry, apparently added in an effort to stabilize weak sections. The south part of the kiva was constructed in the fill of a Pueblo I pitroom. This fill was unstable, so the builders found it

necessary to place a partial lining in the ventilator shaft to keep it from slumping. For this same reason they incorporated a small block of masonry above the mouth of the ventilator tunnel to keep it from collapsing. The face of the banquette between the two north roof support posts is masonry lined to a depth of 1 foot below the edge. The banquette was remodeled during the time the kiva was in use, and the builders probably found it necessary to use masonry to hold the banquette edge in place. Possibly the remodeling of the banquette was done to accommodate the large corrugated jar which was used as a cist (pl. 20, No. 4).

One other strip of crude masonry possibly was incorporated as a stabilization measure. This is a narrow, tapering band, at its widest only a foot high, extending just above the banquette around the north side of the upper kiva wall. The band starts 6 feet to the north of the southwest post and continues around the kiva to a point 3 feet from the southeast post. The rest which located Kiva 2 struck a crudely constructed earthen ledge 18 inches below the present ground level. This tapered off to the north, following somewhat the general kiva contour. Presumably this ledge, possibly a bench, indicates the presence of a Basketmaker III structure. If the kiva was partially excavated through another structure earlier than the pitroom to the south, the band of masonry above the banquette may have served to hold back the fill of a large pithouse.

The floor features are few in number. No deflector is present, nor is there any indication of there ever having been one. No doubt the tunnel opening was closed with a movable slab when need arose to cut off the down draft of cold air from the ventilator shaft. A deep cist filled with ashes is located in front of the firepit and between it and the ventilator tunnel (pl. 20, C). A small, shallow cist to the east of this ashpit may have been used as a pot rest (pl. 20, No. 6). The box-type firepit is lined with slabs. The sipapu, 8½ inches deep, is the only other floor feature showing. The block of fill left to support the superimposed walls of Tower C of Unit Pueblo No. II, precludes the possibility of determining any other floor features which might be present (pl. 23).

The banquette, 3 feet 6 inches high and varying from 1 to 2 feet in width, is well plastered. Two upright slabs are set in the banquette between the wall and the northeast post (pl. 20), while a flat slab is embedded in the banquette beside them (pl. 20, No. 5). The deep banquette cist (pl. 20, No. 4) was covered with a flat slab. This cist was formed by sinking a large, oval corrugated jar into the banquette. The jar is illustrated on plate 55, upper right.

The method of roofing Kiva 2 could not be determined as the roof was torn from the structure prior to the construction, to the north, of Kiva 3. It is presumed that construction was similar to that used in roofing deep pitrooms. Excellent illustrations of this method, which employs a basic framework of four stringers laid across support posts, which are in turn crossed by smaller poles, may be found in Morris (Morris, 1939, p. 70, fig. 13); Roberts (Roberts,

Upper photograph—Section northeast of Unit Pueblo No. 1

In order to preserve what little remains of the outline of the village, it was necessary to replace the disintegrated posts with green timbers. These modern posts were charred somewhat in order to more nearly resemble the originals, and to impress the fact the village burned. Visitors are told the posts are not the originals, which crumbled to dust on exposure to air, but replacements necessary for the preservation of the outline of the rows of holes. This is in no way objectionable as people readily appreciate the fact the holes would fill with the first rain or dust storm and any evidence of the village would then be lost.

Lower photograph—Section southeast of Unit Pueblo No. 1

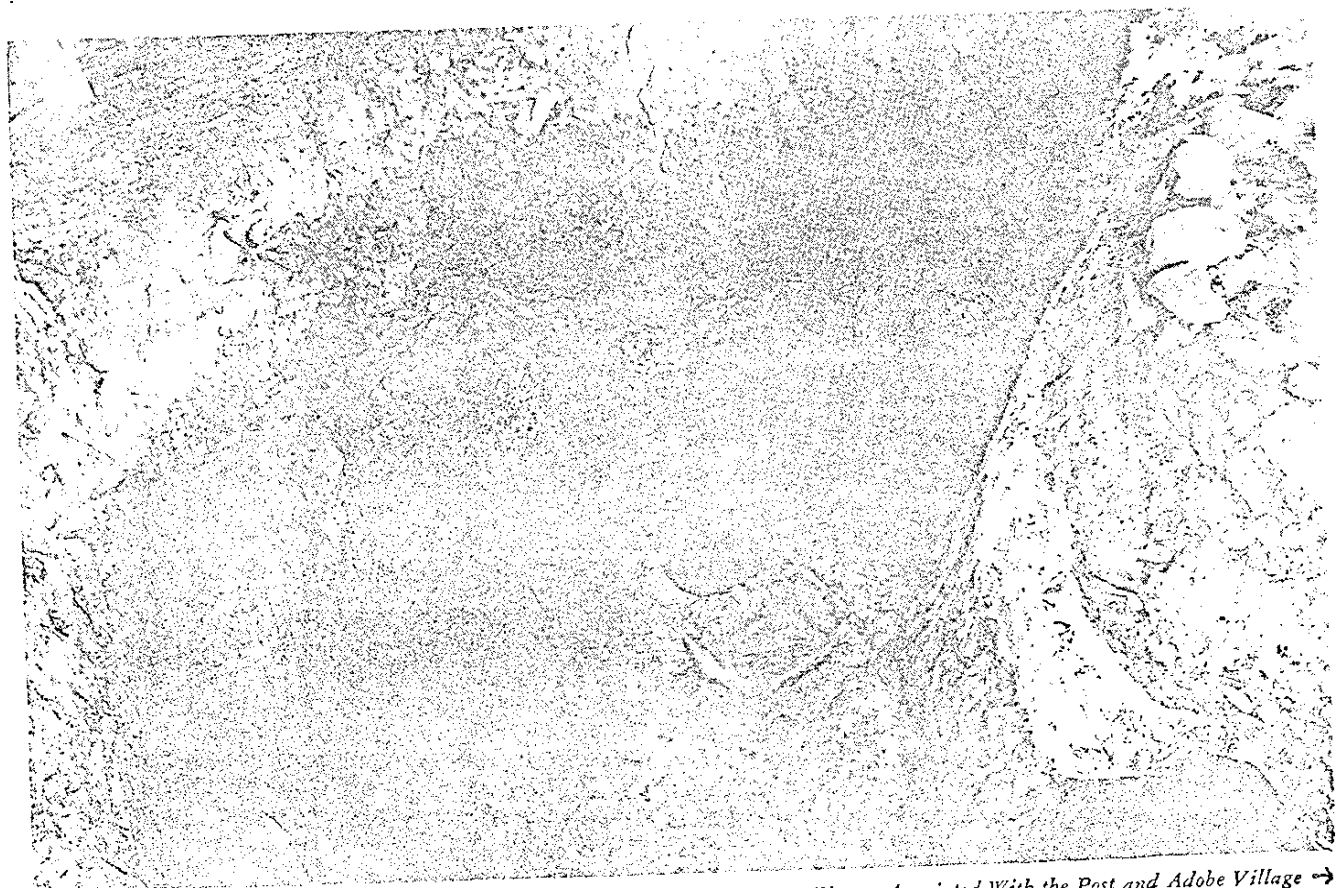
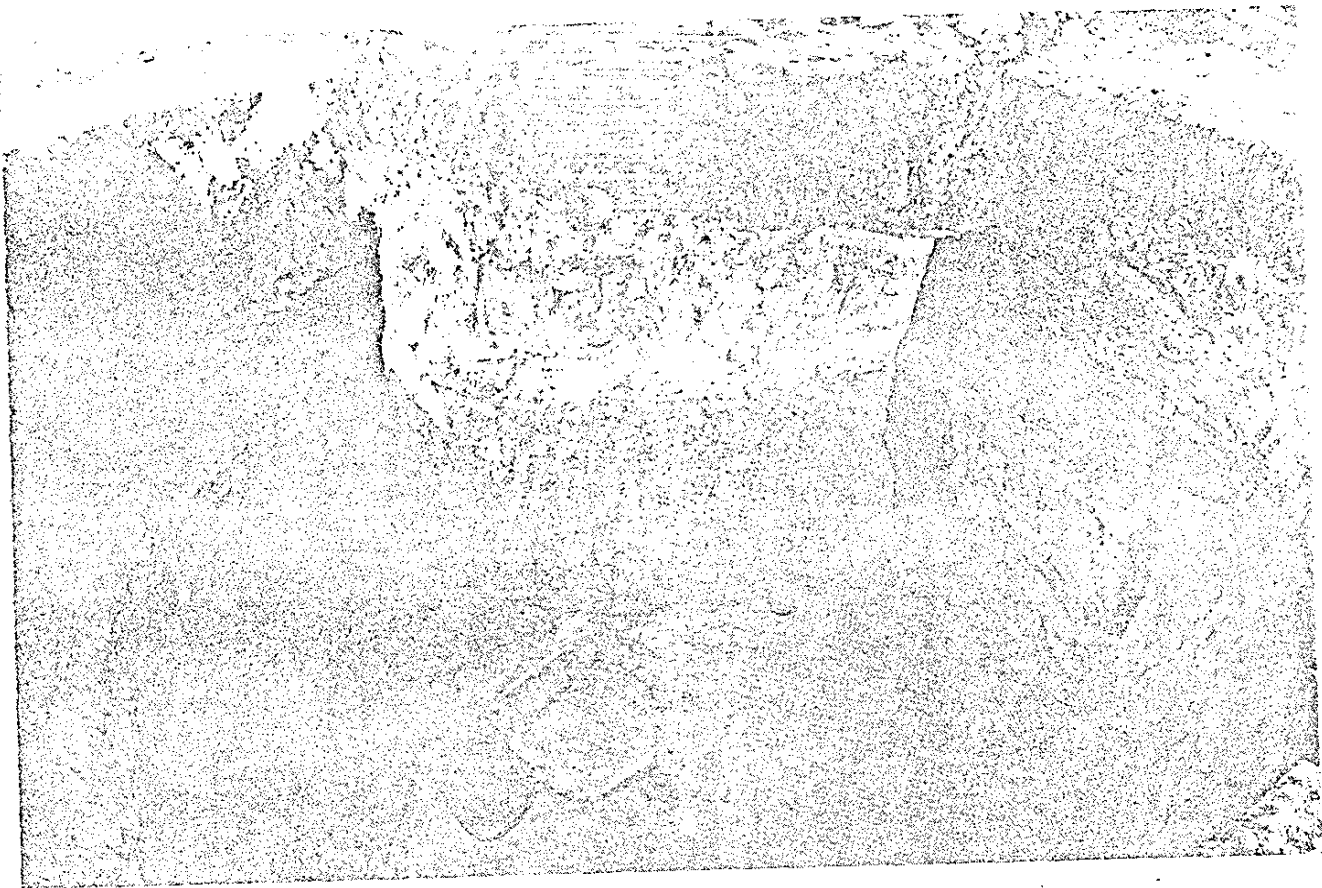


PLATE 23— *Kiva 2, Associated With the Post and Adobe Village* →

1930, p. 44, fig. 9); and O'Bryan (O'Bryan, 1950, p. 43, fig. 16).

When the following kiva, Kiva 3, was to be constructed, the builders were hampered by lack of space between their new masonry pueblo and the abandoned kiva 2 in which to completely construct their ceremonial chamber. Not having space for a ventilator tunnel and the shaft, the tunnel for the new structure was dug under the north side of the banquette of Kiva 2, and the connecting ventilator shaft was completely constructed of masonry within the old kiva. With the ventilating system arranged for, Kiva 3 was excavated and the dirt was thrown into Kiva 2, effectively burying the ventilator shaft and filling the kiva.

Structures similar to Kiva 2 have been excavated in the area northwest of the Mesa Verde by Dr. Paul S. Martin. One of these, House Kiva 1 at Little Dog Ruins, 30 odd miles northwest of Cortez, Colo., is very much like Kiva 2 (Martin, 1930, pp. 27-29, and fig. 2). However, due to the presence within the structure of a number of cooking vessels and baskets of shelled corn, Dr. Martin felt the structure was still used to some extent as a dwelling place, so he called it a "house kiva." Another structure called a house kiva, Feature 1, at Site 1, Ackmen-Lowry area, also some 30 miles northwest of Cortez, seems to be earlier than House Kiva 1, for the banquette is not complete (Martin, 1938, pp. 242-243, and map 6). Both of these house kivas, as well as two others at Little Dog Ruins, are associated with post and adobe villages of Pueblo II origin, and together with Kiva 2 are

proof that the true kiva, in the sense in which the term is now used, made its appearance in the Mesa Verde area early in Pueblo II.

Material Culture.

Artifacts definitely assignable to this occupational level are:

MANOS: 2. One flat with single grinding surface, found with corrugated jar under the northeast wall of Unit Pueblo No. I. One convex end-to-end and side-to-side, with single grinding surface, from the firepit of Kiva 2. Both illustrated on plate 35, see upper row, left and lower row, right.

AXES: 1. Single-bitted and side-notched, from the floor of Kiva 2 (pl. 38, upper row, left).

HAMMERSTONES AND PECKING STONES: 1. With corrugated jar under northeast wall of Unit Pueblo No. I (pl. 37, middle row, middle).

POLISHING PEBBLE: 1. From banquette of Kiva 2 (pl. 39, middle row, left upper).

BONE AWLS: 4. Three from banquette of Kiva 2, one from floor of Kiva 2 (pl. 41, Nos. 3, 4, 7, and 8, upper row).

BONE FLAKER: 1. From banquette of Kiva 2 (pl. 41, No. 1, lower row).

BONE SCRAPER OR FLESHER: 1. From floor of Kiva 2 (pl. 41, No. 3, lower row).

POTTERY: 4. Wide-mouthed, narrow-rimmed corrugated jars. Three used as floor cists in rooms of the village and one used as a banquette cist in Kiva 2 (pl. 55, upper left, upper right, lower middle, lower right).

SHERDS: Predominantly Mancos Black-on-white and Pueblo II Corrugated.

UNIT PUEBLO NO. I

The Second Pueblo II Village Built at Site 16

(Pls. 19, 25, 26, 27)

Component parts.—Rectangular, single-coursed masonry pueblo of three rooms, Rooms 1, 2, and 3 (pls. 19, 25, and 26). Remnant of a detached, D-shaped, single-coursed masonry room, Room 4 (pls. 19, 25, and 26). Kiva 3 (pls. 19, 25, and 26).

Taxonomic position.—Pueblo II; Pecos Classification (table 1, p. 6). Developmental Pueblo; Roberts' Classification (table 1, p. 6). Mancos Mesa Phase; Gila Pueblo Phase System (table 1, p. 6).

Tree-ring dates.—None.

Comparative dating.—Presumed on the basis of findings at similar sites excavated elsewhere in the Mesa Verde area to date about A. D. 1000. Probably not before A. D. 975 and not later than A. D. 1025. This pueblo is architecturally superior to the Twin Trees Pueblo, Site 102, dating approximately A. D. 950 (O'Bryan, 1950, pp. 32-35), but is not as well advanced architecturally as the Site 1 pueblo, located 400 yards south of the Twin Trees, which dates approximately A. D. 1025 (O'Bryan, 1950, pp. 44-51). The masonry, arrangement of rooms and type of kiva, all point to construction of the village in the middle of Pueblo II, late in the 10th or early in the 11th century. See *Dating of Site 16*, pages 77, 78.

The Pueblo.

This unit is a typical example of the hundreds of small farming communities which dotted the mesa tops and valley floors of the Mesa Verde area in the 10th and 11th centuries A. D. These pueblos were the homes of a few families,

Upper photograph—North side

At the top of the photograph are the double-coursed masonry walls of Tower C. The column of fill supporting these walls shows the kiva was backfilled with the original excavation material from Kiva 3, which lies on the other side of the tower. The white band in the column is caliche, into which the lower half of Kiva 3 was excavated. The dark band at the bottom is a mixture of native top soil and fill from a burned pit-structure which was originally cut by Kiva 3, a circumstance demonstrated by the present excavation. The upper dark band is undoubtedly material coming from the cleanup of the burned post and adobe village.

The hole in the banquette back of the block of fill, on the right side, is the corrugated jar cist. The dark hole on the face of the banquette, to the right of the cist, was caused by the plaster breaking away from the rotted remains of the northeast roof support post. The location of the southwest support post is marked by a dark streak on the face of the banquette to the left of the block of fill.

Lower photograph—South side

The upper south wall of the kiva had slumped, so much so that the partial masonry lining of the ventilator shaft is exposed in the upper part of the picture. The southeast and southwest posts for roof support show as dark streaks on the face of the banquette to the left and right of the ventilator tunnel. The tunnel, firepit and sipapu are aligned. The deep pit in front of the firepit was filled with ashes. No evidence of a deflector was found.

The block of fill under the walls of Tower C was slanted to the kiva floor to give it greater stability. This photograph, as well as the one above, shows the east opening to the tunnel which was dug through the block of fill. This tunnel located the ventilator shaft of Kiva 3, which was constructed in Kiva 2.

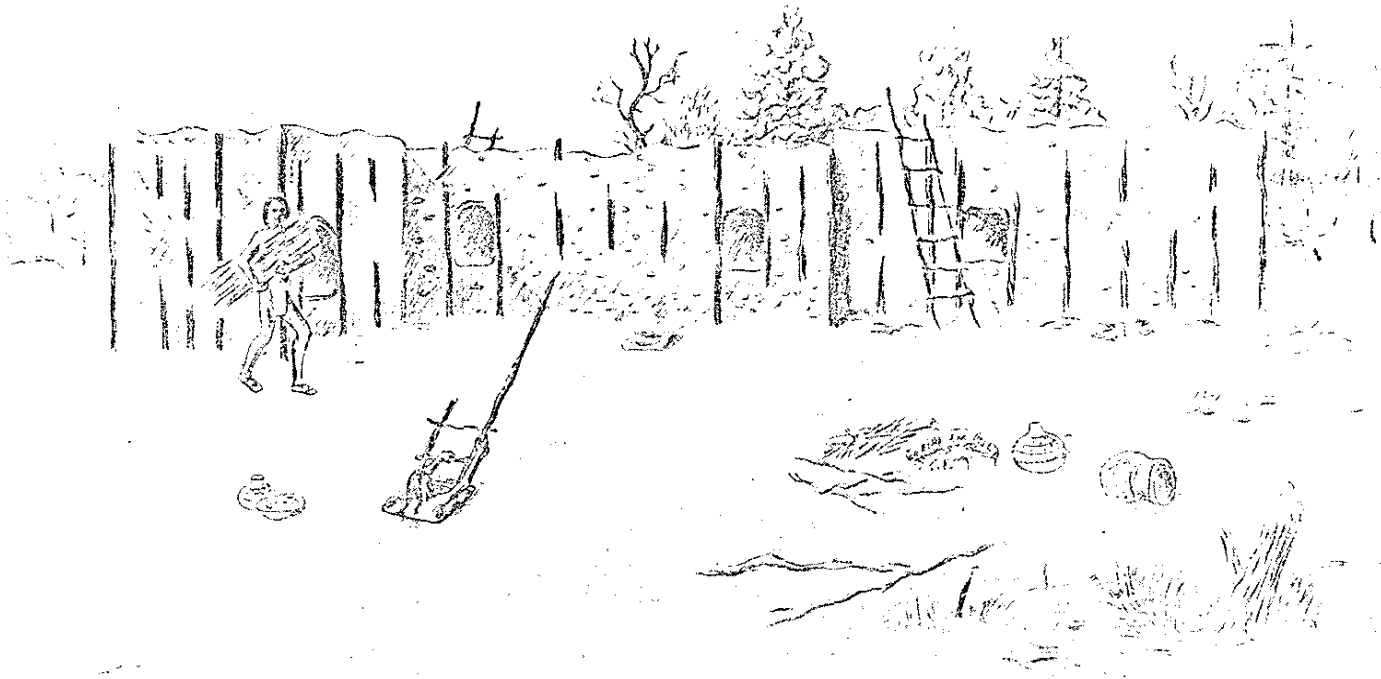


PLATE 24—*Artist's Reconstruction of the Post and Adobe Village.*

This reconstruction is purely conjectural as too little was left of the original outline of the village to give the artist more than a vague impression of what might once have been the arrangement of the row, or rows, of rooms. Lines were projected from one row of posts to another, then ground plans of other excavated post and adobe villages were studied. By this method, a plan was arrived at which seemed to incorporate most known features of these early structures.

perhaps a small clan, and are accompanied by a community ceremonial room, a kiva situated outside and usually south of the house block. Modern counterparts are our own small rural communities, a few farm houses nestled close to a country church.

The main house block, 21 to 23 feet in length and 16 to 16½ feet in width, contains 3 rooms. The large room across the front, Room 1 (pl. 25), undoubtedly served as living quarters since the only inside firepit, a slab-lined box, is located in this room. The two small rooms at the rear, Rooms 2 and 3, quite possibly were used for storage. The one isolated room—the somewhat D-shaped Room 4—may have been built after the main pueblo was constructed, possibly when need arose for another room.

Single-coursed stone masonry was used in the construction of the walls. The courses are fairly even but the stones used vary greatly in size. The method of dressing these stones is characteristic of this stage of the period. Rather flat sandstone slabs were selected, roughly shaped by chipping or knocking the edges from both sides, with the result the inner and outer faces of the blocks appear V-shaped in cross section. Because of the V-shaped edges it was necessary to employ considerable mortar in laying up the courses, and the walls of pueblos of this period usually were not too strong. The

builders sometimes incorporated upright posts in a wall to give it greater stability, as they did in the front wall of Room 1 of this pueblo (pl. 25).

It is doubtful if the walls of the pueblo were ever more than one story high. Certainly Room 1 was only one story in height for the front wall of the room fell into the kiva sometime after abandonment, and not enough stone was present in the kiva to account for more than a portion of a one-story wall. Furthermore, the walls appear too thin and too weak to have supported a second story in any section. A positive statement cannot be made for the ruined pueblo was leveled by the last occupants of the site and any remaining building stones were disposed of elsewhere.

Nothing is known of the method of roof construction but it certainly was no different than that used in other masonry pueblos. One or two cross beams were placed in the wall at the desired ceiling level, and several slender poles were laid at right angles across these vigas. These in turn were covered with smaller poles or shakes (shingle-like boards), and bark, grass, and the like laid on top. This roof would then be covered with a thick layer of mud tamped in place.

The only inside firepit is in Room 1. A deep ashpit, located beside this firepit, contained ashes, manos, and broken stone slabs. An outside firepit (pl. 25) is located against the front wall of the pueblo at the southeast corner.

SITE NO. 16

Mesa Verde National Park
Colorado

UNIT PUEBLO NO. I

Ground plan and profile

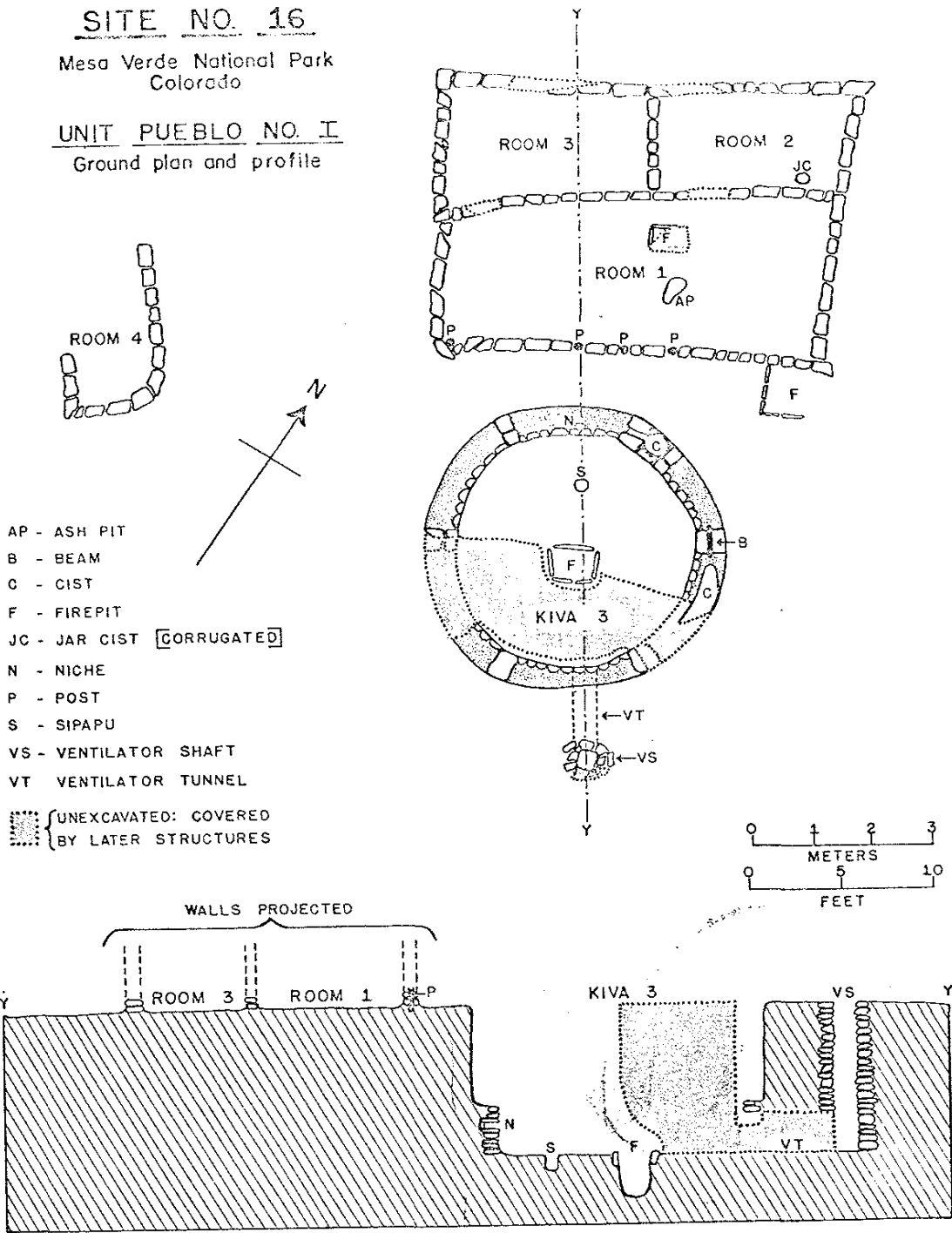


PLATE 25—Unit Pueblo No. I Ground Plan and Profile

Unit Pueblo No. I is a typical small village of Pueblo II times; a rectangular house block with a kiva situated to the south. The most interesting feature is the kiva, an excellent example of a developmental ceremonial chamber.

The block of fill left in Kiva 3 to support the superimposed walls of Tower C was cut as nearly vertical as possible. The tower covers so much of the kiva it was impossible to slant the block as was done in Kiva 2. Even with vertical cutting and undermining the block to excavate the firepit, few floor features could be exposed.

The ventilator shaft of this kiva is constructed in Kiva 2. To prevent possible confusion the situation is not shown on this plate. Refer to plate 19.

One floor cist was found which was made by sinking a corrugated jar into the floor of Room 2 (pl. 25). The mouth of this jar was covered with a sandstone slab.

Unit Pueblo No. I was abandoned and fell into ruin before the last reoccupation of the site. The roof timbers of the kiva rotted and the roof caved in, perhaps when the front wall of the pueblo fell on it. The kiva filled and the fill was well-packed before construction was started of the massive walls of Tower C, of Unit Pueblo No. II (pl. 19). It appears that most of the stone used in building this pueblo was carried away for use elsewhere prior to the last occupation as few stray building blocks were encountered during excavation. The stones were not reused in the walls of Unit Pueblo No. II or its towers, for the stones employed in the construction of these last buildings are squarish blocks, quite different from the flat slabs used in the single-coursed walls of Unit Pueblo No. I.

During the last occupation, Tower B was built on the remains of the ruined walls of this earlier pueblo (pls. 19 and 26). Plate 26, upper photograph, shows the pueblo after excavation.

Plate 27 is the artist's reconstruction of the pueblo as it is thought to have looked when occupied.

Kiva 3.

General features: intermediate type; circular; 16 feet in diameter and 8 feet 3½ inches deep; 6 block-type pilasters for roof support; masonry ventilator shaft located 3 feet back of south wall and inside Kiva 2; no southern recess; presence or absence of deflector unknown; very deep, partially slab-lined, box-type firepit; sipapu; north banquette niche in alinement with sipapu, firepit and ventilator tunnel, banquette cist; face of banquette masonry lined and plastered; walls above banquette of native earth; roof constructed by cribbing; oriented 34° east of north (magnetic reading).

Kiva 3 is a typical example of a developmental kiva and comparison with Kiva 2 will indicate the advances which have taken place. The roof support posts have been replaced by pilasters, and, as usually is the case in most later kivas, these are six in number. Pilasters show cribbing was the method used in roof construction. Masonry lining of the face of the banquette has been introduced. Another feature characteristic of later kivas is now seen—the niche in the face of the banquette in alinement with the sipapu, firepit, and ventilator tunnel.

Comparison with Kiva I, of Unit Pueblo No. II (pl. 30), will emphasize the developmental characteristics of this structure. The pilasters are narrow, thin blocks, not at all like the massive pilasters of Kiva I. The southern recess is lacking, a feature which is usually present in later kivas. The wall above the pilasters is not masonry lined, but this is a variable feature in mesa top kivas.

Kiva 3 may or may not have a deflector. This could not be determined due to the block of fill left in the south half of the structure to support the superimposed walls of Tower C. Very likely the kiva does have a deflector, and in all probab-

ity it is an upright slab. Because of the supporting column of fill, the only floor features it was possible to uncover are the firepit and sipapu. The firepit is very deep, 26½ inches, box-shaped and partially lined with sandstone slabs. The sipapu, 9½ inches deep, is in the usual location north of the firepit.

The banquette, averaging 32 to 33 inches in height and 18 to 19 inches in width, is faced with stone masonry of rather good quality, better in all respects than that used in the pueblo. The walls of the kiva were covered with many layers of plaster, most of which has peeled off since exposure. A cross section of this plaster shows that tan, brown, white, gray, and reddish muds were used at different times to coat the walls.

The narrow pilasters, 20 to 21 inches in height, are set an average of 5 to 6 feet apart on the banquette. With one exception these are made of thin, narrow slabs of sandstone laid one on top of another to form a pillar. The exception is a remodeled pilaster which looks more like those of later kivas. The remodeling was done to incorporate a small cist in the pilaster.

A cist, 28½ inches deep, is located in the banquette on the east side of the kiva. It is presumed this occupies most of the banquette between two pilasters but due to the block of fill it was impossible to determine the actual length of the cist, even though it was traced back for 49 inches under the fill. A mass of food bones had been tossed in the cist. These are discussed under *Foodstuffs*, p. 77.

The method of roofing the kiva was easily determined. Six pilasters with rotted timbers lying in position across them and rotted timbers lying on the banquette demonstrated the roof was cribbed. Those interested in this method of roofing kivas will find excellent illustrations in Nordenskiöld (Nordenskiöld, 1893, p. 57, fig. 31) and Fewkes (Fewkes, 1920, pp. 53-55, figs. 53, 54, 55), based on actual kiva roofs still in position in Mesa Verde cliff dwellings.

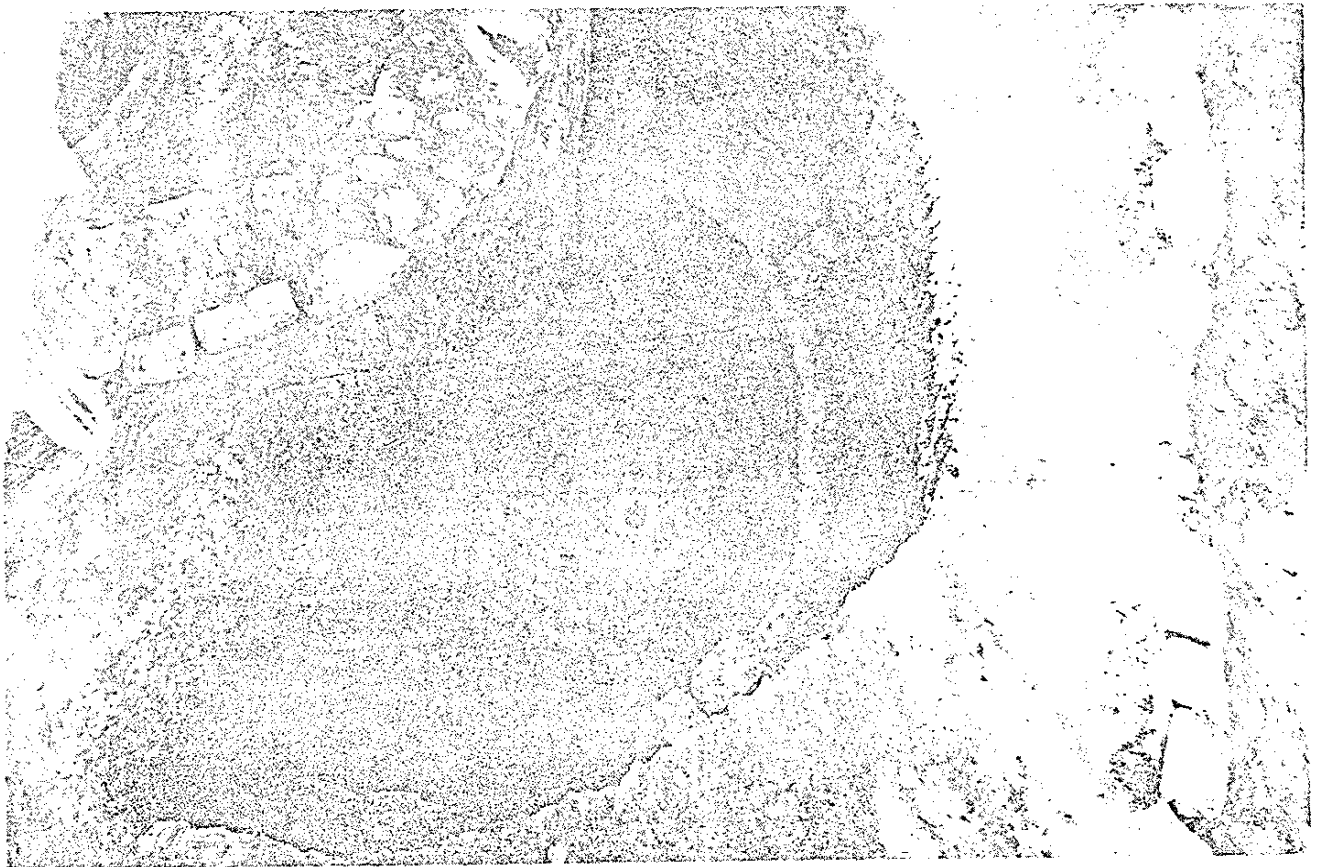
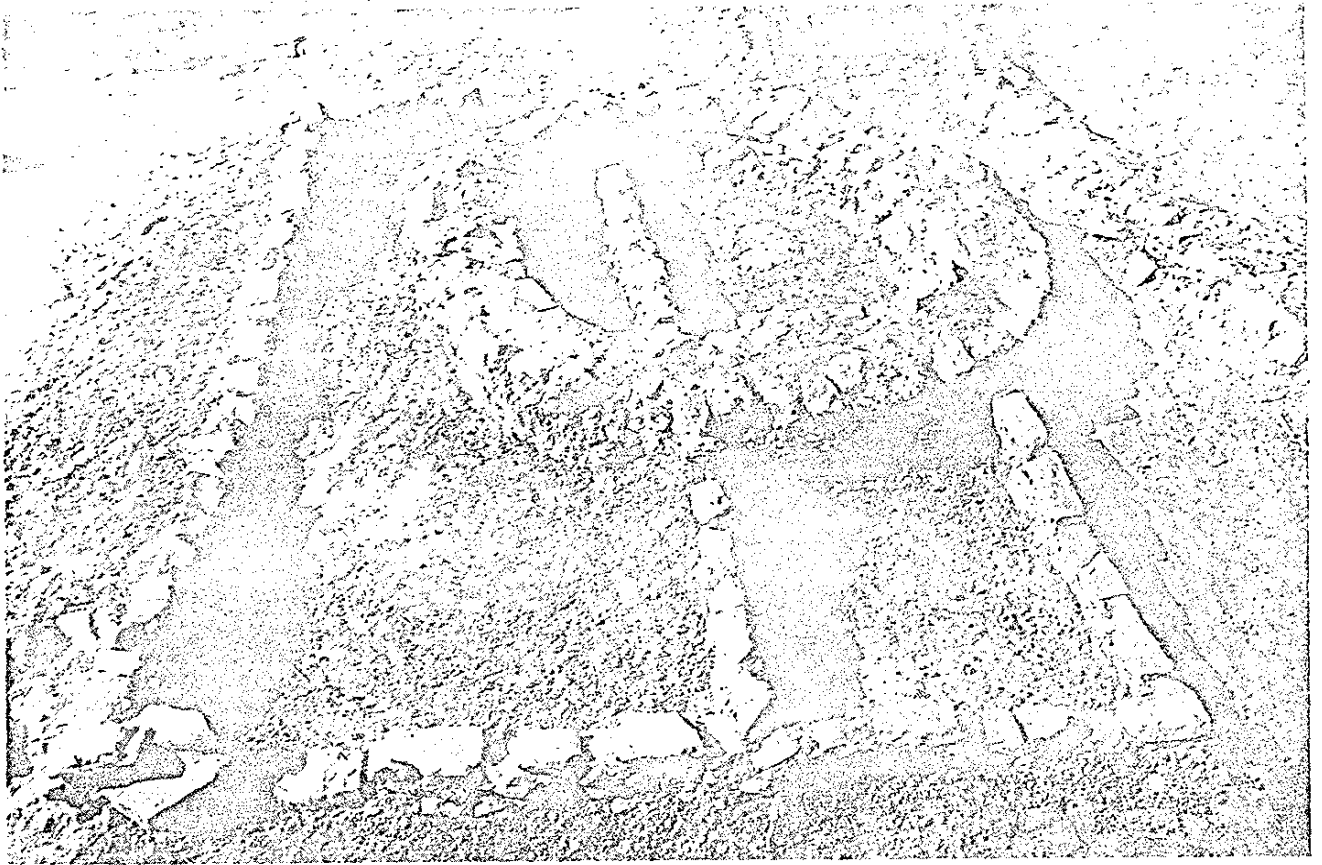
As previously described, the ventilator shaft for Kiva 3 is constructed as a masonry column in Kiva 2 (pl. 19). The connecting ventilator tunnel passes beneath the banquette of the earlier kiva and enters Kiva 3 under its banquette

Upper photograph—Unit Pueblo No. I

This view of the pueblo was taken prior to the excavation of Kiva 3. The walls of Tower B lie on the leveled walls of the pueblo, while the south wall of Unit Pueblo No. II appears at the right of the photograph, adjoining the walls of Tower A, upper right center. The walls of D-shaped Room 4 lie in the shadow, upper left center.

Lower photograph—Kiva 3, Associated with Unit Pueblo No. I

The south wall of the pueblo is seen at the right of the photograph. The north side of the walls of Tower C, superimposed on the kiva, shows in the upper left corner. The hole inside the walls of the tower is the excavation which located the south wall, banquette and ventilator tunnel of the kiva. The remodeled pilaster is seen on the banquette in the bottom center of the photograph.



← PLATE 26

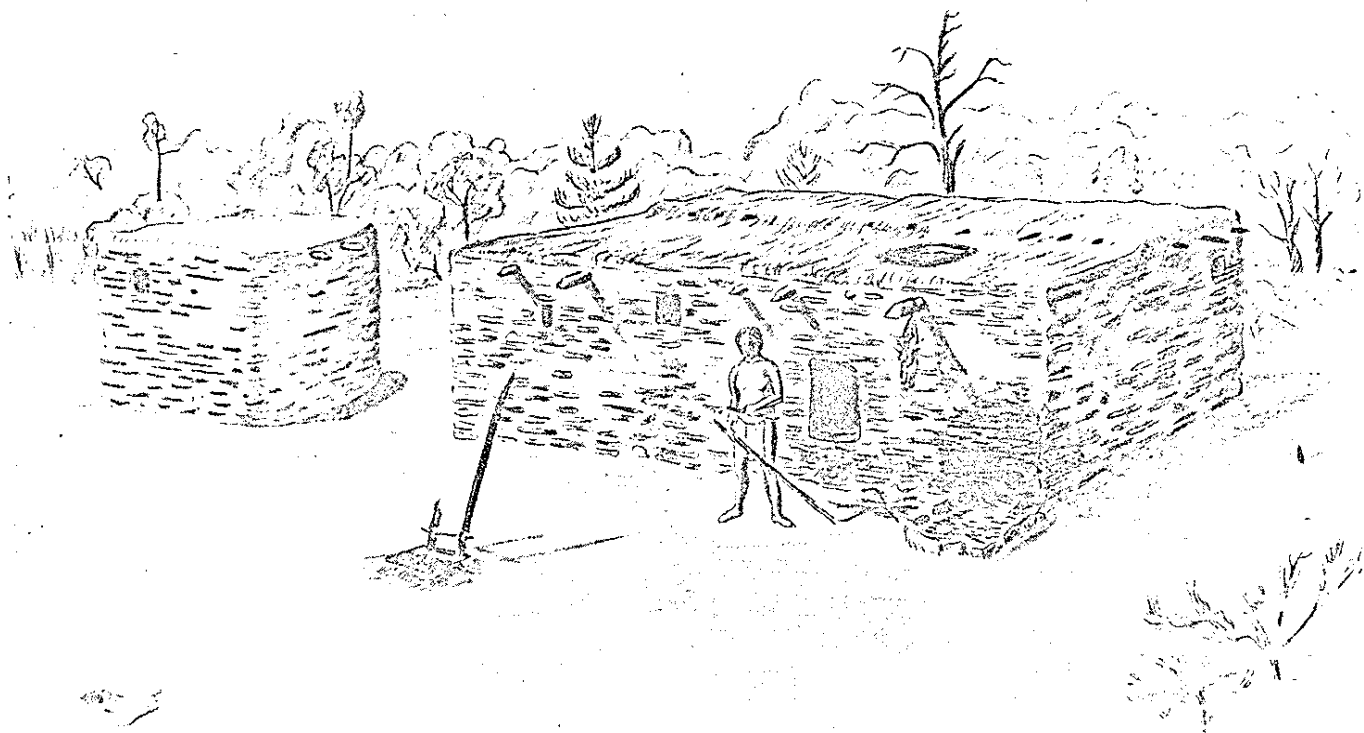


PLATE 27—*Artist's Reconstruction of Unit Pueblo No. 1*

This reconstruction is based largely on other excavated examples of small unit pueblos in the Mesa Verde area and it is felt the village looked much like this at the time it was occupied. The only doubtful feature might be the number of stories. It is possible, but somewhat improbable, that there was a second story across the back of the pueblo. It is felt the front room of the pueblo was only one story high.

between the two southern pilasters. In order to determine the presence or absence of a southern recess, the excavation through the floor of Tower C, which located the masonry ventilator shaft in Kiva 2, was enlarged. While it was possible to show the kiva does not have a southern recess, and to locate the two southern pilasters by limited tunneling, it was unfortunately impossible to go further into the fill to locate the deflector or any other features which might be present.

Plate 26, lower photograph, shows the kiva after excavation.

Material Culture.

Artifacts definitely assignable to the occupation are:

MANOS: 7 (4 complete, 3 broken; 6 with single grinding surface, one used on both sides). Four from floor of Kiva 3; 1 flat; 1 flat and wedge-shaped in cross section; 2 are slightly convex side-to-side. Two from the banquette of Kiva 3; 1 flat and wedge-shaped in cross section; 1 convex side-to-side and wedge-shaped in cross section. One from ashpit in floor of Room 1 (pl. 35 upper row, right).

AXES: 1. Full-grooved, from floor of Room 4 (pl. 38, upper row, middle).

HAMMERSTONES AND PECKING STONES: 7. Five from the floor of Room 4, 1 from the banquette of Kiva 3 and 1 from the floor of Kiva 3 (pl. 37, upper row, entire; middle row, left and right; lower row, left and middle).

PROJECTILE POINTS: 1. Lateral and base notched, from the banquette of Kiva 3 (pl. 39, upper row, left).

NICHE COVER: 1. North banquette niche of Kiva 3 (pl. 39, lower row).

PROBLEMATIC BONE OBJECTS: 3. From the floor of Kiva 3 (pl. 41, Nos. 5, 6 and 7, lower row).

BONE GAMING PIECE: 1. From floor of Kiva 3 (pl. 44, bottom).
TUBULAR BONE BEADS: 2. Both from the floor of Kiva 3; 1 broken (pl. 42, lower row, right).

LIGNITE PENDANT: 1. From banquette of Kiva 3 (pl. 42, upper row, left).
POTTERY: 1. Wide-mouthed, narrow-rimmed corrugated jar, used as floor cist in Room 2 (pl. 55, lower left).

SHERDS: Predominantly Mancos Black-on-white and Pueblo II Corrugated.

UNIT PUEBLO NO. II

The Third Pueblo II Village Built at Site 16

(Pls. 19, 28, 29, 30, 31, 32, 33)

Component parts.—Remains of a rectangular, double-coursed masonry pueblo (pls. 19, 28, and 29). Three circular, double-coursed masonry towers, Towers A, B, and C (pls. 19, 28, and 29). Kiva 1 (pls. 19, 28, 30, 31, and 32).

Taxonomic position.—Pueblo II; Pecos Classification. 1. Developmental Pueblo; Roberts' Classification. Mancos Phase, Gila Pueblo Phase System. (See table 1.)

Tree-ring dates.—Two bark dates, both A. D. 1074, from Kiva 1. Material from the 1950 excavation dated by Edmund Schulman, Tree-Ring Laboratory, University of Arizona (Schulman, 1951, pp. 28-29; Smiley, 1951, p. 88z). Eighteen of the 67 specimens Dr. O'Bryan secured from Kiva 1 yielded dates, but so far these dates have not been published (Gila Pueblo Tree-Ring Laboratory).

SITE NO. 16

Mesa Verde National Park
Colorado

UNIT PUEBLO NO. II

Ground plan and profile

- ⊙ - CIRCULAR PIT
- C - CIST
- D - DEFLECTOR GROOVE
- F - FIREPIT
- P - POST
- S - SIPAPU
- VS - VENTILATOR SHAFT
- VT - VENTILATOR TUNNEL
- XX - RETAINING WALL P

For detailed plan of Kiva
see following Plate

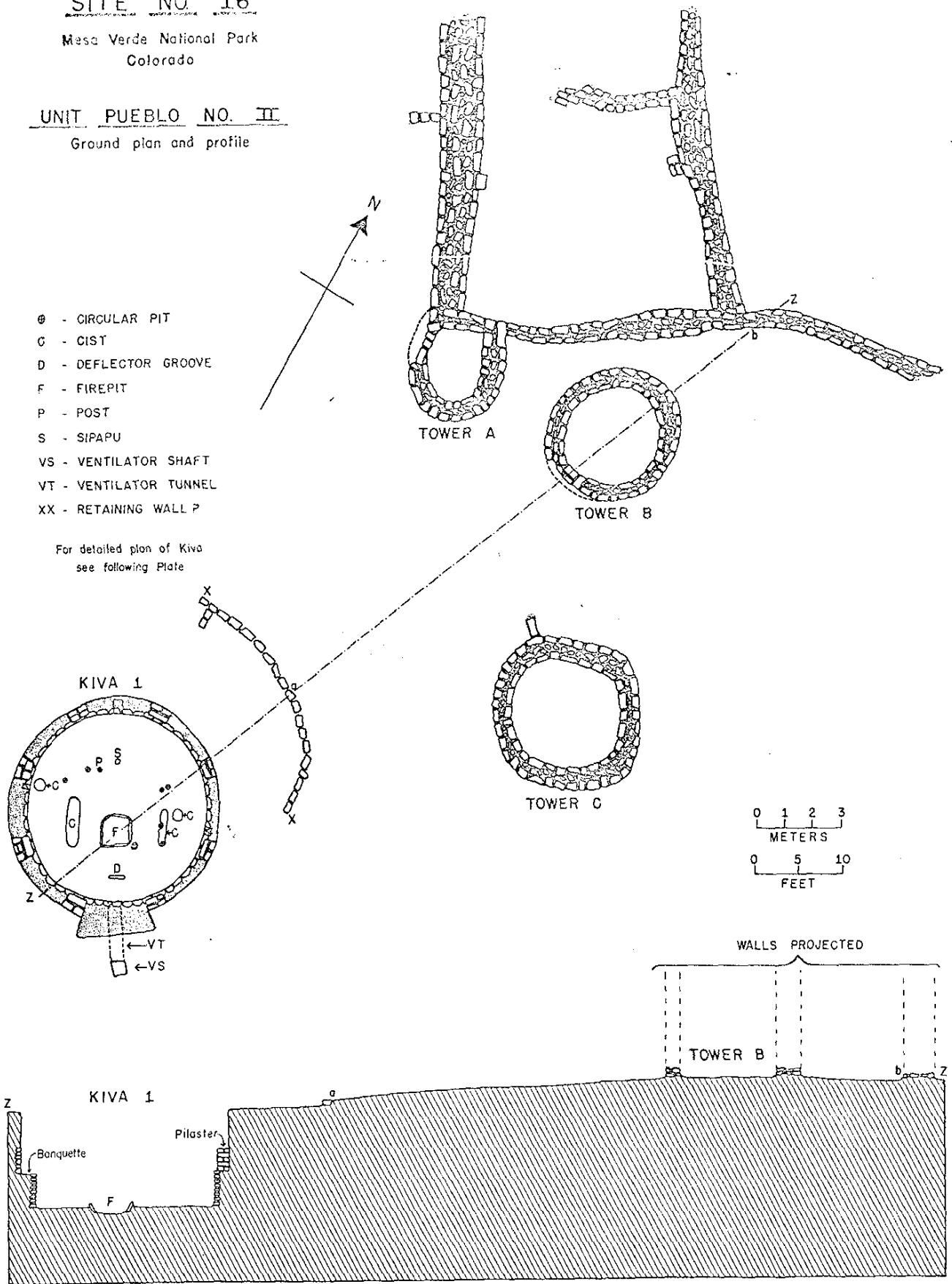


PLATE 28—Unit Pueblo No. II Ground Plan and Profile

This last pueblo constructed at Site 16 was almost completely demolished for its building stones, so it was impossible to follow the walls beyond the point shown on the ground plan. The profile line, by giving a cross section of the walls of Tower B and the southeast wall of the pueblo, indicates the thoroughness with which the structures were razed for their construction materials. For a detailed plan of the kiva see plate 30.

Globe, Ariz., "Tree-Ring Dates for Ruins in Mesa Verde National Park"). List based on the final review of specimens completed in March 1949, furnished the Federal Government, on file at Mesa Verde National Park Museum.

Comparative dating.—On the basis of pottery, predominantly Mancos Black-on-white and allover, Variable Corrugated, the ruin is assignable to Pueblo II. While architecturally approaching Pueblo III in some respects, the majority of features still point to the pueblo, towers, and kiva being of Pueblo II origin. As no Mesa Verde Black-on-white was found at the site, occupation did not extend into Pueblo III. See Dating of Site 16.

The Pueblo.

So little is left of the demolished pueblo that no conclusions could be reached concerning its original size or outline. Plate 28 shows the extent to which it was possible to trace the walls and the existing outline suggests there may have been two rectangular blocks of rooms, as only one other explanation, which will be dealt with later in this section, would seem to explain the eastern extension of the southeast wall. The area to the north of this wall is strewn with building stones but no section of wall outline could be picked up. The outlining walls of the northwest room block were easily traced up to the point shown, then disappeared completely. One cross-wall in the block is fairly distinct, but there is only a bare suggestion of a second.

There is a feeling that the people who built this pueblo were preparing for the possibility of attack. They seemingly were not at all familiar with double-coursed masonry and they did not bother, or were too hurried, to use any care in alining the walls or paralleling the inner and outer courses of masonry. Plate 28 illustrates how the walls bulge in one place, pinch-in in another, varying erratically from 14 inches to almost 5 feet in width. The lopsided outline of the pueblo could be due to an inability of the builders to follow a straight line, but in view of the care they used in the construction of Kiva I, this seems illogical. They apparently were concerned with the defensibility of their pueblo, not its appearance. There is the possibility, of course, that Unit Pueblo No. II is a good example of the extremes to which experimentation was carried in Pueblo II. However, the evidence of the double walls, the obviously hurried construction, and the presence of the three towers, all seem to point to defense construction, which in itself was experimental.

The masonry used in the construction of the pueblo and the towers associated with it is the forerunner of that used in the Sun Point Pueblo (Lancaster and Van Cleave, "Excavation of Sun Point Pueblo," in this volume) and later in the walls of Sun Temple (Fewkes, 1916a), structures of the Classic Pueblo period. Heavy blocks of sandstone were selected, roughly squared, and the inner and outer faces of the walls were then built of these stones. The space between was filled with dirt and broken blocks of stone. The faces of some of the stones used in the masonry, especially in Towers B and C, were pecked to even the surface, but the stones showing the "dimpling" resulting from this pecking

appear crude in contrast to the well-finished blocks used in the Sun Point Pueblo tower. Undoubtedly Unit Pueblo No. II and its towers are some of the earliest structures built which employed pecked building stones, and it is interesting to find this trait appearing late in Pueblo II. Dr. O'Bryan lists the trait as new for the Montezuma Phase (late Pueblo III) (O'Bryan, 1950, pp. 110-111), but Site 16 proves the method was introduced in Pueblo II, and the Sun Point Pueblo shows the technique was well established and fully developed in early Pueblo III times (Lancaster and Van Cleave, "Excavation of Sun Point Pueblo," in this volume).

A suggestion of a masonry wall was found adjoining the house block on the northeast side, and a similar wall once adjoined Tower C. Between the towers and the kiva, a curving row of stones (pl. 28, row X—X) may be the outline of a single-coursed masonry wall, or it may be the remains of a small terrace built as a retaining wall to divert drainage from the kiva roof.

The Towers

Towers A, B, and C are considered the most significant structures excavated at Site 16. Two opposite theories are advanced in explanation of the circular towers of the Mesa Verde region and there are excellent arguments to support either theory. One theory explains the towers as lookouts and defensive structures, while the other assigns a ceremonial usage to these buildings. These two explanations are not incompatible when one considers that most Mesa Verde towers are located close to kivas, and in many instances connected to them by means of an underground passageway. It is entirely possible that the towers were introduced as defensive structures and with continued use and because of location they became invested also with ceremonial significance.

The towers at Site 16 are considered to be lookouts and defensive structures, and arguments for their use as such will be presented here. Inasmuch as the later kiva-tower complex, not present at Site 16, was encountered at the Sun Point Pueblo, a structure of the Classic period, a discussion of the ceremonial significance of kiva-tower units is presented in the report on that site (Lancaster and Van Cleave, "Excavation of Sun Point Pueblo," in this volume).

It seems significant that towers appear with the introduction of double-coursed masonry walls and just prior to the construction of compound pueblos. (In a compound pueblo the court in front of the house block, where the kivas are usually located, is bounded on the east, south and west sides by a wall or a row of rooms, thus making it an integral part of the pueblo. Enclosing the court served to wall in the previously exposed and unprotected kivas.) If the towers are considered as watch towers and defensive structures, then their sudden appearance in the Mesa Verde area no doubt heralds the beginning of the troubled times which led to the construction of compound pueblos early in the Classic period and resulted finally in the retreat, sometime around or shortly after A. D. 1200, to the shallow caves and

narrow ledges of the precipitous cliffs of the Mesa Verde, and the rocky canyon heads of the McElmo and Montezuma drainages to the north and west. The change in the architectural pattern, followed by a withdrawal to less desirable but more defensible home sites, certainly seems to point to enemy pressure. Whether the pressure came from inside the pueblo group or was applied by alien peoples, the fact still remains that the people apparently were forced to change their manner of living to adapt their lives and their homes to the possibility of attack.

The location of towers by kivas seems particularly significant. A raid launched when the men of the village were in the kiva would have a good chance of success, for men rushing from the subterranean structure to the defense of homes and families would present perfect targets as they came through the hatchway in the roof; or if caught in the underground room, they would be helpless. Probably because of this, Pueblo II kivas were connected frequently by tunnels to rooms in the pueblo prior to the construction of circular towers; a step taken, no doubt, to give the men a chance of escaping the kiva trap. Later, by building a tower close to the kiva and posting a lookout, the men could be given sufficient warning of an impending raid. Still later, kivas were connected to the towers by tunnels, thus not only providing a means of escape, but also access to a more defensible position.

This use of towers for lookout and defense has been discounted on the basis that the amount of fallen stone around most structures indicates the buildings were seldom more than a story in height, and that such structures would not afford much of a view and offered little advantage as a defense position. This argument does not take into consideration the pueblo practice of robbing abandoned structures of their building stones, so that lack of any appreciable quantity of stone today is not necessarily indicative of low buildings originally. Secondly, it does not take into consideration the willful destruction of these towers in historic times, an outstanding example of which is the "Triple Walled Tower" of the McElmo. Visiting the ruin in 1875, Mr. W. H. Holmes found the walls of one section standing to a height of 12 feet (Holmes, 1878, p. 399). Dr. Fewkes, examining the ruin in 1917, found the tower so destroyed he was unable to determine whether it had been circular or D-shaped (Fewkes, 1919, p. 22). Neither of these men would recognize the structure today; the outline is difficult to trace and there is nothing to suggest that the walls ever stood more than a foot or two in height. Since ruined towers are known which have walls standing 10 to 25 feet, it is reasonable to suppose they once had considerable height.

It is felt the argument against the use of towers for lookout and defense may be influenced somewhat by the modern conception of what constitutes a watch tower or defense structure. It is not argued that the towers were constructed to give a lookout an uninterrupted view over great distances. Instead, their purpose was to afford a position which commanded a view of the immediate area surrounding the village

or kiva, and for this purpose no great height was necessary. It is also argued that, to meet an attack on the village, towers afforded the best possible defense position under the circumstances. Probably the towers, like those in the Hovenweep District, had parapet walls, so that men stationed on the roof of a tower, even though it might be but little more than a story in height, had a decided advantage over the raiders approaching on foot.

In 1928, Dr. Paul Martin excavated two pueblos in the Ackmen-Lowry area northwest of Cortez, Colo., which it is felt prove the sudden appearance of an enemy threat, and illustrate the steps taken to meet that threat. These villages, Units I and III on the Herren farm, were originally unit type structures built in Pueblo II times, changed to compounds during occupancy and abandoned sometime after the beginning of Pueblo III (Martin, 1929, pp. 11-25, and pls. Iib and VII; 1939, pp. 474-476, and maps 27 and 28a).

The Pueblo II kivas which were excavated are connected to rooms in the pueblo by means of underground passageways. Evidence throughout the Mesa Verde area points to the fact that construction of tunnels to connect kivas and rooms preceded the introduction of circular towers. The ground plans of the pueblos indicate the towers were built prior to the addition of the compound walls, and the towers also are connected to the kivas by tunnels. The compound walls, roughly constructed, were built after the rooms and towers as evidenced by the joining of the masonry (Martin, 1929, p. 22). These walls were built without regard to plan, but in such a way as to connect the separate structures of the village, leaving the space between the houses, towers, and kivas an open court.

Entrance to the houses apparently was gained through hatchways in the roofs as Dr. Martin was unable to find any evidence of doorways in the pueblo rooms, whereas the towers all had doorways opening onto the courts (Martin, 1929, p. 23; 1939, pp. 475-476). It is felt that both doorways and tunnels to the towers gave the men access to the structures from either the kivas or the courts, as well as giving them a chance to leave the towers for the houses if the need arose. With the only entrance to houses being through the roofs, the ladders giving access to the roofs could be drawn up in case the court was invaded, providing an added measure of security for women and children, and for the men in case they were fighting from the roof tops.

The question has been asked, if the towers were used for lookout and defense, why were they always round like the kivas, not rectangular like the ordinary rooms? This is a good point which raises the obvious question, were the towers always round? Certainly they were not always round in the Hovenweep District to the west, where some of the most striking structures are the high-walled, rectangular towers which occur, sometimes side-by-side with D-shaped and circular towers. If square or rectangular towers were built in the Hovenweep it is logical to presume they were constructed elsewhere in the Mesa Verde region. Why have they not been reported? The answer seems to be that since



PLATE 29—Unit Pueblo No. II →

their ruined walls would differ in no way from those of other rectangular structures, they have been overlooked. In case of the poorly preserved structures of the mesas and valleys of this region, no one seems particularly impressed with the lack of fallen building stones around a rectangular structure, whereas they are immediately impressed with the lack of stones around a circular structure.

As mentioned above, a kiva of a unit pueblo is sometimes connected by a tunnel to a room in the village. It is possible this room was a tower room, a few feet to a story higher than the other rooms of the pueblo. A rectangular tower room, incorporated with other rectangular rooms would not be obvious, whereas a circular tower room, such as seen at Pipe Shrine House on the Mesa Verde (Fewkes, 1923, p. 98 and fig. 90), or at Unit III on the Herren farm (Martin, 1929, pl. VII; 1939, map 27, Tower B), is immediately apparent. It is felt the first towers of the Mesa Verde area probably were rectangular, and possibly were 2-story structures in an otherwise 1-story pueblo. As these did not offer an unobstructed view, detached structures soon supplemented them. Someone may have seen the advantage of a round room over a rectangular one with its corners and four distinct sides, so the idea of constructing circular towers was introduced and caught hold.

There is nothing to prove or disprove the use of rectangular rooms as towers, but if circular rooms connected to kivas are considered to be towers, it is just as plausible to regard rectangular rooms connected to kivas as towers.

The towers at Site 16 are considered to be lookouts and defensive structures. The massive walls of the pueblo lend weight to this theory as they give every evidence of having been constructed by a group of people who were either too harassed to use care in building them, or who were employing, with an eye to defense, an architectural style with which they were totally unfamiliar. Yet Kiva 1 is proof the builders were capable of careful work if they so chose.

The grouping of the towers may be significant. As plate 28 shows, only Tower A is attached to the pueblo, and like the pueblo is poorly constructed. The other two towers are more uniform in shape and are constructed of better masonry employing a number of pecked building stones, indicating they were built at a later date. If the work area was in front of the pueblo, as is usually the case, the con-

struction of two extra towers in that area may point to an effort to furnish protection for a number of people should a hurried need arise.

It may be, though it is impossible to demonstrate, that this pueblo, like those to the northwest on the Herren farm (Martin, 1929; 1939), was converted to a compound. Little is left of the pueblo and tower walls (pl. 29) as the village was demolished for its building materials. If a compound wall existed, it could have been completely torn out since there would not be the accumulation of roof and wall filler material around the base stones which would bury them, as there would be in the case of the roofed pueblo and towers. It is not proposed this pueblo was a compound, but if such a wall existed it might explain the otherwise puzzling extension to the east of the southeast wall, previously mentioned, and might also explain the stub ends of walls against the northwest side of the pueblo and Tower C.

Kiva 1.

General features: large, well-developed type; circular; 23½ feet in diameter and 10 feet deep; 8 heavy, flaring masonry pilasters used for roof support; ventilator shaft with small amount of masonry lining located about 3 feet back of south wall; southern recess; slab-type deflector; slab-lined, box-type firepit; sipapu; north banquette niche in alinement with sipapu, firepit, deflector and the ventilator tunnel; 2 oblong and 2 circular floor cists; 6 cylindrical floor holes; 1 potrest (?); 1 post hole; 3 banquette niches (including the north niche); masonry lining below banquette, and above banquette to height of pilasters with the exception of the southern recess; roof constructed by cribbing; oriented 32° east of south (magnetic reading).

Kiva 1 is a well-developed structure and comparison with Kiva 3 will demonstrate the architectural strides which have been made. The southern recess is present, bringing the kiva to the pattern favored in Classic times. The pilasters have developed into substantial columns showing little resemblance to the flimsy blocks used in Kiva 3. The masonry lining has been extended to include the upper walls to the height of the pilasters with the exception of the southern recess. Plate 30 illustrates these features.

However, as comparison with Classic Pueblo III kivas will show (pl. 34, step 6), Kiva 1 still exhibits certain developmental characteristics. It is a good deal larger than later kivas, a circumstance which required the use of 8 instead of the usual 6 pilasters. The ventilators of late kivas are usually built directly in back of the southern recess, using the south wall of the kiva as the north side of the shaft. The greatest difference is the number of floor features. Classic kivas have few if any floor features other than deflector, firepit and sipapu. They do not exhibit a variety of floor features such as are present in Kiva 1.

These floor features in Kiva 1 are interesting (pl. 30). The two oblong cists, Cists 2 and 3, one on either side of the firepit, are located in the same position as the floor vaults, or boxes of Chaco-type kivas, but there the resemblance ends.

Upper photograph—*The Pueblo as Seen From in Front of Unit Pueblo No. 1*

Unit Pueblo No. II is seen in the upper part of the photograph. Tower A is at the left of the picture and Tower B is in the center, superimposed on the walls of Unit Pueblo No. I.

Lower photograph—*The Pueblo, Towers A, B, C, and Kiva 1*

Looking southwest over the walls of Unit Pueblo No. II toward the large kiva and the three tower structures. The photograph was taken prior to the excavation of Kivas 2 and 3, which lie under Tower C, upper left center.

Tower B is in the center of the picture, Tower A to the right, Tower C to the left. Kiva 1 shows in the upper right center.

KIVA NO. 1

Ground plan and profiles

SITE NO. 16

Mesa Verde National Park
Colorado

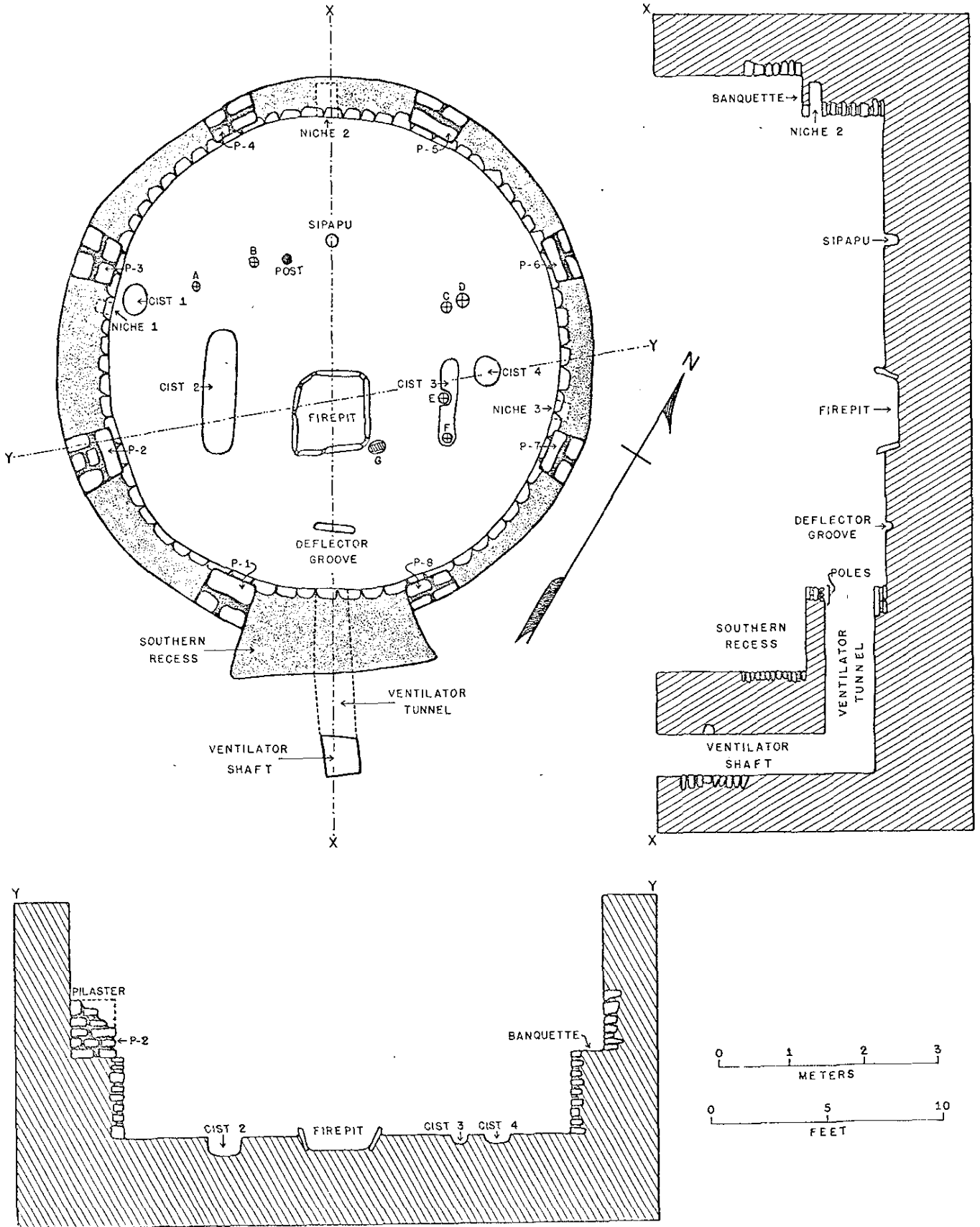


PLATE 30.—Kiva 1, Associated With Unit Pueblo No. 11, Ground Plan and Profiles →

These shallow cists are merely hollowed out of the caliche floor and plastered with adobe; and Cist 3, east of the firepit, was sealed over during the time the kiva was in use. Later, two cylindrical holes, Holes E and F, were sunk into the sealed cist. Besides the 2 oblong cists, there are 2 circular ones—Cists 1 and 4—both of which were filled with brown sand.

There are six cylindrical holes in the floor of the kiva which vary from 3 to 7½ inches in depth and from 3½ to 6 inches in diameter. There is no formal arrangement and all but one of the holes were filled with brown sand. The one hole was filled with small chunks of roof adobe.

Other floor features are not unusual. One post hole was found just west of the sipapu, with the rotted end of the post in place. The firepit is like those of the preceding two kivas, a slab-lined box. The slabs forming the box stand 4½ inches above floor level. The groove in the floor which held the upright slab deflector is very shallow and as no remains of the deflector were found, a substitute slab was placed in the groove when the kiva was stabilized for exhibit. This makes it possible to demonstrate the type of deflector to visitors, who are told of the substitution.

The banquette averages 41 inches in height and varies from 2 feet in width on the north side of the kiva to 1½ feet in width toward the southern recess. The 8 masonry pilasters, averaging 28 to 29 inches in height, are set approxi-

Floor cists:

1. 6.0 inches deep; filled with brown sand.
2. 9.6 inches deep; filled with roof adobe.
3. 4.8 inches deep; this cist had been sealed over with adobe before holes E and F were constructed.
4. 4.8 inches deep; filled with brown sand.

Floor holes:

- A. 4.8 inches deep; filled with brown sand.
- B. 3.6 inches deep; filled with roof adobe.
- C. 3.0 inches deep; filled with brown sand.
- D. 7.2 inches deep; filled with brown sand.
- E. 3.0 inches deep; filled with brown sand.
- F. 6.0 inches deep; filled with brown sand.
- G. 4.8 inches deep; broken mano wedged in bottom and mudded in.

Post hole: 1 only, to west of sipapu; 10.2 inches deep.

Sipapu; 6.6 inches deep.

Niches:

1. 5.4 inches wide; 3.0 inches high; 6.6 inches deep; located 8.4 inches below top of banquette.
2. 9.6 inches wide; 6.6 inches high; 16.8 inches deep; located 2.4 inches below top of banquette. This niche is in a direct line with the sipapu, firepit, deflector groove, ventilator tunnel, and southern recess.
3. 7.2 inches wide; 3.6 inches high; 7.2 inches deep; located 9.6 inches below top of banquette.

Pilasters—P-1 through P-8:

Average 2.4 feet in height; 1.6 feet in width at the banquette edge and 2.0 feet in width where they abut the outer kiva wall; set back an average of 2.4 inches from the edge of the banquette. They are located approximately 6.0 feet apart on the banquette.

Southern recess:

Unlined except for a block of masonry on the south side directly above the ventilator tunnel and in front of the ventilator shaft. Masonry block is 1.7 feet wide and 2.8 feet high.

mately 6 feet apart on the banquette. These pilasters flare from front to back so that the "side walls of the pilasters . . . (are) . . . as the outer sections of radii of the circle" (Brew, 1946, p. 210). They average 19 to 20 inches in width at the banquette edge and 2 feet in width where they abut the outer wall of the kiva. They are set back approximately 2.4 inches from the edge of the banquette. There are three banquette niches, the one on the north being in alignment with the sipapu, firepit, deflector, and ventilator tunnel.

The masonry lining of the kiva is entirely different below and above the banquette, as plates 31 and 32 illustrate. The banquette is faced with fairly well shaped, sometimes surfaced, stones laid in regular courses in a minimum of adobe mortar chinked with small spalls. The masonry above the banquette to the height of the pilasters is crude by contrast. Broken, unfaced, irregular stones are laid in a quantity of adobe mortar. The walls were originally heavily plastered, and the same brown plaster used on the walls was applied in a thick layer over the caliche floor.

The southern recess is not masonry lined, though it was plastered. In the back of the recess, directly above the ventilator tunnel, is a block of masonry 33¾ inches high and 20½ inches wide. An examination of the ventilator tunnel and shaft proved that the south kiva wall had not been cut in constructing the shaft, for the underlying caliche is still in place, so there is no apparent structural reason for the masonry.

The walls of the ventilator tunnel are native earth. The stones of the banquette above the mouth of the tunnel were held in place by small poles which rotted, letting the masonry slump, as seen in plates 31 and 32. The rest of the tunnel under the southern recess apparently was roofed over with shakes, or split timbers. The ventilator shaft, located approximately 3 feet back of the southern recess, has a small amount of masonry on the south side.

The roof of the kiva was built by cribbing, and, as the kiva is large, 8 instead of 6 pilasters were needed to support the roof. The roof was torn from the kiva, as evidenced by the adobe casts of the heavy timbers encountered on the kiva floor. When the logs were wrenched from place the small poles, twigs, bark, etc., used to fill spaces between the timbers, slid onto the banquette and piled up over the pilasters. Later this material burned, possibly when the kiva was used as a dump as evidenced by the fill, and it was this burned filler material which yielded the dates cited above. The material obtained by Dr. O'Bryan came from the banquette between two pilasters on the northeast side. The material dated by Dr. Schulman came from the banquette on the northwest side.

While the significance of the dates is discussed in detail later on (see Dating of Site 16), it should be pointed out the architectural evidence is in keeping with the dates secured by Dr. Schulman. Very likely the two 1074 bark dates, though from small specimens, reflect very closely the construction dates of the kiva.

One detail, the importance of which is often passed over,

may have considerable significance. This is the filling of floor features, such as cists, holes, and sometimes the sipapu, with sand. That the filling was deliberate and not the result of rain water deposition after abandonment, is proved in the case of Kiva 1 by the fill of Cist 2, Hole B and the sipapu (pl. 30). These features did not contain sand but were filled with roof adobe.

The use of sand to fill floor features was a common practice in the San Juan Pueblo area from Basketmaker III through Pueblo II, and continued occasionally, as at least one instance shows, into Pueblo III. Two explanations of the practice are usually accepted: (1) holes so filled were used as pot rests, the soft sand supporting the rounded bottoms of cooking vessels, thus keeping them upright; (2) the holes were used infrequently (use unknown), so when not in use were filled with sand to add to the already somewhat restricted floor space of the room (Brew, 1946, pp. 156-157).

It is true that these sand-filled holes were used as pot rests in some cases, for Mr. Morris has found vessels sitting in sand-filled cists (Morris, 1939, p. 60). A logical explanation for the large, circular, sand-filled cists located to one side of the firepit in so many Basketmaker pithouses would be their use as pot rests. It is difficult, however, to visualize a hole 3 inches in diameter, such as found in Kiva 1, serving such a purpose. It is felt there is a definite reason for filling the holes with sand, and it was not that of adding floor space when the holes were not in use.

If the various authorities are correct in assuming the partitioning of most pithouses and later pitrooms was done to set aside the southern part of the chamber for domestic functions, a women's section so to speak, and the northern part was reserved as general living quarters, there may be a good explanation for the floor features of the north section of the room. Coincident with the explanation for the partitioning is the assumption that the male head of the Basketmaker family was also its religious leader. Having no family or village ceremonial room, he conducted such rites as he deemed necessary for the well-being of his family in his home, using the northern, or general, living section. The theory is given support by the presence in so many pit-houses of a small hole in the floor north of the firepit which is believed to be analogous with the sipapu of the later kivas. On the basis of this and later evidence, it is felt the Basketmaker man used the sand-filled holes in arranging his religious paraphernalia, to hold prayer sticks, fetishes, wands, etc., in an upright position.

Later, when above ground rooms replaced pithouses as living quarters for most of the people, the pitrooms began to assume added ceremonial significance. It is noteworthy, in this connection, that the floors of pitrooms continued to be characterized by a variety of floor features, many of which are filled with sand, while the floors of living rooms of the same period seem bare by comparison. If the floor features served a domestic function, why did they almost entirely disappear from the domestic quarters, yet continue to characterize the partially ceremonial pitrooms?

About A. D. 900 distinct ceremonial rooms, the kivas, replaced the deep pitrooms, and post and adobe, and later masonry houses replaced the rows of slabhouses and storage rooms. Sand-filled holes continued to be used in the ceremonial rooms, but they disappeared entirely from the floors of domestic quarters. This supports the theory given above that the floor features of the pithouses and pitrooms were connected with the religious observances of the people and, for the most part, did not serve any domestic function. The sand-filled holes of the partially and fully subterranean chambers would provide excellent supports for such slender articles as listed above, prayer sticks, wands, etc.

The practice continued into Pueblo III, as was discovered in 1951 at Fire Temple, a ceremonial structure which is considered to be a Great Kiva built in a cave. It became necessary to stabilize the bases of the walls of Fire Temple to forestall the possibility of any collapse. The senior author, in exposing the bases of the walls, discovered that Dr. Fewkes, who originally excavated Fire Temple, had never reached the actual floor level of the structure (Fewkes, 1916b; 1921). With the assistance of Temporary Ranger Archeologist Francis Cassidy, the senior author completed the excavation, which disclosed for the first time the floor features of this unique building. In addition to the large, circular firepit and two rectangular floor vaults, or boxes, only the tops of which had been uncovered by Dr. Fewkes, there are several other features of interest.

The floor plan of Fire Temple is rectangular, with a high banquette extending across the north side, or back wall of the cave. The firepit is in the approximate center of the floor, and to either side of it lie the floor vaults, 1 to the east, 1 to the west (Fewkes, 1921, p. 79, fig. 95). Between the west floor vault and the west wall of the room lies a large, circular floor cist, never uncovered by Fewkes. In the northwest corner of the structure, back of the circular cist and the western floor vault, a narrow groove or slot is cut into the floor. This starts at the west wall, passes in back of the circular cist and the western vault, then curves back to meet the north banquette wall on a line parallel with the east side of the vault. This narrow groove or slot is not continuous, but is broken by two openings. Where it passes back of the circular cist, and again where it passes in back of the vault, it is discontinued for a few inches, leaving openings which face the center of the cist and center of the vault. The groove is plastered and filled with sand. This sand-filled slot could well have served to hold a row of prayer sticks upright around an "altar," such as is used by the Hopi and Zuni today. The openings gave access to, or a view of the "altar," or accommodated other items of religious paraphernalia, such as medicine bundles, fetishes, etc.

A report of the work carried out at Fire Temple the summer of 1951 will be made by Mr. Cassidy, who assisted Mr. Lancaster in the excavation and stabilization. As the plans of the structure published by Dr. Fewkes are inaccurate, Mr. Cassidy will include surveyed ground plans of Fire Temple with his report.

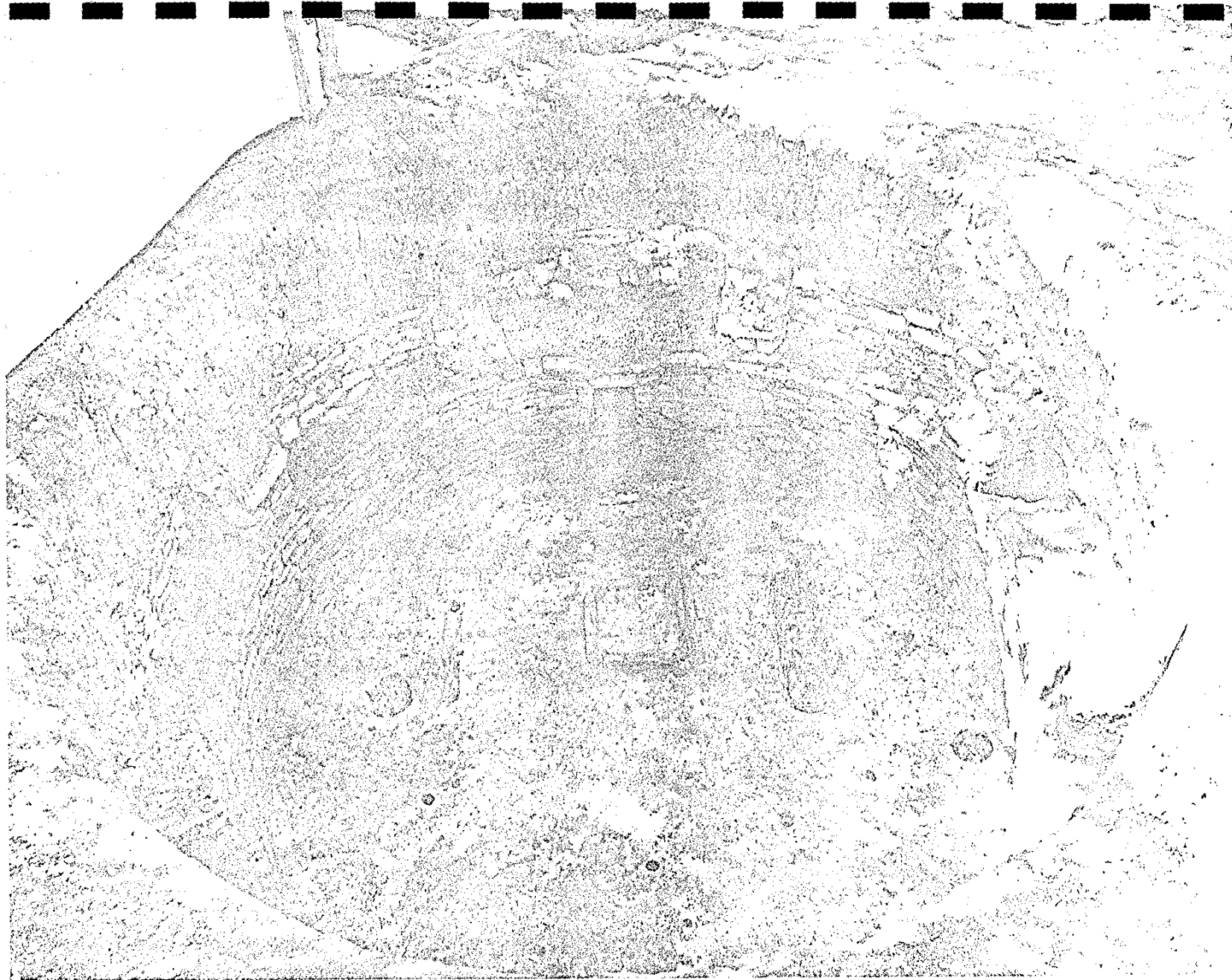


PLATE 31—*Kiva 1, Associated With Unit Pueblo No. II*

Most of the important kiva features, including the ventilator shaft back of the southern recess, show very well in this photograph. The variety of floor features identify the struc-

ture with the Developmental, or Pueblo II period.

For other pictures of the kiva showing the features in more detail see plate 32.

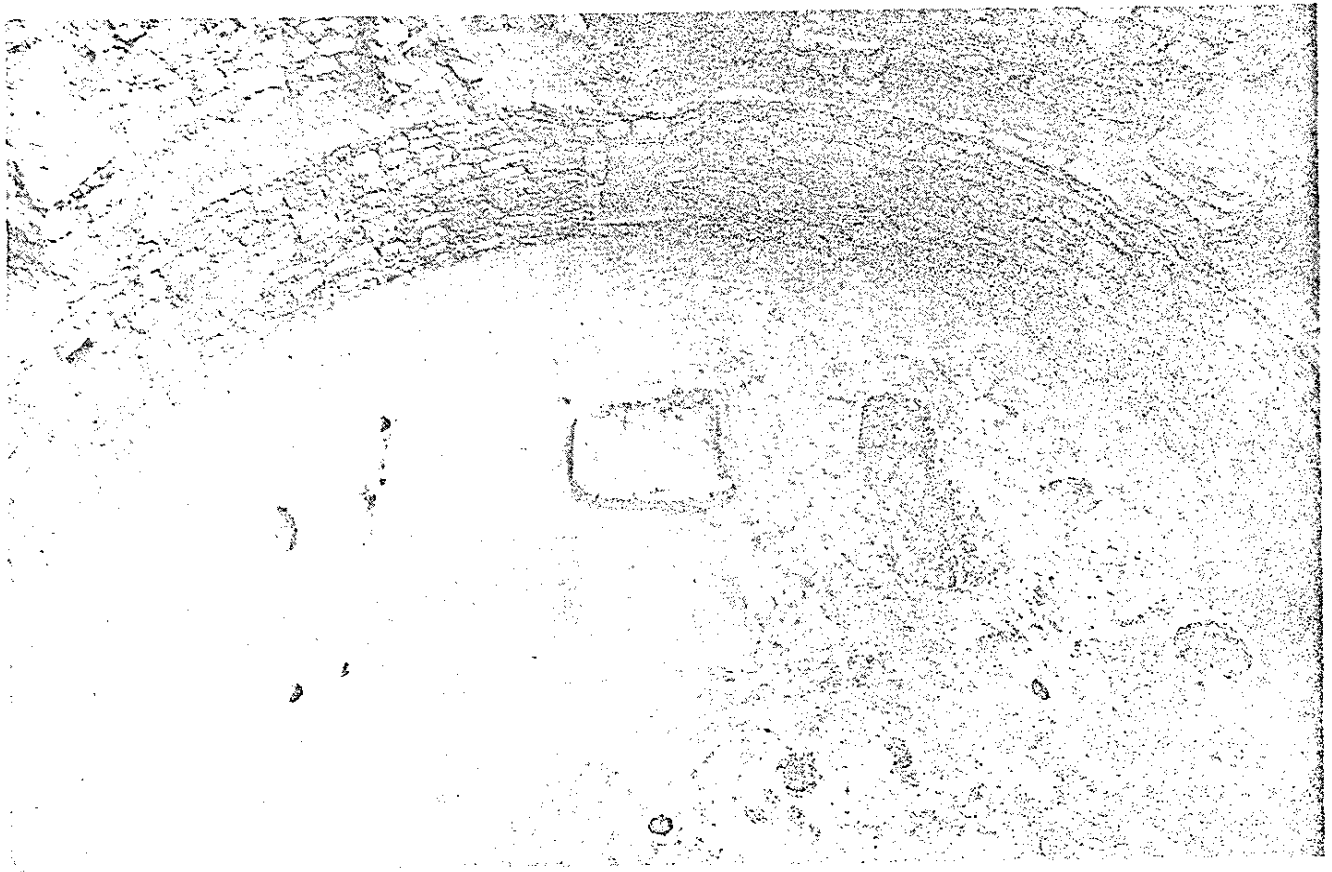
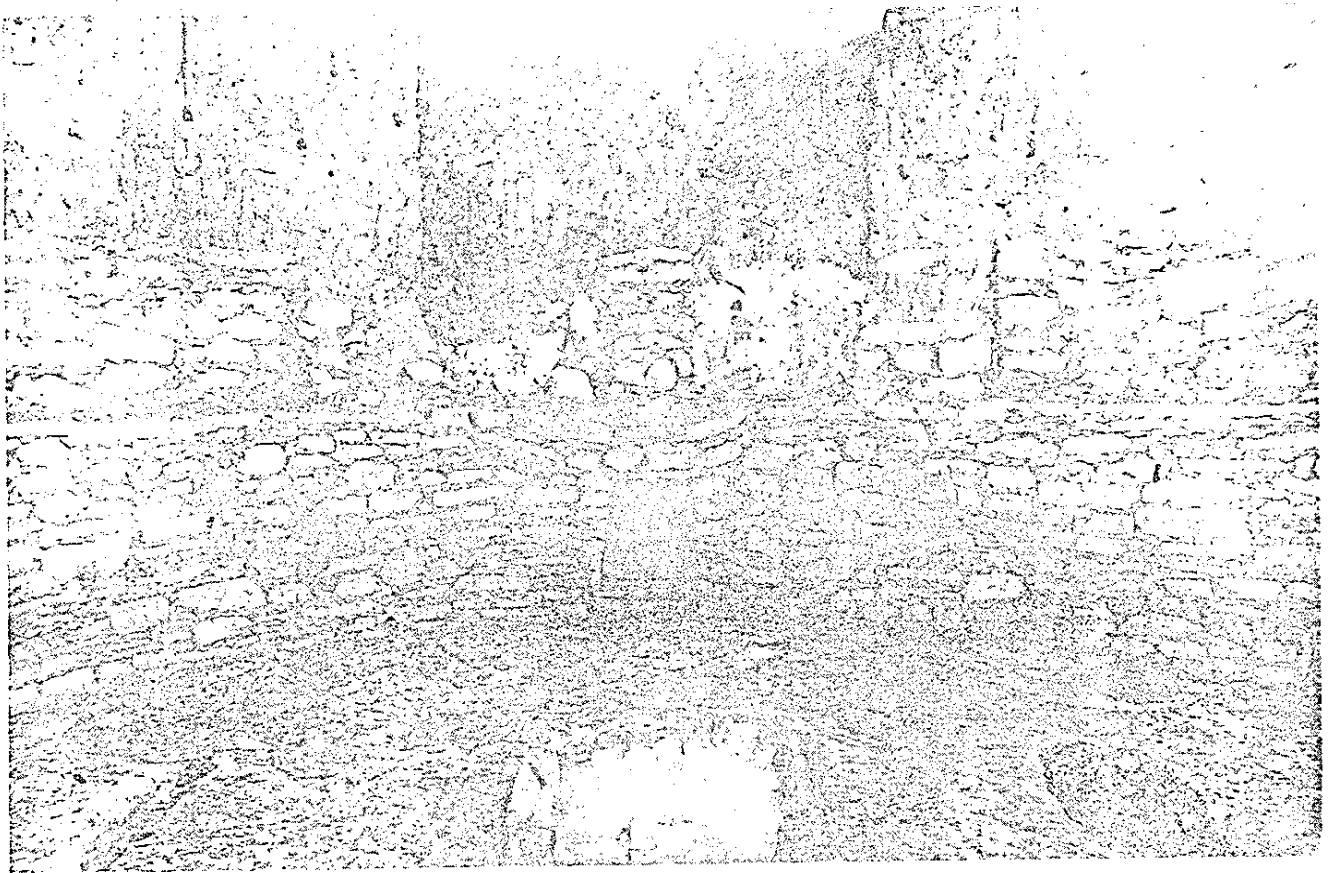


PLATE 32—Kiva 1, Associated With Unit Pueblo No. II →

Material Culture.

The following artifact is the only one definitely assignable to this occupation:

MANO: CONVEX end-to-end, side-to-side and wedge-shaped in cross section. From the floor of Kiva 1. The only other object found on the floor of the kiva was a sandstone concretion, shaped like a ball (pl. 40, middle row, left).

Nothing other than sherds came from the floors of the pueblo or towers.

POTTERY: No restorable pieces.

SHERDS: Predominantly Mancos Black-on-white and Pueblo II corrugated.

Plate 33 illustrates the artist's reconstruction of Unit Pueblo No. II, its associated towers and kiva.

OTHER OCCUPATIONS OF SITE 16

Basketmaker III (Modified Basketmaker)

Phase.—Four Corners (table 1, p. 6; also O'Bryan, 1950, pp. 104-105).

Dates.—Approximately A. D. 450 to 750.

Evidence.—1. Evidence was encountered in Test No. 1, northeast of Unit Pueblo No. I (pl. 19), of what may be a burned pithouse of Basketmaker III origin. As there was no intention at this time of excavating a pithouse at Site 16, the test was backfilled.

2. Sherds from Test No. 1 were predominantly Lino Gray.

3. The test which located Kiva 2, the four-post kiva accompanying the post and adobe village, encountered a section of a roughly constructed ledge, or bench, about 18 inches below the present surface. It appears that the kiva, as well as the Pueblo I pitroom in which it partially is constructed, cut a large, circular structure. There can be little doubt that this subterranean room is of Basketmaker origin since it had been cut by the pitroom prior to the construction of the kiva.

4. Evidence was uncovered that Kiva 3, the six-pilastered kiva associated with Unit Pueblo No. I, also cut an older structure. The northwest wall of the kiva had slumped, indicating it was originally cut into unstable occupational

Upper photograph—Close-up of Southern Recess

The southern recess is not masonry lined and the narrow block of masonry at the middle back is the only stone work in the recess. The band of white at either side of the block is caliche which underlies the red topsoil of the mesa.

The difference in the type of masonry used below and above the banquette shows clearly in both photographs.

Lower photograph—Floor Features

This photograph illustrates the variety and profusion of floor features characterizing Kiva 1. The elongated cists on either side of the firepit are vaguely reminiscent of those found in Chaco-type kivas. No one has yet advanced a satisfactory explanation for their use.

The circular hole at the middle bottom of the picture is the sipapu, and to the right of it is the one post hole found in the kiva. One of the three banquette niches can be seen at the extreme left of the photograph, just to the left of, and below, one of the pilasters.

fill. This fill is full of charcoal which shows plainly on the kiva wall. The depth of fill indicated a Basketmaker pithouse and not a Pueblo I pitroom.

5. Pottery analysis shows 10 percent of the sherds from Site 16 to be of Basketmaker III-Pueblo I origin. For discussion of the situation relative to Basketmaker III-Pueblo I pottery in the Mesa Verde, see subsection so headed under *Pottery*, p. 69.

Pueblo I (Early Developmental Pueblo)

Phase.—Chapin Mesa (table 1, p. 6; also O'Bryan, 1950, pp. 105-107).

Dates.—Approximately A. D. 750 to 900.

Evidence.—1. Evidence was uncovered that Kiva 2, the four-post kiva associated with the post and adobe village, was constructed partially in the fill of an earlier structure. Test No. 2 (pl. 19), demonstrated this structure was a deep pitroom of the type associated with crescentic rows of slab-houses in Pueblo I times.

Excavation of this pitroom is imperative. This is the only site encountered to date in the Mesa Verde where a superimposed order of structures so conclusively demonstrates actual progressive steps in architectural advancement, and one of the few sites so far excavated in the Southwest presenting this sequence in such indisputable order.

2. Occupational fill underlying the floor level of the post and adobe rooms southwest of Unit Pueblo No. I probably indicates the location of former slabhouses which would have accompanied the deep pitroom referred to above. The outline of slab rooms was later obliterated by construction of post and adobe rooms in the same location.

3. Analysis of the pottery from Site 16 indicates the use of the site in Basketmaker III-Pueblo I times. See discussion under *Pottery*, p. 69.

Later Use of Site 16

In the excavation of the large, eight-pilastered Kiva 1, associated with Unit Pueblo No. II, the dirt was removed in layered blocks. This revealed the presence, 6 feet above the kiva floor, of a well-defined firepit. Apparently the partially filled kiva was used temporarily as a camp site long after it was abandoned by the last Pueblo II occupants. It would be interesting to know the identity of the people who camped here, and whether it was during the Pueblo III occupation of the Mesa Verde or sometime after A. D. 1300.

THE MESA VERDE KIVA

One outstanding development of Pueblo architecture was the small ceremonial room known today by the modern Hopi term "kiva." Actually, two types of kivas were in use in the Mesa Verde area in prehistoric times: the Great Kiva, a specialized ceremonial chamber, the function of which is not clearly understood, and the small kiva, which was the common ceremonial room, the center of ritual observances for a religious society or a small village.

Great Kivas were being built as early as Basketmaker III

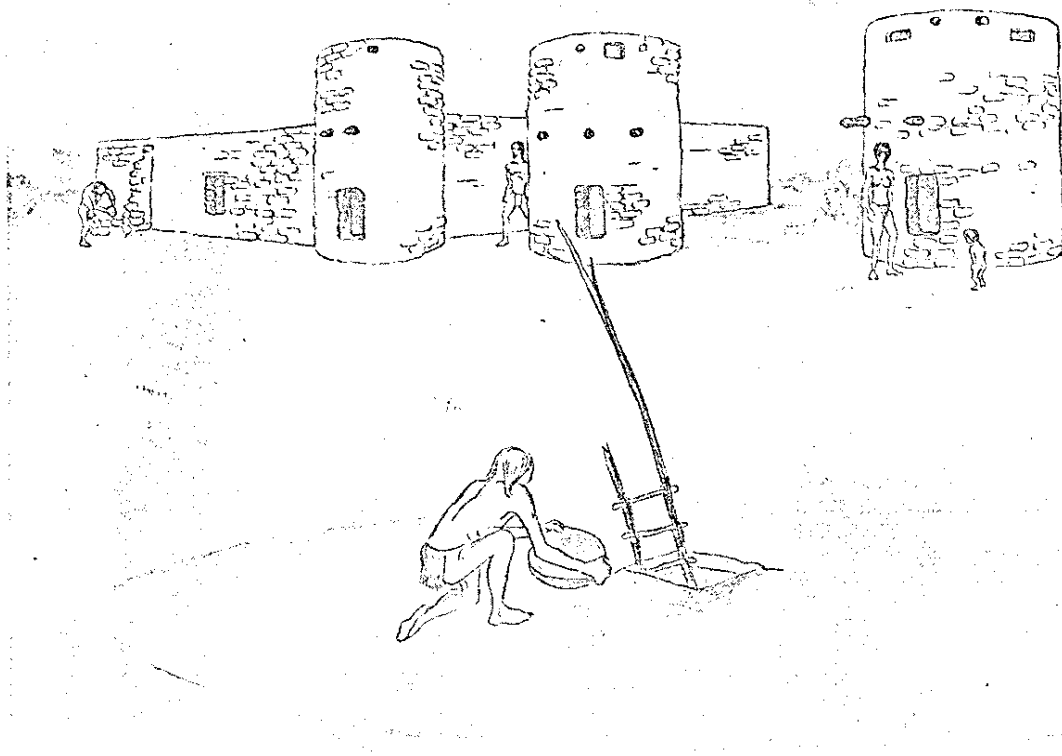


PLATE 33—*Artist's Reconstruction of Unit Pueblo No. II*

This reconstruction is entirely hypothetical. Too little was left of the pueblo to enable the artist to even guess at the extent of the building block, the height of the walls, placement of doorways, etc. Furthermore, no other pueblo like this has been excavated in the area, so there was nothing to use as a basis for comparison.

times and there is good evidence to support the theory that these structures represent a borrowed trait, that the idea of their use did not originate with the Basketmakers. Construction of Great Kivas apparently was discontinued with the abandonment of the San Juan Pueblo area at the end of the Classic period, approximately A. D. 1300.

The small kiva, on the other hand, is considered indigenous to the region, making its appearance at the beginning of Pueblo II as a direct outgrowth of the shallow pithouse of Basketmaker III. Many small kivas continue in use today, still the centers of religious life of several groups of Pueblo Indians. The concern here is with the small kiva of the northern San Juan area, known as the Mesa Verde Kiva.

Three Pueblo II kivas at Site 16, one early Pueblo III kiva at the Sun Point site (Lancaster and Van Cleave, "Excavation of Sun Point Pueblo," in this volume) and two late Basketmaker III deep pithouses (Lancaster and Watson, "Excavation of Two Late Basketmaker Pithouses," in this volume) were excavated by the National Park Service in 1950. Each structure constitutes a different stage in the

development of the Mesa Verde Kiva. Because of this excavation, which filled the existing gaps, structures are now available for interpretive use to illustrate the basic changes which took place in the gradual development of the stylized kiva of Classic Pueblo III.

In this interpretive sequence are the evolutionary stages preceding the construction of the first true kiva, structures dating approximately A. D. 600, 700, and 840, respectively. Then comes the first kiva, a Pueblo II structure, built around A. D. 900. Next are three developmental kivas of Pueblo II times which see the addition, one by one, of all the basic features found in ceremonial rooms of Pueblo III. The first of these kivas dates about A. D. 950, the second approximately A. D. 1000, and the third dates A. D. 1074 (tree-ring dates). These structures are followed by a well-developed mesa-top kiva of the early Classic period, dating late in the 1100's. At the end of the sequence are the beautifully constructed kivas of the late Pueblo III cliff dwellings, structures which resulted from the slow evolution throughout the centuries. These late Classic kivas date in the 13th century.

This is the first time such a series has been available for public presentation and while the sequence does not present all the infinite variations to be found in kivas, it does present the basic stages and fundamental changes. The dictates of medicine men, individual preference, radical differences or changes in the ritualistic patterns of various religious societies, could influence the final design of any particular kiva. However, kivas adhere generally to a pattern and that pattern evolved along certain lines. The series now on exhibit and used in the interpretive program constitutes a unique historical sequence.

It is not necessary to describe the stages preceding the construction of the first kiva. Most archeologists are convinced the kiva was the outgrowth of the Basketmaker pithouse and the evolution was: first, shallow pithouse with antechamber; second, deep pithouse with ventilator crawl tunnel; third, deep pitroom with ventilator, but a roof hatchway entrance; fourth, the four-post kiva. Excellent summaries of the development are found in Brew (Brew, 1946, pp. 203-214); Morris (Morris, 1939, pp. 36-38); and Roberts (Roberts, 1929, pp. 81-90). The most significant points are presented by Mr. Morris, who states: "Several diagnostic features of the kiva, such as fireplace, deflector, and ventilator are present in the very oldest dwellings thus far found" (Morris, 1939, p. 36). It might be pointed out that many pithouses are characterized also by a banquette and sipapu.

This discussion will deal with the development of the kiva from its four-post beginning to its final Classic stage, following the development as it is presented in the interpretive program of this park. Plate 34 shows the ground plans and profiles of six kivas now used in the program and these will be referred to in describing the steps or stages. Step 1 is the four-post kiva at Site 16; Step 2, the Twin Trees kiva; Step 3, Kiva 3 at Site 16; Step 4, Kiva 1 at Site 16; Step 5, the Sun Point kiva; Step 6 is Kiva C, Cliff Palace, a highly standardized Mesa Verde ceremonial chamber.

Steps in the Development of the Mesa Verde Kiva

Step 1.—Four basic kiva features are present: banquette, firepit, sipapu and standard ventilating system, consisting of a vertical shaft joining a horizontal tunnel which enters the kiva from under the banquette on the south side.

The first kivas are simple structures, and though reminiscent of Pueblo I pitrooms, certain significant changes have taken place. The basic change is immediately apparent: the partitioning of the room has disappeared and the four roof support posts have been moved from the floor to the banquette. The floor space is cleared of major obstructions of a nonreligious nature, freeing the space for the performance of religious rites. Domestic arrangements have been dispensed with. Another change is seen in the banquette: this now circles the structure instead of being confined to the east, north, and west walls, as was customary in the earlier pit structures.

Kiva 2, Site 16, illustrating this first step, has no deflector. This feature may or may not be present in any given kiva, but it appears that few of the early kivas had a built-in deflector. Instead, a movable slab was used to close the opening of the ventilator tunnel when need arose to cut off the down draft of air. The firepit is a slab-lined box, somewhat south of the center of the kiva. The sipapu is located to the north of the firepit and on a line with it and the ventilator. Other floor features consist of an ashpit, often present in early kivas, and a small cist, or pot rest.

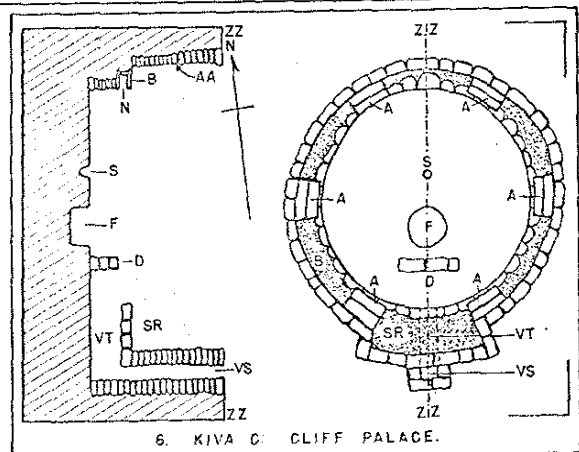
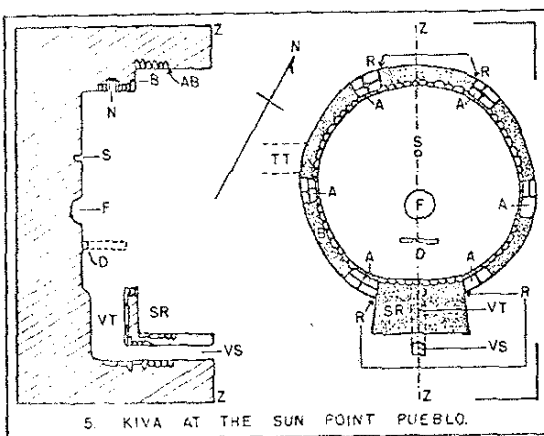
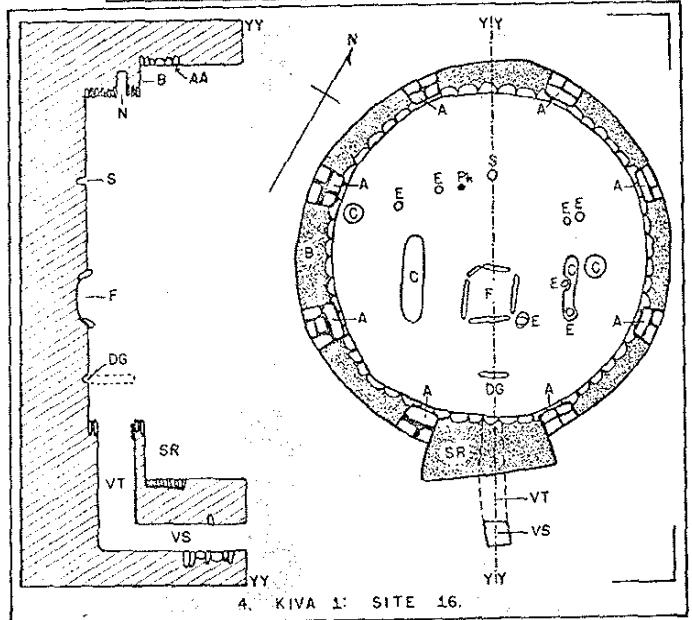
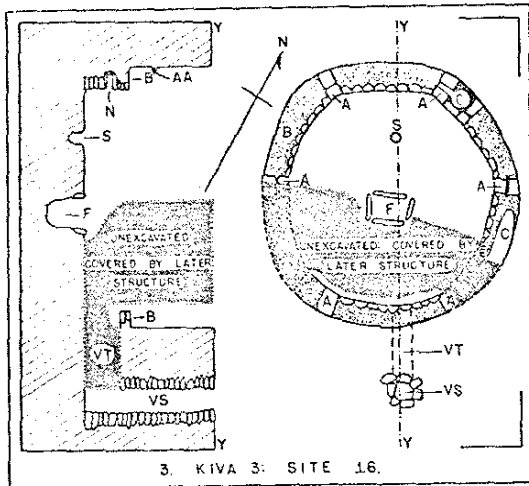
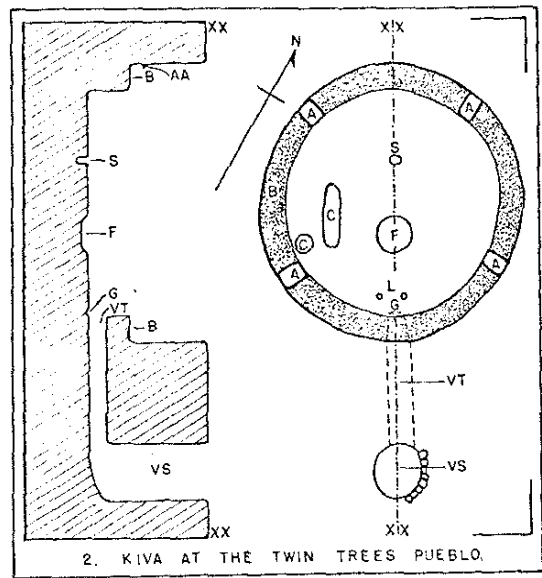
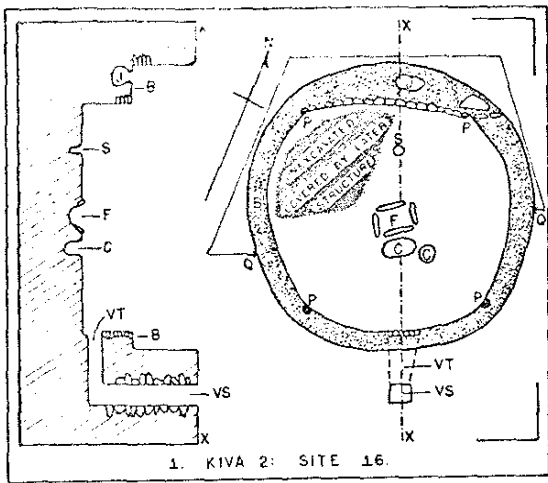
The kiva has the standard ventilating system mentioned above, and it may be noted that the ventilator shaft is located some distance back of the south wall. The only other feature that need be mentioned is the banquette cist, apparently a common feature of early kivas.

The roof probably was constructed by laying 4 horizontal beams, or stringers, across the forked tops of the 4 support posts. Smaller poles across the stringers formed the top of the roof, while other small poles spanned the space between the stringers and the top of the earthen kiva walls to form the sides of the roof. These were covered with reeds, bark, etc., and a thick layer of adobe. A hatchway in the roof served as smoke hole and entrance.

Step 2.—Five basic kiva features are present: banquette, pilasters, firepit, sipapu, and intersecting shaft-tunnel ventilator.

The second step is almost identical with the first except for one important substitution: stone pilasters replace posts as roof supports, thus paving the way for a major architectural change in Step 3. Dr. O'Bryan, in describing the Twin Trees kiva, which is used to illustrate Step 2, stated the roof probably was cribbed (O'Bryan, 1950, p. 34). This seems unlikely as there has been no basic change in the number of roof supports which would reflect a major change in construction and design. If the roof were cribbed, it would have been necessary to carry the cribbing straight up in order to allow any headroom. It seems more logical to presume this 4-pilastered kiva was roofed in the same manner as the 4-post kiva.

The same basic features, with the exception of the pilasters, are present in Step 2 as were found in Step 1. The firepit in the Twin Trees kiva is a shallow, circular basin instead of a slab-lined box. The sipapu is north of the firepit and in a line with it and the ventilator. Those familiar with Dr. O'Bryan's report on this structure will note that he does not show a sipapu in his ground plan of the kiva, and in commenting on this feature he states, ". . . a shallow depression at the southwest base of the circumference wall . . . may have served as the opening to the underworld (as no 'sipapu' was found in a more conventional place)" (O'Bryan, 1950, p. 34). When a ground plan of this kiva was being drawn for inclusion in this report, the question of the presence or absence of a sipapu arose. Feeling that the kiva had a sipapu, and it was not the cist against the west wall, the floor area north of the firepit was carefully swept with a stiff whisk broom. The circular outline of a plugged sipapu



0 1 2 3
METERS

0 5 10
FEET

PLATE 34—Steps in the Development of the Mesa Verde Kiva→

was located a little over 2½ feet north of the firepit, so the feature was cleaned out. It is standard in all respects.

This kiva, like the first, does not have a deflector, and like the first, there is no indication on the hard-packed floor of there ever having been one. There is a well-made groove in the mouth of the ventilator tunnel, and a shaped slab found leaning against the wall by the tunnel opening fits the groove, showing the down draft was cut off by placing the slab in the tunnel opening.

Step 3.—Five basic kiva features are present: banquette, pilasters, firepit, sipapu, and ventilator. Undoubtedly, though it could not be demonstrated in this particular kiva (Kiva 3 at Site 16), a sixth basic feature, a built-in deflector, also is present as most kivas of this type have one.

Three new features make their first appearance: a cribbed roof, masonry lining of the face of the banquette, and a banquette niche in alignment with the sipapu, firepit and ventilator. These features are considered to be typical of later kivas, but not basic.

Step 3 is marked by the first really basic change in kiva design and construction. Six stone pilasters indicate the

Ground plans and profiles are of ceremonial chambers used in the interpretive program of Mesa Verde National Park which constitute definite, progressive steps in kiva development. The importance to the program of the 4 kivas recently excavated, 3 at Site 16 and 1 at the Sun Point Pueblo, is evident. The kiva features are identified as follows:

- A. Pilasters; in kivas shown as Steps 2, 3, 4, 5, and 6.
- AA. Average height of pilasters Steps 2, 3, 4, and 6.
- AB. Estimated height of pilasters in Sun Point kiva; Step 5.
 - B. Banquette; present in all steps.
 - C. Cist.
 - D. Deflector; in kivas shown as Steps 5 and 6.
- DG. Groove for upright slab deflector in Kiva 1, Site 16; Step 4.
- E. Cylindrical floor holes in Kiva 1, Site 16; Step 4.
- F. Firepit; present in all steps.
- G. Groove for base of slab used to close ventilator tunnel opening in the kiva at the Twin Trees Pueblo; Step 2. Undoubtedly the tunnel opening of Kiva 2, Site 16, Step 1, was closed in a similar manner.
- J. Corrugated jar cist in banquette of Kiva 2, Site 16; Step 1.
- L. Holes in floor serving as rests for the base ends of poles of a runged ladder in kiva at the Twin Trees Pueblo; Step 2.
- N. Banquette niche; in profiles of kivas shown as Steps 3, 4, 5, and 6.
- P. Posts; used in place of pilasters in Kiva 2, Site 16; Step 1.
- Ph. Post hole; in floor of Kiva 1, Site 16; Step 4.
- Q-Q. Feathering of crude masonry extending above banquette to height of approximately one foot in Kiva 2, Site 16; Step 1.
- R-R. Only masonry above banquette in the Sun Point kiva, Step 5.
 - 1. A crude block between the two northern pilasters.
 - 2. As facing for the three sides of the southern recess.
- S. Sipapu; present in all steps.
- SR. Southern recess; in kivas shown as Steps 4, 5, and 6.
- TT. Tunnel leading from the kiva to a circular, double-coursed masonry tower at Sun Point Pueblo; Step 5.
- VS. Ventilator shaft; present in all steps.
- VT. Ventilator tunnel; present in all steps.

NOTE.—Q-Q and R-R are referred to because the drawings do not indicate the extent of the masonry. Furthermore, the southern recess of Kiva 1, Site 16, Step 4, is not masonry lined. The masonry shown is a narrow block above the ventilator tunnel.

introduction of a cribbed roof. By using this number of pilasters, or more if the kiva was larger, the builders were able to hold the cribbing close to the outer circumference of the structure, thus not interfering to any degree with head-room or floor space.

The six pilasters are developmental in character, being like those employed in Step 2. Narrow slabs were laid one on top of another, forming small rectangular blocks. These are usually 6 in number in Mesa Verde kivas, but occasionally, as in the following step, 8 were needed to support a roof.

While it is not known if Kiva 3, illustrating this step, has a deflector, most 6-pilastered kivas do, and a built-in deflector is a basic characteristic from this stage on. The deflectors in these early kivas are, for the most part, a thin slab set on end in a shallow groove between the firepit and the ventilator tunnel, and cemented firmly in place with adobe.

The firepit is a slab-lined box, like that seen in the first kiva. The sipapu is in the usual position to the north of the firepit and aligned with it and the ventilator.

Step 3 is marked also by the introduction of coursed masonry. This is confined to the face of the banquette, and to judge by the early kivas with their earthen banquettes, there is in most cases no structural need for this lining. It is interesting to note the masonry lining makes its appearance coincident with the first major change in kiva design. It is felt this indicates the growing importance of these structures and reflects the attitude of the people toward their religious edifices.

Another new feature makes its first appearance—a niche in the north face of the banquette in a direct line with the sipapu, firepit, deflector (if present), and ventilator tunnel. This niche makes its appearance with the introduction of the masonry lining of the banquette and, while not always present, it becomes a common feature of later kivas. Beside the niche, a deep banquette cist also is present.

Step 4.—Seven basic kiva features are present: banquette, pilasters, southern recess, deflector, firepit, sipapu and ventilator.

The final basic change in kiva design takes place in Step 4: the southern recess is added, thus giving the kiva the pattern that becomes more or less standard in Pueblo III. Actually, any kiva with pilasters is characterized by the same number of recesses as it has pilasters, the recesses occurring between each set of pilasters. But in the latter part of Pueblo II, the recess occurring between the two southern pilasters was deepened, giving the kiva a "keyhole" outline. In most kivas the ventilator tunnel enters under this recess. The reason for deepening the southern recess has never been understood.

Step 4 is characterized by another change, a constructional improvement that also involves design. As a glance at plate 34 will show, the pilasters in Kiva 1, Site 16, Step 4, are very different from those used in the Twin Trees kiva and Kiva 3, which illustrate Steps 2 and 3. The heavy masonry pilasters of Kiva 1 are no longer rectangular but flare from

front to back. This change, as pointed out by Dr. Brew, ". . . brings the previously rectangular pilasters into the circular plan of the kiva. The side walls of the pilasters become as the outer sections of radii of the circle" (Brew, 1946, p. 210). The pilasters are much more substantial and capable of bearing a heavy load. It is interesting also to note that these pilasters are set slightly back from the edge of the banquette. Expanding masonry pilasters, set back from the banquette edge, are characteristic of Mesa Verde kivas from this time on.

The deflector is still a sandstone slab set on edge in a narrow groove between the firepit and the ventilator tunnel. The firepit has not changed, being a slab-lined box as in earlier kivas. The sipapu and north banquette niche are present, and are alined with the firepit, deflector, and ventilator tunnel. Other banquette niches make their appearance and become a common feature. The variety of floor features of Kiva 1, while not too common, are in no way unusual for a developmental kiva.

The masonry lining has been extended and now appears above the banquette to the height of the pilasters, with the exception of the southern recess. This is a feature which varies so much from kiva to kiva, in mesa-top ruins, that it cannot be said to be either typical or atypical. The masonry is not essential to construction, as evidenced by the southern recess which is unlined. Occasionally it was necessary to use masonry in mesa-top kivas to stabilize the earthen walls, but on the whole the use of a lining seems to indicate a desire on the part of the builders to improve the appearance of their ceremonial rooms. Certainly from now on the finest craftsmanship was often expended on the kivas. Kiva 1 is an excellent example of this trend: the kiva is well built, but the village with which it is associated is poorly constructed.

Step 5.—The seven basic kiva features are present: banquette, pilasters, southern recess, deflector, firepit, sipapu, and ventilator.

Except for one slight change, Step 5 is much like Step 4, as far as basic pattern is concerned. In Step 5 the ventilator shaft becomes an integral part of the kiva, being constructed as a part of the chamber, so that the back side of the south wall of the southern recess becomes the inner side of the north wall of the shaft. In Step 4 the ventilator shaft was located 3 feet back of the southern recess. This change in the position of the ventilator shaft does not show too well on the ground plan of the Sun Point Pueblo kiva, used to illustrate Step 5, as in excavating it was not possible to completely open the top or full length of the ventilator shaft. Constructed as it is in native earth, the wall between the shaft and the southern recess would have collapsed if cut too thin. However, it was possible to determine that the back of stones used in the southern recess of the kiva formed the north side of the ventilator shaft.

The pilasters of this kiva are like those used in Step 4, and since the kiva is considerably smaller than Kiva 1 at Site 16, only six pilasters, the usual number, are present.

Step 5 sees the introduction of a masonry block deflector, replacing the thin slab deflector of earlier kivas. The firepit is no longer a slab-lined box. A circular basin is used instead, as is the case in most classic kivas, and the slab-lining has been dropped. The sipapu and north banquette niche are present and in alinement with the firepit, deflector and ventilator tunnel.

While the Sun Point Pueblo kiva has little masonry lining, that employed in finishing the upper one to two-thirds of the face of the banquette is exceptionally fine. The lower part of the banquette of this kiva cut the caliche layer underlying the red top soil of the mesa. This caliche is sometimes quite firm, as is the case here, so the builders did not bother to extend the masonry below the top of the layer. The upper part of this banquette may have been unstable, demanding the use of masonry to hold the edge in place. As pointed out before, the use of masonry varies from kiva to kiva, and as it is known the Sun Point kiva was excellently plastered, perhaps the builders did not see fit to expend much energy on giving their ceremonial room a complete lining. A block of crude masonry between the two north pilasters of this kiva is undoubtedly a stabilization measure. The masonry bulges, indicating pressure from behind. The southern recess of the kiva is lined with slabs and some masonry.

This kiva has three features which are not shown on the ground plan (pl. 34, Step 5). These features are unusual but not unheard of in a Classic kiva, though similar features are more often encountered in Pueblo II kivas. There are three dome-shaped cists cut into the face of, and built under, the banquette. Two of the cists are quite large and are located to either side, 1 to the east and 1 to the west, of the ventilator tunnel and southern recess. The smallest of the three cists is located toward the back of the kiva on the east side. The openings to the cists extend from floor level up into the face of the banquette in the caliche layer, but the bottoms of the two larger cists are below floor level. For a complete description of the cists, see the report on Sun Point Pueblo (Lancaster and Van Cleave, "Excavation of Sun Point Pueblo," in this volume).

Step 6.—The seven basic features are present: banquette, pilasters, southern recess, deflector, firepit, sipapu, and ventilator.

There is only one basic difference between Classic kivas built early in the period, as in Step 5, and those built later in the period, as in Step 6. Because of the location of the late structures in the sandy fill or loose trash of caves, or at the front edges of sloping cave floors or on rocky ledges, they necessarily had to be constructed of masonry, so one is immediately impressed with the seeming excellence of the cliff dwelling kivas. It should be mentioned in this connection that early Pueblo III kivas are built of masonry when they are incorporated within the floor levels of a house block, as at Far View House, an early Classic compound pueblo located 4 miles north of headquarters, Mesa Verde National Park. These kivas are referred to as intramural, and there

is seldom anything to distinguish an intramural kiva of the A. D. 1100's from a cliff dwelling kiva of the A. D. 1200's. Since no intramural mesa-top kivas are now used in the interpretive program, they are not considered here. This discussion follows kiva development as it is now illustrated in the present interpretive program.

A question often arises concerning the extent of masonry in the outer walls of the kivas built in caves. Did it extend downward back of the banquette to what would be the floor level of the kiva? Did it extend above the tops of the pilasters to the level of the surrounding court, or was it merely confined to the space between the top of the banquette and the tops of the pilasters? The appearance of the stabilized kivas in Spruce Tree House, Cliff Palace, and other excavated cliff dwellings in which the outer kiva wall extends to the level of the surrounding court, has sometimes been questioned, the feeling being that the walls never extended above the tops of the pilasters.

When Kiva C in Cliff Palace was chosen as a typical example of a Classic kiva in a cliff dwelling and surveyed for inclusion in this report to illustrate Step 6, the question of the actual extent of masonry used in the outer wall immediately arose. Did it extend downward back of the banquette? Was there any justification for showing it extending above the tops of the pilasters to the surrounding court level? Old pictures of Cliff Palace and other cliff dwellings were studied. These pictures, taken in 1891 and 1893, many years before the excavation and stabilization of a Mesa Verde cliff dwelling, show several kivas in which the masonry wall extends above the tops of the pilasters, and in two kivas where the masonry is intact the photographs show the walls continuing to the level of the surrounding court. These pictures were taken at Cliff Palace where the two kivas are located and compared with the walls as they appear today. In several instances individual stones could be spotted in exactly the same location as shown by the photographs. Further study of other kiva walls above the pilasters proved that parts of them are definitely original and not reconstructed. Not all kivas had the upper kiva wall, it is true, but it is now demonstrated that some of them did and still do. It is not known, however, if the masonry of the outer wall ever extends down behind the banquette to floor level. Investigation of Kiva C showed that it, at least, does not have such an extension of the outer wall.

In all respects Step 6 is the ultimate refinement of Step 5. The basic as well as the typical kiva features are all present and in the usual standard position. A glance at plate 34 will show that Step 6 incorporates all features and is the result of the steady, gradual trend to standardization.

Kiva Features

A description such as given above is of necessity more or less limited and generalized, since it deals with only six structures. A given kiva may contain any or all of the basic features and the arrangement of the features may differ a great deal from one kiva to the next, leading to infinite variations. The complexity of the situation, as regards not

only kivas but Pueblo architecture in general, is recognized by all, but best described by Dr. Brew, who states, "In my own observations of both ancient and modern examples of Pueblo architecture, if I have found any rule at all it has been one of uncompromising irregularity" (Brew, 1946, p. 215). For this reason, and in order to summarize the discussion of the various stages, it may be well to consider the time of appearance and variations of the several kiva features referred to above.

Banquette.—Present in all steps; occasionally lacking in individual kivas.

Roof support posts.—Characteristic only of Step 1; use in later kivas is uncommon but not unknown (Kiva F, Lowry Pueblo, is a case in point. Martin, 1936, pp. 40-42, and pl. LVI).

Pilasters.—Replace posts for roof support and are characteristic of Steps 2, 3, 4, 5, and 6. Usually lacking in kivas which do not have a banquette, though this is not invariable, as seen in Kiva H, Lowry Pueblo, which has no banquette but does have pilasters rising from the floor (Martin, 1936, pl. XLIX. This kiva is pictured, not described). Pilasters are narrow, rectangular blocks in Steps 2 and 3. Flaring masonry pilasters are introduced in Step 4, and characterize Steps 4, 5, and 6. Coincident with the introduction of improved pilasters is the practice of setting these members slightly back from the edge of the banquette. Dr. Brew mentions that narrow block pilasters are sometimes set back from the banquette edge (Brew, 1946, p. 210), but by Step 4 the practice becomes common, though not universal.

Step 2 is characterized by 4 pilasters; Steps 3, 4, 5, and 6, usually by 6 pilasters. However, the number may vary and Classic kivas sometimes have only 4 pilasters, and large Pueblo II and III kivas have 8 pilasters, like Kiva 1 at Site 16.

Pilasters are not always functional, as kivas are known which have pilasters that never served to support a roof. Mr. Morris excavated 2 kivas at site 41, La Plata Valley (southeast of the Mesa Verde), each of which has 4 pilasters, the tops of which are finished with flat slabs. The walls of these structures are smoked black, and the smoking extends in an even coat across the tops of the pilasters, indicating nothing ever rested on them (Morris, 1939, pp. 89, 94).

Southern recess.—Present in Steps 4, 5, and 6, being introduced late in Pueblo II and becoming more or less standard in Pueblo III. There is great variation in the depth of the southern recess, and like any other feature, it may be lacking in individual kivas. In some kivas where it is lacking, the standard recess between the two southern pilasters is obliterated by filling the space with masonry. An odd variation of the southern recess is seen in Kivas A and B, at Lowry Pueblo. The banquette is missing between the two southern pilasters, but there is a deep southern recess which starts at floor level (Martin, 1936, pls. LI, LVIII, pictured but not described). A similar floor level recess was encountered in Kiva 9, Site 41, La Plata Valley. However, in Kiva 9, short shelves extend into the recess from in back of each flanking pilaster (Morris, 1939, p. 90, and pl. 62).

No satisfactory explanation of this feature has ever been advanced. It has been suggested they were used as storage compartments, spectators' benches, altars, etc. If the recess was used for storage, why is it invariably in the same position? Even when it was necessary to bring the ventilator in from another direction in order to promote a proper draft, the southern recess is often present in the customary place. This factor, and the usual alinement of the recess with the deflector, firepit, sipapu and north banquette niche, indicate more significance was attached to this feature than would be accorded a storage compartment. The size of most southern recesses in the Mesa Verde discounts their use as a spectators' bench. It is impossible to prove or disprove their use as "altars," but there is at least one kiva in the Mesa Verde, described below, in which the southern recess never served such a purpose.

There are southern recesses in two different kivas in cliff dwellings in the Mesa Verde which, when considered with Kivas A and B at Lowry Pueblo, and Kiva 9 at Site 41 (mentioned above), indicate the difficulty of trying to advance any logical theory as to the purpose of these structural features. The kiva beside the so-called Square Tower, in Square Tower House, has an original cribbed roof in position. In this structure the southern recess is roofed along with the kiva proper, which makes it a dark alcove. Another kiva, in Long House, has half of the original roof in position. This roof is not cribbed; instead, four long poles are laid across the north-south axis of the kiva and crossed with smaller poles. The half of the roof still in position shows that the hatchway entrance to the kiva is located directly above the southern recess. So many variations of this feature probably indicate a symbolic and not a functional use.

The explanation is sometimes offered that the southern recess represents a survival of the southern antechamber of pithouses, or the south end of partitioned pithouses and pitrooms. In view of the kiva development, such an explanation is farfetched. Any suggestion of a southern antechamber disappeared in Pueblo I, and any partitioning of pithouses or pitrooms by the end of the period, prior to the beginning of Pueblo II. The southern recess was not introduced until 150 or more years later, so it obviously could not be a survival of anything connected with pithouses or pitrooms.

Deflector.—Present in all steps, but it may be lacking in individual kivas. It is usually lacking in Steps 1 and 2, and the evidence shows that, in this case, a movable slab was used to close the opening to the ventilator tunnel to cut off the draft. A built-in deflector characterizes Steps 3, 4, 5, and 6. Deflectors in Pueblo II kivas, Steps 3 and 4, are usually sandstone slabs set in a groove between the firepit and the ventilator tunnel, and cemented firmly in place with adobe. Deflectors in Steps 5 and 6 are often constructed of masonry. However, many types of deflectors are found in Classic kivas: masonry blocks, sandstone slabs, upright posts set in adobe, and low, enclosing masonry walls curved to meet the banquette on either side of the ventilator tunnel.

Evidence shows that a kiva with a built-in deflector may also have a movable slab to close the tunnel opening, as seen in the outer court kiva at Far View House.

Firepit.—Present in all steps and in all kivas. Those in Pueblo II kivas are often slab-lined, rectangular boxes. Beginning with Step 5, the circular firepit replaces the slab-lined box to a great extent. These circular firepits may be shallow basins with no distinguishing features, they may be clay-lined, with the lining brought up to form a raised lip around the edge of the basin, and occasional firepits in Classic kivas are masonry lined.

Sipapu.—Present in all steps though it may be lacking in an individual kiva. Usually, though not invariably, located in the floor north of the firepit and alined with it, the deflector, ventilator tunnel, and north banquette niche, if the latter is present.

North banquette niche.—Present in Steps 3, 4, 5, and 6. While not an invariable feature, this niche, alined with the sipapu, firepit, deflector, and ventilator, is common enough to constitute a characteristic of later kivas.

Other banquette niches.—Present in Steps 4, 5, and 6, these are considered to be characteristic of Classic kivas.

Banquette cists.—May be present in any step, either as pockets built into the banquette or, especially in later kivas, as pottery jars set in the bench.

Ventilating system.—Present in all steps. Composed of a vertical shaft joining a horizontal tunnel which passes under the banquette, usually on the south side. *Shaft:* located one to several feet back of the south wall of the kiva in Steps 1, 2, 3, and 4. In the last two steps, Nos. 5 and 6, incorporated within the actual plan of the kiva, the center section of the south wall of the southern recess, or kiva, being the north wall of the shaft. *Tunnel:* dug into native earth in mesa-top kivas and seldom lined. Usually roofed over with poles or wooden planks where it passes under the banquette or southern recess in mesa-top kivas, though sometimes roofed with large slabs, as in the Sun Point kiva. Constructed of masonry in intramural mesa-top kivas and cliff dwelling kivas, and roofed over with large slabs or timbers.

Masonry lining.—Seldom encountered in Steps 1 and 2 (any masonry found in these earliest kivas is crude and usually incorporated as a stabilization measure). Lining of the face of the banquette introduced in Step 3, of the entire kiva in Step 4. While a variable feature in any step except Step 6, when the location of the kiva necessitated extensive masonry construction, it would seem that the growing tendency to use masonry in kivas coincides with the improvement of masonry and its standardized use in house architecture. It would appear also that kivas became more and more important with the passing of the years, and that every effort was made to make most of these ceremonial structures as fine as possible. Indicative of the growing importance of kivas is the structural excellence of so many of these chambers compared with the crudity of some of the villages with which they are associated.

Roofing.—Most 4-post and 4-pilastered kivas are presumed

to have been roofed like pitrooms of Pueblo I, with a rectangular framework resting on the posts or pilasters. The framework supported smaller poles covered with reeds, bark, etc., which were covered in turn with a thick layer of adobe. Evidence shows that most 6 and 8 pilastered kivas were roofed by cribbing, the bottom logs of the dome-shaped crib resting on the pilasters and spanning the recesses between them. Shakes or small poles embedded in the outer kiva wall above the height of the pilasters served to fill the space between the straight logs and the circular kiva wall. Poles, twigs, and bark were used to fill spaces between logs, then the roof was topped with adobe. Kivas in which the pilasters were not functional, and kivas lacking pilasters, posts, and/or banquettes were roofed, in all probability, like the kiva in Long House described above.

Entrances.—The standard entrance was through the hatchway left in the roof, this hatchway also serving as a smoke hole. A ladder through this hatchway gave access to the room beneath. A number of kivas have been excavated which have holes, boxes or slots in the floor to hold the bases of ladder poles, such as seen in the Twin Trees kiva (pl. 34, Step 2). Secondary entrances are present in some kivas. The kiva at the Sun Point Pueblo (pl. 34, Step 5) is connected by a crawl tunnel to the circular tower located beside it, a situation often encountered in kiva-tower units in the Mesa Verde region. Occasional kivas, both on the mesa tops and in the caves, have a tunnel entrance to a nearby room in the pueblo.

Outline.—Nothing has been said so far about kiva outline, as a typical Mesa Verde kiva is regarded as circular. While this is true, on the whole, there are modifications in shape, just as there are variations of all other features. A standard Classic kiva with southern recess is actually "keyhole" shaped, rather than circular, even though the basic outline is round. A glance at the ground plan of any excavated ruin of size will convince one that the shape of the kivas, while tending to be circular, depended to considerable extent on the location of each individual structure and the space available for its construction. Occasionally a kiva is somewhat flattened on the southern side, giving it the appearance of a modified "D." Other kivas are more oblong than round, while still others are squarish with rounded corners. And there are square kivas in the Mesa Verde. These are not common, but enough examples are known to indicate such structures are not too unusual. One cliff dwelling, Bone Awl House, located on the east wall of lower Soda Canyon, has four square kivas, and an occasional square kiva is encountered in a cliff dwelling in which the rest of the ceremonial rooms are circular.

Orientation.—It is interesting to note, though it may or may not be significant, that the mesa-top kivas discussed here are oriented east of south. Kiva 2, Site 16, is oriented $28\frac{1}{2}^{\circ}$ east of south; the Twin Trees kiva, 35° ; Kiva 3, Site 16, 34° ; Kiva 1, Site 16, 32° ; while the Sun Point Pueblo kiva is oriented $31\frac{1}{2}^{\circ}$ east of south. These are all magnetic readings. This orientation is exactly like that observed in

the pithouses and pitrooms of the Basketmaker III and Pueblo I periods, and is typical of almost all mesa-top and valley kivas.

Kivas in cliff dwellings vary greatly in their orientation, depending upon the direction in which the cave faces. There seems to have been an effort whenever possible, however, to orient these structures to the south. Kiva C in Cliff Palace (pl. 34, step 6), for example, does not face the front of the cave, which would orient it to the west, but faces the south end of the cave, which gives it an orientation of $6\frac{1}{2}^{\circ}$ west of south.

MATERIAL CULTURE

Few tools, implements or utensils were found at Site 16, but this is not surprising in view of the story revealed by excavation. No one occupation of the site was of prolonged duration and each village excavated was the home of, at the most, only a few families. The post and adobe village burned, undoubtedly destroying most household furnishings and personal possessions. Remains of the burned village were cleared away when the first unit pueblo (Unit Pueblo No. I) was constructed. This pueblo was afterwards abandoned and undoubtedly the people took their possessions with them. Later it too was leveled, this time by the last occupants of the site to provide building space for Towers B and C. Finally this last pueblo (Unit Pueblo No. II) also was abandoned. Either on abandonment or some time later it was razed and the salvaged building materials carried away. The small number of artifacts recovered represent what was normal loss over a period of years and objects discarded as having no further usefulness.

No discarded artifacts or burial offerings were taken from the trash mound, usually a rich source of material culture. Excavation of the thoroughly pot-hunted debris would have been a waste of time and effort since the indiscriminate digging of the past completely destroyed any story the mound might have contained.

Some stone and a few shell and bone artifacts were recovered. The bulk of the excavated material consists of broken pottery and, considering how an earthen vessel may break into several hundred pieces, even this material is scarce. Specimens from Site 16 are considered, with the exception of certain pottery types mentioned below, to be typical of the Pueblo II period.

While occupation in Basketmaker III and Pueblo I times is indicated, no Basketmaker III pithouses or Pueblo I slab-houses or pitrooms were excavated. Material representative of these earlier periods consists only of potsherds of Lino-like plain wares, La Plata Black-on-white and La Plata and/or Bluff Black-on-red.

A discussion of the artifacts from Site 16 follows.

Stone Artifacts

The stone tools found at Site 16 are in no way exceptional as a glance at the illustrations will show. Plates 35 through 40, immediately following this section, picture most of the stone artifacts recovered from the site.

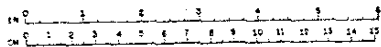
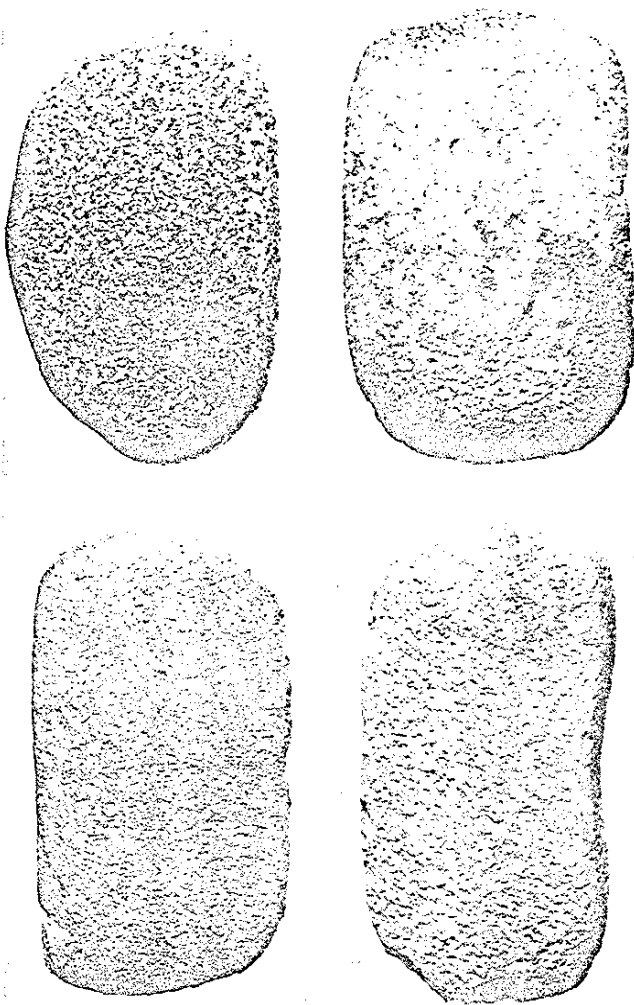


PLATE 35—Manos

Upper row

Left—Single grinding surface; flat; granite; from under northeast wall of Unit Pueblo No. 1; found with corrugated jar (pl. 55, Jar No. 5).
Right—Single grinding surface; convex end-to-end; fine-grained igneous rock; from ashpit in floor of Room 1, Unit Pueblo No. 1.

Lower row

Left—Single grinding surface; slightly convex end-to-end; wedge-shaped in cross section; sandstone; from top fill of Kiva 1.
Right—Single grinding surface; slightly convex end-to-end; wedge-shaped in cross section; thumb-grip on broad side of wedge; fine-grained igneous rock; from firepit of Kiva 2.

Manos.—Thirteen manos, handstones used in grinding corn, etc., on a metate, were found and four are pictured and described on plate 35. Eleven of the specimens have a single grinding surface; 2 have been used on both sides. Six are convex end-to-end, 2 are convex side-to-side, and 2 are convex both end-to-end and side-to-side; the other 3 are flat. Four are wedge-shaped in cross section. No metates were found, but the use of both convex and flat manos indicates metates were both trough-shaped and flat-slabbed.



PLATE 36—Rubbing Stones or Small Manos

Upper row

Left—Andesite; from just outside the walls of Room 4.
Right—Rhyolite; from just outside the walls of Room 4.

Middle row

Left—Rhyolite; from just outside the walls of Room 4.
Middle—Rhyolite; from just outside the walls of Room 4.
Right—Rhyolite; from just outside the walls of Room 4.

Lower row

Left—Basaltic schist; from the upper fill of Kiva 2.
Right—Andesite; from just outside the walls of Room 4.

Rubbing stones or small manos.—These are small stones of various shapes which conveniently fit the hand and they could have been used for grinding many different materials in a basin or on a slab. The ends of several specimens show they were used also for pecking and hammering. All the small manos from the site are pictured on plate 36.

Pecking and hammer stones.—For the most part these implements are reused fragments of axes, mauls and small manos.



PLATE 37—Small Hammerstones and Pecking Stones

Upper row

- Left.*—Basalt; from floor of Room 4.
Middle.—Rhyolite; from floor of Room 4.
Right.—Basalt; from floor of Room 4.

Middle row

- Left.*—Basalt; from banquette of Kiva 3.
Middle.—Fine-grained igneous rock; from under the northeast wall of Room 1, Unit Pueblo No. 1; found with corrugated jar (pl. 55, jar No. 5).
Right.—Rhyolite; from floor of Room 4.

Lower row

- Left.*—Rhyolite; from floor of Kiva 3.
Middle.—Basalt; from floor of Room 4.
Right.—Rhyolite; from lower fill of Kiva 3.

From the chipped and battered ends of these specimens it is obvious that they were used in shaping other stone artifacts such as metates, manos, axes, door slabs, building blocks, etc. Specimens found are shown on plate 37.

Grooved and side-notched axes and hammers, and grooved mauls.—Of the 14 implements grooved or notched for hafting, only 3 axes and 2 hammers are complete. Specimens show that side-notching and full-grooving were both used in hafting axes and hammers; full-grooving only was used in



PLATE 38—Axes, Hammers, and Maul

Upper row

- Left.*—Side-notched axe of fine-grained igneous rock; from floor of Kiva 2.
Middle.—Full-grooved axe of rhyolite; from Room 4.
Right.—Side-notched axe of diorite; from outside walls of Room 4.

Middle row

- Left.*—Full-grooved hammer of basalt; from the ventilator shaft of Kiva 1.
Middle.—Full-grooved hammer of diorite; from the fill of Room 4.
Right.—Side-notched hammer of rhyolite; from upper fill of Kiva 2.

Lower row

- Left.*—Side-notched hammer of diorite; from outside the walls of Room 4.
Middle.—Side-notched implement, probably an axe, of rhyolite; from outside the walls of Room 4.
Right.—Half of a full-grooved maul of basalt; from outside the walls of Room 4.

hafting mauls. Several implements are illustrated on plate 38.

Miscellaneous stone artifacts.—Plate 39 pictures miscellaneous items of stone from the ruin. Only one projectile point, large and crude, was found. Five polishing pebbles were

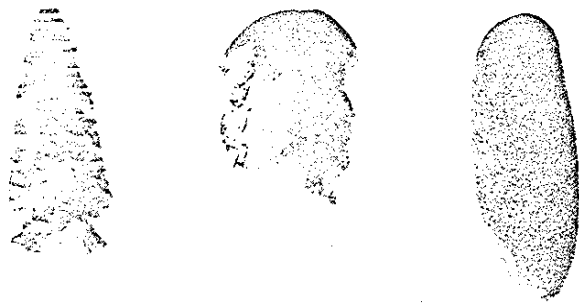


PLATE 39—Miscellaneous Stone Artifacts
Upper row

Left.—Chipped flint point; from banquette of Kiva 3.
Middle.—Miniature stone axe of siltstone (?); found during stripping operations southeast of Unit Pueblo No. I.
Right.—Sandstone polisher; from outside walls of Room 4.

Middle row
Polishing pebbles of fine-grained igneous rock.

Left upper.—From banquette of Kiva 2.
Left lower.—From area northeast of Unit Pueblo No. I.
Middle left.—From upper fill of Kiva 2.
Middle right.—From lower fill of Kiva 3.
Right.—From just outside the walls of Room 4.

Lower row

Sandstone cover for the niche in the north side of the banquette of Kiva 3. The cover was not in place but lay in the fill directly below the niche.

recovered (pl. 39, middle row). These small, hard, smooth pebbles were used, as they are today, to polish pottery. The miniature side-notched axe, which looks like a modern curio store item, is an oddity (pl. 39, upper row, middle). Made of the material used in the manufacture of *tchamabias* (fleshers), it is no doubt a child's toy as its battered edges would not be in keeping with a ceremonial object. The sandstone niche cover shown (the cover for the north banquette niche of Kiva 3) is the only complete specimen of its type from the site (pl. 39, bottom). Numerous flakes, spalls and chips were found but, as none of these showed any evidence of use, they are not considered as artifacts. Stone beads and pendants are discussed under ornaments.

Concretions.—Concretions were picked up in the past, as today, because of their strange shapes. Children no doubt treasured them, medicine men may have valued them, and

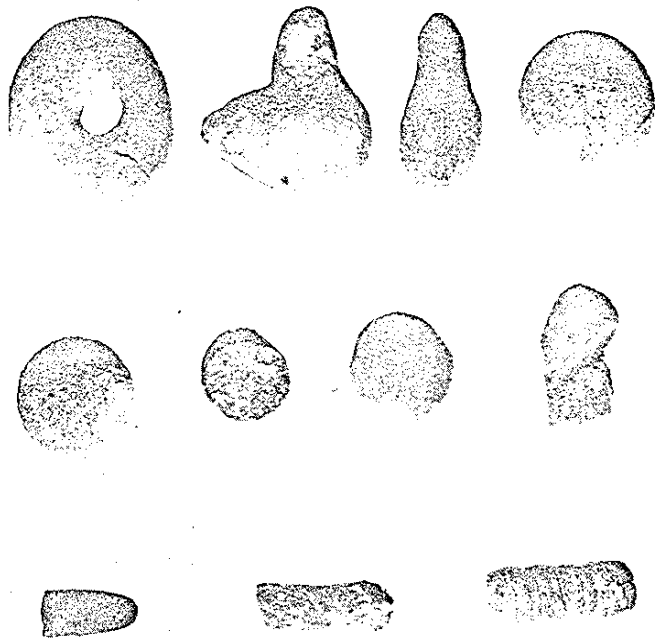


PLATE 40—Concretions

Upper row

Oddly formed little concretions found together as a cache during stripping operations northeast of Unit Pueblo No. I.

Middle row

Left.—From floor of Kiva 1.
Middle left.—From Unit Pueblo No. I.
Middle right.—From upper fill of Kiva 1. Both surfaces of this disk have been used for polishing purposes.
Right.—From area northeast of Unit Pueblo No. I. Groove on this concretion would suggest its use as an awl sharpener.

Lower row

Left.—From upper fill of Kiva 1. This blunt-pointed concretion is covered with thick, red paint.
Middle.—From area northeast of Unit Pueblo No. I.
Right.—From area northeast of Unit Pueblo No. I.

an occasional one served a utilitarian purpose. Those illustrated in the top row of plate 40 are amusing because of their shapes and interesting in that they were found together as a cache.

Bone Artifacts

Bone artifacts are few in number and plate 41 pictures all but two of the specimens. A bone bead, considered under ornaments, is illustrated on plate 42, and a bone die (or gaming piece) is pictured on plate 44.

Awls.—The eight awls from Site 16 are made of mammal bone, mostly deer, and though few in number represent a wide range of types.

Flakers.—Two bone implements can be classified as flakers. One of these (pl. 41, No. 1, lower row) is unusual in that it is made of a piece of massive, dense and very heavy bone. It was sent to the Chicago Natural History Museum in hopes the bone could be identified. Identification proved impossible, but Dwight Davis, curator of vertebrate anatomy of that institution, suggested bison or elk (personal letter from Dr. Paul S. Martin, Chicago Natural History Museum, to Park Archeologist Don Watson, January 17, 1951).

Fleshers or scrapers.—Two implements found are classified as fleshers or scrapers, though similar specimens are sometimes considered to be weaving tools. The two specimens from Site 16 do not exhibit any polishing such as would be expected in a weaving tool.

Objects of unknown use.—The last three objects pictured on the right in the bottom row of plate 41 are of unknown use. These are sometimes encountered in excavation of ruins in the Mesa Verde region and have been the subject of considerable speculation. Dr. Martin (Martin, 1939, pp. 424-425, fig. 122, upper left corner) and Dr. Roberts (Roberts, 1930, p. 147, and pl. 43a) classify these objects as whistles. Dr. O'Bryan suggests they were used as tinklers (O'Bryan, 1950, p. 87, and pl. XXXVIIIb). Dr. Reed illustrates what appears to be an incomplete specimen and suggests it possibly was used as a flute or whistle (Reed, 1943, p. 176, and pl. XXIX, specimen 1/11).

These artifacts were manufactured only of the tibia bones of small mammals: jack rabbits, cottontails, foxes, and a fairly consistent pattern was followed. The proximal end of the bone was ground down to expose the marrow cavity. Just below this ground surface a shallow notch was often cut across the bony ridge extending down the front of the shank. A hole was drilled through the shank to the marrow cavity somewhere between the proximal and distal ends. The distal end of the bone was never worked.

A specimen in the Mesa Verde Museum collections, which came from a cliff dwelling, has a fragment of cord attached in the following manner: the cord is inserted through the hole in the shank, knotted to keep it from slipping through, and run up the marrow cavity to emerge at the proximal end. The cord is broken just beyond the point where it emerges from the cavity so the original length is not known. It is this specimen which gave Dr. O'Bryan the idea the objects were used as tinklers. It is difficult to visualize the use of



PLATE 41—Bone Artifacts

Upper row

From left to right:

1. Awl; split deer metapodial; lower fill of Kiva 2.
2. Awl; split mammal leg bone; upper fill of Kiva 2.
3. Awl; mammal rib; floor of Kiva 2.
4. Awl; mammal rib; faintly incised decoration on upper side; banquette of Kiva 2.
5. Awl; mammal bone; lower fill of Kiva 3.
6. Awl; mammal bone; banquette of Kiva 2.
7. Awl; mammal bone; banquette of Kiva 2.
8. Awl; mammal bone; banquette of Kiva 2.

Lower row

From left to right:

1. Flaker; manufactured of a piece of massive and very heavy bone. Dwight Davis, Chicago Natural History Museum, suggests bison or elk. From banquette of Kiva 2.
2. Reused awl, or flaker; mammal bone; lower fill of Kiva 3.
3. Flesher, or scraper; mammal rib; floor of Kiva 2.
4. Flesher, or scraper; mammal rib; lower fill of Kiva 3.
- 5, 6 and 7. Objects of unknown use; tibia bones of jack rabbits; floor of Kiva 3.

these long, slender and fragile bones for such a purpose. There are numerous other bones better adapted to such use, and it seems odd that such a distinctive bone, and always the same bone, would be chosen for a tinkler.

The specimen with the cord through the hole in the shank definitely proves the objects were not used as whistles, an untenable idea in the first place since no one has ever been able to produce the slightest noise on one. The placement of the hole on most specimens, in the trough between the ridges for muscle attachment, makes it impossible to use these artifacts as whistles.

It is quite possible that these bone artifacts which, so far as can be determined, are found only in the Mesa Verde and closely allied Piedra areas, have some ceremonial significance. Five of the 9 specimens in the Mesa Verde Museum collections are known definitely to have come from kivas: the 3 discussed here, from kiva 3, Site 16; 1 from an abandoned and backfilled kiva at Far View House; the fifth from Kiva V, Site 34, Soda Canyon Pueblo excavated by Gila Pueblo in 1948 (O'Bryan, 1950, p. 73, pl. XXXVIIIb; also M. V. Museum catalog). There is little doubt but that two others in the collection, from Bone Awl House, were found also in kivas, as only the kivas in this cliff dwelling were excavated and they yielded a number of bone implements (excavated by Superintendent J. L. Nusbaum, 1927; no report). It is one of the two specimens from Bone Awl House that still has the cord attached. The original cataloging of the 2 specimens indicates that both were found with yucca cord strung through the perforations, though only the 1 still retains the cord.

It is interesting to note that most of the specimens found by Dr. Martin at Sites 1 and 2, Ackmen-Lowry area, were in deep pitrooms of Pueblo I origin (Martin, 1939, p. 430). Most archeologists feel these pitrooms were the forerunners of the Mesa Verde kiva and were partially ceremonial in function. The only complete specimen obtained by Dr. Roberts came from a trash mound (Roberts, 1930, p. 175). Baron Nordenskiöld pictures a specimen found in Spring House, but the exact provenience is not given (Nordenskiöld, 1893; sketched on the caption page for pl. XLI).

Manufacture of these objects apparently began in Pueblo I, since to date none has been reported from Basketmaker III sites. They continued to be made through Pueblo III, but so far as is known were not manufactured after the abandonment of the Mesa Verde area. Dr. O'Bryan lists these objects as a new trait for the McElmo Phase of Pueblo III (O'Bryan, 1950, p. 109). This is difficult to understand since he states they were found at both Site 102 ruin (Pueblo II) and Site 34 (Pueblo III), and pictures specimens from both sites (O'Bryan, 1950, p. 87, and pl. XXXVIIIb). Their presence in Pueblo I pitrooms is proof of much earlier origin.

Bone die or gaming piece.—One elliptical-shaped, flat piece of polished bone, seven-eighths of an inch long, came from the floor of Kiva 3 (pl. 44). Objects such as this are often referred to as dice.

Ornaments

Archeologists working in the Mesa Verde area are often impressed by the fact that few articles classifiable as ornaments are encountered in excavation. To all intents and purposes the former inhabitants of this region were "poverty struck" as regards possession of items for personal adornment. It is not often that ornaments are found interred with the dead and, considering Pueblo Indian burial customs in general, this factor alone is indicative of their actual scarcity. A review of items reportedly taken from the cliff dwellings in the early days shows that jewelry rarely was found.

Considering the usual dearth of such articles, and how few artifacts were recovered from Site 16, it is surprising any ornaments were found. Yet one of the finest necklaces taken from a Mesa Verde ruin was discovered here (pl. 43).

Pendants.—Four pendants were taken from Site 16: 1 of hematite, 1 of lignite, 1 of shell and 1 made from a reworked potsherd (see pl. 42). The bird pendant (pl. 42, middle row, left), cut from the shell of *Cardium elatum* (identification by Dr. E. W. Haury, director, Arizona State Museum), is undoubtedly a trade piece, but the other three pendants could have been made locally.

Beads.—The collection from the ruin contains three types of beads: tubular bone; figure-8-shaped white shell; and disk-shaped red shell, white shell and gray shale. The shell beads are considered imports, but the bone and shale beads are probably of local manufacture. The types of beads are shown on plates 42, 43, and 44.

Shell necklaces.—The graduated and tapered figure-8-shaped white shell and disk-shaped red shell beads (pl. 43) were found together 6 inches below the surface in the fill of Room 4, Unit Pueblo No. I. There was little to suggest the manner in which they were strung.

Figure-8-shaped beads are not too common but examples have been found in ruins throughout the Southwest and down into Mexico. However, this is the first known instance of their having been found on the Mesa Verde.

Four fine necklaces of figure-8 beads have come from sites in the Pueblo area. The one from Site 16 is very similar to the necklace from a Pueblo III ruin at Kiatuthlanna, Eastern Arizona, pictured and discussed by Dr. Frank Roberts (Roberts, 1931, pp. 161-162, and pl. 45). Another, found by Dr. Roberts in a ruin near Allantown, Ariz., and now at the Laboratory of Anthropology, Santa Fe, N. Mex., is composed of hundreds of tiny beads, so small that one has to look closely to see that they are actually figure-8-shaped (Roberts, 1939, p. 202; 1940, pp. 131-132). The fourth necklace is in the possession of Dr. Jesse L. Nusbaum, senior archeologist, National Park Service, Santa Fe. This necklace, a magnificent specimen in perfect condition, reportedly was found in a cliff dwelling in southeastern Utah. It is exceptionally long and the beads are quite large; in fact, the smallest bead in Dr. Nusbaum's necklace is larger than the largest bead in the necklace from Site 16.

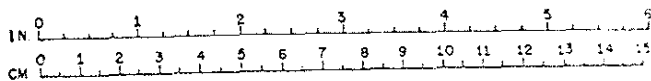
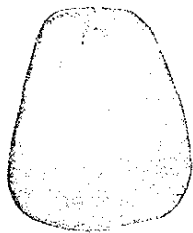


PLATE 42—Ornaments

Upper row

Left—Pendant of lignite, or cannel coal; from banquette of Kiva 3.
Right—Pendant made from a sherd of La Plata and/or Bluff Black-on-red; from just outside the walls of Room 4.

Middle row

Left—Pendant, carved from shell of *Cardium elatum*;* from 6 feet below the surface in the fill of Kiva 1.
Right—Pendant of hematite; from just outside the walls of Room 4.

Lower row

Left—Figure-8-shaped shell beads; examples of the largest and smallest beads from the graduated shell necklace pictured on plate 27; from 6 inches below surface in fill of Room 4.
Right—Cylindrical bead of a bird leg bone; from floor of Kiva 3.
 For other examples of ornaments from Site 16 see plates 43, 44, and 45.

* Identification of shell by Dr. Emil W. Haury, Arizona State Museum.

Dr. Frank Roberts was at first inclined to consider the presence of figure-8-shaped beads in the prehistoric Pueblo area a Classic Pueblo III trait (Roberts, 1931, pp. 161-162). However, on later finding the same type beads in a Pueblo II site he revised his opinion, stating "Their presence in the second unit (a Developmental Pueblo in the Whitewater Dis-

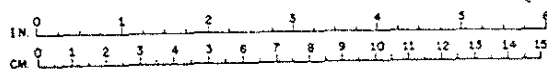
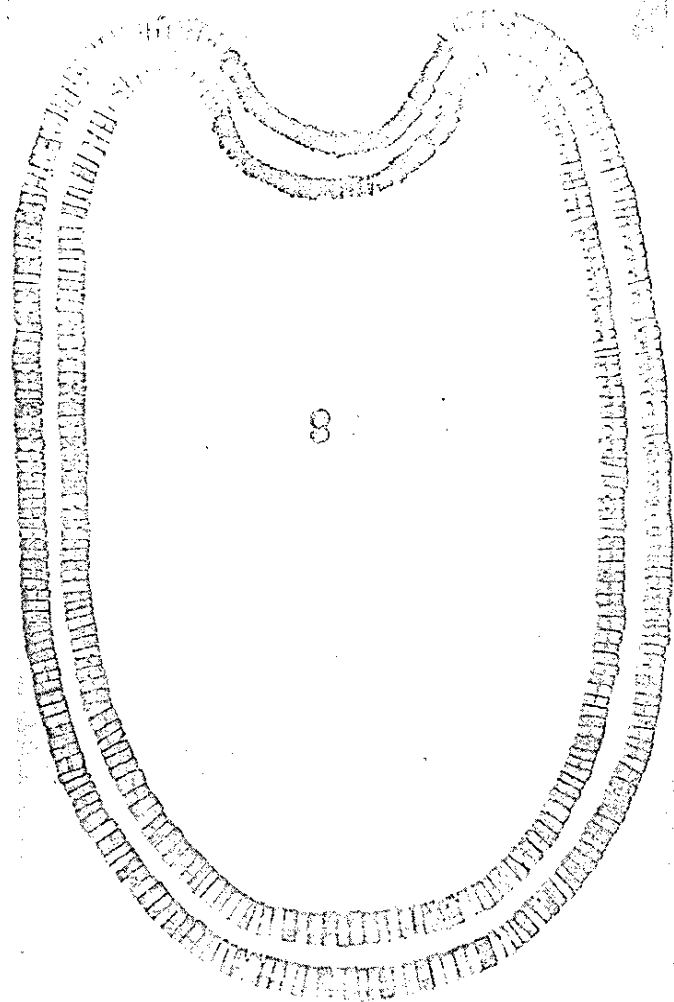


PLATE 43—Necklace of Shell Beads

The stringing of this necklace of 458 graduated, tapered, figure-8-shaped white shell beads, and 89 disk-shaped red shell beads, is purely arbitrary. Nothing was left of the original cord nor was there, with one exception, any arrangement to suggest the order in which the beads were strung. Several of the red beads were stuck so tightly together they resembled one bead, suggesting they were strung as a group, or in small groups. For this reason only they were grouped together and placed at the ends of the strands.

Since the beads are graduated in size, illustrated by the largest and smallest beads pictured in the center of the plate, the necklace was first strung as a single strand. This was obviously incorrect as the necklace then hung to the knees of a person of average stature. Therefore, the two-strand arrangement was tried. Certain observations incline one to believe this, perhaps, was the original style. The graduated beads seem to fit much better in a two-strand arrangement. Also, the beads are tapered to make the necklace lie in a gentle, even curve, and the tapering is much better adapted to the 2-strand grouping than to a 1-strand necklace.

The necklace was found in the fill of Room 4, of Unit Pueblo No. 1.

trict, 3½ miles south of Allantown, Ariz.) would tend to indicate a somewhat earlier horizon and to date them in the latter part of the Developmental period" (Roberts, 1940, p. 132). The necklace from Site 16 is further evidence that

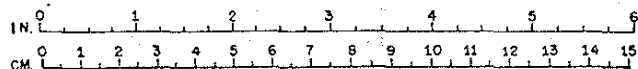
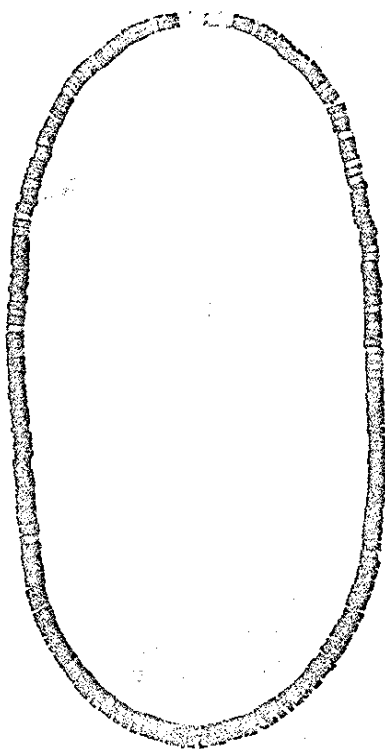


PLATE 44—Necklace of Shale and Shell Beads and a Bone Gaming Piece

The 210 graduated, gray shale beads and six white shell beads were screened from ashy fill just to the south of Kiva 1.

The bone gaming piece came from the floor of Kiva 3. These articles are sometimes referred to as "dice."

figure-8-shaped beads were known to the Pueblo Indians prior to Classic times.

Beads from the necklace were submitted to Dr. E. W. Haury, director of the Arizona State Museum, for identification. Dr. Haury was not able to identify the species of shells but suggested that since the common thick-walled shell used in the Southwest was *Glycymeris*, the figure-8-shaped beads might have been cut from that species. He also reported shells recently collected by divers in the Gulf of California have characteristics in common with the red shell beads. These shells are very thick walled and, when the outer crust is removed, a purplish to orange-colored shell, usually heavily worm eaten, is exposed. This exactly describes the appearance of the red shell beads in the necklace. Dr. Haury has not yet received a specimen identification of the Gulf of Lower California shells (information received in a personal communication from Dr. Haury, Feb. 2, 1952).

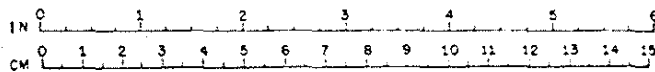
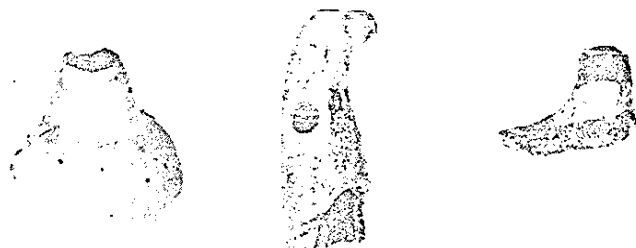


PLATE 45—Miscellaneous Clay Objects

Upper row

- Left.*—Small jar of unfired clay; from fill of Kiva 3.
- Middle.*—End of an effigy handle of a Mancos Black-on-white ladle. Possibly the hole was drilled after the ladle broke and the dog (?) head was then worn as a pendant. From the upper fill of Kiva 1.
- Right.*—Moccasined foot from a Mancos Black-on-white effigy jar; from the lower fill of Kiva 1.

Middle row

Rolls of clay; use unknown; from the lower fill of Kiva 2.

Lower row

- Left.*—Fired clay pellet resembling a button which may have been used as such, or as a bead; loop for attachment broken; from the lower fill of Kiva 2.
- Middle.*—Pendant blank made of a La Plata and/or Bluff Black-on-red sherd; from the upper fill of Kiva 1.
- Right.*—End of a flat-headed lug handle of a Mancos Black-on-white canteen; from the upper fill of Kiva 1.

Shale and shell necklaces.—Two hundred and ten small, disk-shaped, graduated gray shale beads and six disk-shaped white shell beads were found in fill just south of Kiva 1. Possibly this fill is trash, or, on the other hand, it may be the fill of a burned room. The beads were screened from mixed ash and dirt. The shale beads vary in color from pale gray

to dull, blackish gray and are well-made. When strung, the beads make a necklace 17½ inches long (pl. 44).

Miscellaneous items.—Three objects pictured on plate 45, Miscellaneous Clay Objects, might be classified as ornaments. The end of an effigy handle of a Mancos Black-on-white ladle, bored for stringing, may have been worn as a pendant (pl. 45, lower row, right). The worked black-on-red sherd is obviously a pendant blank. The fired clay pellet with a broken loop, resembling a button, possibly was used for that purpose, or it may be a clay bead from a necklace (pl. 45, lower row, left).

Pottery

Results of the analysis of the pottery from Site 16 parallel in detail the architectural evidence of the occupational span. Briefly summarized, the pottery evidence is as follows: (1.) Lino Gray-like ware and La Plata Black-on-white indicate use of the site during the Basketmaker III period. (2.) These 2 wares, together with La Plata and/or Bluff Black-on-red point to continued occupation in Pueblo I. (3.) Mancos Black-on-white and Variable or Exuberant Corrugated, the 2 wares comprising 90 percent of the pottery, signify prolonged use of the site in Pueblo II. (4.) The 2 diagnostic wares not present at Site 16, Mesa Verde Black-on-white and Pueblo III corrugated, offer conclusive evidence the site was abandoned prior to the beginning of Pueblo III and never reoccupied.

The pottery types and wares listed below are not described as to manufacturing, firing or decorating techniques, paint, paste, surface treatment, decoration or shape, as all are well known wares. Excellent technical discussions are to be found in Brew (Brew, 1946); Colton (Colton and Hargrave, 1937); Martin (Martin; 1936, 1938, 1939); Morris (Morris, 1939; and Appendix A, by Shepard); Reed (Reed, 1943); and others, and description here would be repetitious.

Basketmaker III—Pueblo I.—Ten percent of the sherds from Site 16 are assignable to this category, which includes the Gila Pueblo "Four Corners" and "Chapin Mesa" phases (O'Bryan, 1950, pp. 104-107). There may be some question as to the advisability of grouping the wares of these two periods and considering them as one lot. However, such a classification is the only feasible one for the purposes of this report. No excavations were conducted at this time in Basketmaker III or Pueblo I horizons, though it is felt certain on the basis of findings in Tests 1 and 2 (pl. 19), that structures assignable to both periods are present at Site 16.

In the Mesa Verde area it is almost impossible to distinguish a Basketmaker III from a Pueblo I occupation on the basis of pottery analysis alone, for there is an almost unbroken sequence of what are considered to be typical Basketmaker III wares through the Pueblo I period. This continued use of early wares has been established and demonstrated through excavations conducted by Dr. J. O. Brew in southeastern Utah (Brew, 1946); Dr. Paul S. Martin in the Ackmen-Lowry area of southwestern Colorado (Martin,

1936, 1938, 1939); Earl H. Morris in the La Plata, Johnson, and Red Mesa areas adjacent to the Mesa Verde (Morris, 1939); Dr. Erik K. Reed in the Mancos Canyon (Reed, 1943); and Dr. Deric O'Bryan in Mesa Verde National Park (O'Bryan, 1950).

Lino-like plain wares. Eight and one-half percent of the pottery from Site 16 is a Lino-like plain ware. The ware is not broken down into the usual categories of Lino Gray and Kana-a Gray for the following reasons: Lino Gray, the standard utility ware of Basketmaker III times continued to be manufactured until sometime in Pueblo II when allover corrugated finally superseded other unpainted pottery to become the standard Pueblo utility ware. At Site 102 (Twin Trees Pueblo) for example, Dr. O'Bryan found that, during A. D. 950, Lino Gray totaled half of all pottery found; Corrugated but 10 percent. By A. D. 1025, at the Site 1 pueblo (400 yards south of Twin Trees), the situation was exactly reversed (O'Bryan, 1950, p. 93).

The supposedly diagnostic unpainted ware of Pueblo I times, Kana-a Gray, is indistinguishable from Lino Gray except for the characteristic banded-necks of Kana-a jars. This diagnostic trait of Kana-a Gray appears to be of little use in the Mesa Verde region, however, for as Dr. Brew points out in his report on the Archeology of Alkali Ridge, ". . . local potters seldom left the bands showing on the necks of Pueblo I jars" (Brew, 1946, p. 291). Dr. O'Bryan concluded from his excavation in Mesa Verde that while "Kana-a Gray and Lino Gray were locally concurrent, the former was never as popular as the latter and older ware" (O'Bryan, 1950, p. 93). In analyzing the pottery from his sites, Dr. O'Bryan made an arbitrary breakdown of plain wares into Lino and Kana-a on the basis of the percentage of rim sherds of each ware (O'Bryan, 1950, p. 92). This procedure was impossible for Site 16, as not a single rim sherd was found which could be classified as Kana-a Gray.

La Plata Black-on-white.—A few sherds of La Plata Black-on-white, about 1 percent of the total, were recovered from the ruin. (See plate 46.)

This ware is the local, characteristic Basketmaker III decorated pottery. It continued to be popular in Pueblo I times and so far as is known at present, seems to be the typical black-on-white ware of both periods in the Mesa Verde proper. Other Pueblo I Black-on-white types, Piedra, Kana-a, Rosa, etc., do not appear, on the basis of present research, to have gained much popularity.

La Plata and/or Bluff Black-on-red.—Only a few sherds of red ware, 0.3 percent of the total, were found. These have been lumped under the broad classification of La Plata and/or Bluff Black-on-red. The sherds are too few, too small, and, for the most part, too badly eroded to justify a breakdown. Actually, there seems to be some question as to whether La Plata and Bluff Black-on-reds are distinct wares, and some archeologists find it impossible to distinguish one from the other. Dr. Brew has pointed out "Hargrave's Bluff Black-on-red seems to be identical with the pottery

known taxonomically in the Mesa Verde area as La Plata Black-on-red . . ." (Brew, 1946, p. 296). Probably the typical black-on-reds of the Mesa Verde should be classified simply as La Plata.

The red wares which originated elsewhere in Basketmaker III times and came into increasing vogue in Pueblo I would seem never to have been too popular with the Mesa Verde potters. Plate 46, row 1 pictures sherds of red wares.

Variations of the above wares.—Two types of sherds were found at Site 16 which are occasionally considered to be distinct, or at least given separate classification or recognition. It is strongly felt that these types are merely variations, both intentional and unintentional, of Lino-like plain wares and La Plata Black-on-white. The two types are as follows:

(a) *Fugitive red.*—A fugitive red wash was frequently applied to the exteriors of Lino-Gray-like jars and La Plata Black-on-white bowls. Since the wash is not permanent, it is impossible to say what percentage of the wares may have been so decorated originally. A few sherds from Site 16 exhibited a fugitive red exterior wash, and in the case of some, this wash, of a distinctive pinkish cast, disappeared, or almost disappeared when the sherds were scrubbed in clear water. Perhaps many more sherds had this wash than was realized.

(b) *Smudged and/or burnished.*—A very few sherds of the Lino-like ware were either smudged or burnished, or both. This apparently resulted from secondary firing of greasy sherds. A test conducted here demonstrated that plain scraped or roughly smoothed sherds of Lino-like pottery, when burned in a dense fire of piñon-juniper, also will come from the fire as perfect examples of smudged and/or burnished pottery. It is not felt that the few sherds exhibiting these characteristics warrant classification as Twin Trees Plain (O'Bryan, 1950, p. 91).

Pueblo II.—Ninety percent of the pottery from Site 16 is assignable to the Pueblo II period, or the Mancos Mesa phase. Two new and distinctive wares characterize the period: Mancos Black-on-white, the diagnostic Pueblo II decorated ware of the Mesa Verde region, and allover corrugated, which replaced the Lino-like plain pottery as the standard utility ware.

Mancos Black-on-white.—Forty-four percent of the pottery from Site 16 is Mancos Black-on-white, and of this total, 67 percent of the sherds are decorated. Plates 47 through 53, inclusive, picture sherds and vessels bearing typical Mancos designs.

The all-inclusive, iron-paint pottery known as Mancos was manufactured over a long period of time. Manufacture started sometime around A. D. 900 and continued until at least A. D. 1100, possibly later, when Mesa Verde Black-on-white took its place. While Mancos Black-on-white is variable in all respects and reflects the experimentation so characteristic of the formative pueblo years, it is, nevertheless, an easily recognizable ware.

Possibly a breakdown of Mancos Black-on-white could be made on the basis of design trends and styles, surface treatment and finish, etc., if one were given a site with a good refuse mound and undisturbed occupational levels. Such a breakdown has been forecast by the work of Brew (Brew, 1946, pp. 275-279, and accompanying plates), but inasmuch as no one seems to be in doubt as to the validity of the ware, a breakdown does not seem to be indicated. Furthermore, in view of the present chaotic state of affairs as regards Southwestern pottery classification, subdividing an easily recognizable ware would seem unwise.

No stratigraphic changes could be established in the Mancos Black-on-white from the three Pueblo II levels. Some changes in design styles are apparent but it is felt such changes are attributable to the whims of individual potters and do not reflect any basic trend. This feeling is strengthened when a sherd by sherd comparison is made of the pottery from the three levels. For example, the Mancos Black-on-white from the floors of Towers A, B, C, and Kiva 1 have an allover appearance of being earlier than the Mancos sherds from the floors of Kivas 2 and 3, and the floors of the rooms in Unit Pueblo No. 1. One would expect the reverse to be true.

It is not felt the Mancos ware from Site 16 reflects the gradual change to Mesa Verde Black-on-white, as did the pottery from Unit 1, Site 13, Alkali Ridge, excavated by Dr. Brew (Brew, 1946, p. 279). At Unit 1, where occupation continued from Pueblo II into Pueblo III, Dr. Brew was able to trace the shift in fashion which resulted in Mesa Verde Black-on-white, the diagnostic ware of Pueblo III. Dr. Brew emphasizes the change was gradual, so possibly the trend was overlooked at Site 16. Lacking any restorable pieces other than the two pictured on plate 53, the picture presented by fragmentary sherd patterns may be misleading. Had a number of vessels been available for study, the feeling about the designs, style trends and shapes might be different.

Row 1.—La Plata and/or Bluff Black-on-red.

Nos. 1, 3 and 5 are rim sherds.

Row 2.—La Plata Black-on-white.

Nos. 3 and 5 are rim sherds.

Nos. 4 and 5 have fugitive red exteriors.

Row 3.—La Plata Black-on-white.

No. 5 is a rim sherd.

Row 4.—La Plata Black-on-white.

Decoration on all sherds is in a heavy, iron oxide paint.

No. 3 has a fugitive red exterior.

Row 5.—La Plata Black-on-white.

Sherds pictured in this row probably are within the range of La Plata Black-on-white despite the variation in decoration and surface treatment.

No. 2. Design executed in thick, red, iron oxide paint on a deep buff background, but exterior is typical La Plata.

Nos. 3 and 6. These sherds are smoothed but do not seem sufficiently polished to warrant their classification as anything but La Plata Black-on-white.

Nos. 2, 3 and 5 are rim sherds.



← PLATE 46—Basketmaker III-Pueblo I Decorated Bowl Sherds
 (Sherds are in sequence from left to right; rows are in sequence from top to bottom)

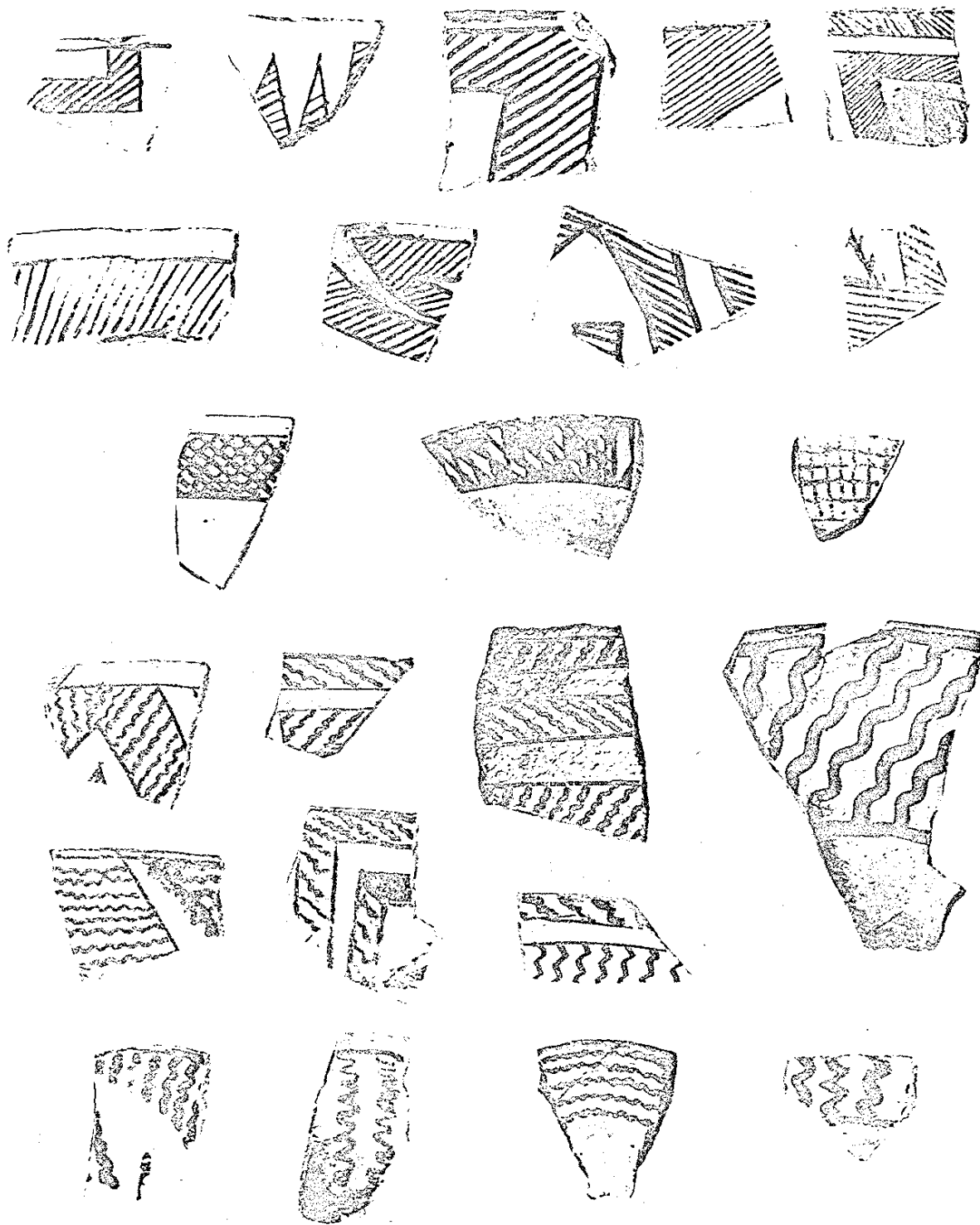


PLATE 47—Mancos Black-on-White Bowl and Ladle Sherds

(Sherds are in sequence from left to right; rows are in sequence from top to bottom)

Rows 1 and 2—Straight line diagonal hatching.

Row 1. All are rim sherds.

Row 2. Nos. 1 and 2 are rim sherds.

Row 3—Straight line cross hatching.

All are rim sherds.

Rows 4 and 5—Squiggly, or wavy line diagonal hatching.

Row 4. Nos. 1, 2, and 4 are rim sherds.

Row 5. All are rim sherds.

Row 6—Squiggly line decoration.

All are rim sherds.

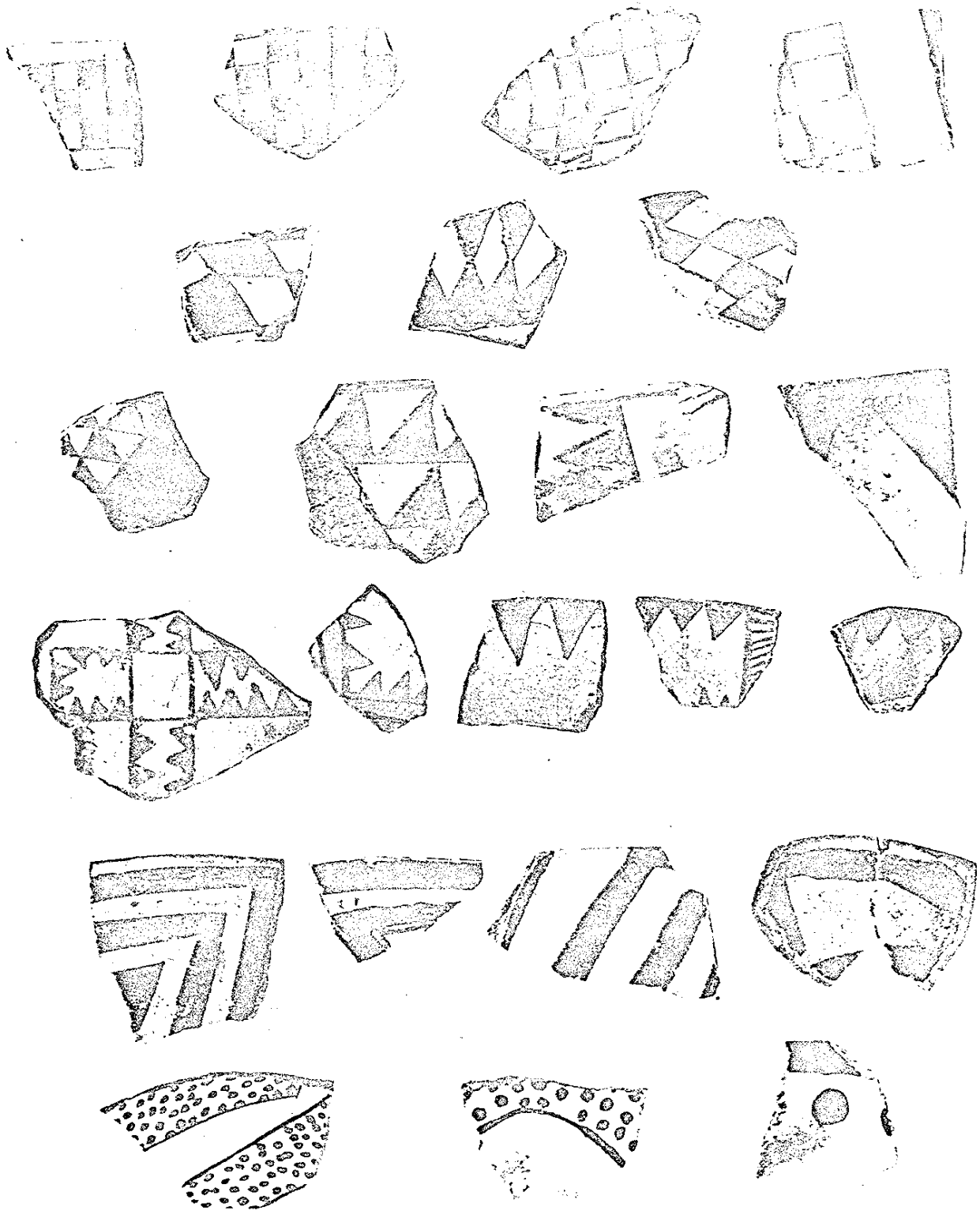


PLATE 48—Mancos Black-on-White Bowl and Ladle Sherds

(Sherds are in sequence from left to right; rows are in sequence from top to bottom)

Row 1.—Checkerboard design.

Nos. 1, 2, and 4 are rim sherds.

Row 2.—Diamonds, rhomboids, or diagonal checkerboard.

No. 3 is a rim sherd.

Rows 3 and 4.—Solid triangles.

Row 3. Nos. 2, 3, and 4 are rim sherds.

Row 4. Nos. 3, 4, and 5 are rim sherds.

Row 5.—Broad lines.

All are rim sherds.

Row 6.—Polka dots.

No. 3 is a rim sherd.

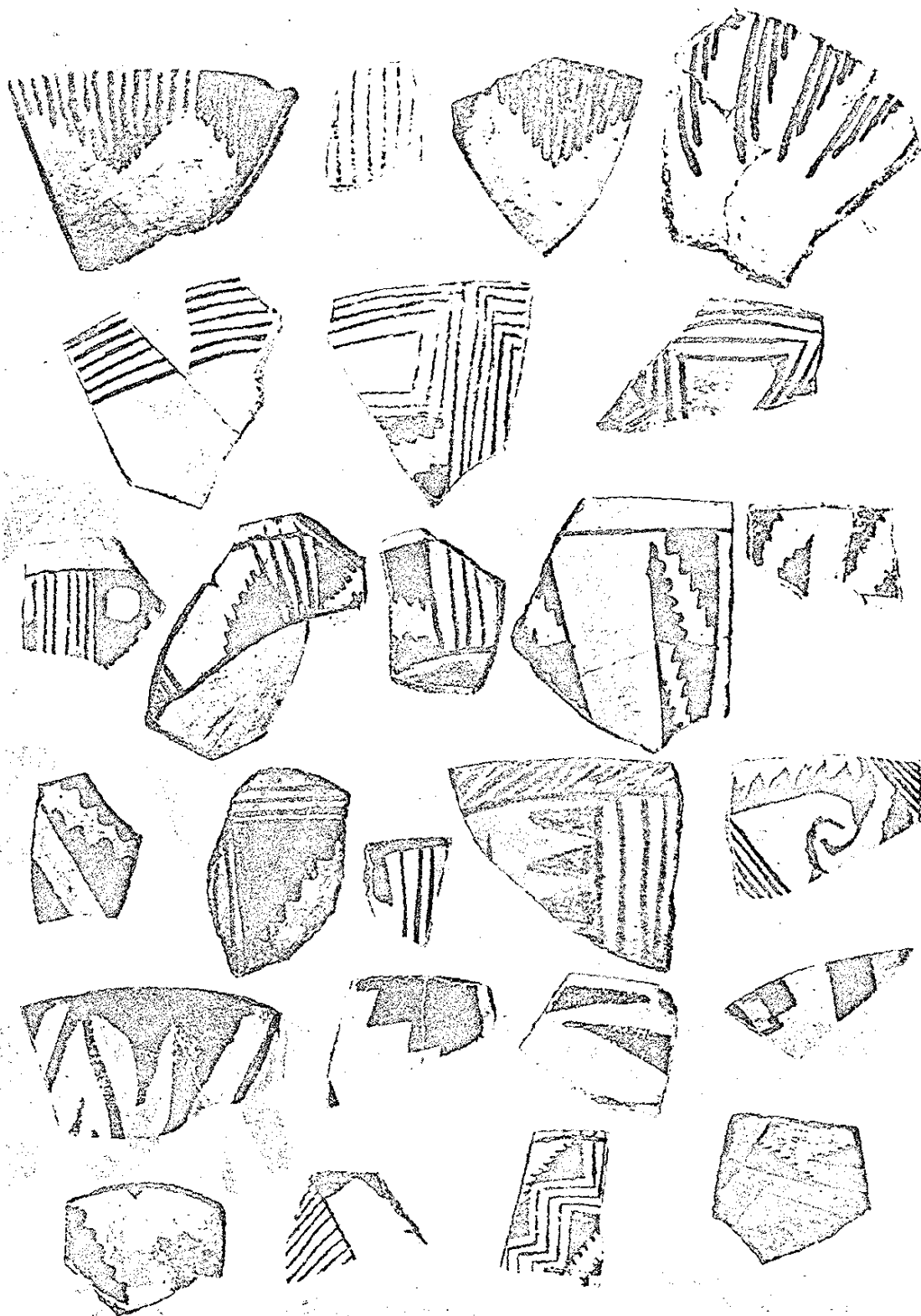


PLATE 49—Mancos Black-on-White Bowl and Ladle Sherds

(Sherds are in sequence from left to right; rows are in sequence from top to bottom)

Rows 1 and 2.—Straight line decoration.

All are rim sherds.

Row 3.—Opposed, stepped triangles.

All are rim sherds.

Rows 4, 5, and 6.—Combination of various elements.

Row 4. Nos. 3, 4, and 5 are rim sherds.

Row 5. Nos. 1, 3, and 4 are rim sherds.

Row 6. Nos. 1, 2, and 3 are rim sherds.

Row 4, No. 5. Interlocking scrolls were seldom used in decorating bowl and ladle interiors, although they were commonly used in the decoration of Mancos Black-on-white jars.

Note the use of triangles. Decoration of Mancos Black-on-white is characterized by triangles, elements combined in triangular patterns, and solid triangles combined in such a way as to give a totally different allover effect, as rhomboids and diagonal checkerboarding.

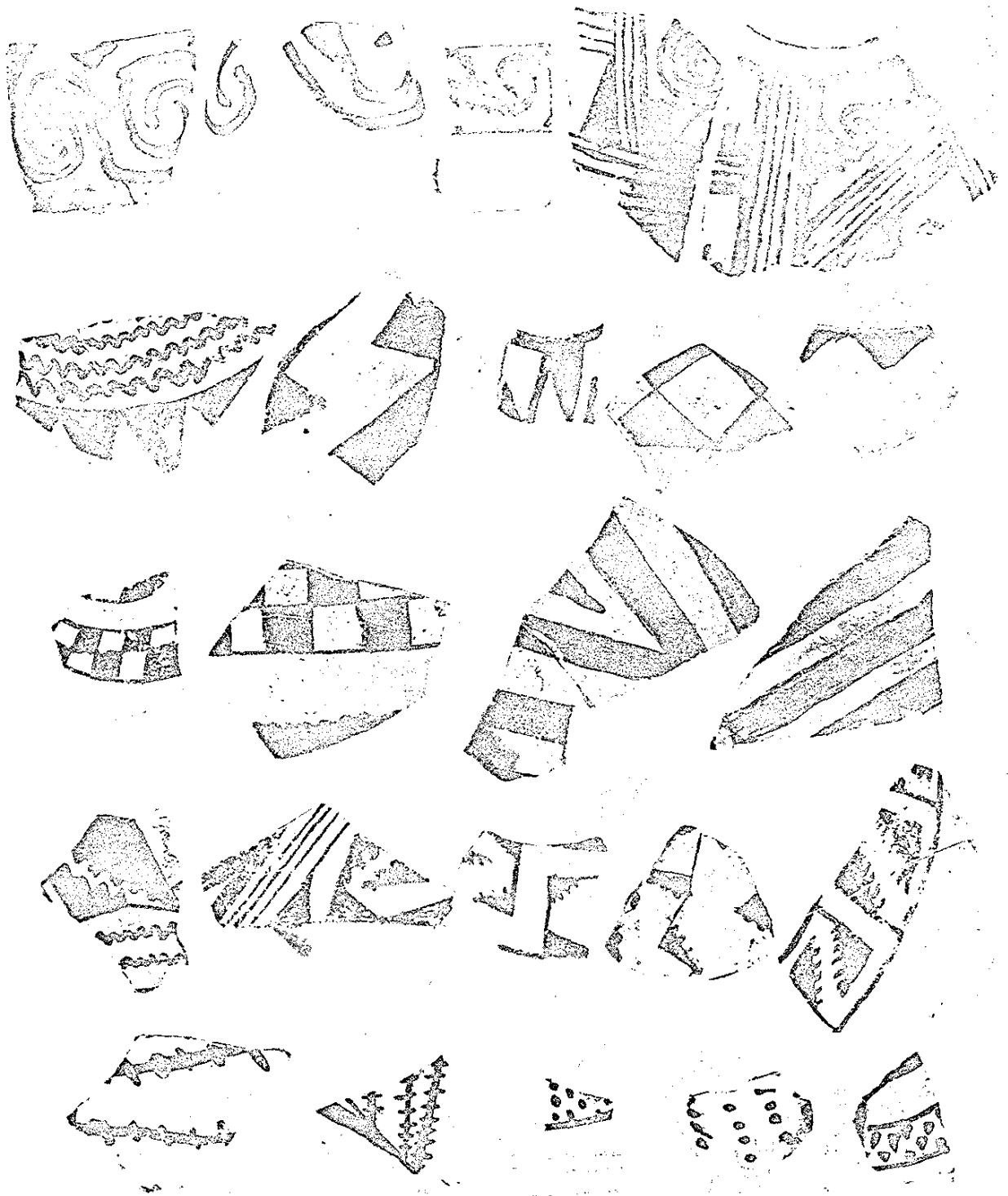


PLATE 50—Mancos Black-on-White Pitcher and Jar Sherds

(Sherds are in sequence from left to right; rows are in sequence from top to bottom)

Row 1.—Interlocking scrolls.

Nos. 1 and 2 are rim sherds of narrow-mouthed, straight-necked jars.

No. 5 is a rim sherd of a globular seed jar.

Row 2.—Solid triangles.

No. 3 is the rim sherd of a flat-topped seed jar.

No. 5 is the rim sherd of a small jar with short neck and abrupt, out-curving rim.

Row 3.—Checkerboards and broad lines.

No. 1. Several sherds from this same jar indicate the checkerboard design was arranged in interlocking scrolls.

Row 4.—Opposed, stepped triangles.

No. 3 is the rim sherd of a seed jar.

Row 5.—Ticked lines and polka dots.

These design elements were common on earlier wares.

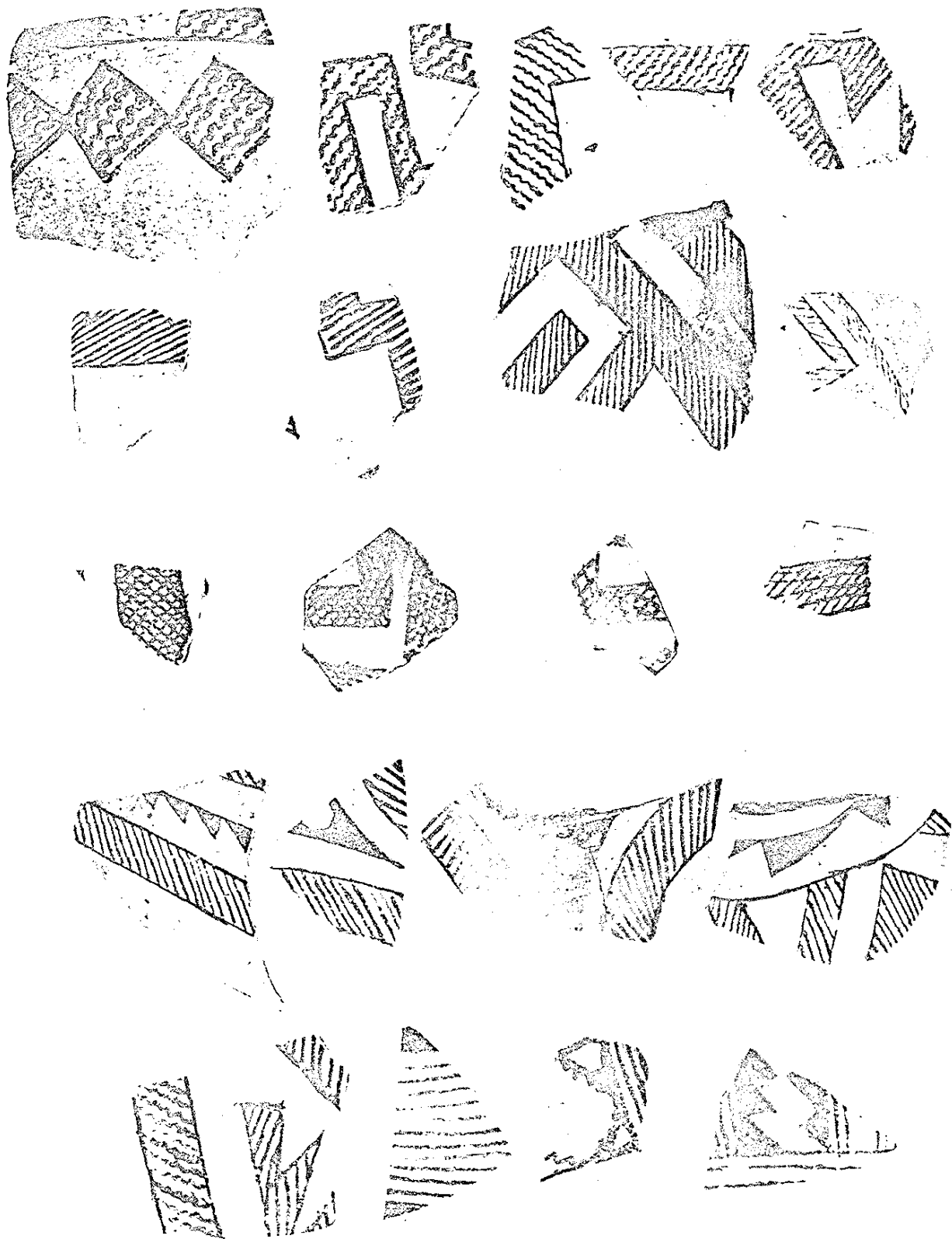


PLATE 51—Mancos Black-on-White Pitcher and Jar Sherds

(Sherds are in sequence from left to right; rows are in sequence from top to bottom)

Row 1.—Squiggly, or wavy line diagonal hatching.

No. 5 is the rim sherd of a globular seed jar.

Row 2.—Straight line diagonal hatching.

Row 3.—Straight line cross hatching.

Row 4.—Solid triangles and straight line diagonal

hatching.

These two elements were often combined.

The negative polka dot, seen in Nos. 2 and 3, was sometimes used, apparently to relieve the black of solid triangles.

Row 5.—Combined elements.

No. 1. Squiggly and straight line hatching were often combined.

Pueblo II Corrugated.—Over 45 percent of the sherds from this ruin are corrugated and of the 7 restorable vessels found, 5 are wide-mouthed, narrow-rimmed corrugated jars. These 5 jars are illustrated on plate 55.

Like its companion ware, Mancos Black-on-white, the corrugated utility ware is exceedingly variable. In fact the descriptive term, "Variable," (Reed, 1943, p. 144) is applied to the ware, while another popular designation is "Exhuberant." (Roberts, 1935, p. 13). Either name is well-chosen. It seems the Pueblo II potters, once they mastered all-over coiling and indenting, went to extremes to achieve the most elaborate decoration possible with their new techniques. It is difficult to explain this sudden vogue for decorating culinary vessels, nor is it understood why such a technique, requiring considerable skill, was employed.

Plate 54 illustrates a few of the effects achieved by manipulation of the coils.

Tables 4, 5, 6, 7, and 8, pages 83, 85, and 86, tabulate the results of the analysis of the sherds from Site 16.

Foodstuffs

The Pueblo Indians were farmers, dependent primarily upon the crops they raised—corn, beans, and squash. However, it is known they took advantage of many native plants yielding edible greens, roots, nuts, seeds, and berries. Wild mammals and birds were hunted and trapped. The turkey and dog were domesticated, but it has not been satisfactorily demonstrated to date whether or not the people of the Mesa Verde ever raised domestic animals for food.

As is the case in most shallow surface sites, little evidence was encountered of actual remains of food plants. One burned bean was found; no remains of native plants were recovered. A few animal bones were recovered from the fill of rooms and kivas. These were deer bones for the most part. The trash mound no doubt contains bones of several species of birds and mammals and, had its excavation been feasible, a fair list of animals utilized for food might have been compiled.

One interesting cache of bird, mammal and reptile bones was found in the deep banquette cist on the east side of Kiva 3. The bird and mammal bones, remains of former feasts, were undoubtedly tossed in the cist by the people using the kiva. It is felt the reptile bones are of more recent origin. Probably they are the skeletons (there are vertebrae of two specimens) of snakes that died in a rodent burrow which penetrated the soft fill of the cist.

The finding of bird and mammal bones in the cist brings to mind a present-day Hopi custom. When a feast is held in the kiva, any bird or mammal bones, as well as fruit pits and melon seeds, are placed in a special jar, never thrown in the fire and burned. When the jar is full it is taken from the kiva and the bones and seeds carefully deposited in a special place. This not only serves as an offering to the gods, but shows proper respect for the animals and plants and appreciation of their use as food, hence propitiating their spirits and assuring good hunting and crops in the future.

Dating of the three Pueblo II ruins at Site 16 is approximate and comparative. Architectural developments in Pueblo II were rapid and constant changes were taking place. For this reason it was possible for a village under construction, in which the latest architectural styles were being incorporated, to be out of date as concerns one or more of its features before building was complete. While it is possible to pin down the time of introduction of certain features with a fair degree of accuracy as more and more ruins are excavated, the time of incorporation of these features within individual structures or pueblos is often problematical, and the presence or absence of one or more distinctive features cannot be used to date as early or late any given village within the period. The sum total of all evidence must be considered, then a conservative estimate made. The easiest of all dating is that of superimposed structures, so while an error may be made in the time of actual construction, there can be no doubt about the order of construction. Every effort has been made to be as conservative as possible in the dating of the three superimposed Pueblo II villages at Site 16.

Because of the several reoccupations and subsequent levelings of the site, little wood was obtained suitable for tree-ring dating. The post and adobe village was the only structure destroyed by fire. However, the charred remains were cleared away preparatory to the construction of Unit Pueblo No. I, and the ends of the upright posts remaining in the ground were so rotted they disintegrated on exposure to air. The roof was torn from the four-post kiva, so no timbers were available from that structure. Ends of upright posts in the kiva banquette, ends of others found in the front wall of Unit Pueblo No. I, and remains of roof beams lying over the pilasters and on the banquette of Kiva 3, were all too decayed to be of use. Unit Pueblo No. II and Kiva 1 were robbed of their construction materials. However, when the timbers were wrenched from the roof of Kiva 1, the materials used to fill the spaces between beams, such as slender poles, twigs, etc., slid onto the banquette and pilasters. This material, which later burned, furnished the only datable charcoal from the site.

When Dr. O'Bryan tested the kiva in 1941 he struck the banquette on the northeast side between two pilasters, as the 1950 excavation disclosed the outline of his trench. Under the terms of his permit, Dr. O'Bryan furnished the Mesa Verde National Park Museum with a list of dates he obtained, and this list gives dates for 18 of the 67 specimens taken from Kiva 1. However, the dates are tentative, and Dr. O'Bryan did not consider their correlation to be satisfactory, so he did not include them in his recently published list of "Tree-Ring Dates for Mesa Verde Ruins." (O'Bryan, 1950, Appendix A, pp. 112-115). This charcoal from Site 16, along with other wood specimens obtained under secretarial permit from Mesa Verde National Park and adjacent Federal lands, has not yet been turned over to the Arizona State

Museum and Tree-Ring Laboratory with the rest of the Gila Pueblo collections, but remains for the present in the possession of Harold S. Gladwin. For this reason, it has not been possible to have the charcoal obtained by Dr. O'Bryan studied and checked by Dr. Schulman and his assistants. As the tentative dates are both unpublished and unchecked, they are not included in this report.

Less than a dozen specimens were obtained from Kiva 1 during the 1950 excavation of the structure. The charcoal, all small pieces, was submitted to Dr. Schulman at the Tree-Ring Laboratory, and it was gratifying to have two of the specimens yield dates entirely in keeping with the architectural evidence. Both specimens, with bark attached, gave dates of A. D. 1074 (Schulman, 1951, pp. 28-29; Smiley, 1951, p. 23, No. 88z). Dr. Schulman states that specimen MV-494, is "in extraordinarily fine agreement with the master chronology for some 45 rings or so preceding the bark date of A. D. 1074 . . . and specimen MV-495, with excellent bark attached, is a very short, open sequence, but exactly parallels the outer portions of 494." (Statement from a personal letter from Dr. Edmund Schulman to Park Archeologist Don Watson, dated April 30, 1951, Tucson, Ariz.) All factors considered, these dates come close to being actual construction dates for Kiva 1.

Lacking other dates, the time of construction of the three villages must be estimated. The first village, comprising post and adobe rooms associated with a 4-post kiva, was built very early in Pueblo II, as present evidence points to post and adobe construction having replaced slab, post and adobe construction about A. D. 900, and at this time 4-post kivas replaced deep pitrooms. These architectural changes mark the beginning of the Pueblo II period in the Mesa Verde area. The village is not as advanced as the pueblo at the Twin Trees Site, where crude masonry rooms are associated with a four-pilastered kiva. As Dr. O'Bryan has assigned a date of approximately A. D. 950 to the Twin Trees pueblo (O'Bryan, 1950, pp. 28-35, 107, and Appendix A), the post and adobe village at Site 16 probably was built just about or shortly after A. D. 900.

The post and adobe village burned, and sometime later the site was leveled and Unit Pueblo No. I was built. This pueblo, as has been pointed out, exhibits considerable architectural advancement when compared to the Twin Trees pueblo. Just south of the Twin Trees pueblo is Site 1, also excavated by Dr. O'Bryan. The unit pueblo at Site 1 is more advanced architecturally than Unit Pueblo No. I at Site 16. Dr. O'Bryan assigns an approximate date of A. D. 1025 to the Site 1 pueblo (O'Bryan, 1950, pp. 50-51, 107, and Appendix A), so it is reasonable to suppose the first unit pueblo at Site 16 was built sometime after A. D. 950 and prior to A. D. 1025. For this reason, approximate dates of A. D. 975 to 1000 are assigned Unit Pueblo No. I.

Unit Pueblo No. II was obviously built late in Pueblo II. The masonry of the village is approaching that used in the construction of compound pueblos early in Pueblo III, and the presence of circular towers, considered a late Pueblo II

development, tends to confirm the evidence of the masonry. The best evidence for late construction, however, is Kiva 1. This well-advanced structure could easily pass for an early Pueblo III ceremonial room if the associated pottery had been Mesa Verde Black-on-white instead of Mancos Black-on-white. The tree-ring dates of A. D. 1074 from Kiva 1 may be considered, in view of the architectural evidence, as approximate construction dates for Unit Pueblo No. II.

A terminal date of around A. D. 1100 may be assigned Site 16 at present, subject of course to revision in light of future excavation. The last occupation apparently took place by, or shortly after, A. D. 1074, and it is presumed this occupation lasted for at least a few years. However, the most significant evidence for the time of abandonment is negative: no sherds of Mesa Verde Black-on-white pottery, the diagnostic ware of Pueblo III in this area, were found at the site. Manufacture of this ware is considered to have started by, or shortly after, A. D. 1100. This does not agree with Dr. O'Bryan, who assigns early Mesa Verde Black-on-white, which he calls McElmo Black-on-white, a beginning date of A. D. 1050. (O'Bryan, 1950, p. 109). A revision of Dr. O'Bryan's date for McElmo Phase seems indicated in view of the A. D. 1074 date from Site 16, a ruin centrally located in the once densely populated Chapin Mesa area of the Mesa Verde, which yielded not one sherd of Pueblo III Black-on-white, whether it be called McElmo, Early Classic, or just Mesa Verde Black-on-white. Since the Mancos Black-on-white from Site 16 does not reflect any of the changes which marked the transition to Mesa Verde Black-on-white, it is unlikely that any Pueblo III Black-on-white was being manufactured in the Mesa Verde prior to about A. D. 1100.

Row 1.—Scoop-type ladle handles.

Scoop-type ladles, modeled after half-gourds, were typical of the earlier periods but their manufacture continued throughout Pueblo II.

Row 2.—Solid-type ladle handles.

Nos. 1 and 2, rounded; Nos. 3, 4, and 5 are flat bars.

Row 3.—Hollow-type ladle handles.

This became the standard type ladle handle in Pueblo III, but first appeared in Pueblo II.

Nos. 2, 3, 4, 5. The hollow opening is one-half inch or more in diameter. Note hole in side of No. 4.

No. 1. This possibly may be a pipe stem as the hole continues through the round, tapered end and is less than one-eighth inch in diameter.

Row 4.—Lug handles from bowls, jars or canteens.

No. 1. Pierced-lug handle from a small jar or canteen.

Nos. 2, 3, 4. Pierced-lug handles from small bowls.

No. 5. Double-lug handle from a small jar.

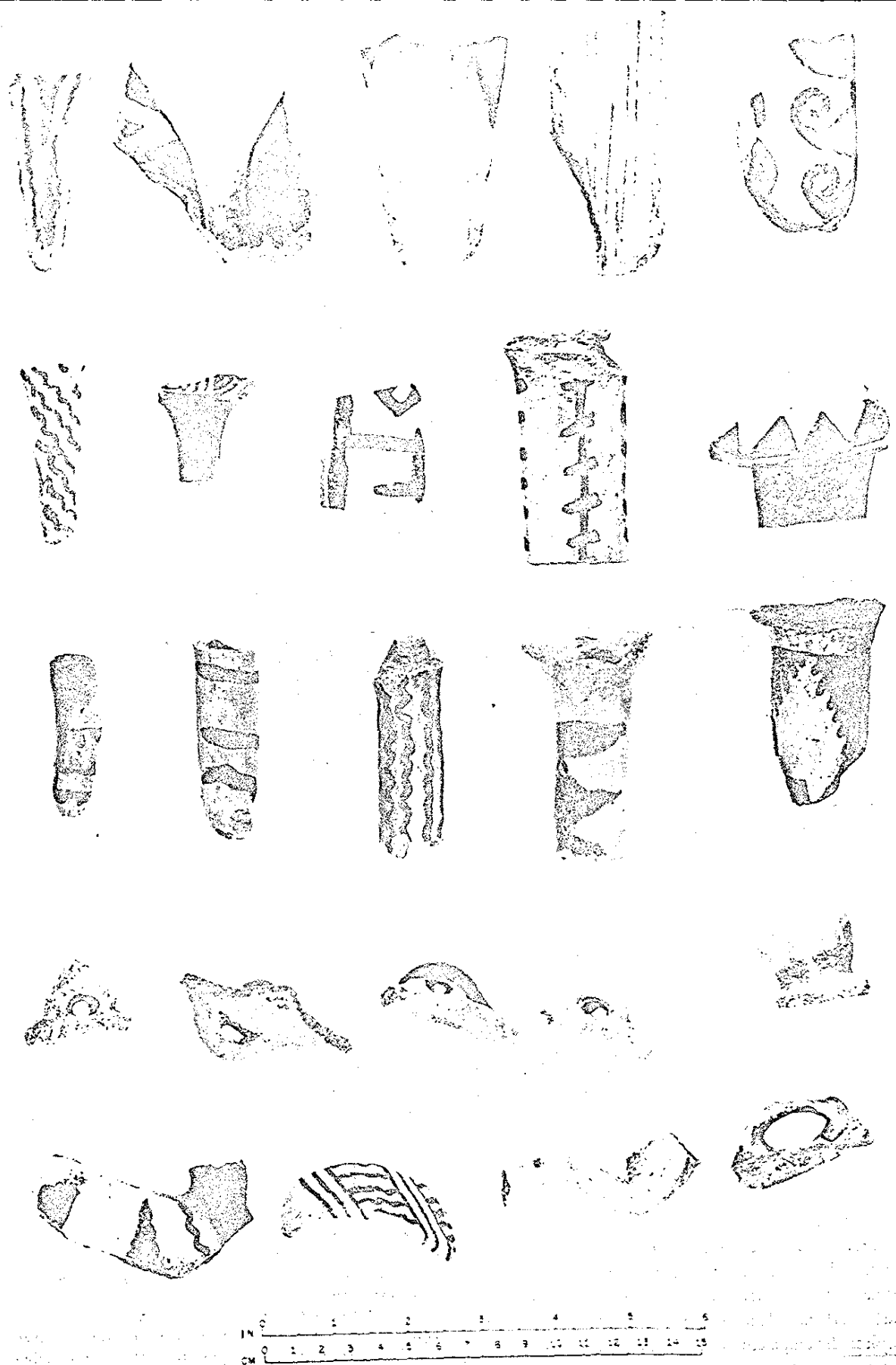
Row 5.—Jar and pitcher handles.

No. 1. An unusual, recessed handle from a large jar.

No. 2. A vertical strap handle from a pitcher.

No. 3. An incurved, flat, horizontal strap handle from a jar. This is the common type of handle used on Mancos Black-on-white jars. See the following plate (No. 53) for a picture of a Mancos Black-on-white jar with handles of this type.

No. 4. Handle of a small pitcher.



← PLATE 52—Mancos Black-on-White Vessel Handles

(Sherds are in sequence from left to right; rows are in sequence from top to bottom)

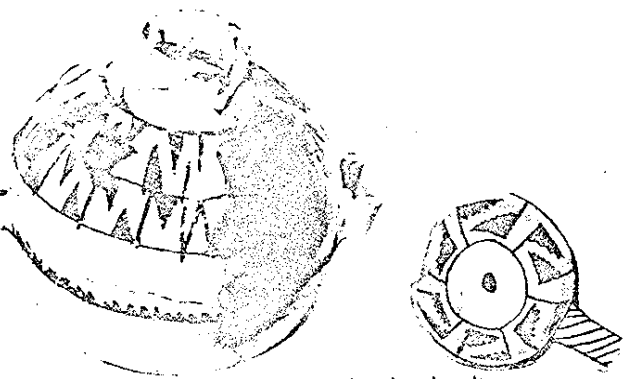


PLATE 53—*Mancos Black-on-White*

(The only partially-restorable decorated pieces from Site 16)

Upper left photograph—*Jar*

A typical Mancos Black-on-white jar with short neck, small mouth, and globular body, with flat and somewhat incurved strap handles. The sloppy application of the early-type design may possibly indicate the jar was manufactured in the period. Found when a post hole was dug beside Kiva 2 for one of the shelter roof support posts.

Upper right photograph—*Ladle*

The mica present in the tempering material shows clearly as light flecks on the surface of this unslipped ladle. The rim opposite the handle is deeply worn, indicating long use. Found in ashy fill just south of Kiva 1.

SUMMARY AND CONCLUSIONS

Site 16 was occupied, intermittently, over a period of several hundred years, from sometime in Basketmaker III to very late in Pueblo II, and final abandonment took place prior to the beginning of Pueblo III. The 1950 excavation was confined to the Pueblo II occupational level since the purpose was to make available for exhibit and use in the interpretive program a pueblo intermediate in type and in time between the Twin Trees Developmental unit and the Early Classic San Point Pueblo.

Three Pueblo II villages were uncovered instead of the 1 expected, and these 3, superimposed as they are, make Site 16 one of the finest comparative exhibits available in the field of Southwestern archeology. The 3 ruins demonstrate progressive architectural development, and since the sherds from all 3 villages are predominantly Mancos Black-on-white, and there is no later ware present at the site, the pottery proves this development took place within the limits of Pueblo II.

With the last occupation occurring late in Pueblo II, the value of Site 16 is its clear-cut demonstration of the extent of architectural development which took place in the northern San Juan area in Pueblo II times. The evidence from the site is proof that Pueblo II saw the introduction of most of the architectural traits which reached their ultimate refinement in Pueblo III, and demonstrates conclusively that the almost complete development of the Mesa Verde kiva took place within the period.

The material evidence from the ruin parallels that from other excavated sites in the Mesa Verde region which are assignable to the period. The diagnostic decorated ware is Mancos Black-on-white. This pottery, though variable in the extreme as regards decoration, remains unchanged throughout the occupational span, a distinctive and easily recognizable ware. Except for the greater prevalence of full-grooved axes and hammers, and the indicated use of flat-slab metates, stone tools differ little from those in use in Pueblo I. This is also true of bone tools, which are like those of the preceding period. It is interesting to note that not one artifact manufactured from a turkey bone was recovered, and it is perhaps significant that the Mesa Verde Museum collections do not contain a single turkey bone artifact of Pueblo II origin. This may support the current theory that the turkey was raised only for its feathers prior to Pueblo III times. Figure-8-shaped carved shell beads constitute the only new item recovered from Site 16, new only for Pueblo II in the Mesa Verde area, as they have been found in Developmental sites elsewhere in the Pueblo region.

Of more than passing interest is the evidence encountered in excavation of the thoroughness with which the buildings had been stripped of their constructional materials. Only the bases of the masonry walls of the last 2 pueblos and 3 towers remained, and very few building stones were encountered in the fill. Excavation also revealed that the roofs had been torn from both Kiva 1 and Kiva 2. Robbing abandoned sites of their building stones and roof timbers appears to have been a common practice in prehistoric times. Lack of appreciation of this fact has resulted in considerable misinterpretation of tree-ring data and is largely responsible for the seeming confusion in period dating in the Mesa Verde region.

Selected sherds illustrating the variety of techniques used in manipulation of coils to produce decorative effects.

Fine, pointed corrugation.

Row 5, Nos. 1, 3, 5. Row 7, No. 3.

Narrow rows of wavy corrugation.

Row 7, Nos. 1, 4.

Regulated corrugations, forming diagonal ridges.

Row 5, Nos. 5, 6. Row 6, Nos. 1, 2. Row 7, No. 3.

Alternate clapboarding and indentation, forming decorative bands.

Row 3, all sherds.

Thumbnail incision.

Row 5, No. 2. Row 6, No. 3. Row 7, No. 4.

Incision with a sharp instrument.

Row 4, Nos. 6, 7.

Coil pinching.

Row 4, No. 1.

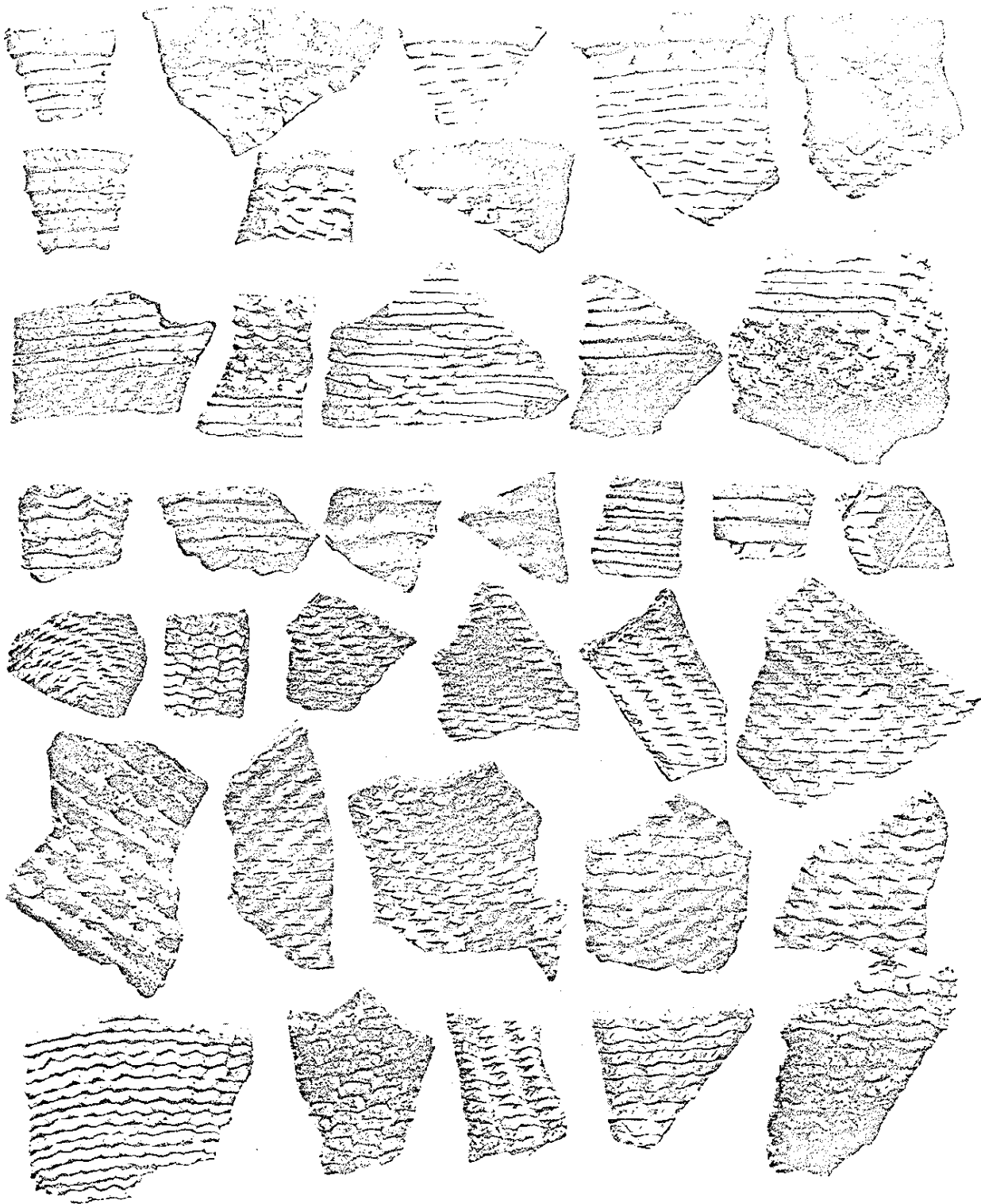
Partial smoothing of corrugations.

Row 3, No. 5. Row 6, Nos. 1, 4.

Complete obliteration of diagonal ridged corrugations, while wet, to form alternate deep troughs and ridges.

Row 4, Nos. 3, 4.

Sherds in rows 1 and 2 have the typical narrow rim-band characteristic of wide-mouthed Pueblo II Corrugated jars. Sherd 5, row 1, shows the addition of a volute.



← PLATE 54—*Pueblo II Corrugated Jar Sherds*

(Sherds are in sequence from left to right; rows are in sequence from top to bottom)

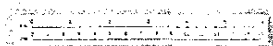
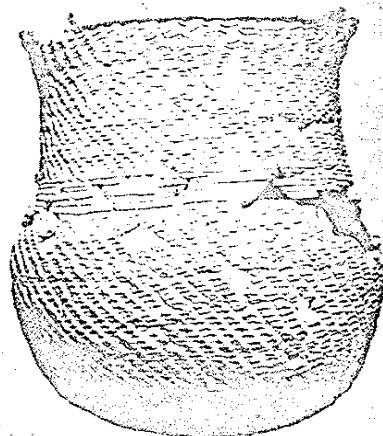
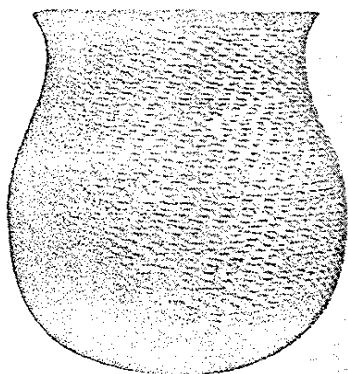
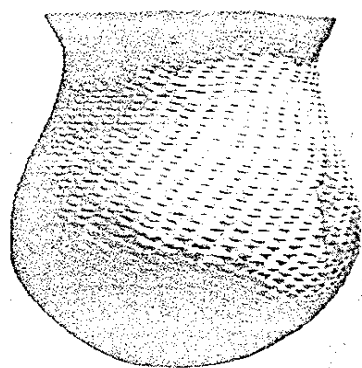
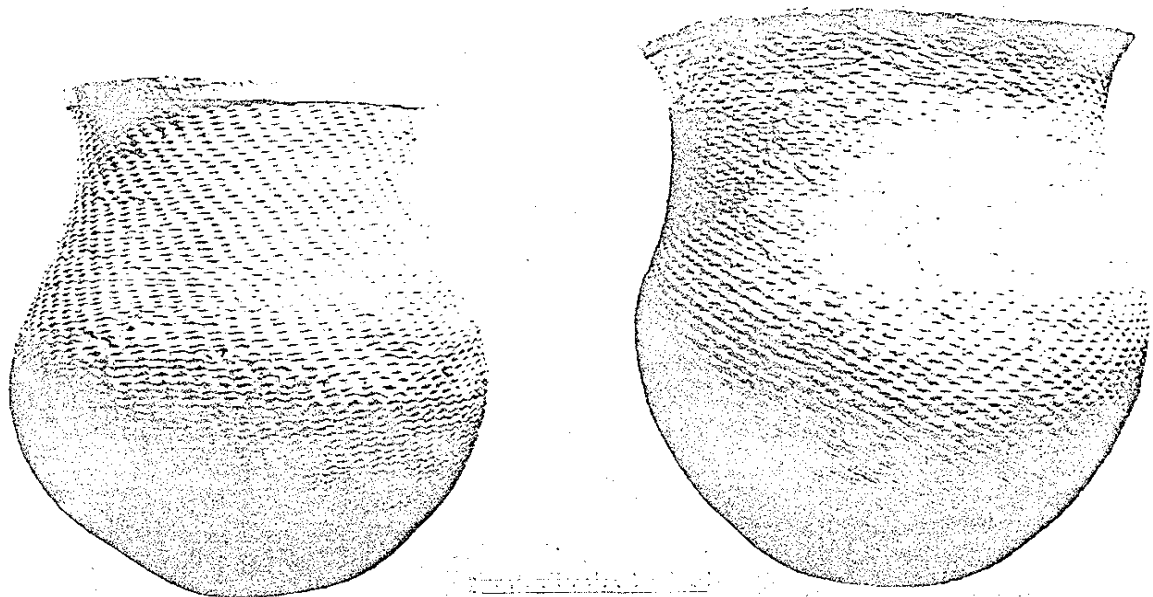


PLATE 55—Pueblo II Corrugated Jars →

The trash mound at Site 16 is large, but not particularly deep, the greatest depths encountered in the limited testing varying from 18 to 24 inches. In view of the fact that each village was the home of, at the most, only a few families, the absence of any appreciable depth of trash is not necessarily indicative of short occupations. No burials were excavated, but testing of the thoroughly pot-hunted debris indicated it was used for interment of at least some of the dead. It might be stated in this connection that burials were not encountered beneath the floors of rooms, towers, or in the open court areas.

Site 16 has contributed more to an understanding of the Pueblo II period than any site so far excavated in the Mesa Verde. Because of the time of the occupations, one at the beginning, one in the middle and one toward the end of the 200 year interval, and because there was no subsequent occupation in Pueblo III to confuse the evidence, Site 16 affords the best limitations to date on what should be included in a definition of the period for the Mesa Verde. Briefly summarized, the evidence gives the following general outline for Pueblo II:

Upper left.—Used as a floor cist; southwesternmost room of the post and adobe village (pl. 20, No. 1).

Height: 15 inches.
Body diameter: 13 inches.
Mouth diameter: 11 inches.

Upper right.—Used as a cist; north side of banquette of Kiva 2, of the post and adobe village (pl. 20, No. 4). Oval in cross section; estimated capacity of over five gallons.

Height: 16½ inches.
Body diameter: 14¼ inches long diameter and 13 inches short diameter.
Mouth diameter: 14 inches long diameter and 12½ inches short diameter.

Lower left.—Used as a floor cist; Room 2, Unit Pueblo No. 1; mouth covered with a flat, sandstone slab. The surface of this vessel was wiped before dry, partially obliterating the corrugations and flattening the decorative, diagonal ridges.

Height: 10¼ inches.
Body diameter: 9 inches.
Mouth diameter: 8 inches.

Lower middle.—Apparently used as a floor cist in a room of the post and adobe village (pl. 20, No. 3). Found in the southeast corner of Room 1, of Unit Pueblo No. 1 (pl. 19). However, the mouth of the vessel was below the floor level of Room 1 and flush with a hard-packed clay surface, undoubtedly the floor of a post room. The vessel walls are thin, the paste is very brittle and friable as the temper is coarse sand. A typical, early Pueblo II Corrugated jar as thin-walled vessels were seldom made later in the period after temper and paste improved.

Height: 10¾ inches.
Body diameter: 8½ inches.
Mouth diameter: 7¾ inches.

Lower right.—Apparently used as floor cist in a room of the post and adobe village (pl. 20, No. 2). Found under the northeast wall of Room 1, Unit Pueblo No. 1 (pl. 19). Badly shattered by the tap root of a tree which penetrated the masonry wall above it.

Height: 12 inches.
Body diameter: 9½ inches.
Mouth diameter: 9¼ inches.

1. The period is characterized by several architectural mediums, post and adobe, single and double-coursed stone masonry, and by extremes in architectural experimentation. Unit type pueblos, with the kiva located outside and south of the house block, are typical.

2. The Mesa Verde kiva made its appearance at the beginning of the period, and by the end of the period was almost completely developed and highly standardized. Kivas in all stages of development, from 4-post structures to masonry-lined, 6-pillastered kivas with southern recess, are characteristic of Pueblo II.

3. A unique and typical Mesa Verde structure, the circular tower, also made its first appearance in Pueblo II, probably late in the period.

4. Two wares characterize the period: diagnostic Mancos Black-on-white and Variable, or Exuberant Corrugated.

5. Pueblo II is marked by very little change, except for pottery, in the nonperishable material culture. No artifacts are found, with the possible exception of flat-slab *metates* and *figure-8-shaped* shell beads, which were not present in the preceding Pueblo I period.

Site 16, with its superimposed structures, is the most valuable interpretive exhibit in the park. The site is and will be, with the hoped-for excavation in the future of the Pueblo I and Basketmaker III structures known to be present, an outstanding exhibit of architectural development. However, its greatest interpretive value lies in the story it tells of people, of successive groups of people who chose to live, time and again, where other people had lived before them. The superimposed structures are testimony to the continuing efforts expended by these people to improve their homes and enhance their religious edifices, of their growing interest in their religion and devotion to its causes. The story of Site 16 is a story of human advancement, and as such this insignificant appearing ruin adds its bit to the history of man.

Table 4.—Sherd Analysis—Site 16

(Total sherds from Site 16—7,195)

| PUEBLO II | | Number | Percent |
|---|-------|--------|---------|
| Mancos Black-on-white: | | | |
| Decorated sherds | ..... | 1,664 | 23.1 |
| Undecorated sherds | ..... | 1,539 | 21.5 |
| Total Mancos Black-on-white | ..... | 3,203 | 44.6 |
| Corrugated | ..... | 3,289 | 45.7 |
| Total sherds assignable to Pueblo II | ..... | 6,492 | 90.3 |
| BASKETMAKER III—PUEBLO I | | | |
| La Plata Black-on-white | ..... | 65 | 0.9 |
| La Plata and/or Bluff Black-on-red | ..... | 24 | 0.3 |
| Lino-like plain wares | ..... | 614 | 8.5 |
| Total sherds assignable to Basketmaker III—Pueblo I | ..... | 703 | 9.7 |
| Total sherds from Site 16 | ..... | 7,195 | 100.0 |

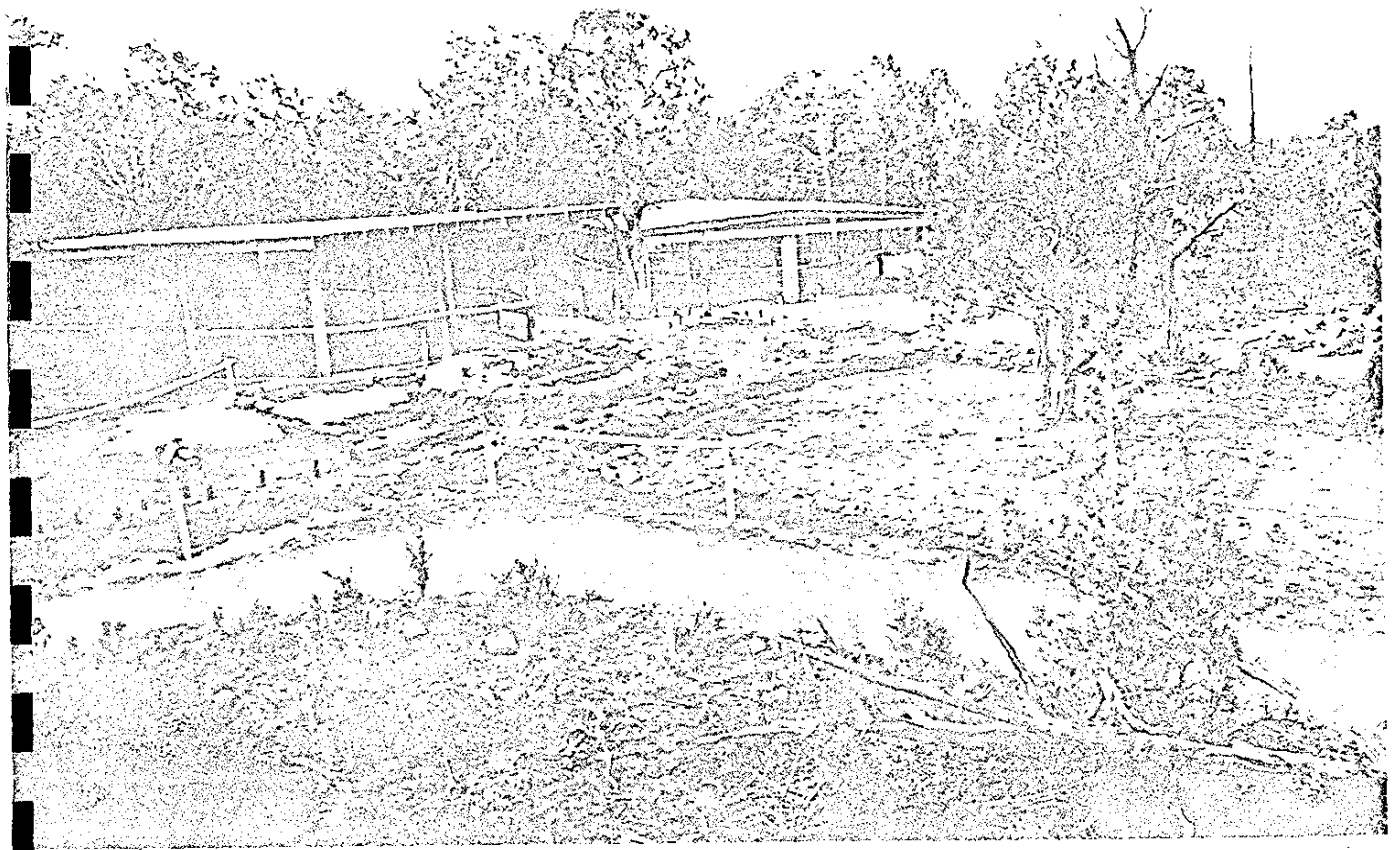


PLATE 56—*Site 16 After Excavation and Stabilization*

This photograph, taken from the north, shows Site 16 ready for exhibit. Shelter roofs have been constructed over the three kivas, protective railings have been installed, and graveled paths laid. Signs, which do not show in the photograph, have been placed at strategic points to direct unguided visitors to the three ruins in proper chronological order. Interpretive exhibits have been installed under the protective roofs. One, under the roof at the left over Kivas 2 and 3, explains the 4-post Kiva 2 and the post and adobe village, and the 6-pilastered Kiva 3 and Unit Pueblo No. I. The other, under the roof at the right over Kiva 1, explains the 8-pilastered kiva, the 3 towers and Unit Pueblo No. II.

Table 5.—*Sherd Percentages by Excavated Unit—Site 16*

[Based on the total from each excavated unit]

| Sherd Types | Kiva 1 | Unit Pueblo No. II | Kiva 3 | Unit Pueblo No. I | Kiva 2 | Strip ¹ areas |
|--|--------|--------------------|--------|-------------------|-------------------|--------------------------|
| <i>Pueblo II</i> | | | | | | |
| Mancos Black-on-white | | | | | | |
| Decorated | 21.4 | 25.6 | 26.9 | 25.5 | 27.8 | 22.2 |
| Undecorated | 22.9 | 30.9 | 12.2 | 16.0 | 13.5 | 24.1 |
| Total Mancos Black-on-white | 44.3 | 56.5 | 39.1 | 41.5 | 41.3 | 46.3 |
| Corrugated | 44.8 | 35.4 | 56.9 | 46.6 | 38.6 | 45.9 |
| Total percent assignable to Pueblo II | 89.1 | 91.9 | 96.0 | 88.1 | 79.9 | 92.2 |
| <i>Basketmaker III—Pueblo I</i> | | | | | | |
| La Plata Black-on-white | .9 | | | 1.0 | 2.3 | .9 |
| La Plata and/or Bluff Black-on-red | .5 | | | | | .4 |
| Lino-like plain wares | 9.5 | 8.1 | 4.0 | 10.9 | 17.8 | 6.5 |
| Total percent assignable to Basketmaker III—Pueblo I | 10.9 | 8.1 | 4.0 | 11.9 | ² 20.1 | 7.8 |

¹ This includes the sherds from the post and adobe village for the village was located solely as a result of stripping the area.

² The higher percentage of Basketmaker III—Pueblo I sherds in the fill of Kiva 2 is to be expected. This kiva was backfilled with the material from the excavation of Kiva 3. As pointed out, Kiva 3 apparently cut a Basket-

maker structure and the material would have been thrown into Kiva 2. Undoubtedly debris from the leveling of the burned post village was also thrown into this kiva and the cleanup of the site would naturally include some trash from older levels.

Table 6.—*Sherd Percentages by Periods—Site 16*

[Based on the total sherds of each ware and the totals assignable to each period]

| Sherd Types | 3,203 Mancos Black-on-white sherds | 3,289 Corrugated sherds | 6,492 sherds assignable to Pueblo II | 65 La Plata Black-on-white sherds | 24 La Plata and/or Bluff Black-on-red sherds | 614 Lino-like plain ware sherds | 703 sherds assignable to Basketmaker III—Pueblo I | 7,195 total sherds from Site 16 |
|-----------------------------|------------------------------------|-------------------------|--------------------------------------|-----------------------------------|--|---------------------------------|---|---------------------------------|
| Kiva 1 (2,659 sherds) | 36.8 | 36.2 | 36.5 | 36.9 | 58.3 | 40.9 | 41.1 | 37.0 |
| Unit Pueblo II (223 sherds) | 3.9 | 2.4 | 3.1 | | | 3.0 | 2.5 | 3.1 |
| Kiva 3 (774 sherds) | 9.4 | 13.4 | 11.4 | | | 5.2 | 4.5 | 10.8 |
| Unit Pueblo I (219 sherds) | 2.9 | 3.1 | 3.0 | 3.1 | | 3.9 | 3.7 | 3.0 |
| Kiva 2 (647 sherds) | 8.4 | 7.6 | 8.0 | 23.1 | | 18.7 | 18.5 | 9.0 |
| Strip areas (2,673 sherds) | 38.6 | 37.3 | 38.0 | 36.9 | 41.7 | 28.3 | 29.7 | 37.1 |

Table 7.—Tabulation of Body and Rim Sherds—Site 16

| | | | |
|----------------------------------|-------|---|-------|
| Mancos Black-on-white: | | La Plata Black-on-white: | |
| Decorated: | | Bowl and ladle sherds..... | 44 |
| Jar sherds..... | 817 | Bowl and ladle rims..... | 21 |
| Jar rims..... | 57 | | |
| Bowl and ladle sherds..... | 424 | Total La Plata Black-on-white..... | 65 |
| Bowl and ladle rims..... | 338 | | |
| Corrugated bowl exteriors..... | 28 | La Plata and/or Bluff Black-on-red: | |
| Undecorated: | | Bowl sherds..... | 20 |
| Jar, bowl, and ladle sherds..... | 1,505 | Bowl rims..... | 4 |
| Jar rims..... | 19 | | |
| Bowl and ladle rims..... | 15 | Total La Plata and/or Bluff Black-on-red..... | 24 |
| | | | |
| Total Mancos Black-on-white..... | 3,203 | Lino-like plain wares: | |
| | | Jar and bowl sherds..... | 557 |
| Corrugated: | | Jar rims..... | 48 |
| Jar sherds..... | 2,972 | Bowl rims..... | 9 |
| Jar rims..... | 317 | | |
| | | Total Lino-like plain wares..... | 614 |
| Total Corrugated..... | 3,289 | Total Basketmaker III—Pueblo I sherds..... | 703 |
| | | | |
| Total Pueblo II sherds..... | 6,492 | Total sherds from Site 16..... | 7,195 |

Table 8.—Sherd Counts From the Excavation—Site 16

| Sherd Types | Kiva 1 | Unit Pueblo No. II | Kiva 3 | Unit Pueblo No. I | Kiva 2 | Strip areas | Totals |
|---|--------|--------------------|--------|-------------------|--------|-------------|--------|
| <i>Pueblo II</i> | | | | | | | |
| Mancos Black-on-white: | | | | | | | |
| Decorated..... | 570 | 57 | 208 | 56 | 180 | 593 | 1,664 |
| Undecorated..... | 610 | 69 | 94 | 35 | 87 | 644 | 1,539 |
| Total Mancos..... | 1,180 | 126 | 302 | 91 | 267 | 1,237 | 3,203 |
| Corrugated..... | 1,190 | 79 | 440 | 102 | 250 | 1,228 | 3,289 |
| Total Pueblo II..... | 2,370 | 205 | 742 | 193 | 517 | 2,465 | 6,492 |
| <i>Basketmaker III—Pueblo I</i> | | | | | | | |
| La Plata Black-on-white..... | 24 | | | 2 | 15 | 24 | 65 |
| La Plata and/or Bluff Black-on-red..... | 14 | | | | | 10 | 24 |
| Lino-like plain..... | 251 | 18 | 32 | 24 | 115 | 174 | 614 |
| Total Basketmaker III—Pueblo I..... | 289 | 18 | 32 | 26 | 130 | 208 | 703 |
| Total sherds..... | 2,659 | 223 | 774 | 219 | 647 | 2,673 | 7,195 |

The Excavation of Sun Point Pueblo

BY JAMES A. LANCASTER AND PHILIP F. VAN CLEAVE

INTRODUCTION

Pursuant to the authority granted by the Director of the National Park Service (Director Drury's memorandum of February 24, 1950 to the Director, Region Three, National Park Service, Santa Fe), the archeological excavation of a small surface pueblo located approximately one-quarter mile west of Sun Point in Mesa Verde National Park, Colo., was initiated on April 3, 1950.

The specific need for a single ruin of approximately A. D. 1100-1200, which would provide information on this little-known interval and serve as an exhibit for the public, led to the selection of this site.

The latter specification demanded that a ruin fulfilling the other requirements be so located as to fit properly into an orderly sequence of 7 sites representing the chronological development of architecture from the sixth century pithouse throughout the succeeding 7 centuries of occupation of the Mesa Verde. Since previous excavations representing periods as recent as the 10th century were already incorporated into the interpretational plan of the park, the area of search for this "type site" was bounded by the location of the 10th century pueblo excavation (pl. 1, B), the view of the cliff dwellings obtained from Sun Point, and by an "easy walking distance" from that portion of the Square Tower House to Sun Temple view road which connects the series of interpretational sites.

While the site chosen had long been recognized, there is no record of its ever having been given any designation by name or number prior to the preparation of project proposal sheets relating to intended future excavations prepared in June of 1949. Apparently it was overlooked in the course of the Gila Pueblo Ruins Survey of 1929, and again during that institution's work in the summers of 1940 and 1941. (See O'Bryan, 1950, page 25 for the extent of this survey). Convenience of reference in interpretive use recommends the establishment of the name "Sun Point Pueblo" for this site.

Several sites of the approximate period had previously been excavated within the park, but none satisfied the location requirement for convenient visitor use, and few could serve to give period information because of the lack of reports covering the work. Early work by Fewkes in the Mesa Verde included the excavation of Far View House (Fewkes, 1917a, 1917b) in 1916, a small unit pueblo above Square Tower House dug by Linton in 1919 under Fewkes' direction (Linton, 1919), Pipe Shrine House, Far View Tower, and One Clan House in 1922 (Fewkes, 1922, 1923), all of which represent occupations at least in part coeval with the occupation of Sun Point Pueblo. In addition, O'Bryan's

excavation of Site 34 (O'Bryan, 1950, p. 62 et seq.), satisfactory except for its isolation, spans the period under consideration. Of work in the Mesa Verde area outside of Mesa Verde National Park, several of the sites (Reed, 1943, notably Sites 1 and 4) bear strong resemblance to Sun Point Pueblo. The connection between kiva and tower which will be discussed later is a trait as yet poorly known from the Mesa Verde but much studied elsewhere in the region to the west of the park. Excepting Fewkes' mention of this condition at Cedar Tree Tower (Fewkes, 1921, p. 91) in Mesa Verde, Martin's work of 1928 and 1929 gave the first considerable information on towers connected to kivas in the literature of the San Juan area (Martin, 1929, 1930). Whether this manifestation appearing at Sun Point Pueblo will prove as constant a feature in the Mesa Verde proper as it does in the somewhat peripheral area of Martin's excavations, will remain for future work to determine.

This report on the excavation of Sun Point Pueblo can serve its greatest value in giving better definition to a few of the problems facing us in the reconstruction of the history of the Mesa Verde people.

SUN POINT PUEBLO

The preexcavation surface indications (pl. 57, upper photograph) at Sun Point Pueblo were of some 10 to 15 room outlines formed about a rectangular court containing vestiges of a towerlike structure close to a kiva depression. While the areal extent of the ruin could be fairly determined, little could be ascertained as to the depth of cultural deposit, although the dearth of tumbled stone made it apparent that no great height of standing wall would be encountered. Evidences with particular bearing upon the period represented were: first, the overall plan of the pueblo with the kiva incorporated within the enclosed court; second, the carefully pecked-faced stones found in association with the exposed top of the double-coursed masonry of the towerlike structure. Little or no significance could be attached to surface potsherds, for the situation of the site, on a south-southeasterly slope, had allowed for a confusing accumulation of drift sherds from an area of long or sporadic occupation to the north and northwest. A total of 42½ man-days was spent in the excavation and stabilization of the site. All work was accomplished by a two-man crew of Navaho laborers under the direction and supervision of the senior author. The ensuing description of the excavations follows roughly the same sequence as did the initiation of the several phases of the work, although actually, in each case, a succeeding phase was initiated before work was complete on a given operation.

THE KIVA-TOWER

Since much of interpretational value of a site would hinge upon the "period characteristics" of the kiva, excavation was started within the kiva depression. Preliminary test-trenching had disclosed little fill overlying the rooms surrounding the court, so that clearing the kiva first offered the advantage of allowing slight protection to the remains of neighboring structures during the process of earth removal from the kiva interior.

In the course of excavating the kiva all sherds were saved although the nature of the fill material, being of drift deposit from the sherd area north and northwest of the site, made it impossible to define meaningful stratigraphic layers. Because of the paucity of sherds encountered in the upper fill of the kiva, all sherds from existing ground level to the top of the banquette were considered as one lot and were separated from those found in the lower fill, which extended from the top of the banquette to within 6 inches of the kiva floor. The last intended layer, comprising the 6 inches of fill immediately above the floor, proved to be entirely devoid of sherds or other artifacts.

The kiva manifests practically all the characteristics of a typical "Mesa Verde" or "San Juan" kiva. Some of the variations from type as noted below may be significant time-indicators for the Mesa Verde culture group, but it is thought likely that most are merely reflections of "environmental" differences as compared to the kivas of Mesa Verde cliff dwellings.

The banquette to banquette diameter of the kiva varies between 12.5 and 13 feet with the banquette itself ranging in width from 10.5 to 13.75 inches. The southern recess measures 3.1 feet in depth along the midline, and orients approximately 31.5° east of south (magnetic reading). The orientation of the kiva within the village is shown in plate 58. Projection of the lines formed by the side walls of the southern recess creates an angle of about 25°, converging at the north wall of the kiva behind the banquette. Although little is left of the 6 pilasters, each is evidenced by a retention of mud on the banquette, and the first pillar east of the recess has 2 of its basal stones still *in situ*. From these stones and the mortar impressions of others, it appears that the pillars had been constructed of large, uniformly pecked-faced stone blocks.

The face of the wall below the banquette level was provided with five niches fashioned in the masonry lining. The niche below the tunnel entrance (shown in pls. 61, upper photograph, and 62) probably functioned primarily as a step. As to the function of niches in general, no new evidence came to light here; however, it would be well to point out the constancy with which a small niche is to be found in the kiva wall in perfect alignment with the ventilator, deflector, fire-pit, and sipapu. The example in the Sun Point kiva is shown in plates 60, lower photograph, and 62, and is duplicated in at least 4 (and probably all) of the 5 kivas at O'Bryan's Site 34 (O'Bryan, 1950), as well as in the second and third

horizons at Site 16 (Lancaster and Pinkley, "Excavation at Site 16", in this volume). The limited information presently at hand suggests that this niche location was rather rigidly adhered to from about A. D. 1050 until around A. D. 1200 with less constancy found in the kivas of the later cliff dwellings. The uniformly small size of niches in this location as compared to others apparently placed at random, lends support to Brew's suggestion that "... we may ... suggest that some of the niches, at least, may have had ceremonial significance in themselves" (Brew, 1946, p. 213).

The wall below the banquette had been plastered at least once, and probably twice, with clay ranging in color from red-brown to olive-brown. The plaster was carried somewhat into the mouth of the smallest of three wall cists (see discussion on p. 93).

The entire clay floor shows a remarkable preservation. The sipapu had been plugged with an inch thick seal of floor clay beneath which was fill of a dark material in sharp contrast to the whiteness of the native calichelike soil into which it had been cut. The firepit is near circular in form, approximately 2 feet in diameter, and forms a shallow basin without any noticeable rim or coping. The deflector had apparently been dismantled, for its location was marked only by three stones bedded in, and just slightly protruding from, the floor.

The horizontal shaft of the ventilator measures 26 inches in height by 14 inches in width at the mouth, and extends 54 inches to the back wall of the vertical shaft following the midline of the southern recess above. The roof of the tunnel shaft is supported by 3 large stone slabs including the 1 which forms the lintel over the door-like opening. These slabs are borne upon the masonry lining of the ventilator side walls. The vertical shaft of the ventilator is so constructed that occasional stones of the facing in the southern recess serve also as facing stones of the adjacent shaft. The masonry lining of the vertical shaft does not extend to the ground level above, nor is there evidence of a stone framing at the ground level. Interior sectional dimensions of the vertical shaft at its base are about 11 by 14 inches, although there is a considerable reducing taper to the upper portion.

While most of the kiva features previously mentioned are considered typical of "Mesa Verde" or "San Juan" kiva constructions, the following are notable departures from, or apparent additions to, "type" form and will be dealt with individually in an effort to suggest possible significances.

Upper photograph—View of Sun Point Pueblo before excavation. This view shows the kiva-tower unit as a slight mound covered with dense growth just right of center. Compare the litter of stones left of center with the room outlines shown in plate 64, upper photograph.

Lower photograph—View of Sun Point Pueblo after excavation. The shed roof shelters only the kiva-tower unit. At the left, the tower shows the greatest height of free-standing wall encountered in the ruin.

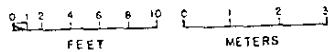


←PLATE 57—Excavation at Sun Point Pueblo

GROUND PLAN — SUN POINT PUEBLO

Mesa Verde National Park

- B BANQUETTE
- D DEFLECTOR
- E SLAB-LINED FIREPIT
- F KIVA FIREPIT
- G OVAL CLAY FIREPIT
- P PILASTER
- S SIPAPU



- T TOWER-KIVA TUNNEL
- T TUNNEL ENTRANCE
- V KIVA VENTILATOR
- W CURVED WALL
- Y CURVED WALL ?
- Y POSSIBLY AN EXTENSION OF Y
- AA' & CC' SEE SITE PROFILES

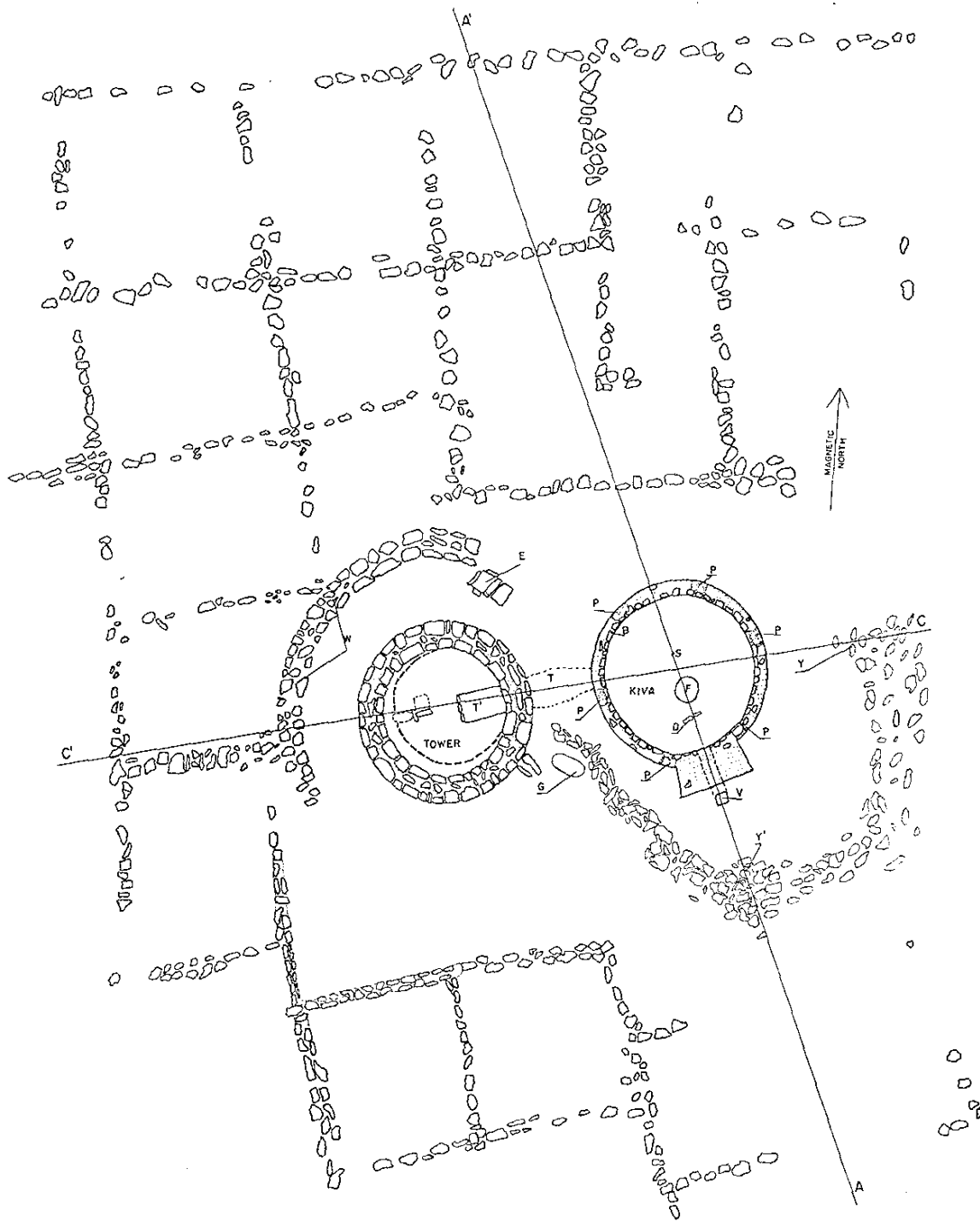


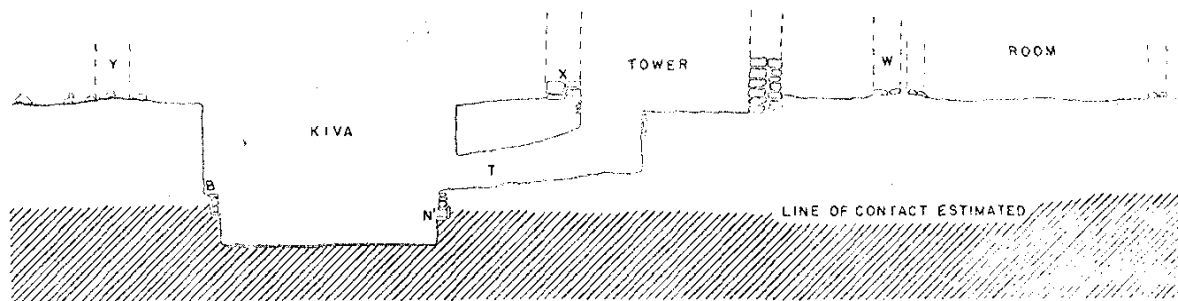
PLATE 58—Ground Plan of Sun Point Pueblo

While the continuous line of stones along the north border of the village probably represents the original boundary of the village on that side, obliteration of the house walls on the other borders makes it impossible to define accurately the bounds of the pueblo on the other sides of the presumed enclosure.

SITE PROFILES -- SUN POINT PUEBLO

Mesa Verde National Park

Profile through CC'

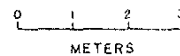


- B BANQUETTE
- D DEFLECTOR
- F FIREPIT
- N NICHE IN WALL
- N' NICHE B/OR STEP
- S SIPAPU
- T TOWER-KIVA TUNNEL

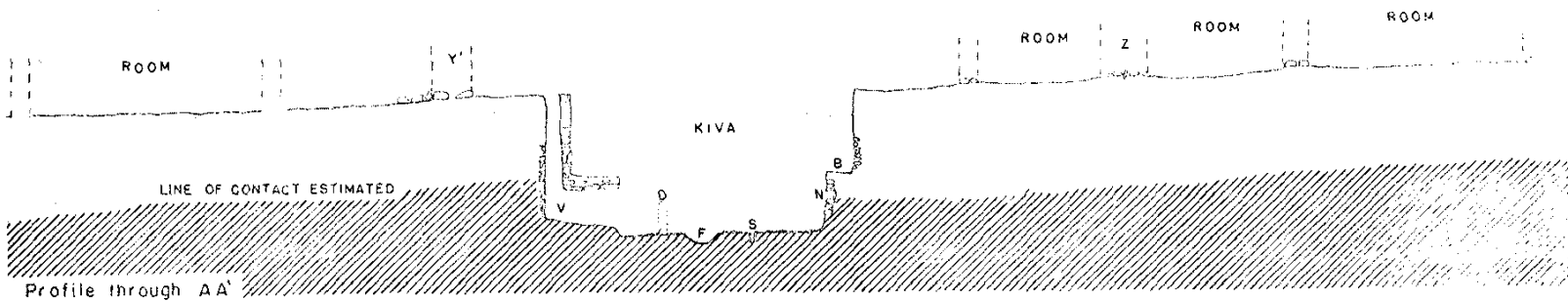
□ NATIVE
RED CLAY

□ CLAY MORTAR
AND PLASTER

▨ NATIVE
WHITE EARTH



- V VENTILATOR
- W CURVED WALL SEGMENT
- X TOWER DOORSILL
- Y CURVED WALL SEGMENT
- Y' POSSIBLY AN EXTENSION OF Y
- Z DISCONTINUOUS WALL REMAINS



Profile through AA'

PLATE 59—Profiles of Sun Point Pueblo

CC' and AA' have reference to the profile lines indicated on plate 4. Features uncovered by excavation beneath the floor of the tower early in 1952 are described on pages 99-103, but are not shown in the profile through CC'.



PLATE 60—*Kiva Interior* →

(1) Masonry used in the lining of the kiva interior (pl. 60, upper and lower photographs; 61, upper photograph, and 62) is limited in extent. In a typological series of Mesa Verde kivas, one will find examples of an early form in which no masonry is used, the walls being carved into native earth (O'Bryan, 1950, Site 102, kiva). In other cases equally as early, limited amounts of masonry occur under conditions which suggest use only to prevent collapse of weak portions of the native soil. In some instances this may have been done at the time of original construction; while in others, it is reasonable to assume that the masonry was added only when demanded by soil slumping conditions. A third condition, found at Sun Point Pueblo, is one in which masonry is carried throughout the circumference of the kiva, but extends downward from the banquette only deep enough to obtain a firm footing. In the Sun Point kiva this depth was determined by the contact between the crumbly red-clay surface soil and the underlying dense calichelike earth into which the masonry footings were carved. In comparatively late kivas on the mesa top, the masonry will be found to extend upward to the level of the tops of the pilasters, giving full lining from floor to roof (Lancaster and Pinkley, "Excavation at Site 16" in this volume). The culmination of this development is seen in late talus pueblos (O'Bryan, 1950, Site 34) and in cliff dwellings where masonry is often continued from the tops of the pilasters to the ground or court level.

To what extent this apparent refinement of technique is attributable to the necessity of retaining loose fill or dirt, rather than aesthetic or conventional standardization of religious architecture, seemingly remains an unanswered question. It has been suggested (Brew, 1946, p. 214) that the extent of masonry used in kiva lining was merely a practical means of meeting various exigencies of "earth" conditions met with in construction, and not, *per se*, a standardization capable of time indication. Whether or not a kiva was to be plastered might be an important factor in determining the extent of masonry (in excess of structural need) to be used.

To complete the description of the masonry lining in the Sun Point kiva, it will be noted in plate 60, upper photograph, that both vertical slabs and horizontal masonry were used in facing the walls of the southern recess, while plate

60, lower photograph, shows the extent of masonry above the banquette between pilasters 3 and 4 in the north quadrant of the kiva.

(2) The presence of kiva wall crypts is hitherto unrecorded from the Mesa Verde proper, though both Brew (Brew, 1946, pp. 143-144) and Morris (Morris, 1939, pp. 89-90) encountered cists in kivas which might have been analogous to those in the Sun Point kiva. In all three of the Sun Point kiva cists, the enlarged globular body of the cist extends somewhat below the level of the kiva floor, and is excavated entirely into the claichelike white earth beneath the banquette. The three are extremely variable in size, with maximum diameters ranging from 18 inches (north cist) to 56 inches (west cist). Maximum depth below kiva floor level ranges from 5 inches (north cist) to 18 inches (west cist). The maximum height of the west cist could not be accurately measured since the banquette above had collapsed into the body of the cist; however, the curvature of the upper walls indicates an approximate height of 48 inches. The maximum height of the small north cist is about 18 inches which establishes an approximation of the range for this dimension. The variations among the three cists can be seen in plate 62.

While nothing was found to indicate function of the wall crypts, the one east of the ventilator contained three sherds forming almost one-half of a large, well-made Mesa Verde Black-on-white bowl (pl. 69) and a pecked-grip hammerstone (pl. 66). The half-bowl is undoubtedly the most reliable single dating criterion for the site, and will be dealt with in detail elsewhere.

(3) The pilasters were of slightly atypical form. Fragmentary remains of the pilasters show that they had been formed of large pecked-faced stones in marked contrast to the small blocks used in the banquette facing. The pilasters had been set back slightly from the edge of the banquette, a trait which seems to correlate with small rectangular pilasters in early kivas on Alkali Ridge (Brew, 1946, p. 210), but is commonly manifest in late cliff dwelling kivas of the Mesa Verde. In this and all other discernible features, the pillars are fully characteristic of Mesa Verde Pueblo III, including the widening or flaring from front to back which Brew has considered a significant advance since "The side walls of the pilasters become as the outer sections of radii of the circle" thus bringing the pilasters "... into the circular plan of the kiva." (Brew, *Ibid.*) These details may be seen in plates 60, upper photograph; 61, lower photograph; and 62.

(4) The presence of a tunnel connecting the kiva to a round structure (presumably a tower) has previously been reported from the Mesa Verde (Fewkes, 1921; Reed, 1943) and more notably from the Hovenweep drainage (Martin, 1929, 1930, 1939). However, since Cedar Tree Tower and its associated kiva excavated by Fewkes are not integral parts of a pueblo, this situation was first encountered within the park proper at Sun Point Pueblo. Burgh (Burgh, 1934, p. 34) reported a kiva-tower connection at Far View Tower, but this may be

Upper photograph—*South portion.*

Detail of ventilator and southern recess at center, the two largest kiva cists show at either edge of the photo. Footing for the masonry lining can be seen in contact with the native calichelike soil. The floor of the ventilator is slightly above the level of the kiva floor.

Lower photograph—*North portion.*

This view, looking north from above the southern recess, shows 4 of the 5 wall niches (including the "step" below the tunnel entrance at left) and the smallest of the 3 kiva cists. The dark clay plaster appears to adhere better to the native soil than to the masonry. Note the use of stone masonry above north niche.

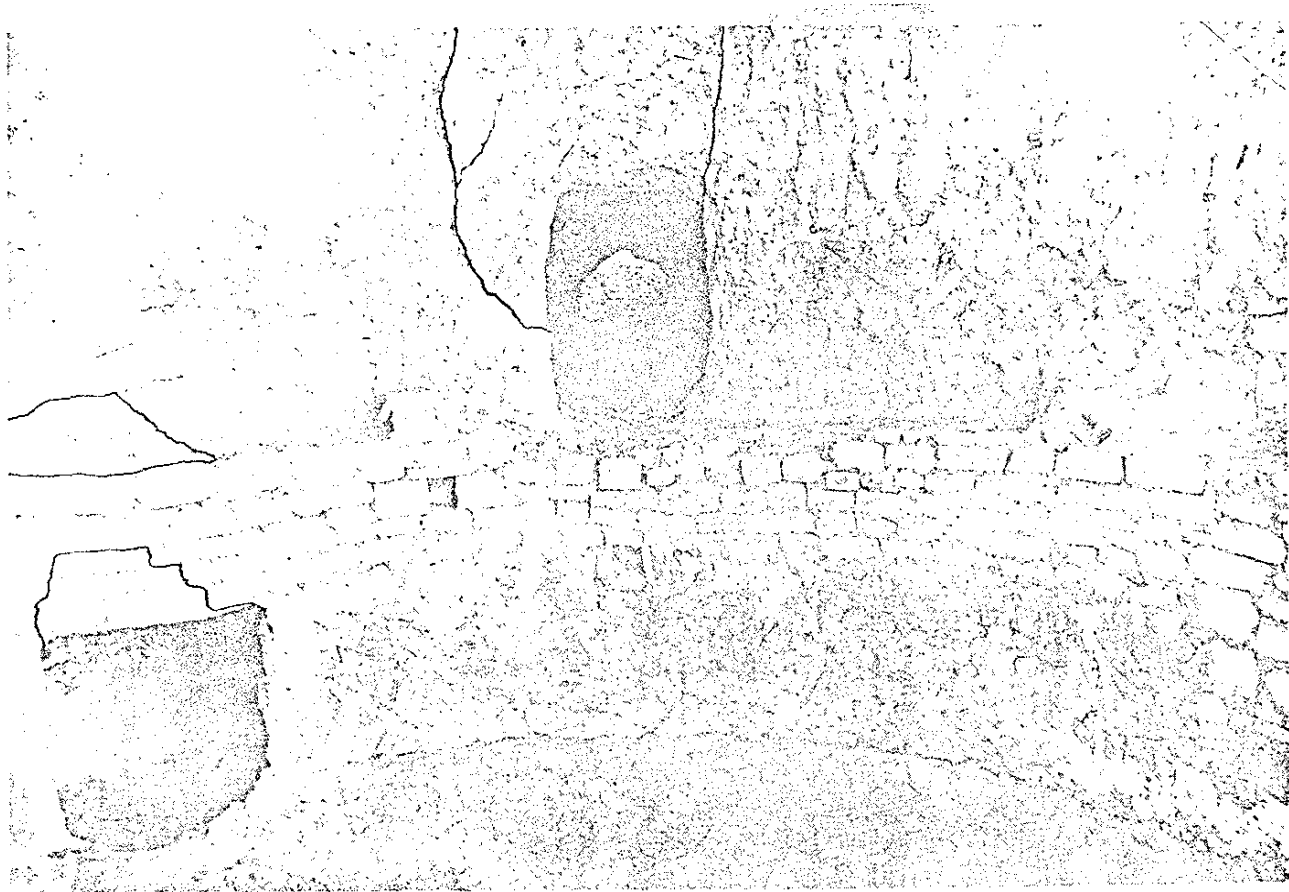


PLATE 61 →

an assumption based on the characteristic kiva-tower connection found by Martin (Martin, 1929, p. 30). There is no reason to doubt that other "kiva-towers" (term by Reed, 1943, p. 59) may exist in the park, for there are numerous unexcavated sites showing towers as surface indications.

Martin refers to "The round tower, subterranean passages (and chambers) and kivas lying to the south, and all forming . . . a psychological unit . . ." (Martin, 1929, p. 19). If we may lift his "psychological unit" slightly out of context and apply it only to the "kiva-tower complex," it will not preclude consideration of Cedar Tree Tower as a parallel of Martin's sites as well as Reed's presumed kiva-towers in the Mancos Canyon, and the unit at Sun Point Pueblo.

Solely on observation of the tower alone, Nordenskiöld (Nordenskiöld, 1893, p. 72) suggested that Cedar Tree Tower ". . . be regarded as a religious edifice." Both Martin (Martin, 1939, p. 476) and Reed (Reed, 1943, p. 13) deny the value of such towers as watch towers, which lends a negative support to their having served as a specialized ceremonial adjunct to the kiva.

At the present time the distribution of this "psychological unit" trait seems better defined in space than in time. Since the trait was not encountered by Morris in the La Plata District, or by Brew at Alkali Ridge, its east-west distribution would bear out Morris' (Morris, in: Martin, 1929, p. 33) suggestion that the kiva-tower is ". . . a local specialization . . ." perhaps more localized than the oft-mentioned tower trait of the San Juan area. There can be little question but what some relationship exists between the kiva-room connection described by Fewkes, (Fewkes, 1909, p. 13) and Prudden (Prudden, 1914, pp. 46-47) and the kiva-tower connection under consideration. While the former trait occurs in known late cliff dwellings, no evidence has yet been reported of the persistence of the latter in cave villages. However, knowing nothing of the specialized use which may have been associated with the kiva-tower, it would be well to mention the possibility that kiva-tower function might have been incompatible with cave situations, and hence they might persist as isolated units upon the mesa top or elsewhere during the period of exclusive cave dwelling occupation. Such isolated towers are, in fact, known to the Mesa Verde, but considerable exploratory excavation would be needed to distinguish "bona fide watch towers" from kiva-tower units. (For discussion of the defensive character of towers, see: Riley, 1950; Schulman, 1950; Lancaster and Pinkley, "Excavation at Site 16," in this volume.)

Upper photograph—*Kiva interior showing tunnel entrance.*

This view of the west quadrant of the kiva interior shows, in outline, the extent of repairs to the largest wall cist and the kiva-tower passage. The preservation of the original clay floors shows nicely in the foreground.

Lower photograph—*Kiva-tower unit, looking west.*

The exploratory trench intersecting the collapsed portion of the tunnel can be seen at the center of the photo. The slumped condition of wall above the east wall cist can be seen at the extreme left in the kiva interior. The extent of collapse of the west kiva cist can be noted at the right in the kiva interior.

The tunnel connecting the kiva to the round tower was an excavation into native soil with no structural use of masonry or wood. A small portion of the tunnel roof had collapsed near the edge of the kiva. An exploratory trench intersected this collapsed portion as may be seen in plate 61, lower photograph. The tunnel had been enlarged along its midsection so that the entrances from either end formed definite constrictions to the tunnel. The span of double-coursed masonry of the tower structure had apparently aided the support of the tunnel roof at that end. The rectangular manhole entrance from the tunnel into the floor of the tower was only partially masonry lined. No evidence of masonry was found on the lateral walls of the manhole, although the end wall was lined with crude masonry at an irregular depth below the level of the tower floor.

After the kiva-tower passage had been abandoned, a considerable quantity of refuse had been thrown into the tunnel, apparently from the tower end. This lens of debris, lying in contact with the floor of the tunnel, consisted of wood ash in which there was the greatest concentration of bone materials found during the excavation of the site.

Excavation of the tower, which was commenced before the excavation of the kiva had been completed, disclosed the basal portion of a double-coursed masonry building with an outside diameter averaging 14 feet. The stone work of the circular wall was of carefully pecked-faced blocks. The greatest depth of fill was found overlying the interior floor level where it reached a maximum depth of 37 inches. Since no standing wall of the tower projected above the ground level at the start of the excavation, this figure will suffice as well for the maximum height of standing wall. Wall thickness averages 2 feet for the double-coursed width. There is indication of a former doorway almost directly over the tunnel passage to the kiva.

The floor of the tower was made of packed red clay, in part poorly preserved. A single slab on edge seemed to extend the midline of the tower-kiva tunnel toward the opposite side of the tower. No purpose could be suggested for the presence of this slab at the time the floor was first exposed, for it seemed to constitute the only irregularity in an otherwise continuous floor level. At the floor level to the south of the doorway the wall is soot blackened and fire reddened through an arc of 4 feet, although there was no sign of a conventional firepit. A slight accumulation of white wood ash was found on the floor more or less centrally located in respect to the arc of fire discoloration, but of too small an extent to account for the more extensive evidence of fire.

The excavation of the tower was considered complete with the exposure of the floor level described above. However, questions concerning the function of the protruding slab and the largely unaccountable fire discoloration around the south quadrant of the wall led to further exploratory excavation beneath the floor level early in 1952. Description of this work and the evidences encountered will be dealt with in a later section.

clearing the area immediately surrounding the tower structure, two outdoor firepits were uncovered, as well as the remnant of a secondary circular wall concentric to the wall of the tower. So little remains of this secondary wall that it is impossible to determine whether or not it was contemporary with the tower structure (see plan, pl. 58). It can be noted from the plan of the site that this outer circular wall, if completed in near-circular form, would overlap the edge of the kiva with a small arc of its outer footing. Some further consideration of this outer wall will be found in a later section of this report describing features found beneath the last-used floor of the tower structure (p. 101).

THE VILLAGE PROPER

The clearing of the area occupied by the pueblo proper disclosed very little additional information regarding structural details. At no point was the fill overlying the presumed occupation level within the room outlines more than 6 inches in depth. The presence of the two firepits close to the tower serves as the best indication of the occupational level in absence of any such features inside of the room enclosures. The stones that outlined house floor areas were occasionally hard to distinguish from scattered rocks that littered the site. An occasional stone set firmly into the ground surface and rare instances of a two-course height of surviving wall serve to define the room areas. Any estimate of the total number of rooms would be merely guesswork, although something more than the "10 to 15 room outlines" mentioned previously are indicated in the site ground plan. While no evidence survives in proof, one might suspect the former existence of a row of rooms or at least a wall bounding the east side of the village and court. It is probable that the north row of rooms as indicated (pl. 58) represents the edge of the village on that side, but elsewhere the remains are too vague to allow outer wall determination. Obviously then, the artist's reconstruction of Sun Point Pueblo (pl. 72) is based more upon typologic supposition than factual evidence, and was produced primarily for interpretive exhibit to visitors at the site.

OBSERVED EVIDENCE AND ARTIFACTS

Because of the dearth of true artifacts recovered in the course of excavation at Sun Point Pueblo, all internal evidence observed during the excavation, as well as the sherds and unworked bone, will be considered under this heading along with the few stone and bone articles of manufacture. Table 9 provides easy reference to all the cultural remains recovered in general reference to provenience of specimens. In the following narrative presentation of the cultural manifestations the same general order will be followed as was used in the foregoing description of the site: kiva, tunnel, tower, court, and general village proper.

The Kiva

Much of the upper fill in the kiva was of water-borne drift including both soil and sherds. A total of 111 sherds

represents a range in decorated wares from Mancos Black-on-white to good Mesa Verde Black-on-white; corrugated wares show variation from narrow, partially obliterated coils to perfect, carefully indented configuration. Certainly the range of occupation span which might be inferred from the range of pottery types cannot be substantiated by any other evidence. Only one sherd was encountered which might be considered intrusive culturally, it being a small brown-ware sherd with finely divided chalky white temper.

Large stones or building blocks were noticeably absent in the upper fill material.

From the level of the banquette downwards the lack of tumbled building stone became even more conspicuous. The almost total absence of pilaster stones was the first indication that the kiva had been dismantled by salvage operations at, or subsequent to, abandonment. While there were almost twice the number of sherds found in the lesser volume of the lower fill as compared to the upper fill, even here the range in types represented was wholly inconsistent with the other evidences pointing to a very limited period of occupation. Decorated and corrugated sherds showing the range found are shown in plates 70 and 71, respectively. A basal fragment of a large chipped point was found in the lower fill and constituted the only nonceramic artifact encountered in the kiva fill (pl. 65, lower left).

Having recognized the insignificance of sherds in the kiva fill from the start, the bottom 6 inch layer above the floor was removed separately in an effort to obtain a series of sherds which would show association with the period of occupation of the village. However, this bottom 6 inch layer was comprised of roof clay, decomposed vegetable matter (not timber), and loose earth presumed to have been from the fill material immediately above the cribbed kiva roof at the time the dismantling operation was commenced. Not a single sherd was found in this layer or in contact with the kiva floor.

With the exception of that section of the floor beneath, and between, the second and third pilasters (northwest quadrant), the kiva floor was clear of any refuse or artifact beneath the litter-fall of the dismantled roof. The two water-worn pebbles shown in plate 66 were found on the floor just north of the tunnel entrance. A broken fragment of the distal end of a turkey tibiotarsus, which shows random scoring of the shaft just above the articular processes and an abraded smoothness along one lateral edge of the fracture (probably a badly damaged bone awl), was found a few inches north of the pebbles. A complete awl fashioned from the proximal end of a bobcat femur (pl. 65) was the northwesternmost of the artifacts, all of which came from an area of approximately 10 square feet.

In cleaning out the southern recess, the small rectangular worked sherd shown in the center of plate 65 was found in contact with the "floor" of the recess.

The remarkable preservation of the kiva floor and the direct contact between floor and vestiges of roof clay would

SCHEMATIC PANORAMA OF KIVA
 SUN POINT PUEBLO
 Mesa Verde National Park

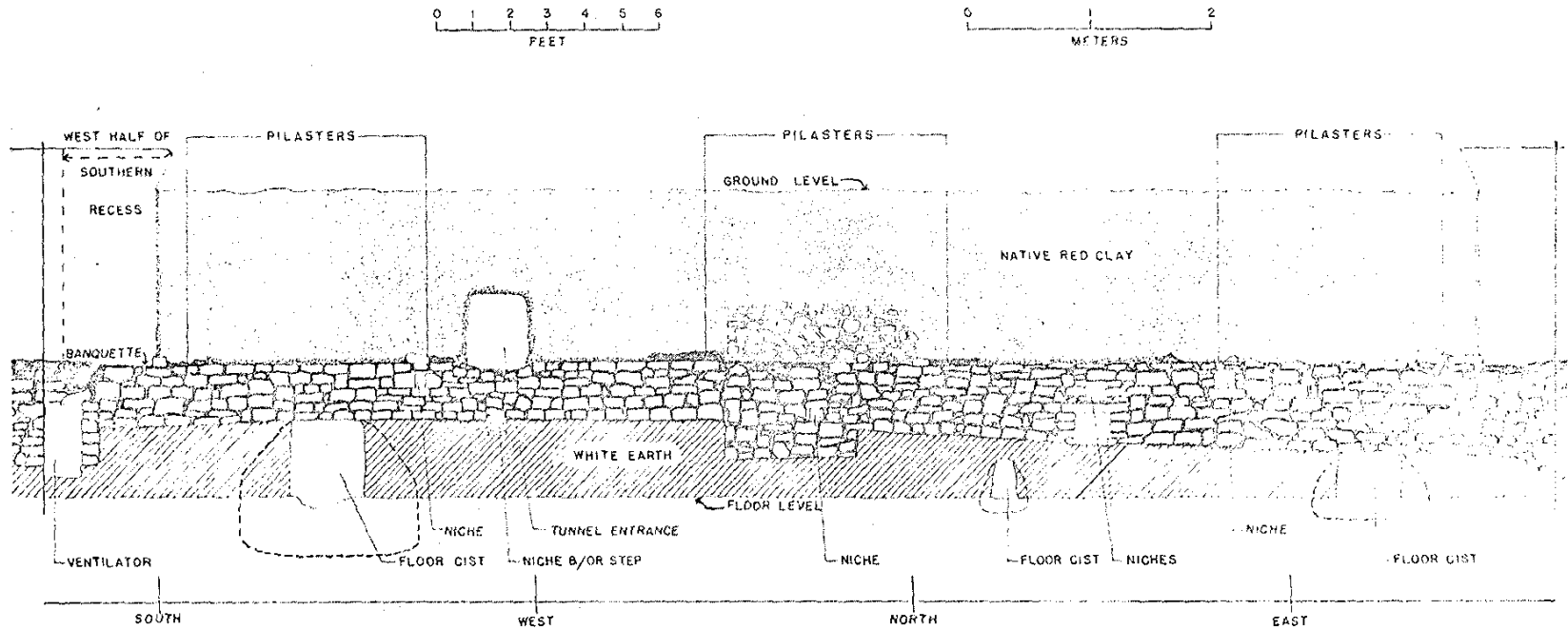


PLATE 62—Schematic Panorama of Kiva Interior

The features labelled here as "floor cists" are more accurately referred to in the accompanying text as "wall cists."

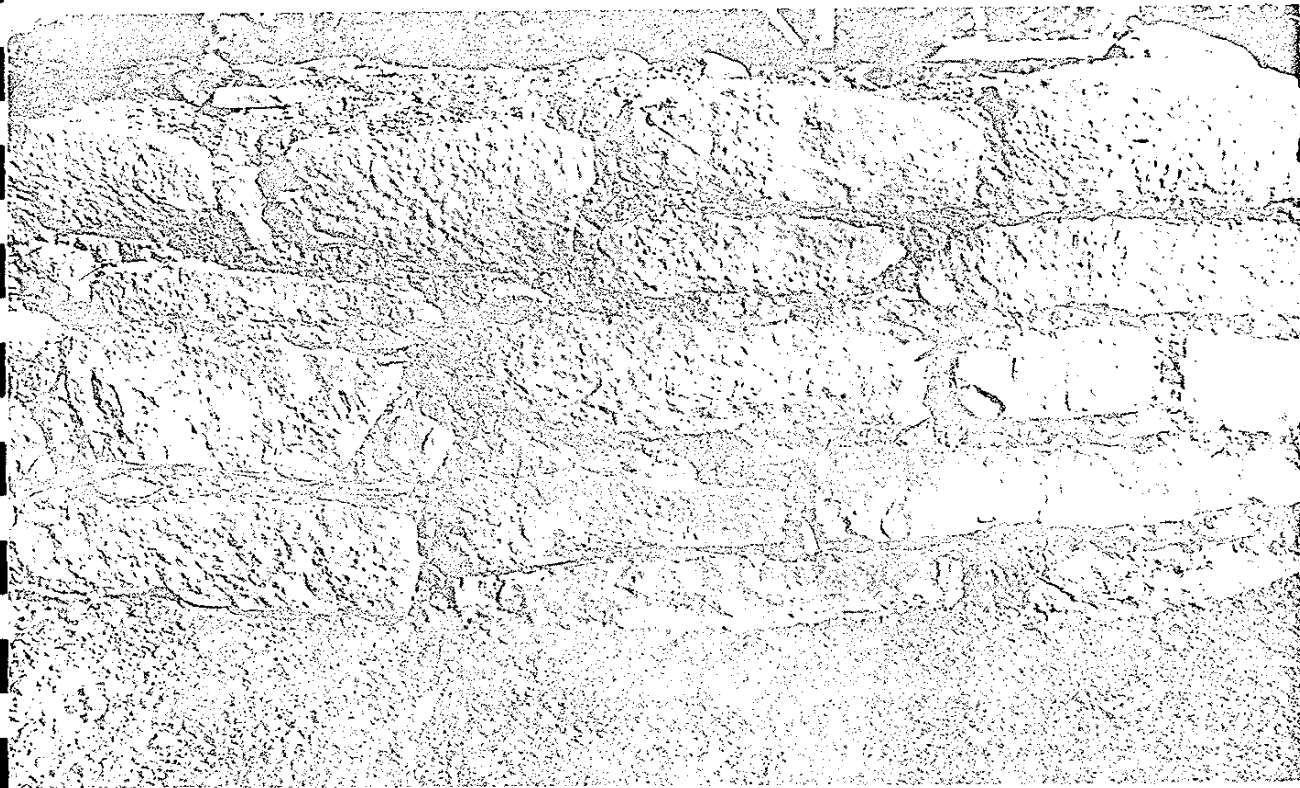


PLATE 63--*Kita Tower Unit* →

seem to indicate that no appreciable lapse of time could have existed between abandonment and removal of the kiva roof.

From the ground plan of the site (pl. 58) it will be noted that there is a somewhat crescent-shaped but irregular mass of stones surrounding the south portion of the kiva. The lack of stones in the kiva fill suggests the possibility that stones accumulating on the kiva roof during dismantling of the tower were tossed off to form the encircling ring when the kiva roof salvage operation was begun. It is equally possible that this ring of stones is the remnant of one or more walls so badly demolished as to defy determination.

In cleaning out the three kiva cists, only the large one east of the ventilator produced significant evidence or artifacts. The pecked-grip hammerstone shown in plate 66 and the restored half-bowl of Mesa Verde Black-on-white shown in plate 69 were found on the floor of this cist. The fill within the cist, overlying the hammerstone and sherds, consisted in part of fragments of dried but unburned roof clay which bore impressions of small roofing sticks. This circumstance points to deposition of the articles before the roof of the kiva was thoroughly dismantled and effectively precludes fortuitous introduction of the artifacts after abandonment of the site.

The Tunnel

The ashy lens of trash found on the floor of the tunnel between the kiva and tower (see p. 95) contained 14 sherds representing not more than 9 vessels; a broken (but complete) flat slab metate; one thin bevelled *mano*; one massive unfinished *mano* (?) and an accumulation of "waste" or "table scrap" bones. The latter constitute parts of 1 or 2 cottontail rabbits; 1 or more unidentified spermophiles; 1 exceedingly young fawn deer; 1 mature deer; and 1 large bird, presumably turkey.

The mandible, scapula and radius (?) of the fawn are so incompletely ossified, and hence fragile, that one might suspect they had been deposited here immediately upon dismemberment of the carcass. Certainly the three parts preserved in association would suggest that the dismantling of the site took place during the fawning season or only slightly after, for there could not have been any traffic through the passage after the deposition of the ashy lens of refuse.

Upper photograph—View as seen from southwest corner of the site.

Note the arc of circular wall around the west half of the tower structure. The trough-shaped firepit can be seen directly in front of the kiva. Wall remains in the foreground are the best defined of the several room outlines.

Lower photograph—Detail of tower wall

View showing dimpled effect on the peck-faced building blocks. This is a trait typical of Pueblo III architecture in the Mesa Verde.

The mature deer bone fragment is the only piece that shows evidence of having been worked, and that only superficially. It is doubtful whether it was ever intended as a tool, but instead may be a splinter discarded in the working of a large bone.

The slab metate and manos are shown in plates 67 and 68, respectively. All three are of sandstone. The fracture of the metate might have been caused by excessive heat, for the working face and edges are somewhat heat discolored and soot darkened. The thin mano is provided with a single working face but has the triangular cross section typical of many Mesa Verde manos. The large mano(?) does not give evidence of having been used and is likely an unfinished blank.

The Tower

The fill material in the tower yielded 14 sherds which represent not less than 10 vessels. Since the remains of the tower wall would have precluded drift from the surrounding area, it is thought likely that a part, or all, of these sherds originated as chinking material in the dismantled upper portion of the tower structure, becoming admixed with the clay in which they had been imbedded as the courses of stone were removed in salvage operations. A few chinking sherds remain in the surviving courses of the standing wall. The absence of any noticeable trash or wind-blown debris beneath the clay and spalls of the dismantled wall again tends to support the idea that salvage operations were undertaken at the time of abandonment.

Five additional sherds and a slightly damaged projectile point were found in direct contact with the tower floor along with both halves of a broken sandstone mano. The point and broken mano are shown in plates 65 and 68, respectively.

As was mentioned earlier, excavation in the tower was discontinued and considered complete with the exposure of the last occupation level, but subsequent excavation beneath this floor early in 1952 led to partial clarification of two questions. Removal of the floor disclosed a great ash deposit corresponding in extent to the arc of fire discoloration on the tower wall (see p. 95), thus solving the problem of origin of the fire reddening and soot blackening of the wall which was obvious but largely unexplainable at the level of the last-used floor. The quantity of ash would indicate a tremendous fuel consumption in this area, yet there is nothing which could be considered a fashioned firepit. The ashes merely accumulated in a crudely gouged groove or trough of irregular form which followed the curvature of the tower wall. Noteworthy inclusions in this ash deposit were 6 sherds of Mesa Verde Black-on-white; 1 Corrugated sherd; 4 sherds of Black-on-white vessels of types indeterminate because of small size or poor condition; and a total of 18 charred fragments of plant remains, including 6 corncobs and tiny sections of small sticks 1½ inches in diameter or less.

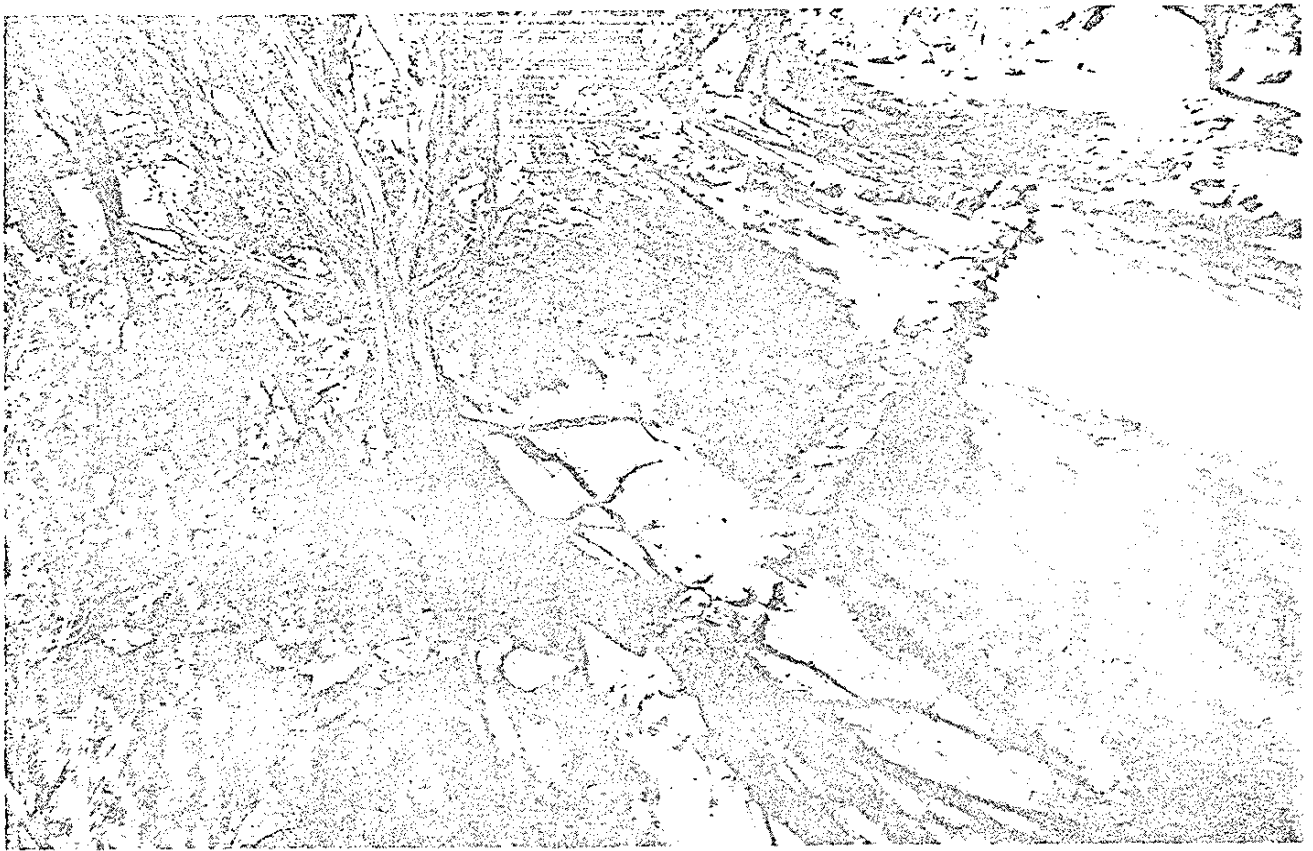


PLATE 64--*Sun Point Pueblo* ->

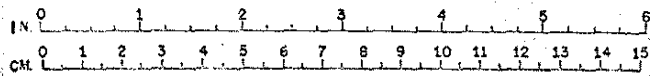
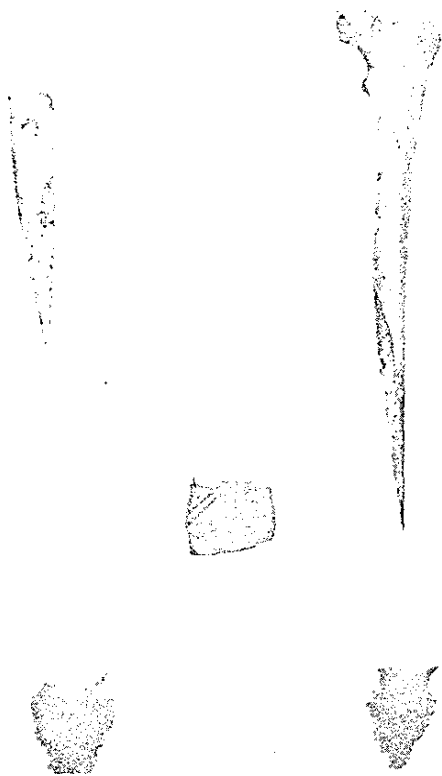


PLATE 65—Miscellaneous Objects

- Upper left.*—Eyed awl from slab-lined fireplace.
Upper right.—Awl of bobcat femur from kiva floor.
Center.—Small worked sherd from floor of southern recess in the kiva.
Lower left.—Chipped point fragment from lower fill in the kiva.
Lower right.—Chipped point from tower floor.

The vertical slab which had been protruding through the tower floor proved to be a vestige of a slab-lined bin whose floor corresponded in level to an earlier underlying floor. There had been two of these bins (see dotted line indications in pl. 58) but it is impossible to determine with certainty whether their use was associated with either of the floors exclusively, or with each in turn. It is probable that the bins had been dug through the upper floor and that happenstance alone accounts for the slab bottom of each coinciding with the underlying earlier floor.

Upper photograph—*South Rooms*

Outlines of south rooms, looking towards the southwest corner of the village. The edge of the Square Tower House to Sun Temple view road can be seen along the upper border of the photo.

Lower photograph—*North Side*

Looking west across the evidences of rooms bordering the north side of the building area.

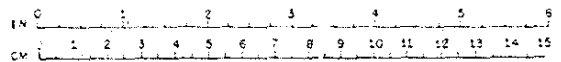


PLATE 66—Objects of Stone

- Upper left.*—Full-grooved axe from court just north of the tower.
Upper right.—Pecked-grip stone hammer from large east wall cist in the kiva.
Lower left and right.—Waterworn pebbles from the kiva floor.

Elsewhere beneath the floor, chunks of unburned roof clay were encountered in the fill suggesting that the original roof had been repaired or replaced prior to the establishment of the last used floor.

An unexpected structure, brought to light by the removal of the tower floor, was an underlying circular wall beneath the footings of the tower proper. This wall, of a diameter slightly less than that of the upper tower, is not quite concentric to the latter so that it seems to form a low benchlike shelf of crescentic form extending from the south side of the tunnel hatchway to the extreme north of the tower interior. A bond of clay mortar ties the bottom course of the tower to the upper course of the smaller circular wall. It is impossible to prove that this wall is a remnant of an earlier tower since it could be a constructional feature of the tower proper. It can be pointed out, however, that the remains of the outer circular wall (see W in pl. 58) and the lower of the "tower" walls compare more closely to each other than either does to the tower proper. This points to the obvious possibility

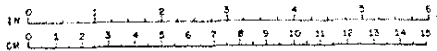
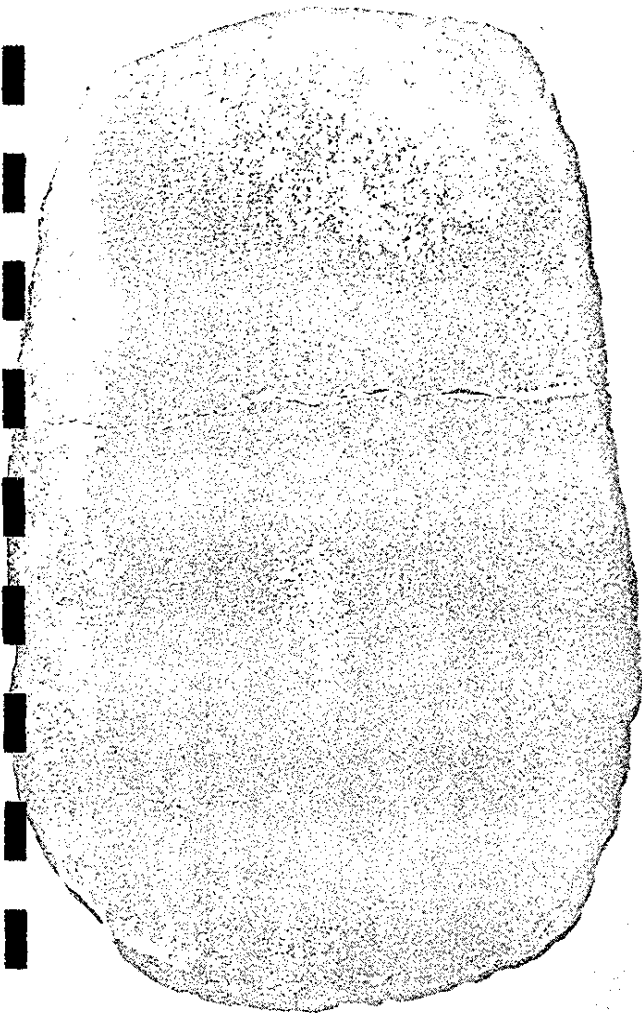


PLATE 67—Slab Metate

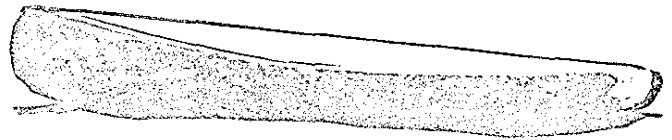
Upper left photograph—Face view of the slab metate found in the tunnel passage. The upper portion of the metate above the crack is foreshortened in this view.

Upper right photograph—Lateral view of metate showing depth of concavity resulting from wear in use.

That an early double-walled tower had been dismantled prior to the erection of the tower proper. Concentricity between the outer circular wall and both superposed "tower" walls is approximately equal.

The only demonstrable floor encountered after penetrating the last-used occupation level corresponds to the footing elevation of the eccentric wall underlying the tower. Since the ash deposit and fire discoloration of the tower wall both arise from this level, this floor probably served as the floor to each of the circular structures in succession.

The presence of Mesa Verde Black-on-white sherds in the fill between the floors gives assurance that the construction of the tower proper took place after that pottery type had become fully developed.



Of considerable significance is the fact that the masonry lining the inner end-wall of the tunnel manhole demonstrates an obvious change in character at a level closely corresponding to the lower floor. This furnishes an implication that the earlier (possibly double-walled) tower had been connected to the kiva by the same tunnel which continued in use throughout the remaining history of the unit. If this be a valid reconstruction, then the seeming disparity between the type of stonework represented by the facing below the banquette and that in fashioning the pilasters in the kiva might be accounted for on the basis of a kiva remodeling at the time of the tower reconstruction.

To reconcile this presumed reconstruction of the kiva-tower unit within the extremely short occupation span of the pueblo, it is necessary to postulate alternative suggestions (1) the earlier (presumably double-walled) tower connected to the kiva existed before the main occupation of the village; or, (2) the tower proper, connected to the kiva, continued in use after the abandonment of the village. Elevations of wall footings of those rooms closest to the kiva-tower are without exception higher than the footing of the tower proper, a fact which tends to stress the theory that the reconstruction of the kiva-tower unit must have taken place during the occupation of the village.

The rubble ring of clay mortar and bits of stone, which formed about the tower proper as it was dismantled, covered (in part) the remains of the outer circular wall, giving proof that this structure (W in pl. 58) had been destroyed prior to the demolition of the tower proper. The same rubble ring surrounding the tower had afforded protection to the only two firepits found outside the kiva. These pits serve to establish the occupation level for the court just outside the tower. The small rectangular firepit just to the north of the tower yielded an unburned eyed-awl (pl. 65) of deer (?) bone from its ash accumulation. The trough-shaped firepit just southeast of the tower doorway produced several sherds including highly developed Mesa Verde Black-on-white (pl. 70, top row, center).

The full-grooved axe shown in plate 66 was found on the occupation level just outside the tower on the north.

The House Floor Areas

In those portions of the house walls best preserved, notably in the southwest corner of the village, the wall footings are of double-coursed thickness. Occasionally, vertical slabs were utilized to "form" a rubble-filled wall footing. While no actual floor levels could be defined, it is considered likely that the walls were footed directly upon the existing ground level without preparation of trenches for the base course.

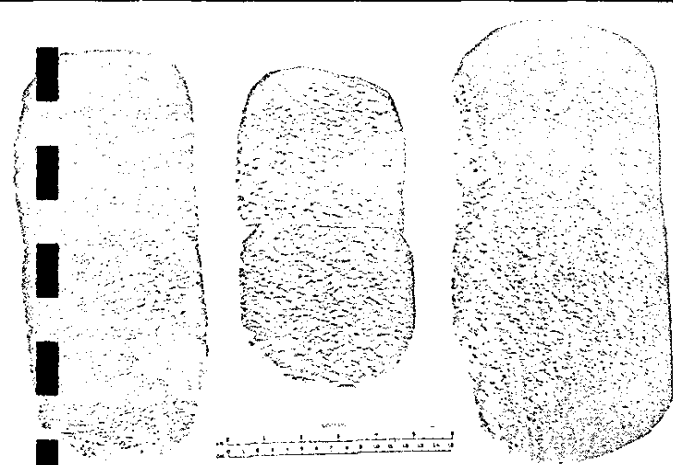


PLATE 68—Manos from Sun Point Pueblo

The broken example in the center was found on the floor of the tower, while the bevelled mano at the left and the unfinished mano (?) at the right are from the trash deposit found on the floor of the kiva-tower passage.

No floor features were encountered in any of the room areas. The apparent lack of post holes is in keeping with the typologic position of the site, for pueblos of this period typically provided roof support, even in multistoried structures, solely by means of horizontal timbers socketed in the walls. Intramural firepits are often less well defined than outside firepits in ruins of this era, (O'Bryan, 1950, p. 68) so that lack of evidence does not deny their former existence.

The Trash Mound

A considerable effort was expended in trying to locate the trash mound for the village. While it is possible that a small debris mound could have been destroyed by erosion or through road construction, it is significant of the brevity of the occupation that no definable refuse area could be located. Perhaps of equal importance is the fact that surface sherds of late Pueblo III types are extremely rare in the area to the south and southeast of the village where the concentration of debris is most likely to have occurred. The fact of the wall footings of rooms adjacent to the court being higher than the occupation level within the court (mentioned on p. 102) implies a sheet deposit of refuse beneath the wall footings of these rooms; but, if and where such a deposit exists, it could hardly be trash deposited during the occupation of the pueblo which rests upon it.

DATING THE OCCUPATION

Unfortunately, no datable wood or charcoal was recovered from any part of the excavation. Hence, no direct dating of the occupation is possible. Nonetheless, several of the evidences previously mentioned can serve to cross-date the approximate period of occupation with other sites for which tree-ring dates have been determined.

Architecturally, the technique of pecking the faces of the building blocks to give a uniformly dimpled effect would

seem to be the most valuable dating criterion. This trait is positively attributable only to the tower proper and the kiva pilasters, but occasional pecked-faced stones found in the litter of the house floor areas tend to associate this trait with the house architecture at Sun Point Pueblo as well. Evidence at Site 16 ("Excavation at Site 16", in this volume) indicates the inception of this treatment was about or slightly before, A. D. 1100. While the large kiva at that site (Kiva 1) is dated at A. D. 1074 (Schulman, 1951, pp. 28-29) and shows no evidence of the pecking technique of stone working, the round tower remnants which have been presumed to be associated with the large kiva do show occasional pits in the faces of stones, yet nothing approaching the high development of this treatment was evident in the Sun Point tower (pl. 63, lower photograph). O'Bryan (O'Bryan, 1950, pp. 110-111) cites this method of stone dressing as a diagnostic of Gila Pueblo's Montezuma Phase (ca. 1150-1300) in the Mesa Verde District. While this is slightly later than the time represented by Site 16, it is thoroughly in keeping with O'Bryan's definition of the treatment as producing "a dimpled effect" which was lacking at Site 16.

The kiva-tower unit, while possessing grosser architectural features than the stone dressing method just dealt with, may eventually prove of value as a time-indicator. The known areal distribution of these kiva-towers has been discussed earlier, as was the lack of evidence relating to the span of time in which they were commonly used. The little evidence so far reported upon kiva-towers is summarized below.

From the slight amount of published and unpublished information available, it would seem that most, if not all, of the sites containing kiva-towers so far examined have had notable ceramic associations with either the so-called McElmo Black-on-white, Mesa Verde Black-on-white, or both. Considering the latter as a "type" and the former as a (perhaps distinctive) decorative style so as to include Morris's "early, but fully recognizable, Mesa Verde ware" (Morris, 1939, p. 214), the beginnings of (McElmo) Mesa Verde Black-on-white in the La Plata District can be placed "... at least by 1175." (Morris, *ibid.*). Reed (Reed, 1943, pp. 119-120) found the greatest amount of "McElmo style" pottery at Site 1 in the Mancos Canyon, and gives dates of 1189+ to 1192+ for that site (Hall, in: Reed, 1943). The recent excavation of Site 16 in Mesa Verde National Park (Lancaster and Pinkley, "Excavation at Site 16", in this volume) shows a persistence of Mancos Black-on-white until A. D. 1074 (Schulman, 1951, pp. 28-29), and an utter lack of carbon paint which precludes the very beginnings of Mesa Verde Black-on-white (including McElmo) by that time (Shepard, in: O'Bryan, 1950, p. 98). If we are to use "McElmo style", or type if you will, as a phase determinant as urged by O'Bryan (O'Bryan, 1950, p. 109), we can be assured that the Site 16 community never entered the McElmo phase despite the fact that the community survived until A. D. 1074 or after. This obviously impugns O'Bryan's

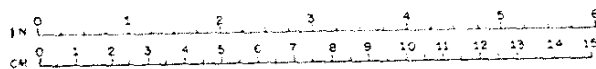
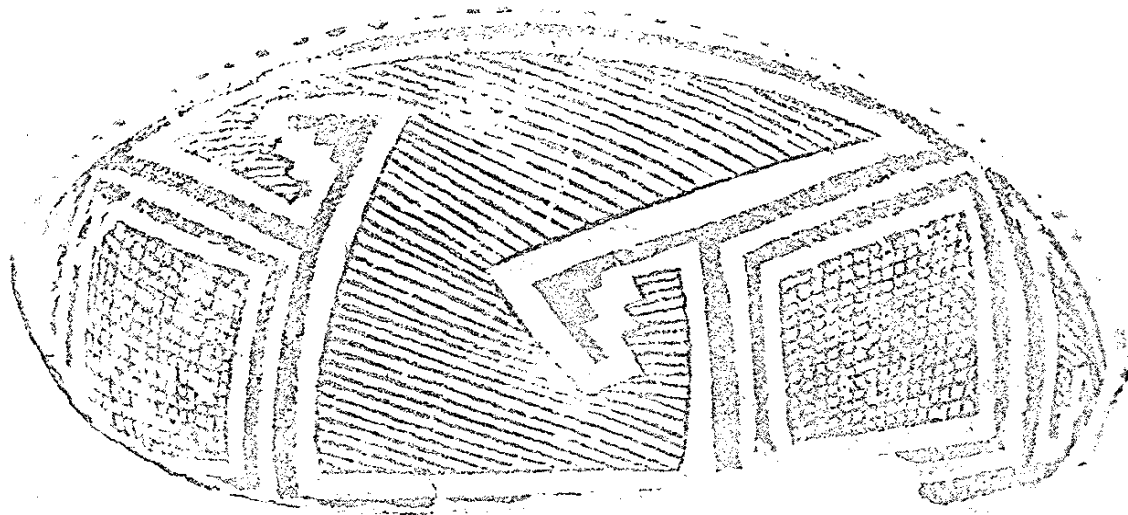


PLATE 69--*Mesa Verde Black-on-White Half Bowl*

Upper photograph--This bowl was found on the floor of the large wall cist east of the kiva ventilator. The decorative layout is of a tri-part style rarely used on Mesa Verde pottery.

Lower photograph--Exterior view of the half-bowl showing 2 isolated decorative elements. From the spacing of these 2 designs it is inferred that there were 3 on the exterior of the complete vessel.

revision of Gila Pueblo's McElmo Phase (Gladwin, 1942, p. 2: "McElmo Phase 1180-1230") which he gives as "ca. 1050-1150." The O'Bryan revision is based upon internal evidences encountered in his excavation of Site 34 in Mesa Verde National Park, and upon dates procured from other sites in the area, most of which remain unexcavated. It seems quite possible that he has, too frequently, assumed that the dates deriving from a given site are representative of terminal dates for the site's occupation.

Regrettably, no kiva-tower has yet yielded actual tree-ring dates, but on the basis of the ceramic associations reported it seems doubtful that any of the kiva-towers so far excavated were built before A. D. 1100.

The full-grooved axe (pl. 66) is probably a time-indicator as suggested by Reed (Reed, 1943, p. 183) but only on a "frequency" basis, not in its presence or absence as demonstrated by Brew (Brew, 1946, p. 239).

The Mesa Verde Black-on-white half-bowl (pl. 69) found in the kiva wall cist has previously been suggested as the best available dating criterion for the site. While much of the discussion given to the dating of the kiva-tower unit above is applicable to the time of manufacture for early stages of the Mesa Verde Black-on-white development, the half-bowl under consideration cannot be considered "early." The layout of design is of the type described by Morris (Morris, 1939, p. 239) as "allover" or "entire." The most prevalent variety of this layout is one in which the pattern is based on a square central element with "arms" extending from each corner of the square toward the rim to balance opposed elements depending from the rim. In the specimen from Sun Point Pueblo, however, the central element is a triangle rather than a square. This treatment is known from 11 specimens of which only 4 have been figured in the literature on Mesa Verde pottery. Morris (Morris, 1919a, p. 87; figs. 62b, 65a) figures 1 of 3 such bowls from Aztec Ruin and states elsewhere (Morris, 1939, p. 214) that ". . . Mesa Verde pottery would appear not to have been developed in or brought to the Aztec vicinity prior to 1171." Three different specimens are figures from the Lotrich Collection (Hurst and Lotrich, 1935, 1936) in the Museum of Western State College and 5 specimens are in the Mesa Verde Museum collections.

Although all 3 of the Lotrich collection specimens are from Yellow Jacket Canyon a few miles northwest of the Mesa Verde, 1 of the group is attributed to the Pueblo II horizon in that area, while the others are ascribed to the Pueblo III horizon. Since the senior author of the series of articles on the Lotrich collection states elsewhere that "Pueblo II extended from A. D. 900 to 1100" (Hurst, 1946a, p. 53) it is impossible to justify the ascription of any of the pieces to the Pueblo II period. It seems quite evident that the Pueblo II ascription is based primarily upon an apparent conformity with Kidder's "Proto-Mesa Verde" pottery description (Kidder, 1924, pp. 61-67). Certainly the implication is erroneous and the piece can be quite properly placed in late Pueblo III.

It should be noted that one of the pieces in the Mesa Verde collections came also from the Yellow Jacket vicinity, and while being atypical of Mesa Verde Black-on-white in several respects including form and chalky finish, it is by no means an early piece. Such differences as do occur between pieces from the Mesa Verde and from the Yellow Jacket are quite likely due to localized specializations and are not necessarily indicative of differences in time.

In studying the specimens in the Mesa Verde collections and those of the published figures that show rim and exterior design, it was noted that there is a marked inconsistency of treatment in these three areas of decoration. In 4 examples (and possibly more) either the rim decoration or the exterior decoration is made up of a 4-part design in conjunction with the 3-part all-over design layout used on the interior. This in itself is suggestive of the unfamiliarity of Mesa Verde potters with the tri-part decorative treatment as compared to the more common four-part all-over decoration. The Sun Point Pueblo bowl and a specimen from a Mesa Verde cliff dwelling are the only ones known to show consistent use of a three-part decoration both on the interior and exterior.

Because of the brevity of Sun Point Pueblo's occupation as attested by the lack of associated occupational debris, the latest cultural manifestation found should give the most accurate approximation of the time of occupation. Since Reed's Site 1 in the Mancos Canyon (Reed, 1943) had an abundance of "McElmo style" decoration, but no highly developed Mesa Verde Black-on-white with exterior decoration, the A. D. 1192+ date previously noted for that site would seem to be the best and most logical lower time limit for the life of the Sun Point community. While much more is known of the "cliff dwelling" period of Mesa Verde history than of any of the prior periods, the beginnings of that era are as yet poorly defined. Lacking evidence of any other mesa-top site in the vicinity of Sun Point Pueblo which manifests contemporary or later traits, it can be fairly assumed that the Sun Point villagers removed their homes to one or more of the cave shelters in nearby Fewkes or Cliff Canyons (see vicinity map, pl. 1). The upper time limit to be established for the occupation of this community then hinges upon the determination of the period of time required for the transition of populations from mesa-top villages to cave shelter or cliff-dwelling locations.

Several factors continue to confuse the picture of this transitional period. Heretofore the abandonment of mesa-top sites for the more readily protected cave shelter locations has been conjectured upon largely quantitative observations: very few of the many surface ruins show Mesa Verde Black-on-white or other late Pueblo III sherds in their pottery complexes, and there are relatively few pre-1200 A. D. tree-ring dates from cliff dwellings. Hence the abandonment of open sites appeared to have transpired largely before Mesa Verde Black-on-white became the dominant pottery type.

It is indeed certain that some cave shelter locations in the Mesa Verde had been occupied either intermittently, season-

ally or perhaps continuously, since very early times. This is proved either by dated house remains (as in the case of Step House Cave, Schulman, 1946, p. 20) or by the presence in quantity of roughly datable cultural remains in the refuse of the site. Such instances indicate that, prior to A. D. 1200, there were occasional "preferences" for cliff dwelling locations, although the bulk of the population was housed in mesa-top pueblos. In contrast, by the mid-13th century, virtually the entire population was housed in cave shelters, a condition indicating that the choice of location was no longer a matter of preference, but instead was prescribed by consideration of community safety. Reed gives A. D. 1250-1275, as the period covering the congregation of San Juan Anasazi into cliff houses and large defensible open pueblos (Reed, 1950, p. 92). This apparently is based upon the notable concentration of cliff house dates in the mid-1200's, but ignores the hiatus between the latest dates from surface pueblos and the demonstrable beginnings of defensive constructions. Tree-ring dates from cliff dwellings cannot be relied upon to demonstrate accurately the beginning of this era of "enforced" cliff dwelling. Salvage of building materials as indicated at Sun Point Pueblo must have been characteristic of most communities abandoning mesa-top villages thus lending "mesa-top" dates to newly established cliff dwelling communities.

Other less obvious factors vitiate the value of tree-ring data from cliff dwellings in this connection. There is a strong probability that too much weight has been allowed to "plus" tree-ring dates insofar as dating the beginnings of eras or the appearance of traits is concerned. Specimen cores from opposite ends of a single timber have given "plus" dates separated by as much as 115 years (Schulman, 1946, p. 21, specimens MV-294 and MV-295) although the cores had growth radii within 8 mm. of the same length. Circumferential continuity of the outermost ring has often been considered to be synonymous with "cutting date," and, in absence of firmly adhering bark, is never justifiable. An evident source of error lies in the possible use of long-dead trees, while a less obvious error could result from the use of a tree fully vital at the base which had had its crown killed long before by lightning damage or other injury. This condition of snag-top living trees is particularly prevalent along the canyon walls where moisture conditions are apt to be optimal, and where such trees form the source of easiest access to the cliff dwelling sites. Under such conditions the last year of growth evidenced in the upper end of the timber might be many years earlier than the true cutting date.

The reasons for the abandonment of the mesa-top sites may have been many and complex, yet there has never been serious doubt but what pressure of "enemy" forces was a major element. The identity of the enemy and the nature of the pressure they exerted upon the Mesa Verde people remain largely unproven. The nature of the pressure exerted can be limited to three possibilities: (1) pressure of a long, continuously increasing nature; (2) occasional or intermittent "raids" whose force and/or frequency was increasing; and

(3) abrupt arrival of the enemy group with little or no forewarning. The total evidence found at Sun Point Pueblo, while far from conclusive, does at least shed some new light on the problem. It seems highly unlikely that the community would have been founded and then abandoned in such a short span of years in the face of conditions of continuous, gradually increasing pressure. Its history suggests rather that conditions unforeseeable at the time of founding developed so precipitously that the considerable effort already expended had to be sacrificed in the interest of public safety.

While Reed as recently as 1950 (Reed, 1950) has favored the long-accepted "nomad" theory as the major factor responsible for defensive architecture in the San Juan area, Linton (Linton, 1944) has gone to great length in a very plausible attempt to discredit this theory. It is only proper that long-accepted theories die hard, for there is little point in substituting one theory for another until such time as the preponderance of positive evidence incontrovertibly outweighs the negative, theoretical and circumstantial evidences upon which so many of our early working hypotheses had to be erected.

Morris (Morris, 1939, p. 43) summarizes his interpretation of the evidences of strife in Pueblo III times in this fashion:

... it would not have been compatible with human nature for the inhabitants of one valley, reduced to famine by local crop failure, to have starved complacently, knowing the while that in villages beyond the next mountain there were storerooms still full of corn. Possibility of attack from one source or another must have existed throughout all periods, and the larger the population the greater its imminence. To safeguard against it the defensive features of the great-house type of construction were developed, but the destroyers whom it was thus sought to keep at bay were also been groups living under the same culture, as bands of alien raiders forcing their way in from the periphery.

It might be pointed out that strife resultant from famine conditions need not be predicated upon one village being immeasurably more fortunate than its neighbors in having quantities of stored crop, for even under conditions of general famine or drought, populations reduced to "living off the land" require vastly greater land-holdings for survival. Hence, the severity and persistence of such famine conditions would be equally as important as the size of populations in bringing about intervillage hostility.

Tree-growth indices for the Mesa Verde (Schulman, 1947, table 1) show notable periods of subnormal winter precipitation at A. D. 1191-1193, A. D. 1205-1208, and a most severe instance at A. D. 1215-1218 (mention or evidence of this drought will be found in: Douglass 1935a, p. 49, 1935b, p. 14, 1940; Getty, 1935, p. 23; Roberts, 1937, p. 14). Winter drought conditions throughout this last 4-year period were more consistently severe than in any 4-year increment of the so-called great drought which is credited as a major factor in bringing about the abandonment of the San Juan area by the close of the 13th century. Sampson has decried the use of ring-width variations as indicators of variations in precipitation when other factors are capable of producing identical effects in tree-growth records (Sampson, 1940).

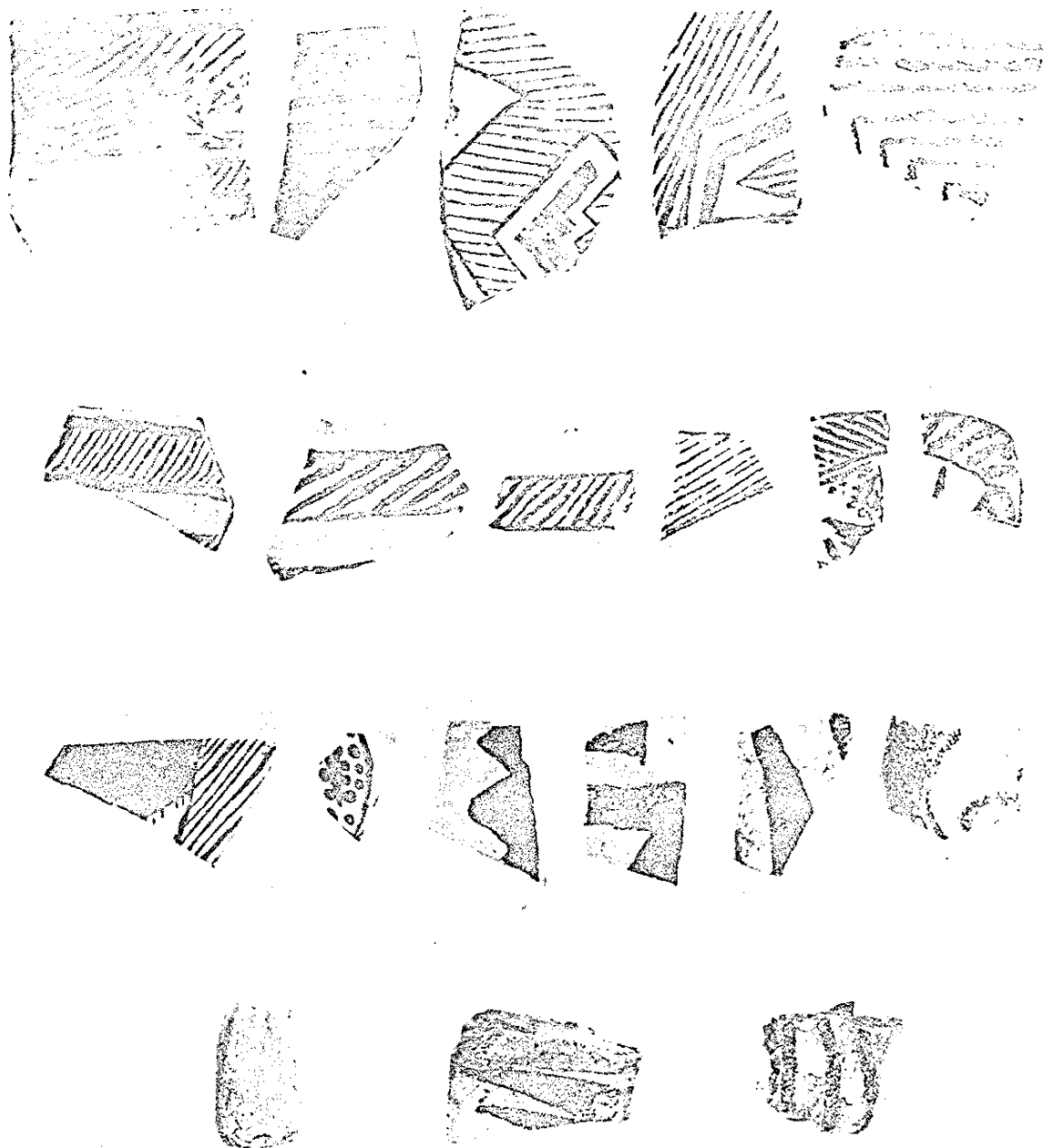


PLATE 70—Black-on-white Sherds from the Excavation of Sun Point Pueblo

Top row sherds are Mesa Verde Black-on-white (including McElmo). The first two are from the same vessel, showing interior and exterior decoration. In view of the brevity of the site's occupation it is likely that most of the Mancos Black-on-white sherds in the lower three rows derived as drift from earlier sites or as chinking material from dismantled walls.

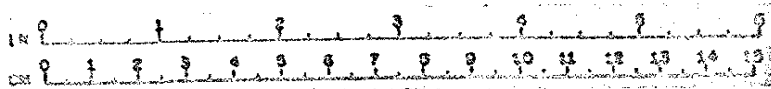
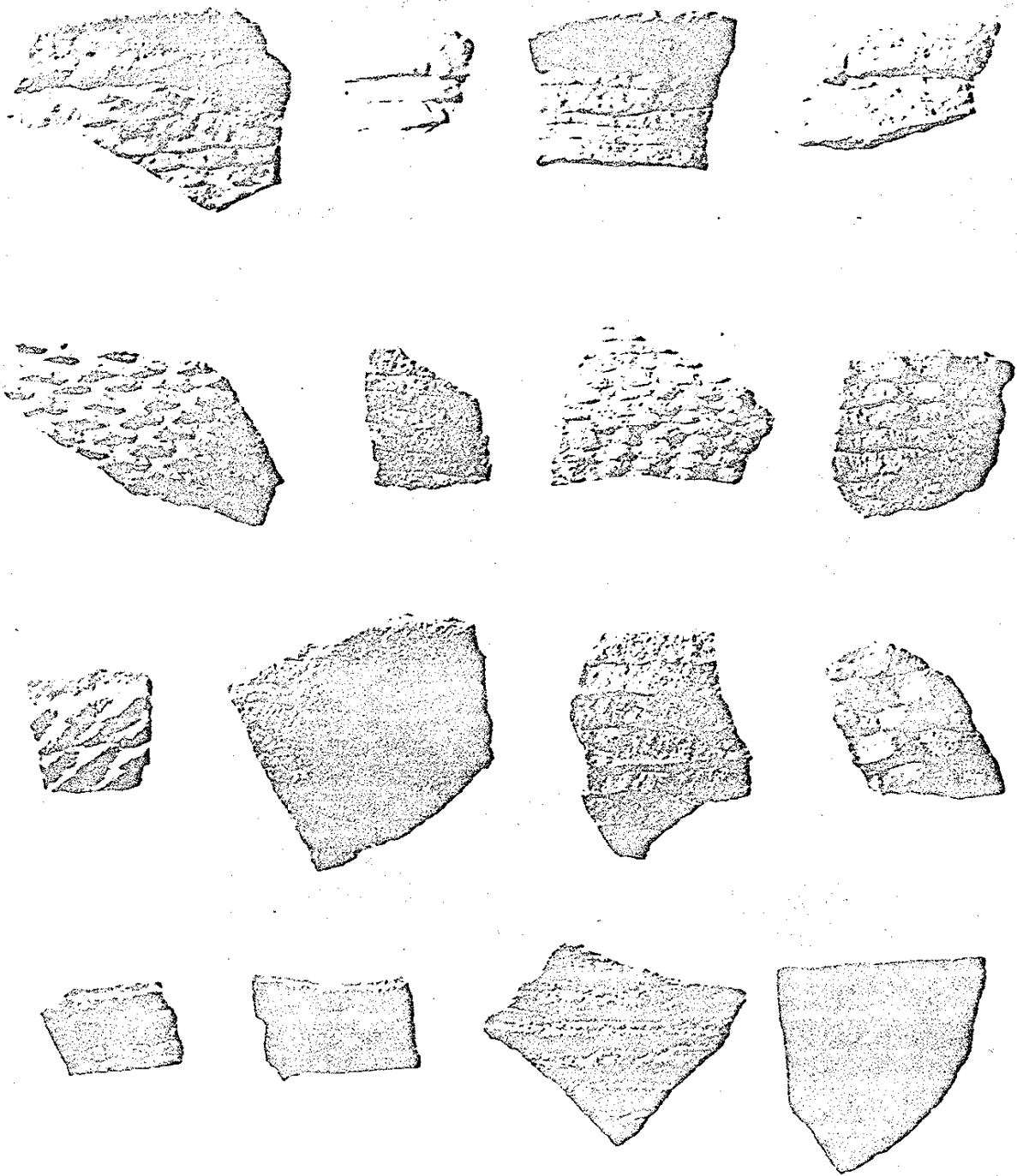


PLATE 71—*Corrugated Sherds from the Excavation of Sun Point Pueblo*

All specimens shown here are from the lower fill in the kiva, hence have no demonstrable association with the occupation of the community. Some may have been "chinking sherds" in dismantled walls, while others may be drift from other sites.

Stallings has provided adequate answer to this objection as it relates to this report (Stallings, 1939, p. 5; 1949, p. 5).

It seems quite possible that each of the short droughts noted above gave impetus to the transition from mesa-top sites to cave shelter locations. Lacking evidence of significant periods of subnormal winter moisture between 1219 and the local beginnings of the "great drought" in the winter of 1272-73 (Schulman, 1947, p. 8) drought conditions must have lost much importance as a source of conflict, overpopulation being left as a prime factor enforcing continuing use of defensive cliff dwelling sites. It will be interesting to see whether or not the A. D. 1215-1218 period saw the virtual conclusion of the movement into the defensive sites. Chapman, admitting the validity of dendrochronology in determining past dates, criticises the use of tree-ring data in formulating "... unwarranted assumptions dealing with matters of land use ..." (Chapman, 1940a, 1940b). Nonetheless, it seems a safe assumption that even 4 years of conditions which limited the growth potential of various species of trees over a wide geographic range would also appreciably limit production of domestic crops within the affected area. Lacking any more conclusive evidence, the A. D. 1218 date can serve tentatively as the upper time limit to the period within which the history of Sun Point Pueblo was enacted.

To date, the only surface pueblos in Mesa Verde National Park which have yielded tree-ring dates in the post-1100 A. D. period are O'Bryan's Site 34 with 11 dates between 1100 and 1183+ (O'Bryan, 1950, pp. 70, 74, 75); Fewkes' Unit Pueblo with dates by O'Bryan (O'Bryan, 1950, p. 140) of A. D. 1181+ to 1190; and Smiley's dating of Pipe Shrine House (Smiley, 1947, pp. 30-32) at A. D. 1214+. Site 34 is a "talus pueblo" rather than a "mesa-top site" and may well have been occupied considerably later than the "around 1200" A. D. given by O'Bryan (O'Bryan, 1950, p. 79). These few data, while admittedly meager, lend their slight weight to the suggested thesis under consideration. Unfortunately, it is impossible to compare the cultural materials from either Fewkes' Unit Pueblo or Pipe Shrine House, for in neither case has there been a comprehensive report of the material culture recovered from these excavations.

It is indeed regrettable that the only portion of O'Bryan's Site 34 which was left unexcavated constitutes a group of four rooms at the southwest corner of the pueblo which he considers likely to represent the final period of house construction. Accepting the "History of Occupation" for Site 34 as outlined by O'Bryan on page 79, a moment's study of his plan of the village will show that unexcavated Rooms 1 and 25 share the probability of containing the most important (latest) evidences bearing upon the dating of the abandonment of the community (O'Bryan, 1950, fig. 25).

The two fragmentary chipped points from Sun Point Pueblo (pl. 65) do not conform to what has been considered typical of Pueblo III in the Mesa Verde (O'Bryan, 1950, p. 111) although there seems to be reason to question the very existence of a "typical Mesa Verde" chipped stone

point in the Pueblo III horizon. Morris, in explaining the rarity of arrowpoints in the La Plata District, points out:

The small number of . . . arrowpoints is by no means expressive of a limited use of arrows by the former inhabitants, since sharpened foreshafts of hard wood were far more plentiful during all periods than were foreshafts equipped with stone tips. (Morris, 1939, page 125.)

What few chipped stone points have come from sites within Mesa Verde National Park are notably lacking indisputable association with other Mesa Verde culture traits. Of all artifacts, arrowpoints should be most suspect of having been intruded into Mesa Verde sites by alien groups. Certainly it would be unwise to consider the Sun Point Pueblo pieces as additions to the range of Mesa Verde Pueblo III stoneworking techniques so long as their origin remains obscure.

The "flat slab" metate (pl. 67) is a rather poor dating trait for the Mesa Verde culture area at large. The change from trough-shaped metate to slab metate appears to have been quite erratic, for while Morris places the advent of the flat metate "after the beginning of Pueblo III," (Morris, 1939, p. 133), Brew found it in use in an undeniable Pueblo II context on Alkali Ridge (Brew, 1946, pp. 147-48, 233), yet it failed to appear even in the McElmo phase in the Ackmen-Lowry area (Rinaldo, 1950, p. 101). O'Bryan found one flat metate in a Pueblo II horizon in the Mesa Verde, but expressed the likelihood that the narrowness of the boulder may account for the lack of side ridges (O'Bryan, 1950, p. 83).

STABILIZATION AND REPAIR

The only stabilization measures undertaken were the erection of the protecting shed roof over the kiva-tower unit as shown in plate 57, lower photograph, and provision of adequate ground-water drainage from the site. Repair was limited to that portion of the kiva-tower tunnel which had collapsed, or had been cut by the intersecting exploratory trench and to the restoration of the slumped masonry above the two partially collapsed kiva cists. The entire extent of the exploratory trench can be seen in plate 61, lower photograph, while the upper photograph shows the extent of restorations necessary to the repair of the tunnel entrance and the large west cist. Lengths of hidden deformed steel serve as lintel support in all three of the repair jobs, and sheet iron was used to support the clay at banquette level above the collapsed wall cists.

Preservation problems posed by the use of the site by large groups of visitors will have to be met by whatever expedients give the greatest promise of maximum protection to the exceedingly fragile remains of room wall footings. It is thought that properly located trails for visitor use can prevent undue damage to the ruin.

CONCLUSIONS

Of the sites excavated and preserved in Mesa Verde National Park for interpretation of the Mesa Verde story, Sun Point Pueblo is chronologically the last of the series

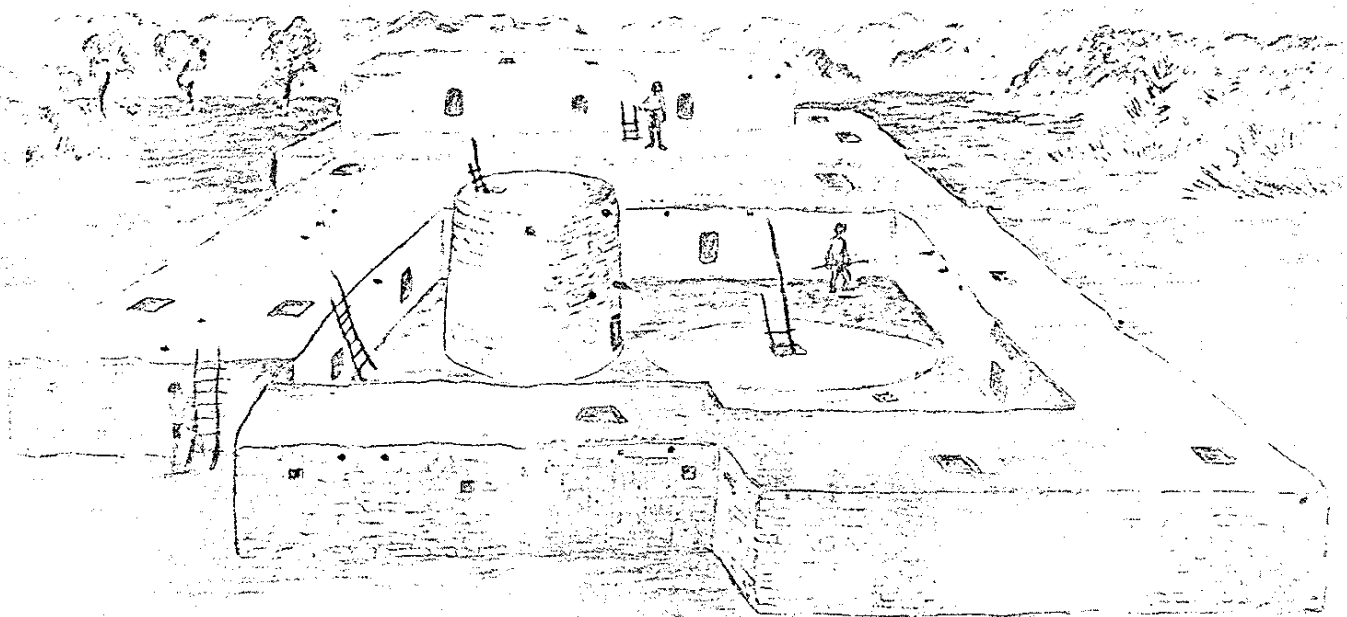


PLATE 72—*Artist's Reconstruction of Sun Point Pueblo*

This was produced primarily for use as an interpretive exhibit for the aid of visitors to the site. It is based more upon typology and conjecture than upon factual evidences found here. The original drawing was prepared in the summer of 1951 by Temporary Ranger Archeologist Per Guldbeck.

of open mesa-top villages. As yet, little is known of the period which saw the transition from mesa-top sites to the cliff dwelling locations. This transitional period poses more intriguing questions than any other period of like span in the history of the Mesa Verde occupation.

The following list enumerates the few facts discovered at Sun Point Pueblo which might serve as basis for tentative conclusions pertaining to the general period of transition from mesa-top pueblos to cliff dwelling communities:

1. The occupation of Sun Point Pueblo was extremely brief, probably less than 10 years in duration. This suggests that the conditions of enemy pressure which brought about the abandonment of mesa-top sites arose precipitously to a level which made further habitation of this newly founded village no longer tenable.

2. The dismantling of Sun Point Pueblo was as nearly complete as any reported in the literature. This evidences the probability that many of the pre-1200 A. D. tree-ring dates found in cliff dwellings derive from reuse of timbers salvaged during the abandonment of earlier mesa-top sites.

3. The kiva-tower feature is unknown from any cliff dwelling situation. Since it has been found widespread in

the area surrounding the park, it may prove to be a feature typical of the short period just prior to the abandonment of the mesa-top.

4. Mesa Verde Black-on-white pottery had been developed in all its full "classic" characteristics before the abandonment of mesa-top sites.

5. Although the occupation of Sun Point Pueblo must have taken place within the time span allotted to the "late" phase of the Pueblo III period (Montezuma Phase in the Gila Pueblo taxonomy) nothing was found which could serve to validate this split of the Pueblo III period in the Mesa Verde.

Much more excavation in sites dating near the end of the 12th century and in the first part of the 13th century will be needed before any of the points enumerated above can be clarified adequately. Only by obtaining a large series of terminal tree-ring dates from small mesa-top sites can we determine with accuracy the time and span of the important transitional period. Research directed toward any one of the problems of the period would surely be of benefit in increasing our knowledge of this highly important time in Mesa Verde history.

Table 9.—*Tabulation of Artifacts Recovered—Sun Point Pueblo*

| Location | Pottery | Stone | Bone | Plant |
|-------------------|------------------------------------|------------------------|--|---|
| Kiva: | | | | |
| Upper fill | 111 sherds | | | |
| Lower fill | 205 sherds | Chipped point fragment | | |
| Floor | | Water worn pebbles (2) | Awl, bobcat, femur. Worked bone, turkey. | |
| South recess | Worked sherd | | | |
| Southeast cist | ½ bowl, Mesa Verde Black-on-white. | Pecked grip hammer | | |
| Tunnel: | | | | |
| Ash lens on floor | 14 sherds | Metate Manos (2) | Worked bone, deer (?) 16 bone fragments | |
| Tower: | | | | |
| Fill | 14 sherds | | | |
| Floor | 5 sherds | Chipped point Mano | | |
| Subfloor | 12 sherds | | | Charred corn cobs (6). Charred twigs (12). |
| Oval firepit | 16 sherds | | | |
| Slab-box firepit | | | Eyed awl, deer bone (?) | |
| Court area | | Grooved axe | | |

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