EXCAVATIONS IN MESA VERDE NATIONAL PARK

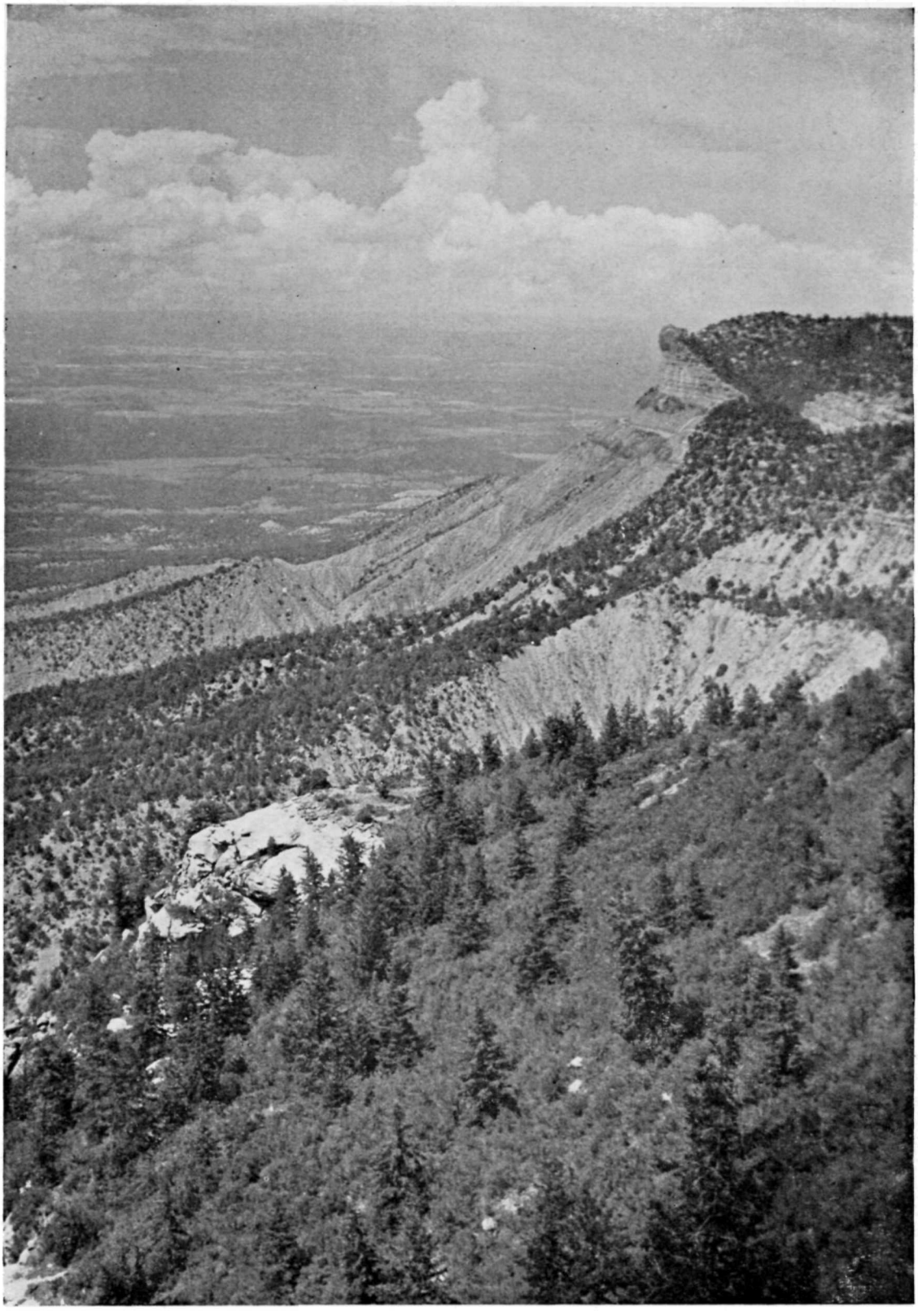
1947—1948

MEDALLION PAPERS NO. XXXIX

By

DERIC O'BRYAN

PRIVATELY PRINTED
FOR
GILA PUEBLO - GLOBE, ARIZONA
June, 1950



North Rim, Mesa Verde

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PREFACE

THIS Medallion presents the results of archaeological investigation by Gila Pueblo in Mesa Verde National Park, Colorado, during the field seasons of 1947 and 1948. Permission to excavate was granted by the Secretary of the United States Department of the Interior.

Description and discussion of the investigations in prehistoric pit-house and pueblo ruins, representing successive occupations of open mesa land from about 650 to 1200 A.D., comprise the body of the monograph. Other relevant data, heretofore scattered or unpublished, are contained in the Appendices.

Relations between National Park Service personnel and the Gila Pueblo staff were exceptionally pleasant. Dr. Jesse L. Nusbaum, Senior Archaeologist, and Dr. Erik K. Reed, Archaeologist for Region 3, approved our selection of sites excavated, and generously made available unpublished reports pertaining to the archaeology of the area. Mr. R. H. Rose, Park Superintendent, and members of his staff gave constant help in the field. Special thanks are due Mr. Don Watson, Park Naturalist, for his continued aid and interest.

Mr. Neil M. Judd, Curator of Archaeology, United States National Museum, facilitated the study of Mesa Verde archaeological material now located in his department, and supplied me with valuable publications long since out of print. Dr. J. O. Brew, Director, Peabody Museum of Archaeology and Ethnology, in correspondence and consultation, gave me the benefit of his experience among kindred ruins on Alkali Ridge, southeastern Utah.

Dr. Earl H. Morris, Division of Historical Research, Carnegie Institution of Washington, read the manuscript before publication, and gave counsel drawn from a lifetime of archaeological experience in the San Juan River region. Miss Anna O. Shepard, a member of the same institution, studied sherd samples from the ruins excavated; Miss Shepard's observations and results are included in Chapter X.

My thanks are due to all staff members at Gila Pueblo for help in extracting the maximum of information out of materials collected.

Throughout the course of the Mesa Verde research program, Mr. Harold S. Gladwin, Director of Gila Pueblo, has given his continued support, and has made many valuable and welcome suggestions in preparing this Medallion for the press.

DERIC O'BRYAN

CONTENTS

CHAPTER		PAGE
	INTRODUCTION	1
I	ENVIRONMENT	5
II	TERMINOLOGY	8
III	PUBLISHED INFORMATION AND MUSEUM COLLECTIONS	15
IV	CORRELATIVE DATA OF RUIN SURVEYS AND CERAMIC TECHNOLOGY	19
	La Plata Valley Survey	19
	Ackmen-Lowry Survey	24
	Mesa Verde Survey	25
V	EXCAVATIONS AT SITE 102	28
	Pueblo	32
	Outside Fireplaces	32
	Debris Mound	32
	Masonry Rooms	32
	Kiva	34
	Village	36
	Outside Fireplaces	36
	Slab Rooms	37
	Pit-House I	38
	Pit-House II	41
	Pit-House III	43
VI	EXCAVATIONS AT SITE 1	44
	Pueblo	44
	Outside Fireplaces	46
	Debris Mound	46
	Masonry Rooms	46
	Kiva	49
	Village	51
	Slab Rooms	52
VII	EXCAVATIONS AT SITE 145	55
	Pit-House I	55
	Pit-House II	58
	Cemetery	61
VIII	EXCAVATIONS AT SITE 34	62
	Masonry Rooms	65
	Kivas and Courts	70
	Debris Mound	75
	Burials	76
	History of Occupation	79
IX	REPRESENTATIVE ACCESSORIES	81
	Wood	81
	Artifacts	81
	Inferential Evidence	81

PAGE

Stone . . . 82
Chipped Implements . . . 82
Pecked and Ground Implements . . . 83
Unworked Objects . . . 86
Bone . . . 86
Antler . . . 88
Shell . . . 88
X Associated Pottery . . . 89
Site 145: Village Pottery . . . 91
New Types . . . 91
Named Types . . . 92
Sites 102 and 1: Village Pottery . . . 92
Named Types . . . 92
Sites 102 and 1: Pueblo Pottery . . . 92
Named Types . . . 93
Site 34: Pueblo Pottery . . . 98
Named Types . . . 99
XI Foodstuffs . . . 101
Mammals . . . 101
Birds . . . 101
Plants . . . 101
XII Conclusions . . . 103
Four Corners Phase . . . 104
Chapin Mesa Phase . . . 105
Mancos Mesa Phase . . . 107
McElmo Phase . . . 109
Montezuma Phase . . . 110
Appendix A Tree-Ring Dates for Mesa Verde Ruins . . . 112
Appendix B Sherd Counts from the Excavations . . . 115
Appendix C Modern Fauna and Identification of Prehistoric Faunal Remains . . . 132
Appendix D Selected List of Modern Flora . . . 134
Appendix E Fewkes Unit Pueblo, Site 149 . . . 137
Bibliography . . . 141

ILLUSTRATIONS

PLATES

NUMBER		
	North Rim, Mesa Verde	*Frontispiece*
I	Site 102, Before Excavation	*facing page* 28
II	Site 102, Pueblo	32
III	Site 102 Pueblo, Kiva	34
IV	Site 102 Village, Slab Rooms, Looking Northeast	38
V	Site 102 Village, Pit-House I	40
VI	Site 102 Village, Pit-House II, Looking Northeast	42
VII	Site 1, Before and During Excavation	44
VIII	Site 1, Excavations in Pueblo	46
IX	Site 1 Pueblo, Kiva	50
X	Site 145, Pit-House I, Looking Northeast	56
XI	Site 145, Pit-House II, Looking Southwest	56
XII	Site 145, Burial 1, Looking West	60
XIII	Views of Mesa at Head of Little Soda Canyon	62
XIV	Views of Site 34	64
XV	Examples of Masonry at Site 34	65
XVI	Examples of Masonry at Site 34	66
XVII	Unusual Structural Features, Site 34	68
XVIII	Kivas at Site 34	70
XIX	Kiva II, Looking Northwest, Site 34	71
XX	Kiva III, Looking Northwest, Site 34	72
XXI	Kiva IV, Site 34	73
XXII	Kiva V, Site 34	74
XXIII	Burials, Site 34	76
XXIV	Burials, Site 34	77
XXV	Perishable Objects from Four Corners Area	82
XXVI	Stone Objects from the Excavations	82
XXVII	Stone Objects from the Excavations	82
XXVIII	Stone Objects from the Excavations	83
XXIX	Stone Objects from the Excavations	84
XXX	Stone Objects from the Excavations	84
XXXI	Stone Objects from the Excavations	84
XXXII	Stone Objects from the Excavations	84
XXXIII	Stone Objects from the Excavations	84
XXXIV	Stone Objects from the Excavations	85
XXXV	Bone Objects from the Excavations	86
XXXVI	Bone Objects from the Excavations	86
XXXVII	Bone Objects from the Excavations	86
XXXVIII	Bone, Antler, and Shell Objects from the Excavations	87
XXXIX	Pottery from the Excavations, Four Corners Phase	92

XL Pottery from the Excavations, Chapin Mesa Phase 92
XLI Pottery from the Excavations, Chapin Mesa Phase 92
XLII Pottery from the Excavations, Chapin Mesa Phase 93
XLIII Pottery from the Excavations, Mancos Mesa Phase 98
XLIV Pottery from the Excavations, Mancos Mesa Phase 98
XLV Pottery from the Excavations 98
XLVI Pottery from the Excavations, McElmo Phase 98
XLVII Pottery from the Excavations, McElmo Phase 98
XLVIII Pottery from the Excavations, Montezuma Phase 98
XLIX Pottery from the Excavations, Montezuma Phase 98
L Pottery from the Excavations, Intrusives 99

FIGURES

NUMBER PAGE
1 Block Diagram, Showing Geologic Structure and Canyon Erosion 6
2 Correlation of Cultural Stages and Dated Ruins 10
3 Relief Map of the Four Corners Region 11
4 Map of Mesa Verde National Park, Showing Dated Ruins 13
5 Selected Mesa Verde Ruins, Showing Occupation Span Suggested by Tree-Ring Dates 14
6 Time Span of Local Named Pottery Types, Based on Tree-Ring Dates 26
7 Map of Twin Trees Area 29
8 Plan and Profile of Site 102 30
9 Plan of Site 102 Pueblo, Showing Extent of Excavation 31
10 Plan and Profile of Masonry Rooms, Site 102 Pueblo 33
11 Plan and Profile of Kiva, Site 102 Pueblo 35
12 Plan of Site 102 Village, Showing Extent of Excavation 36
13 Plan and Profile of Slab Rooms, Site 102 Village 37
14 Plan and Profile of Pit-House I, Site 102 Village 40
15 Plan and Profile of Pit-House II, Site 102 Village 42
16 Reconstruction of Roof, Pit-House II, Site 102 Village 43
17 Plan and Profile of Site 1, Showing Extent of Excavation 45
18 Plan and Profile of Masonry Rooms, Site 1 Pueblo 47
19 Plan and Profile of Kiva, Site 1 Pueblo 49
20 Plan and Profile of Slab Rooms, Site 1 Village 51
21 Plan and Profile of Site 145, Showing Extent of Excavation 54
22 Plan and Profile of Pit-House I, Site 145 56
23 Plan and Profile of Pit-House II, Site 145 59
24 Map of Ruins at Head of Little Soda Canyon 63
25 Plan of Site 34, Showing Extent of Excavation 66
26 Profiles through Kivas III and IV, Site 34 67

INTRODUCTION

ARCHAEOLOGISTS interested in the Southwest agree that the northern portion of the Pueblo area, the San Juan drainage in particular, harbored most of the developmental stages of the culture possessed by the Pueblo Indians when first seen by the Spaniards, before the intrusion of European cultural techniques and accessories.

Archaeological remains in the Four Corners area are better known than those in most other sections of the Southwest; many of the ruins and much of the country are spectacular, and sites representative of the stages of a long period of continuous cultural growth are plentiful. Here the earliest remains of the Pueblo development, the Basket Maker II period, were identified. Here are located most of the type sites of the succeeding cultural stage, Basket Maker III. The changes which mark the later periods have been reported from the same region. Here are found the most noteworthy endeavors of the entire Pueblo development, both the results of communal effort and individual handicraft, assignable to the Classic or Great Period. Then one or more pressures developed which led to the desertion of the Pueblo homeland, the San Juan drainage, at the close of Pueblo III.

Mesa Verde National Park is a major center of Pueblo development in this San Juan drainage. A great deal of archaeological work has been done in areas adjoining the National Park in almost every direction: excellent monographs have been published on research accomplished, in particular, to the northwest and southeast of Mesa Verde.

Students accept tacitly the supposition that remains representative of a continuous cultural development between 600 A.D. and 1300 are present within the boundaries of Mesa Verde National Park. For the most part, past research has been in the latest, most spectacular ruins: the cliff-dwellings and the larger surface pueblos. Subsequent publications furnish a fair picture of the material culture locally possessed in the 1200's. A few early sites have been recognized and excavated; some information has been published on the local material remains of the early 600's. Very little work had been done in archaeological sites representative of the intervening centuries.

The main questions regarding the pre-history of Mesa Verde are these:

1. Was the area occupied or visited by early men, the hunters who made and used characteristic Folsom[1] or Yuma[2] or Sandia[3] chipped points, or the hunters and gleaners of the Cochise[4] horizons?

[1] Figgins, 1927.
[2] Roberts, 1940.
[3] Hibben, 1941.
[4] Sayles, 1941.

2. Is there any evidence in the area which might substantiate or disprove the hypothetical Basket Maker I period of cultural development in the Southwest?

3. Did the early agriculturists of the San Juan area, the Basket Maker II people, live on Mesa Verde?

4. Did the local first potters, the Basket Maker III people, differ in important respects from contemporaneous groups in adjacent regions, either physically or in cultural practices?

5. The whole San Juan drainage, including the Mesa Verde subdivision, was a frequent recipient of stimulus diffusion throughout the Basket Maker III and Pueblo I periods. What was the source, or what were the sources, of the new ideas? Was contact peaceful? Was there a recognizable physical intrusion with the influx of new techniques and accessories?

6. Is there a locally definable Pueblo II, or Early Developmental Pueblo, period? What are its characteristics, its time span, its importance?

7. What effect did the great development of the late 1000's and early 1100's in neighboring Chaco Canyon have on the Mesa Verde people?

8. When were the first towers and fortifications built in southwestern Colorado? Who was the enemy?

9. Why was the entire northern section of the Pueblo range, the densely populated San Juan drainage in particular, abandoned by the 14th century?

To Gila Pueblo, research on Mesa Verde means an attempt to fill in some or all of the gaps in the cultural development which took place within the area. To the National Park Service, particularly to personnel stationed on Mesa Verde itself, archaeological research within the confines of the Park means not only more information concerning the local sequence of cultural stages, but additional exhibits of artifacts and the excavated ruins themselves for the visiting public. It was agreed that Gila Pueblo would excavate in easily accessible sites insofar as possible, in order to minimize the road building, ruin stabilization and maintenance cares of the National Park Service.

Two shallow pit-houses, or earth lodges,[5] dating around 600 A.D.,[6] had been cleaned out and opened to the public near Park headquarters. It was the hope of the National Park Service that this area might contain a series of sites which would display consecutively later cultural developments. This hope was realized in large measure: the two surface ruins excavated in 1947 permit the reconstruction of much of the technology of the inhabitants of Mesa Verde at A.D. 830–845, and from approximately 950 to 1025. The National Park Service has stabilized and is maintaining the two sites as public exhibits. Two pit-houses, dating respectively in the late 500's and middle 600's, have been carefully backfilled in such manner

[5] Fewkes, 1926, pp. 271–72. Linton, manuscript. Lancaster and Watson, 1943.

[6] Appendix A, p. 112.

that they can be reopened easily should the need arise (the two earth lodges already on exhibit, which date around 600, were deemed adequate for present display purposes).

No satisfactory site containing surface indications of occupancy during the 1100's was found in the particular neighborhood. The Gila Pueblo surveys, carried out intermittently from 1929 through 1941, had located promising ruins in northern sections of the Park. Subordinating the desire for an easily exhibitable excavated ruin to the need for the greatest possible amount of information on the many developments of the 1100's, one of a group of large surface ruins was excavated in an out-of-the-way canyon head. This site was back-filled, and will remain unvisited if not unknown.

The bulk of the collections from all the ruins excavated have been returned to the permanent custody of the Mesa Verde Museum. By agreement with the National Park Service, Gila Pueblo has kept a few duplicate specimens, all the wood and charcoal material and, for a limited time, the skeletal remains.

CHAPTER I

ENVIRONMENT

MESA VERDE is an upthrust table land gently sloping from north to south, therefore more a cuesta than a mesa. The abrupt northern escarpment reaches heights of 2650 feet above the bordering McElmo drainage, within horizontal distances not exceeding 1.2 miles (see Frontispiece). The cliffs lessen gradually in height from the northwest corner south to the Colorado-New Mexico state line. In New Mexico, the escarpment (there only a few hundred feet high) turns east until it is lost in the erosion of the La Plata drainage; it reemerges further east as Red Mesa. The eastern border of Mesa Verde is indefinite: at the northeast corner it is separated from the La Plata Mountain foothills only by the cut of Mancos Canyon; to the east and southeast, Mesa Verde merges into the great stretch of mesa country broken by the La Plata, Animas, and San Juan Rivers.

Mesa Verde National Park includes most of the northern escarpment and the majority of the precipitous canyons and subsidiary mesas of the table land north of the Mancos River.

Green Table is a fitting name, as Mesa Verde is covered by a forest of juniper and pinyon. A century-old fire scar over the North Rim has been healed by growths of scrub oak and other species of brush, and by the slow expansion of surviving groves of Douglas Fir and a few Yellow Pine. Smaller fire scars farther south on the Mesa now are sage-covered glades. More than seven square miles on the west side of the National Park were burned over in 1934; a profusion of annual wild flowers and some grasses grew in the area in the following years; by 1940 many perennial shrubs had established themselves, in particular oak brush on the North Rim.

The geologic formation of Mesa Verde is shown in Figure 1. The structure and composition of the Cretaceous sandstones and shales afforded environmental benefits to the Indian settlers: water filtered through the sandstone beds to layers of impervious shales; small springs, found in canyon heads and along the cliff bases, are frequent and reliable throughout the region; sandstone above shale was conducive to the formation of caves by headward erosion, affording natural shelters for the early inhabitants. Beds of inferior coal, an occasional increment of the shales, were not recognized as useful. Hematite, and fossil shells, were collected occasionally from the marine sandstones.

Red clay soils, residual on the meager mesa tops and deposited in the ravine and valley bottoms, are rich in plant foods, and permitted extensive agriculture. The experimental corn field on Chapin Mesa, started in 1928, usually yields a crop,

failures are rare and the ravages of rabbits and deer often are more serious than late frosts or seasonal droughts. It is a dry farm experiment, no irrigation is practiced. Series of soil-retaining dams in ravines and some canyon bottoms are evidence of prehistoric agricultural methods, such as flood-water irrigation. The

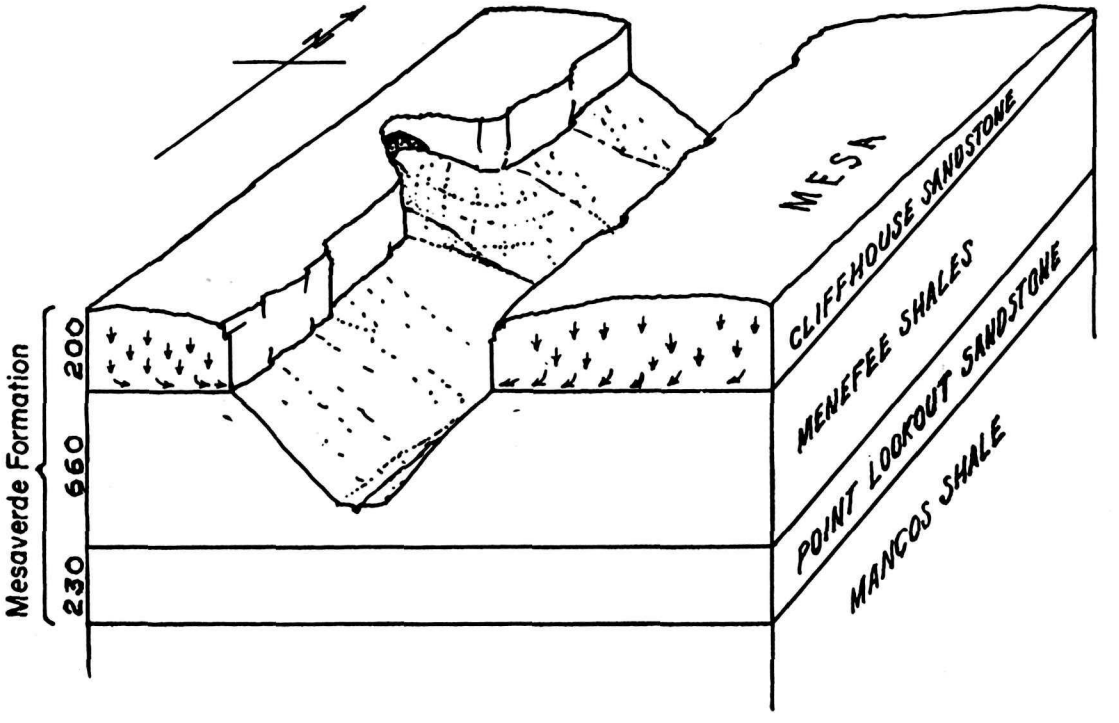


FIG. 1. BLOCK DIAGRAM, SHOWING GEOLOGIC STRUCTURE AND CANYON EROSION

Idealized section, showing characteristic exposures of strata in the Mesaverde Formation in vicinity of Park Headquarters. Arrows on face of Cliffhouse Sandstone show downward percolation of groundwater and emergence of seepage in canyon walls along the surface of contact between the Cliffhouse Sandstone and the Menefee Shales. Cave in west wall of canyon shows mature stage of headward erosion: eventual collapse of cave roof—following frost action, undercutting of shales, and floodwater cutting of the canyon—will increase the extent of the newly-formed box canyon and further reduce the mesa area between the canyons. The gradient of the mesa surface from north to south is 160 feet per mile; the dip of the Mesaverde Formation from north to south is 240 feet per mile. At Park Headquarters, the Point Lookout Sandstone is buried; but, owing to its steep northward rise, it emerges as the caprock on the north rim of the Park, overlying the Mancos Shale, which forms the bold northern escarpment of the Mesa Verde.

canal[1] (race track?) on Chapin Mesa follows the gradient for approximately 4.4 miles, from the Far View group of pueblos to the vicinity of the check dams near the Spruce Tree House cliff-dwelling. I share Brew's[2] scepticism regarding the efficacy of the "canal"; it shows no signs of erosion attributable to running water; if it was constructed as a canal, it was a laborious failure.

[1] Stewart, 1940; Stewart and Donnelly, 1943. [2] Brew, 1946, p. 10.

About 19 inches of precipitation fall on Mesa Verde in an average year; much moisture falls as snow, the rainfall peak is in July and August. The growing season, between the killing frosts of spring and autumn, averages between 130 and 140 days, sufficiently long for most varieties of maize. The Mancos River is the only local perennial stream; the canyon bottoms have wet weather water courses, and short sections moistened by spring seepages.

Mesa Verde is not rich in fauna and flora of particular use to the Indian inhabitants; no economy based on a single, or even several, wild foodstuffs could be established which would permit a concentration of population. However, it is more favored than most subdivisions of the Pueblo area. Lists of indigenous species of fauna and flora of possible use to the aborigines are included in Appendices C and D, with notes as to the occurrence of different wild foodstuffs found in archaeological remains.

Extremes of altitude on Mesa Verde National Park are 8575 feet at the summit of Park Point, and barely more than 6100 feet in the bottoms of the larger canyons, at points along the southern boundary of the Park.

The Mesa Verde environment contains no raw materials of particular trade value to the aboriginal inhabitants. It does contain some game, some edible wild plant foods, and soils and climate suitable for the successful cultivation of maize, beans, and squash. Topographically, Mesa Verde is a retreat area in comparison with fertile Montezuma Valley to the north; according to geographical position, it is a peripheral area—barred by its escarpments from easy contact with the neighboring valleys which were the logical avenues of travel, and many miles north or east of contemporaneous great centers of population.

CHAPTER II

TERMINOLOGY

THE nomenclature and the definitions of the archaeological cultural stages, found within and adjacent to Mesa Verde, are complicated and confused. This is widely admitted. Brew tackled the problems of taxonomy at some length, and[1]

> "attempted to show, principally, two things: (1) that all classification is arbitrary, that the classes are made by students for their own use; and (2) that the biological implications inherent in certain archaeological systems of taxonomy are dangerous in that they may introduce concepts at variance with the anthropological and historical processes with which we are dealing.
>
> "I do not believe that the Pecos Classification should be abandoned. I do, however, believe that we should abandon the practice of treating it as the only classification applicable or useful to the phenomena we group under the term Pueblo or Anasazi culture.
>
> "We need more rather than fewer classifications . . . We are, or should be, in search of all of the evidence our material holds. Even in simple things no single analysis will bring out all that evidence.
>
> "The kind of simplification and systematization introduced by the usual classificatory schemes brings about a distortion which must be corrected by proper interpretation, and proper interpretation of such things demands narrative, not charts and diagrams, which are simplifications."

Brew, then, was faced with using all the main systems of classification applied in the Southwest, plus the narrative approach, when considering any particular site or cultural period. Undoubtedly this technique is thorough; at times I believe that clarity of reasoning and sharpness of conclusion are blurred by lengthy exposition, taxonomic problems become questions of semantics.

Many analytical or specialized studies have been made, and new techniques introduced, in Southwestern archaeology, especially since 1924. All of these influence the study of Mesa Verde pre-history. The Pecos Classification,[2] based on stratigraphic excavation records, gave coherence and position to the scattered writings in the field. The Roberts' nomenclature[3] was presented in 1927 and elaborated in 1935, its qualifying terms facilitated comparisons between the different Periods.

Construction timbers from Mesa Verde sites supplied much basic information, when the method of dating ruins by tree-rings was added to Southwestern archaeological techniques.[4] Theories were amended, and comparative studies were stimulated. Stratigraphic evidence was strengthened and refined, as recognized occupa-

[1] Brew, 1946, pp. 59, 63–64, 65, 60.
[2] Kidder, 1927.
[3] Roberts, 1927, 1935.
[4] Douglass, 1929.

tion levels or cultural horizons could be broken into smaller divisions by associated tree-ring dates. More flexible and detailed systems of classification were conceived and applied, and differentiations were sought for and found in such culture accessories as sandals, pottery, and architecture.

The Gladwins introduced a new classificatory system designed to facilitate[5]

> "The correlation of stages through which all people in the Southwest are believed to have passed, but which do not coincide either in time or in geographical relations."

This involves

> "1. Recognition of certain Roots from which the later people are believed to have sprung; Basket Maker, etc.
>
> 2. Division of these Roots into Stems, based on major geographical features; San Juan, etc.
>
> 3. Division of these Stems into Branches, which correspond in importance to the culture-areas named by Kidder; Mesa Verde, etc.
>
> 4. Division of these Branches into Phases, to cover variations both in time and space, named after minor geographical features; Mancos Mesa, etc."

H. S. Colton[6] altered the Gladwins' classification slightly for closer conformation with the McKern system[7] in vogue in the Midwest.

The technological analysis of Southwestern pottery types was initiated by Miss A. O. Shepard. As pottery is the most common accessory throughout much of the prehistoric Pueblo development, this specialized study provides much restrictive and comparative data regarding the analysis of clay, temper, applied pigments, and methods of manufacture. The "Technology of La Plata Pottery"[8] needs but few amendments and additions for direct application to Mesa Verde ceramics.

Manuals on pottery types have been logical and useful reactions to the application of the Root-to-Phase system. The Gila Pueblo Medallion Papers include five titles on different ceramic wares related to Branches and Phases.[9] Hargrave[10] and later Colton and Hargrave[11] are authors of manuals on pottery types found in the Flagstaff and Hopi country of Arizona; and a comprehensive manual was published by Hawley.[12] Mera[13] and Kidder[14] also named a number of pottery types. Duplication and overspecialization in future studies might be avoided if the naming and description of new types were done in conjunction with Shepard's technological studies.

[5] Gladwin, 1934, pp. 9–10.
[6] Colton, 1939.
[7] McKern, 1939.
[8] Shepard, 1939 (Appendix A in Morris, 1939, pp. 249–87).
[9] Gladwin, 1930. Gladwin, 1931. Gladwin, 1933. Haury, 1936. Sayles, 1936.
[10] 1932.
[11] 1937.
[12] 1936.
[13] 1935.
[14] 1936.

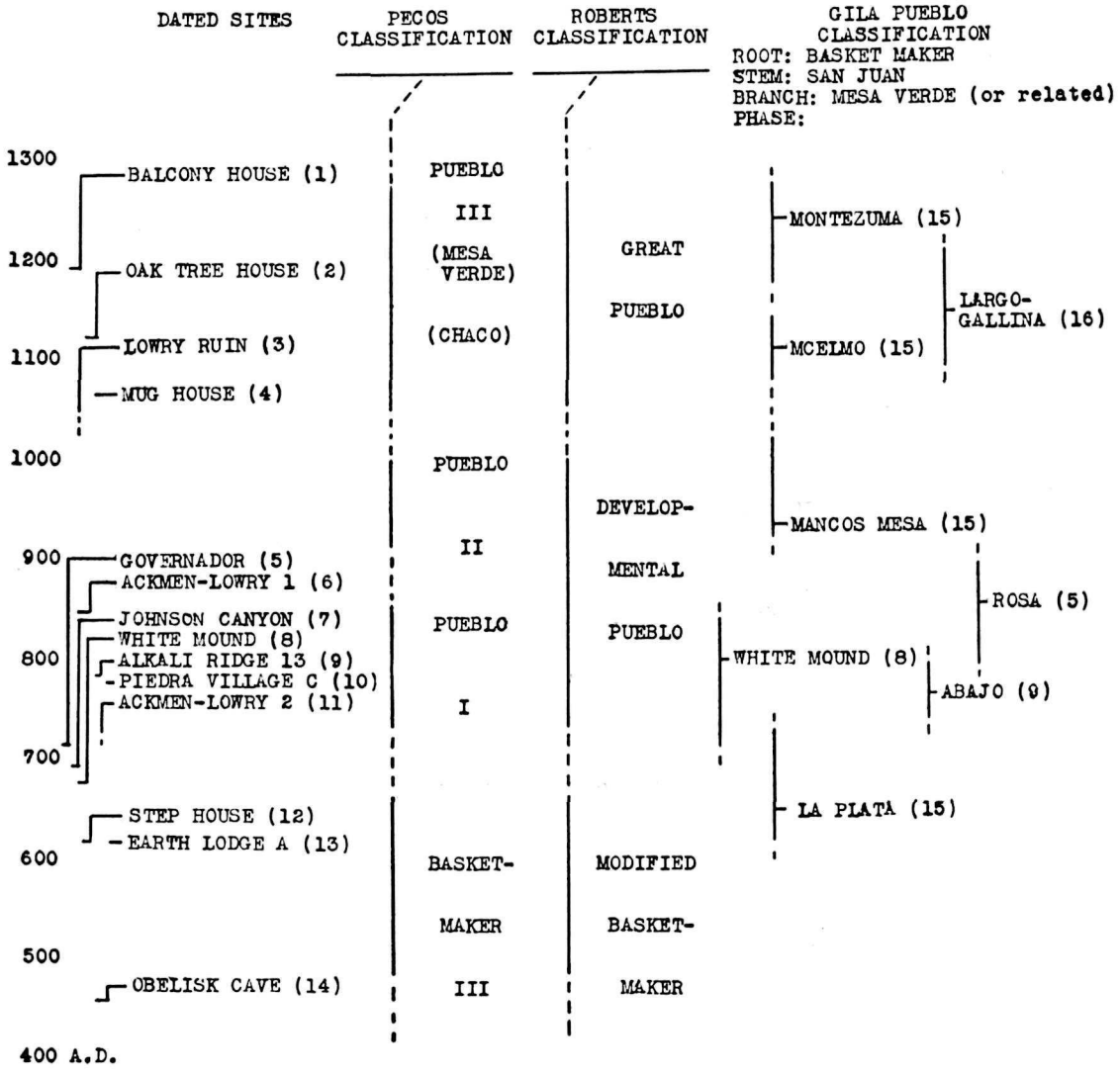


Figure 2. Correlation of Cultural Stages and Dated Ruins.

Representative sites excavated in and near the Four Corners area, with range of tree-ring dates, are listed in the first column. Their chronological places in the three principal southwestern classifications are shown in the columns on the right. The Gila Pueblo phases are staggered unless they determine a local sequence.

Sources for this figure and the figure 3 map are:

1) Douglass, 1935
Getty, 1935 Jan.
Schulman, 1946 Jan.
2) Fewkes, 1916
Getty, 1935 Jan.
Douglass, 1935
Schulman, 1946 Jan.
3) Martin, 1936
Haury, 1938 Jan.
Stallings, 1937 Oct.
Douglass, 1938 Oct.
4) Nordenskiold, 1893
Getty, 1935 Jan.
Schulman, 1946 Jan.
5) Hall, 1944
6) Martin, 1939
Getty, 1939
7) Morris, 1939
8) Gladwin, 1945
9) Brew, 1946
10) Roberts, 1930
Haury, 1938 Jan.
11) Martin, 1939
Getty, 1939
12) Nordenskiold, 1893
Douglass, 1938 Oct.
Schulman, 1946 Jan.
13) Fewkes, 1920
Douglass, 1938 Oct.
Schulman, 1946 Jan.
14) Morris, 1936 Apr.
Douglass, 1938 Oct.
Haury, 1938 Jan.
15) Gladwin, 1934
16) Hibben, 1948

Seltzer[15] stated that there was no physical anthropological evidence to support a division between Basket Maker III and Pueblo I; in other words, there had been no great intrusion of round-headed people into the Southwest with the new culture

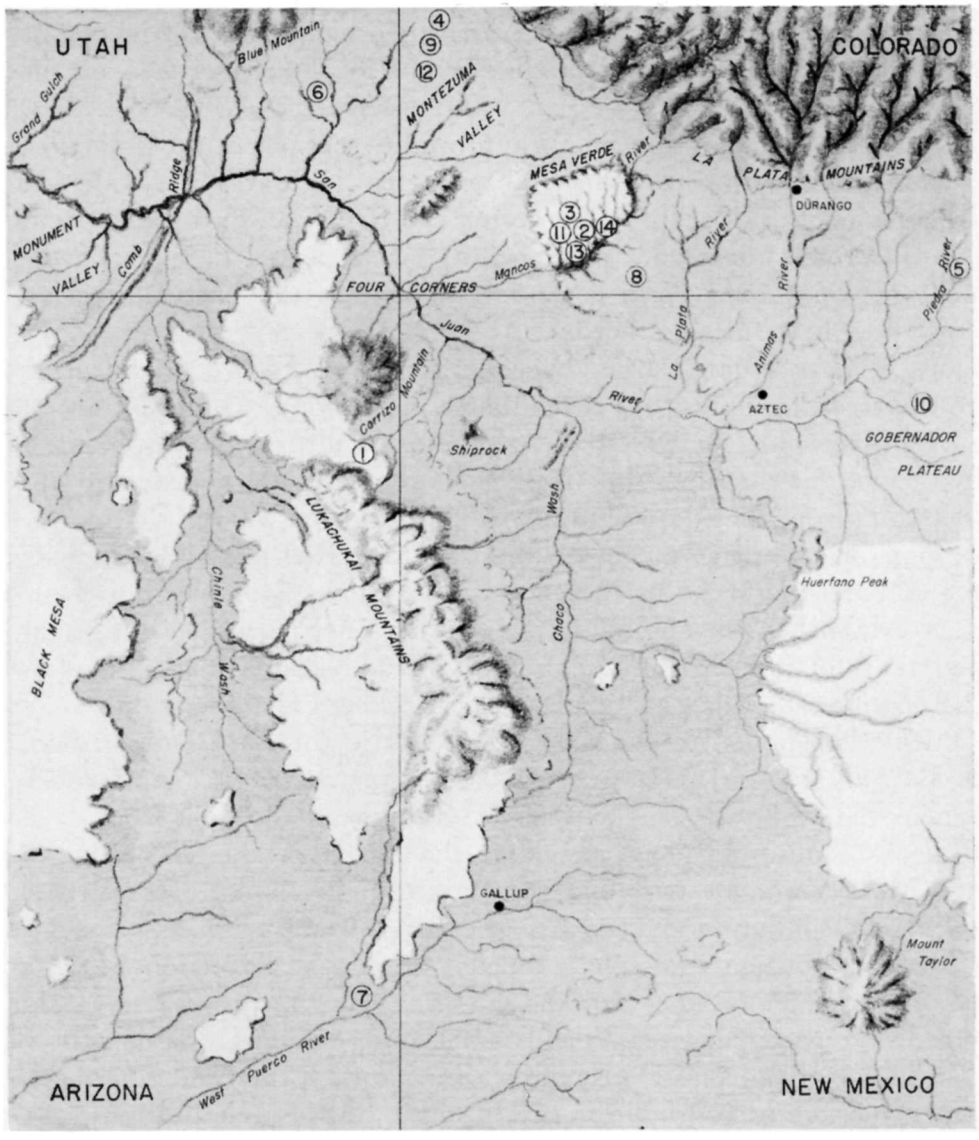


FIG. 3. RELIEF MAP OF THE FOUR CORNERS REGION
Showing natural barriers and travel routes, and location of Sites 1 to 14, listed in Figure 2.

traits which were introduced in the 500's to 800's. Furthermore, he believes the modern Pueblos to be the comparatively unmixed descendants of the early Basket Makers.

[15] 1944.

Fortunately all the ruins considered in this monograph furnished reliable tree-ring dates. Thus, with time and sequence tied to the Christian calendar, I need not, in this report, support emphatically any particular nomenclature. However, I name two new Phases of the Mesa Verde Branch;[16] the associations of accessories warrant the action, and the identification of the two new Phases lists comparative data at a set period of time in the local successive levels of cultural development.

In Figure 2 I attempt to reconcile appropriate sections of the different cultural-stage classifications with each other and with tree-ring dates established for representative sites (Fig. 3), within or bordering the San Juan drainage. Reference to Figure 2 will permit the reader to place any site reported in the following pages, for which tree-ring dates have been determined, in the particular classificatory chronology that best suits his needs.

Figure 4 locates dated Mesa Verde ruins, and Figure 5 and Appendix A tabulate the tree-ring dates for selected sites in question. Figure 5 also serves to delimit the time spans in which the prehistoric cultural development has been partially defined; at the same time it displays the gaps, the absence of information before 600 A.D., from that date almost to 1000, and after 1277.

The possible reference use of the four figures cited may be demonstrated by placing any particular ruin in the San Juan drainage, for which tree-ring dates have been established, in chronological position on Figure 2. For example, the published dates for Balcony House, on Mesa Verde National Park, range from 1190 to 1272; therefore the ruin can be placed in the Pecos Classification[17] as belonging to the Pueblo III period, and in the Mesa Verde (or Late) subdivision of that period. Balcony House fits into the last century of the Great Pueblo period, according to the Roberts' Classification.[18] Following the Gila Pueblo Classification,[19] Balcony House may be assigned to the Basket Maker Root, the San Juan Stem, the Mesa Verde Branch, and the Montezuma (classic Mesa Verde) Phase; which is in part contemporaneous with the Largo-Gallina Phase found in another section of the San Juan drainage. Balcony House is placed on Mesa Verde in Figure 3; geographically, the ruin should be representative of the local cultural development. Figure 4 locates Balcony House more precisely within the National Park. In Figure 5, Balcony House dates coincide with the time ranges established for the construction and occupation of a number of Mesa Verde ruins; the correct implication is that several ruins have been studied which are representative of this particular stage of cultural development.

When I speak of cultural development, I refer primarily to the changes, additions, alterations, improvements and so forth, in accessories (artifacts) found singly

[16] After the Gila Pueblo Classification, Gladwin, 1934.
[17] Kidder, 1927; Morris, 1939.
[18] Roberts, 1929.
[19] Gladwin, 1934.

or in associations in successive archaeological strata (horizons, periods, phases). In other words, the main body of archaeological evidence is comprised of accessories; from them, relationships can be determined by association, techniques often can be deduced, conceptions of traits and trait complexes may be surmised, and sometimes intangible practices and beliefs are suggested. In this paper—a presentation

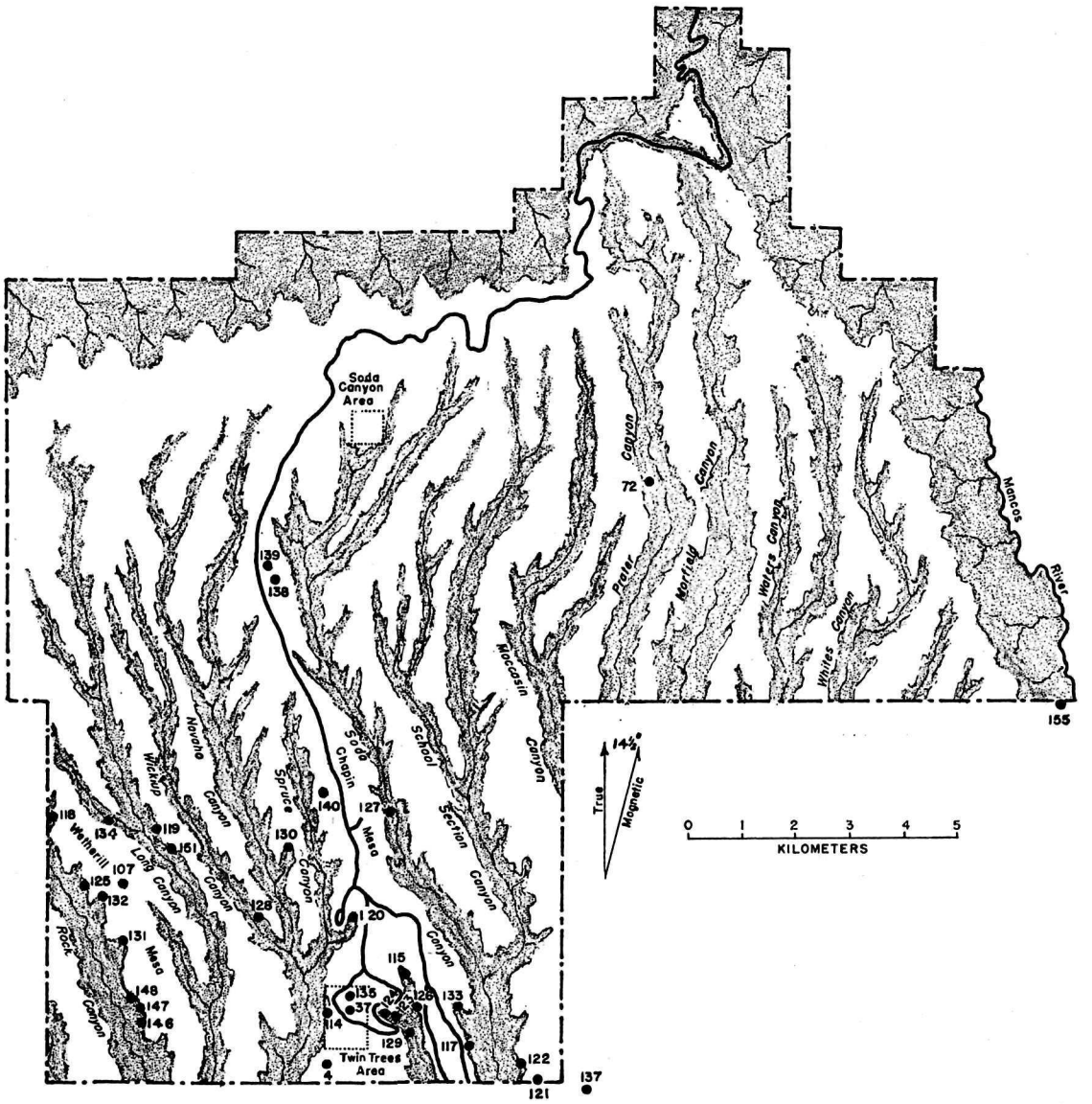


FIG. 4. MAP OF MESA VERDE NATIONAL PARK, SHOWING DATED RUINS

Names and dates of ruins are listed in Appendix A, with reference to Gila Pueblo Survey numbers. The two small rectangles locate Gila Pueblo excavations in Twin Trees area, Figure 7, and Head of Little Soda Canyon, Figure 24.

of the data from sites in a particular area representative of the local development of culture at different intervals in time—the primary object is to present the main body of archaeological evidence encountered.

Charts, diagrams and illustrations are used copiously. I believe that such simplifications permit brevity and comprehensiveness which compensate for the

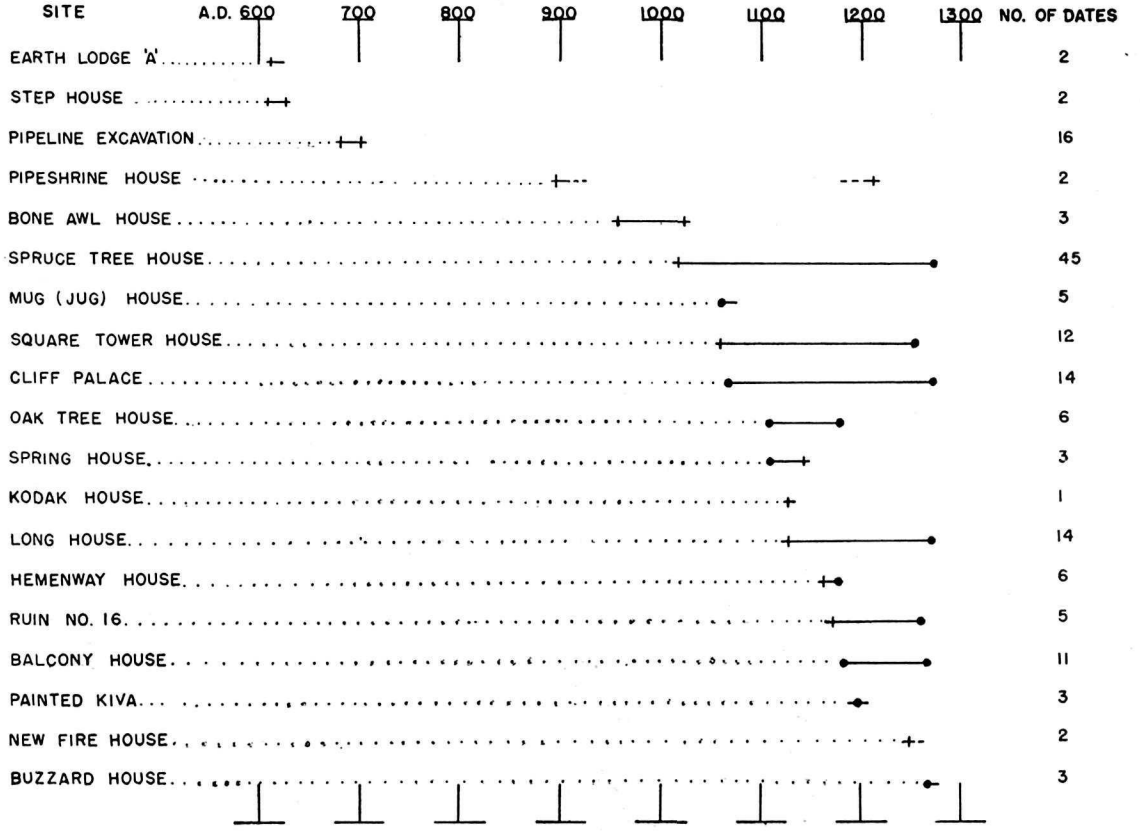


FIG. 5. SELECTED MESA VERDE RUINS, SHOWING OCCUPATION SPAN SUGGESTED BY TREE-RING DATES

lack of weighting of the criteria considered, and this weighting is presented in frequency figures.

Illustrations of specimens have been compiled with several aims: 1) the typical specimen is shown, 2) variations from the type are illustrated, and 3) groups of specimens, excepting pottery, are arranged to permit easy comparison between accessories and Phase-association in the different ruins excavated, and in some cases with pertinent material from neighboring ruins now in the Mesa Verde Museum and at Gila Pueblo.

CHAPTER III

PUBLISHED INFORMATION AND MUSEUM COLLECTIONS

BREW has published an excellent account of the history of exploration and research of Mesa Verde and adjacent parts of the San Juan drainage. There is no good reason for duplicating that information. I will review briefly the records that apply most directly to Mesa Verde itself, and refer to some additional data contained in museum collections, general papers of particular importance, and very recent publications.

For convenience, Brew divides the history of exploration into four groups:[1]

> "1. Up to 1885: exploration and discovery; descriptive writings; preliminary comparative studies.
> 2. 1885–1914: simple but extensive excavation; extended surveys.
> 3. 1915–1927: stratigraphic excavation.
> 4. Since 1927: analytical studies; excavation directed towards the solution of particular problems.
>
> This is a rough grouping but it indicates the trend . . . The categories overlap, the dates are but approximations, and many of the latest developments are definitely foreshadowed by the earliest writers."

1. From 1776, when Escalante looked at the northern escarpment of Mesa Verde, until 1874, the region was often visited by prospector, Mormon pioneer, and cattleman. Mesa Verde itself, behind forbidding cliffs, remained unexplored.

A party headed by F. V. Hayden and including W. H. Jackson and W. H. Holmes, working for the United States Geological and Geographical Survey of the Territories, explored in the San Juan drainage in 1874, '75, and '76. They rode into the Mancos Canyon, which bisects the Mesa Verde highland and forms part of the southeastern boundary of the National Park (see Fig. 4). They reported cliff-dwellings and less conspicuous ruins in the area.[2] The first published remarks on the archaeological remains encountered by this expedition appeared in the Nov. 3, 1874, issue of the New York *Tribune*, written by Mr. Ernest Ingersoll.[3]

A paper was presented in 1879 before the American Association for the Advancement of Science; the title: "Description of a Cliff House on the Mancos River of Colorado, with a Ground Plan." Undoubtedly many curious men like W. F. Morgan, the author of the above-mentioned paper, were beginning to visit the known cliff-dwellings and search for new archaeological sites.

[1] Brew, 1946, p. 16.
[2] U. S. Geol. and Geogr. Survey of the Territories, 10th annual report, 1878.
[3] Ingersoll, 1928.

2. Cattle ranching was an established business in southeastern Colorado by 1880. The Wetherill family had settled near Mancos by 1882;[4] in 1886 Wetherill cattle were running on the Southern Ute Reservation. The five Wetherill brothers and their comrades (including Charlie Mason—a brother-in-law, and Charles McLoyd, Howard Graham, and Levi Patrick) began collecting pottery and other artifacts from ruins in the Mancos Valley, Acowitz Canyon (now called Johnson Canyon, a southern tributary of the Mancos), and from Mesa Verde. Personal interest, and a growing market for the archaeological material, made ruin digging of greater importance than cattle raising to the Wetherills and some of their associates for the next two decades.

The first concerted excavation was undertaken in the winter of 1888–89. John Wetherill and the four men mentioned above dug for 30 days in Cliff Palace, and for shorter periods in Square Tower House and Spruce Tree House. The collection was exhibited at Durango, Colorado, during the winter of 1889–90. Green published a "Brief History"[5] of the material. Later, in 1890, the collection was exhibited at Denver, then sold to the State Historical Society of Colorado. This "First Wetherill Collection" of about 440 specimens is housed in the Colorado State Museum; it includes excellent basketry from the cliff-dwellings, probably the best representation in any collection from Mesa Verde.[6]

Excavation continued in the winter of 1890–91. Old sites were revisited, and the splendid group of cliff-dwellings on the west side of Mesa Verde was discovered. The resulting collection was purchased by H. J. Smith and C. D. Hazard of Minneapolis. It was exhibited at the World's Columbian Exposition in Chicago. It should be the "Wetherill-Hazard Collection" now in the University of Pennsylvania Museum, but the 390 specimens so listed are catalogued from localities throughout the greater San Juan drainage. It is more probable that the material is now known as the "Phoebe A. Hearst Collection," the more than 3000 specimens are divided between the University of Pennsylvania Museum and the Museum of the University of California at Berkeley. There is some evidence that an addition was made to this collection in 1893;[7] perhaps this addition can be identified as the catalogued "Wetherill-Hazard Collection." The material shared by the Pennsylvania and California University Museums includes many of the finest examples of Mesa Verde Black-on-white pottery.

In 1891 Baron Gustav Nordenskiold of Sweden appointed John Wetherill as Director of Excavations on an expedition to Mesa Verde cliff-dwellings. A total

[4] Gillmor, 1934. This, and the following cited information regarding the activities of the Wetherills and their associates, is considered insofar as it agrees with the data possessed by different museums containing archaeological material from Mesa Verde collected during the 1880's and '90's.

[5] Green, 1891. In 1889 the *Durango Herald* published a "Catalogue of Ancient Aztec Relics, from the Mancos Canyon La Plata County, Southwest Colorado."

[6] Morris and Burgh, 1941.

[7] Gillmor, 1934, p. 38.

of 36 sites was investigated, including Long House, Kodak House, Mug House, Spring House, and Sun Temple. In Step House they found the first reported remains of an earlier Basket Maker horizon. Nordenskiold's publication[8] is a noteworthy early work in Southwestern archaeology. This "Nordenskiold Collection" of 613 specimens is in the National Museum, Helsinki, Finland (there known as the "Antell Collection").

John Wetherill then explored in southeastern Utah for over a year. In 1892–93 he returned to Mesa Verde to secure a collection which was exhibited at the Chicago World's Fair; this material, about 140 specimens, included over 20 crude mud platters from Step House, similar to the one reported by Nordenskiold. It is now in the Colorado State Museum, known as the "A. F. Wilmarth Collection."

Later in the 1890's, John Wetherill dug in the Far View House group of surface pueblos. This material may have been included in the "2nd Richard Wetherill Collection" secured in 1896–97 from ruins for the most part in southeastern Utah; the collection of almost 1400 specimens was purchased by B. T. B. Hyde and is now in the American Museum of Natural History, New York.

3. The first publication on Mesa Verde by Dr. J. W. Fewkes appeared in 1909:

"from then until 1926 reports appeared almost annually . . . His main interests seem to have been restoration of the ruins and interpretation of the religious symbolism of the prehistoric peoples . . ."[9]

Most of the material recovered by Fewkes from Mesa Verde ruins is in the National Museum, Washington; a few specimens are in the Mesa Verde National Park Museum.

No early work of E. H. Morris was done actually within the limits of Mesa Verde National Park; however, several of the 23 sites described by him[10] are on the Mesa proper, though south of the Mancos River bisection. A tremendous amount of archaeological information was secured by Morris during his eight years of intermittent research in the area (1915 to 1930). Unfortunately the value of wood and charcoal material for tree-ring dating was not recognized until the late 1920's; Morris salvaged some datable material in later years. The La Plata report will stand for some time as the most complete documentation of accessories illustrative of cultural development, from about 700 A.D. to the late 1200's, for any tributary in the San Juan drainage.

4. Only recently has the National Park Service applied funds for excavation and other archaeological research. When an adequate museum was constructed on Mesa Verde in the 1920's, there was very little material on hand to exhibit. J. L. Nusbaum, then superintendent, gleaned a fairly representative collection of Basket Maker III and Pueblo III specimens by working short winter periods in such previously ransacked sites as Step House,[11] Long House and Mug House (on

[8] 1893.
[9] Brew, 1946, p. 24.
[10] Morris, 1939.
[11] Nusbaum, manuscript.

the west side of the Park), Bone Awl House, the dusty innermost recess of Spruce Tree House, and a small cave in Fewkes Canyon.

When road building and pipe-line trenching threatened an obscure surface site, PWA workmen saved much material and information which would have been lost; later, Park Service personnel worked after hours to save specimens and data. Publications on pit-houses by Lancaster and Watson,[12] and by Smiley[13] resulted from some of this work.

In the last few years, funds for salvage excavation have been available. E. K. Reed[14] worked in five small surface sites, gouged by road construction, on the floor of Mancos Canyon a few miles south of the National Park boundary. In addition, he recognized a connection between Early Pueblo remains from Mesa Verde and from the Governador district to the east.

J. A. Lancaster, qualified by years of archaeological field experience with Martin, Morris, and Brew, continues to gather much information from ruin stabilization work. An example is the list of dates[15] from Far View House, secured from charcoal found by him while strengthening the foundations of walls near collapse.

The National Park Service Museum on Mesa Verde contains good material from the late cliff-dwellings, collected for the most part during the past 25 years either by Nusbaum during winter excavations, or by Lancaster and others while engaged in ruin salvage and stabilization work, or found by chance in out-of-the-way caves and shelters by various Park Service personnel. The Museum also has some slightly earlier material from two cave ruins (Hoot Owl House and a site opposite Fire Temple) and from large surface pueblos. Several small gift collections from different parts of Montezuma Valley, immediately northwest of the Park, are quite representative of Pueblo II and Early Pueblo III, locally the Mancos and McElmo Phases respectively. Loaned material from Morris's La Plata collections has been used to illustrate remains of Pueblo I times. Nusbaum's excavation in Step House furnished many of the specimens on display as characteristic of the Basket Maker III period. Some artifacts from Morris's Basket Maker II sites found near Trimble Springs, north of Durango, about 35 airline miles east of Mesa Verde, are displayed as typical of that period.

To the above has been added the large majority of the specimens collected in the course of the Gila Pueblo excavations in 1947 and '48, from representative Basket Maker III, Pueblo I, II, and III ruins outside the caves.

[12] Lancaster and Watson, 1943.
[13] Smiley, 1949.
[14] Reed, 1944.
[15] Appendix A, p. 113.

CHAPTER IV

CORRELATIVE DATA OF RUIN SURVEYS AND CERAMIC TECHNOLOGY

THE main purposes of a ruin survey in the Pueblo region are to locate archaeological sites, note in general terms the types of ruins encountered, and list the identified pottery wares, if any, found on the surface of each ruin visited. As a bare minimum, a survey of the ruins in any particular district of the Southwest should give some indication of associations between local pottery types. Of greater value, ruin surveys do furnish general information of culture distribution and variation which permits intelligently planned research and excavation.

Several ruin surveys have been made in the Mesa Verde area of the San Juan drainage. Although the data secured have been published with different aspects stressed, three surveys in particular furnish information pertinent to the archaeology of Mesa Verde.

La Plata Valley Survey

A fairly thorough survey of the archaeological remains in the La Plata District was made in 1935, under the auspices of the Division of Historical Research of the Carnegie Institution of Washington. This work was done to supplement Morris's intensive study of the 42 sites (excavations in 23 ruins, notations on an additional 19) in the area.[1] A total of 992 surface sites was located between the mouth of the La Plata, north to the Cherry Creek-La Plata junction, and west to the ridges on both sides of Johnson Canyon (east of the Mancos River). The ruins were identified as belonging to all periods from Basket Maker III through Pueblo III, plus one historic Zuni camping area.

Shepard studied over 3000 surface sherds from 95 of these La Plata district sites, in addition to almost 300 sherds, sectioned for petrographic analysis, selected by Morris as representative of his excavated material. The results of this study deserve mention at some length, as they have direct bearing on the pottery from the Gila Pueblo excavations on Mesa Verde. A resume follows in quotation and paraphrase:[2]

Clay:

> "The Indian's basis of judgment in selecting clays for black-on-white ware would be plasticity, hardness, and color when fired in reducing atmosphere."[3]

Locally present in the La Plata district are beds of pale ocher and gray carbonaceous clay, both of which fire to a buff color (in an oxidizing atmosphere only) and both of which are sufficiently absorptive to hold applied organic paint. Also

[1] Morris, 1939, fig. 2, p. 48. [2] Shepard, 1939. [3] idem, p. 251.

present is a deep ocher clay which fires red, and could have been used for most of the red wares.

Temper:

> "Two main classes of tempering material were used in the La Plata area: ground igneous rock and potsherd. Occasionally sherds which are clearly sand-tempered are found among some types but these are exceptional."[4]

Igneous rocks, andesites and diorites, were available locally as river boulders.

Pigments:

> "The two principal classes of pigment used by the Pueblo Indians, organic and mineral, occur on La Plata pottery. Both kinds were used during the Basket Maker III period, but beginning with Pueblo I and carrying through Pueblo II only mineral pigments are found. With the appearance of early Pueblo III styles, organic paint was again introduced and in Mesa Verde Pueblo III it completely replaced the mineral paint which persisted through early Pueblo III. The mineral paint of the black-on-white types is essentially the same in all periods [iron oxide]. A distinct kind of mineral paint occurs on Pueblo I black-on-red ware [iron manganese]. Examples of a glaze, presumably of accidental production, are found associated with the mineral pigments of black-on-white ware [iron oxide containing silica as an impurity], and an entirely different glaze [lead] was sometimes used on Basket Maker III decorated ware."[5]

The organic paint, a plant extract carbonized by firing, is retained most effectively by highly absorptive clays and burns out when applied on other classes of clay.

Firing:

> "La Plata [black-on-white] pottery could not have been fired in a strongly oxidizing atmosphere; the grays or grayish white pastes and blackish pigments must have been produced by maintaining reducing or, at most, nearly neutral conditions during firing."[6]

The actual firing was probably accomplished by surrounding the pottery with wood. The possibility that a simple pit kiln was used is remote.[7] Although the firing atmosphere was mainly reducing, white margins of dark gray paste show that oxidizing conditions sometimes obtained at the finish. The physical properties of the wares have been reproduced with local clays fired within the range of 875 to 950 degrees Centigrade.

Basket Maker III Black-on-White:

> ". . . There is a distinct geographic distribution of the two kinds of paint, organic paint being characteristic of the sites in the northern part of the area [north of the Colorado-New Mexico line] and mineral paint more abundant in the southern sites . . . Superficially there appears to be no noticeable difference in paste, surface finish or design between the mineral- and the organic-paint groups."[8]

[4] idem, p. 251.
[5] Shepard, 1939, p. 254.
[6] idem, pp. 261–62.
[7] Morris, 1939, pp. 111–12.
[8] Shepard, 1939, p. 267.

The usual temper is pulverized diorite with the use of organic paint, andesite with the use of mineral paint; the association probably can be explained by the local occurrence of the tempers. The clays used were buff-burning, calcareous in a third of the specimens studied. A slip was never applied. The surfaces of the vessels were never polished. The organic paint is uneven and lusterless, usually light gray in color. The mineral paint varies from brown to black, and is typically thin, soft, and badly worn. About 15 per cent of the ware bears designs in lead paint, applied for an intentional glaze.

Pueblo I Black-on-white:

> ". . . is tempered with igneous rock and decorated with mineral paint . . . definitely standardized in technique and limited in materials."[9]

The usual temper is pulverized andesite, with a varying admixture of sand. The clay used was a buff-burning type. Surface finishes are unslipped in 50 to 76 per cent of the specimens from different sites, slipped in the remainder. The paint is an iron oxide, usually black, sometimes red-brown and rarely gray; the light gray organic paint, common in the preceding period, had disappeared completely.

Pueblo I Black-on-red:

It should be mentioned that black-on-red pottery was occasionally made by the versatile Basket Maker III experimentalists, perhaps in imitation of trade ware received from the south.

> "The paste . . . is clearly distinct from that of typical black-on-white ware . . . The color ranges from deep tan through red-brown to brick red . . . The paste is more friable and the fracture tends to be earthen and irregular."[10]

The usual temper is andesite. Sherd temper appears rarely, and probably late, in Pueblo I times. The surface finish is smooth, sometimes polished. Neither slip nor wash was applied, at least before the end of the Pueblo I period. The usual applied paint is iron manganese, which fires dark brown to brown-black. More rarely a soft red hematite was used, which fires dark reddish brown to purplish brown. In both cases the paint was polished or pressed well into the clay. This ware, in contrast to the Pueblo I Black-on-white types, was well oxidized in firing, and it appears to have been fired at lower temperatures.

Pueblo II Black-on-white:

> "The outstanding innovation of Pueblo II was in tempering. The custom of using sherd temper for black-on-white-ware paste was for the first time established . . . Sherd temper did not entirely replace rock temper in Pueblo II . . . The proportion of sherd-tempered pastes from various sites ranges from 36 to 81%."[11]

[9] idem, p. 269.
[10] Shepard, 1939, p. 250.
[11] idem, p. 283.

The clay is buff-burning, never calcareous. The instance of slipping of the painted ware is about 50 per cent; bowl exteriors bear a slip in only an approximate one-third of the examples which have a slipped surface finish on the interior. The paint is an iron oxide. The very rare sherds bearing organic paint were proven to be intrusives, probably from the Chuska Mountains to the southwest.

Pueblo II Black-on-red:

> "Black-on-red ware was made for a short time and even improved by the application of a thin wash of exceptionally bright red-burning clay and then given up. It is difficult to understand why it should have been, for the bright color was a relief from the monotony of black and gray. The wide distribution by trade of certain black-on-red types has attested to the general popularity of the ware. The condition of the La Plata black-on-red vessels indicates that they were serviceable and no technological reason for the disappearance of the ware is known."[12]

Early Pueblo III Black-on-white:

1. Decorated with mineral paint: Approximately 85 per cent of the sherds of this ware contain sherd temper, there is no marked regional variation in the percentage; the remainder contain crushed igneous rock. The clay is buff-burning. The paint used is an iron oxide. Slipping occurs in less than half of the specimens, and bowls slipped on the inside often have unslipped exteriors. This ware is a logical continuation of Pueblo II Black-on-white.

2. Decorated with organic paint: Almost three-fourths of the pottery of the La Plata Valley proper was tempered with igneous rock. Sherds from sites located at some distance from the watercourse contain sherd temper in about 80 per cent of the examples studied.

> "The explanation appears simple enough. The potters in the western villages away from the river could not easily obtain rock [igneous river boulders]."[13]

The clay used in a majority of the sherds studied is of the buff-burning variety; however, a less-refractory red-burning clay was used in a high minority, with percentages varying somewhat according to geographic location (higher for the river bottom sites). All sherds of vessels made of red-burning clay show a slip, less than half the sherds of buff-burning clay show sign of having a slipped surface finish.

Late Pueblo III Black-on-white:

> "Mesa Verde black-on-white is characterized by very fine finish. Bowl surfaces were perfectly smoothed and polished to a slight luster on both interior and exterior. As a fine-quality, light, buff-burning clay, which in reducing atmosphere fires to a near white was frequently used, . . . many vessels were unslipped. The majority . . . however, are slipped."[14]

[12] Shepard, 1939, p. 283.
[13] idem, p. 275.
[14] Shepard, 1939, pp. 276–77.

Igneous rock temper predominated in the sherds from sites along the La Plata watercourse, but sherd temper was used in the overwhelming majority of examples from ruins to the west, away from the river terraces containing boulders of diorite and andesite. Sand particles were included in some specimens.

> "If the rock was ground on a sandstone mortar, some sand would be rubbed off . . . The potter may have been short of ground rock and intentionally added some sand . . . There was however no true sand-tempered paste."[15]

The organic paint is consistently darker, although it still varies from light gray to black, showing a slight improvement in knowledge of ingredients and firing controls over Early Pueblo III wares.

Shepard describes the decorated pottery wares found in the La Plata drainage by Periods; in this report I consider them by named types. The following table reconciles the two methods.

Basket Maker III Black-on-white	
(Organic paint)	Lino Black-on-gray
(Mineral paint)	La Plata Black-on-white
Pueblo I Black-on-white	Piedra Black-on-white
Pueblo I Black-on-red	La Plata Black-on-red[16]
	Abajo Red-on-orange
	Bluff Black-on-red?
Pueblo II Black-on-white	
(Mineral paint)	Mancos Black-on-white
Pueblo II Black-on-red	La Plata Black-on-red
Early Pueblo III Black-on-white	
(Mineral paint)	Mancos Black-on-white
(Organic paint)	McElmo Black-on-white
Late Pueblo III Black-on-white	Mesa Verde Black-on-white

Note: Piedra Black-on-white first appeared in Pueblo I times, but it was not the only type since Lino Black-on-gray and La Plata Black-on-white persisted.

Culinary ware:

> "The indications from preliminary examination from surface sherds are that culinary ware paste was rock-tempered consistently and continuously from Basket Maker III to the end [late Pueblo III], and the rare examples of sand or sherd temper appear to result from the occasional whim or convenience of individual potters."[17]

Most of the clay used was buff-burning, the same clay was used for the black-on-white wares.

> "La Plata potters were unusually fortunate in that their environment afforded them a readily accessible and abundant supply of high-grade clays."[18]

[15] idem, p. 276.
[16] Martin, 1939, fig. 133, mentions La Plata Black-on-orange. I follow Shepard's Black-on-red description.
[17] Shepard, 1939, p. 278.
[18] idem, p. 278.

General observations and questions:[19]

1. Intrusive wares found in the La Plata district, mentioned by Shepard, appear to have been imported from Chaco Canyon (or some area occupied by Chaco people) to the south, and the Bennett Peak area of the Chuska Mountains to the southwest.

2. "There were no technical limitations to prevent the potters from varying almost infinitely the color range of their pottery. Nor could the potters have been entirely unaware of the fine buffs which their clays would produce, because vessels were occasionally accidentally oxidized in firing and in the burning of buildings. The strict adherence to black-on-white ware must therefore be attributed to conservatism and force of custom. It is an outstanding example of the persistence and restriction of a specialized technique.

3. "In the beginning we find considerable variability in technique, especially as illustrated by the contemporaneous use of several very different pigments. Is this fact explained entirely by the theory that Basket Maker III was an experimental period . . . , or do mineral and organic paints represent the work of two distinct groups of people having different ceramic traditions?

4. "Was sherd tempering an indigenous development, or was it introduced from a foreign source?

5. "In levels just antedating the emergence of Mesa Verde style, a cursory examination shows a resemblance to Chaco style in the mineral-paint [designs] and features of Mesa Verde in the organic-paint vessels . . . If the same potters were using both mineral and organic paints why should they generally choose sherd temper for the paste of a bowl they intended to paint with iron oxide and crushed rock for one to be decorated with plant extract? Either the La Plata people were influenced by foreign contact or a new group of people settled among them."

Ackmen-Lowry Survey

Concurrent with the excavation of four small surface pueblos in the Ackmen-Lowry area of southwestern Colorado[20] a survey of ruins was made in a selected portion of the surrounding country.[21]

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

Using the pottery type tabulations for these 80 sites, I have calculated the pottery associations found on ruins located in this Ackmen-Lowry area, which is approximately 40 airline miles northwest of Mesa Verde proper. Only named, generally recognized, decorated wares are considered.

[19] idem, pp. 279–85.
[20] Martin, 1938.
[21] Lloyd, 1938, pp. 282–92.

This information is suggested:

1) The intrusives, Black Mesa Black-on-white and Tusayan Black-on-red were introduced during the interval that Lino Black-on-gray and Mancos Black-on-white were used concurrently.

2) Lino Black-on-gray and Abajo Red-on-orange were extinct types before Mesa Verde Black-on-white was made.

3) Mancos and McElmo Black-on-whites were found in association with all mentioned wares and, to a marked extent, with each other.

Mesa Verde Survey

In the Introduction, I spoke of the Gila Pueblo ruin surveys on Mesa Verde National Park. In 1929 one hundred and two ruins were located and described; surface collections of sherds were made, a minimum of 50 specimens from each ruin.[22] This survey was extended in 1940 and 1941, while Gila Pueblo was in possession of a permit which authorized the collecting of wood from archaeological sites on Mesa Verde. Records from over 140 ruins influenced the selection of sites for excavation in 1947 and 1948.

Ruins included in the survey are representative of every Period, they determined the Phases, from Basket Maker III through late Pueblo III. Forty-eight of the sites have been dated, the dates falling in every century from the 500's through the 1200's.

The lists of tree-ring dates for dated sites comprise Appendix A. Dates from some of the least complicated ruins, small sites suggesting a single period of occupation, were used in conjunction with the following table of pottery types (Fig. 6) in order to furnish a tentative time scale for the presence or absence of named ceramic wares.[23]

A site which had a long occupation, or a series of occupations, can distort information suggested by surface surveys. For example, Step House cave contains good Lino wares, and in the northwest half (the cliff dwelling has not been dated by tree-ring material) good corrugated and Mesa Verde Black-on-white types. Rather than show Lino types continuing into comparatively late times I have stopped the dotted line (possible) use of the types before the date of a ruin where the particular wares were not represented (before 1057, the date for a surface pueblo compound in Prater Canyon, where Lino wares did not appear among the large number of surface sherds collected).

[22] Part of the information secured has been published in Gladwin, 1934.

[23] Bluff Black-on-red probably is represented in the collections, but it is not considered; there is too much chance of confusion between this type and the locally identified La Plata and Abajo red wares. Types of Chaco Black-on-white wares are not classified more selectively as the copying propensities of the Mancos Black-on-white potters produced a great number of Chaco-like debatable specimens.

Several pottery types were not found on dated ruins, but they occurred with other types to which dates could be assigned. For example, Site Number 107 furnished a bark date of 836: Lino Gray, Lino Black-on-gray, La Plata Black-on-white, and Kana-a Gray (banded neck) sherds were found on the surface or in the

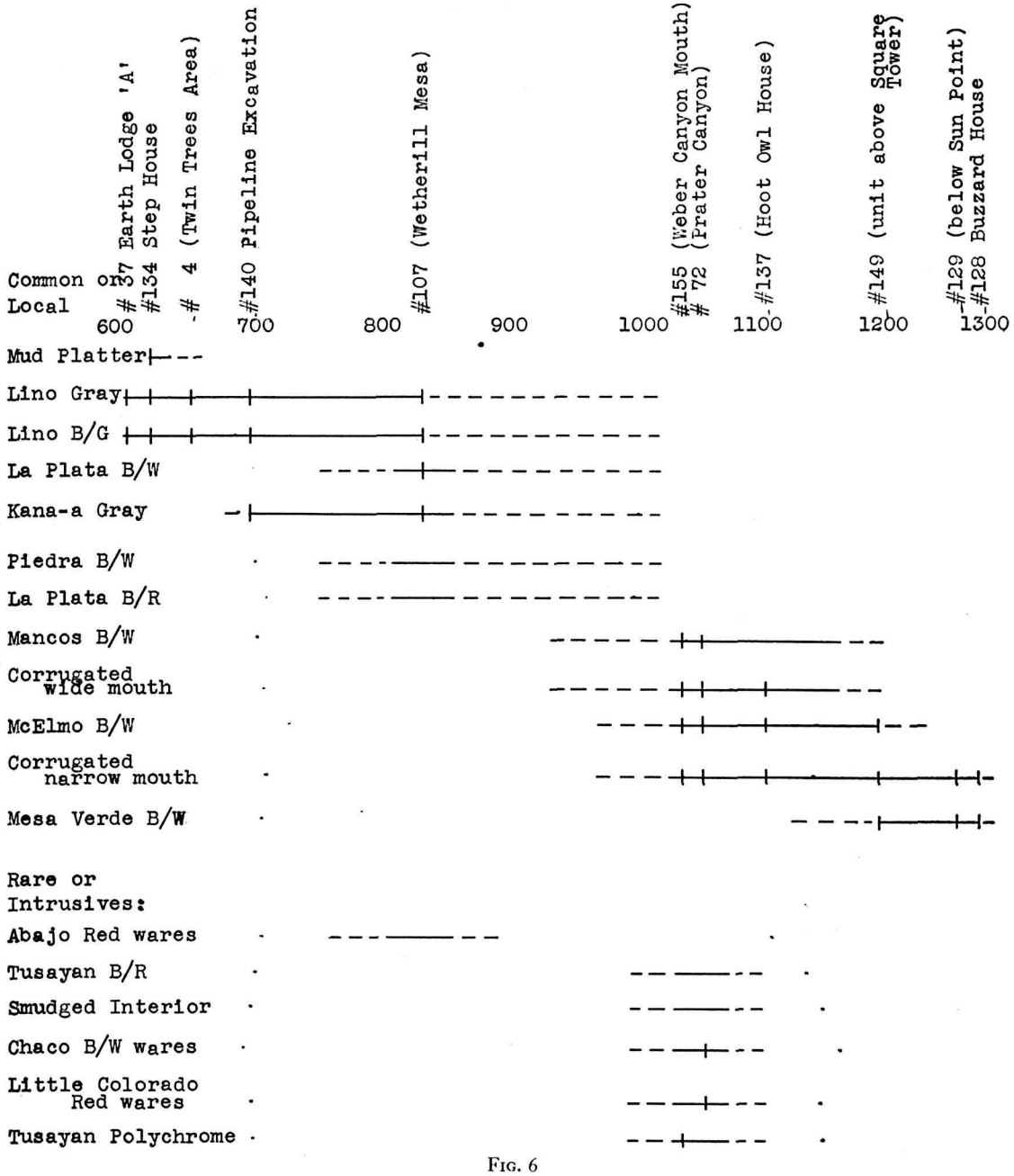


FIG. 6

trench dug for charcoal; with sherds of these pottery types, but found on other undated sites, were Piedra Black-on-white, La Plata Black-on-red, and both Abajo Polychrome and Abajo Red-on-orange. Two occurrences of White Mound Black-on-white locally connect it with the 836 date.

Points of interest (Fig. 6):

1) Wide-mouthed corrugated jars were discarded by 1190, although they overlap the beginnings of Mesa Verde Black-on-white.

2) McElmo Black-on-white comprised the majority of the decorated sherds found at Site Number 149, which furnished a bark date at 1190.

3) Mancos Black-on-white was found in association with Mesa Verde Black-on-white on 18 sites, including 3 cliff-dwellings. I believe that to be too great a number of instances to dismiss as evidence of long occupations or heirloom specimens. It might be explained by the later people collecting random sherds for use as sherd temper in Mesa Verde Black-on-white vessels.

The descriptions of the individual ruins visited during Gila Pueblo surveys furnish convincing evidence that sites at 836 were slab-room, and presumably pit-house, villages. At 702, and back to the earliest remains found on Mesa Verde (in the late 500's), pit-houses alone were used; they may be deep or shallow, in caves or on the surface, with or without banquettes and antechambers. By 1052, dressed stone masonry was the rule; the kiva had replaced the pit-house; debris mounds to the southeast had replaced the practice of scattering rubbish in all directions.

CHAPTER V

EXCAVATIONS AT SITE 102

A SMALL surface pueblo, situated immediately south of the Square Tower House to Sun Point road, at the point of crossing of the westernmost and highest ridge (see Fig. 7), was selected for first excavation. There were surface indications of two or three aligned rectangular rooms to the northwest, outlined both by slabs and horizontal masonry (Plate I); there was a slight depression at the customary position for a kiva, southeast of the surface structures; and, still farther to the southeast, was the deposit of a fairly extensive debris mound.

Decorated sherds found on the surface, and in stratigraphic tests made in 1929 in the debris mound and one of the surface rooms, were preponderantly Mancos Black-on-white; a few La Plata, Piedra, and Lino sherds indicated a comparatively early position for the site in the masonry pueblo development, which followed the pit-house and slab-room style of dwelling in other parts of the San Juan drainage.[1]

Excavation substantiated the initial assumption in a complicated and expansive way: the ground was successively occupied as a pit-house and slab-room village, and as a one-kiva masonry pueblo (Fig. 8).

The area was divided into four-meter grids, and one-meter-wide approach trenches were directed towards the surface structure and kiva depression from the north and west. Some deep pockets of debris, containing fragments of Pueblo I types of pottery, proved the presence of pit-houses. The plan of work was modified and carried out in the following stages:

1. Excavation in and around the surface rooms and kiva depression, in order to define the later occupation.
2. Excavation of the pit-houses and living areas, including a row of slab-outlined rooms located to the northwest.
3. Excavation of complex deposits, stratified debris and structures superimposed completely or in part on earlier constructions.
4. Trenching of the debris mound.

Discussion of the later occupation, the one-kiva pueblo, and of the earlier occupation, the pit-house and slab-room village, will be considered in order of mention. To minimize confusion between the remains of the two occupations, I will refer to the former as the pueblo,[2] the latter as the village.

[1] Morris, 1939, pp. 30, 34. Martin, 1939, pp. 463–64. Brew, 1946, pp. 218–19.

[2] Prudden, 1914, p. 33. A "unit type," surface rooms associated with a single kiva.

a Looking north over kiva depression to masonry rooms in background.

b Surface indication of southeast wall of masonry rooms, upper left to lower right.

SITE 102, BEFORE EXCAVATION

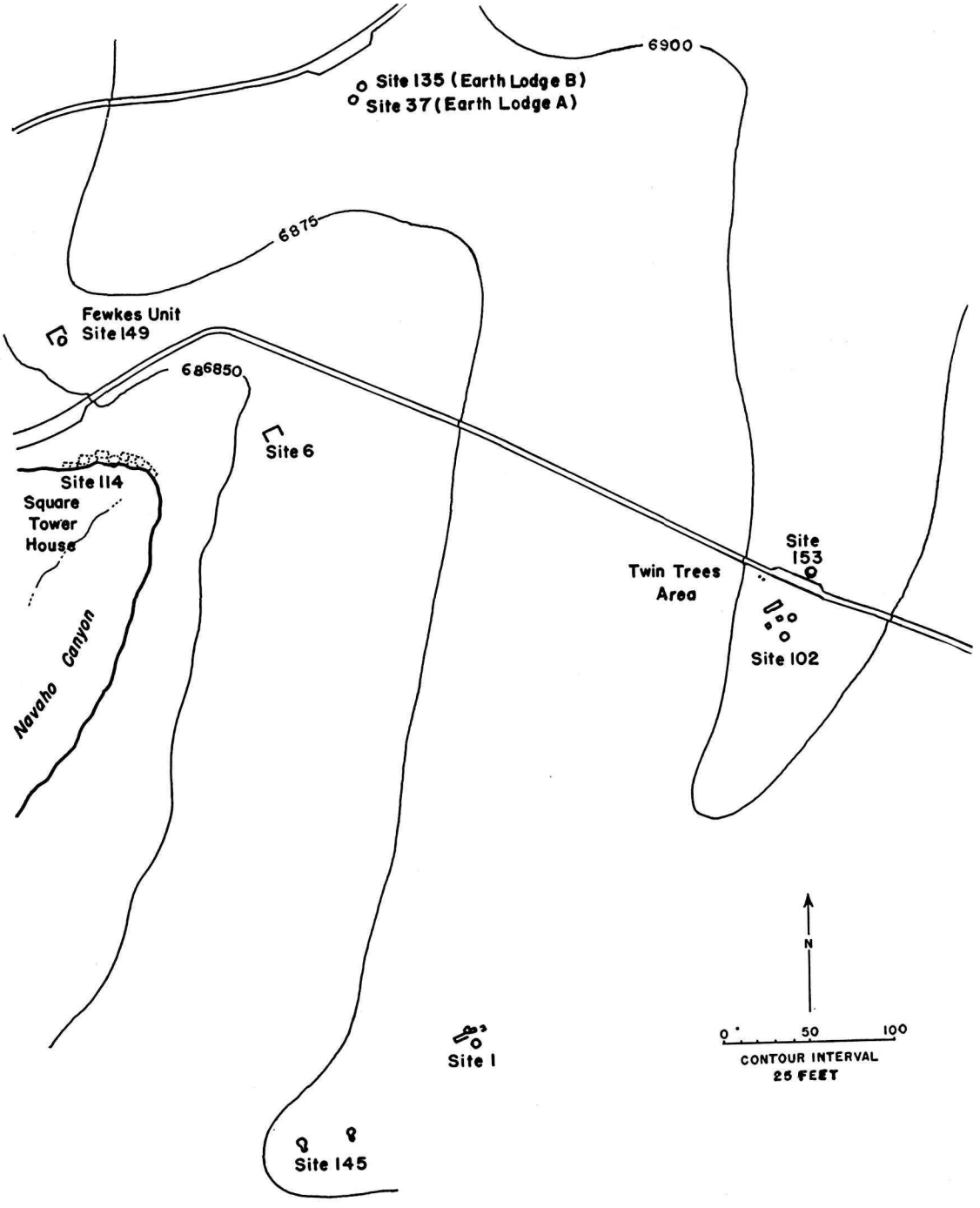


FIG. 7. MAP OF TWIN TREES AREA

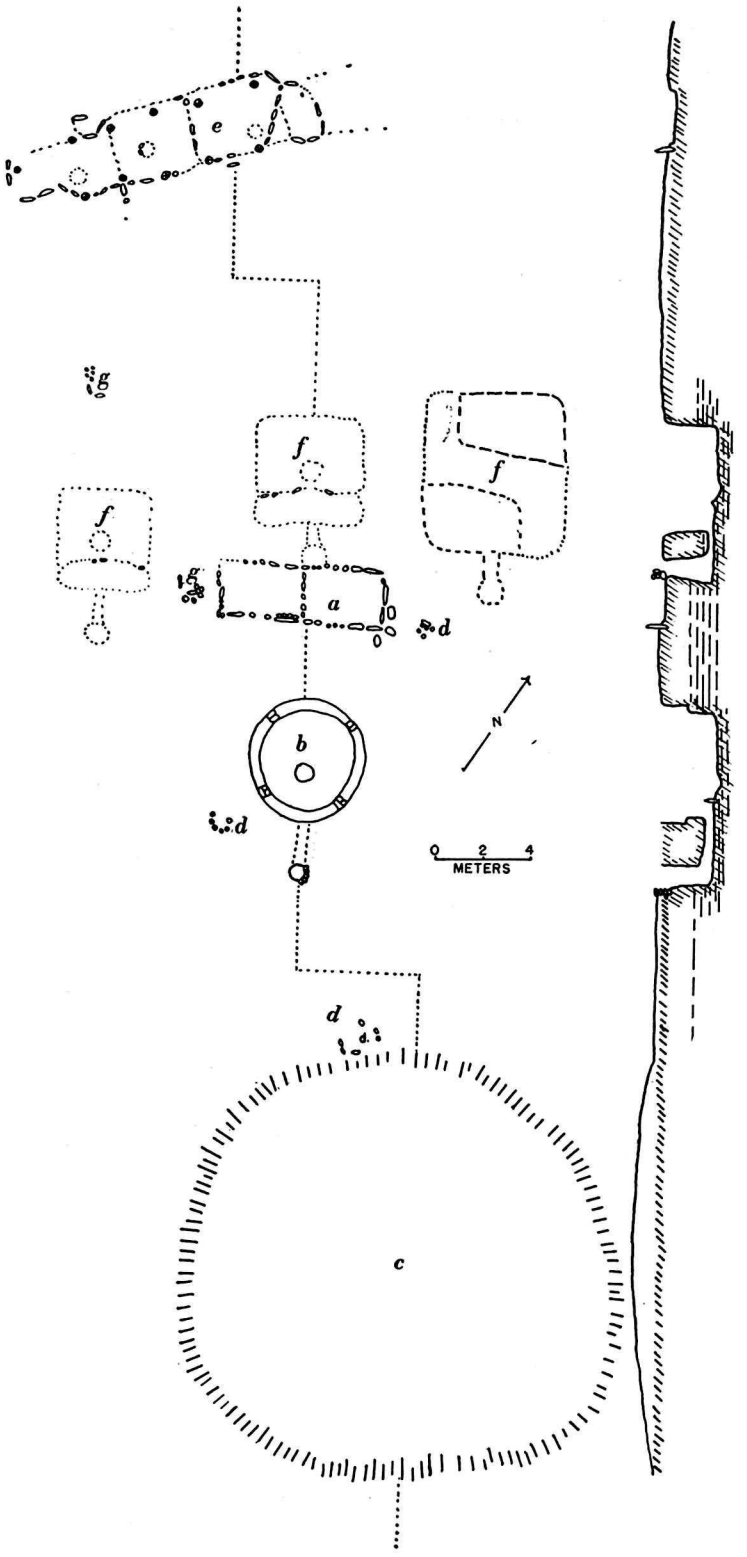


FIG. 8. PLAN AND PROFILE OF SITE 102

a, Pueblo surface room; *b*, Pueblo Kiva; *c*, Pueblo debris mound; *d*, Pueblo fireplaces; *e*, Village slab rooms; *f*, Village pit-houses; *g*, Village fireplaces.

Dotted line indicates alignment of profile on the right.

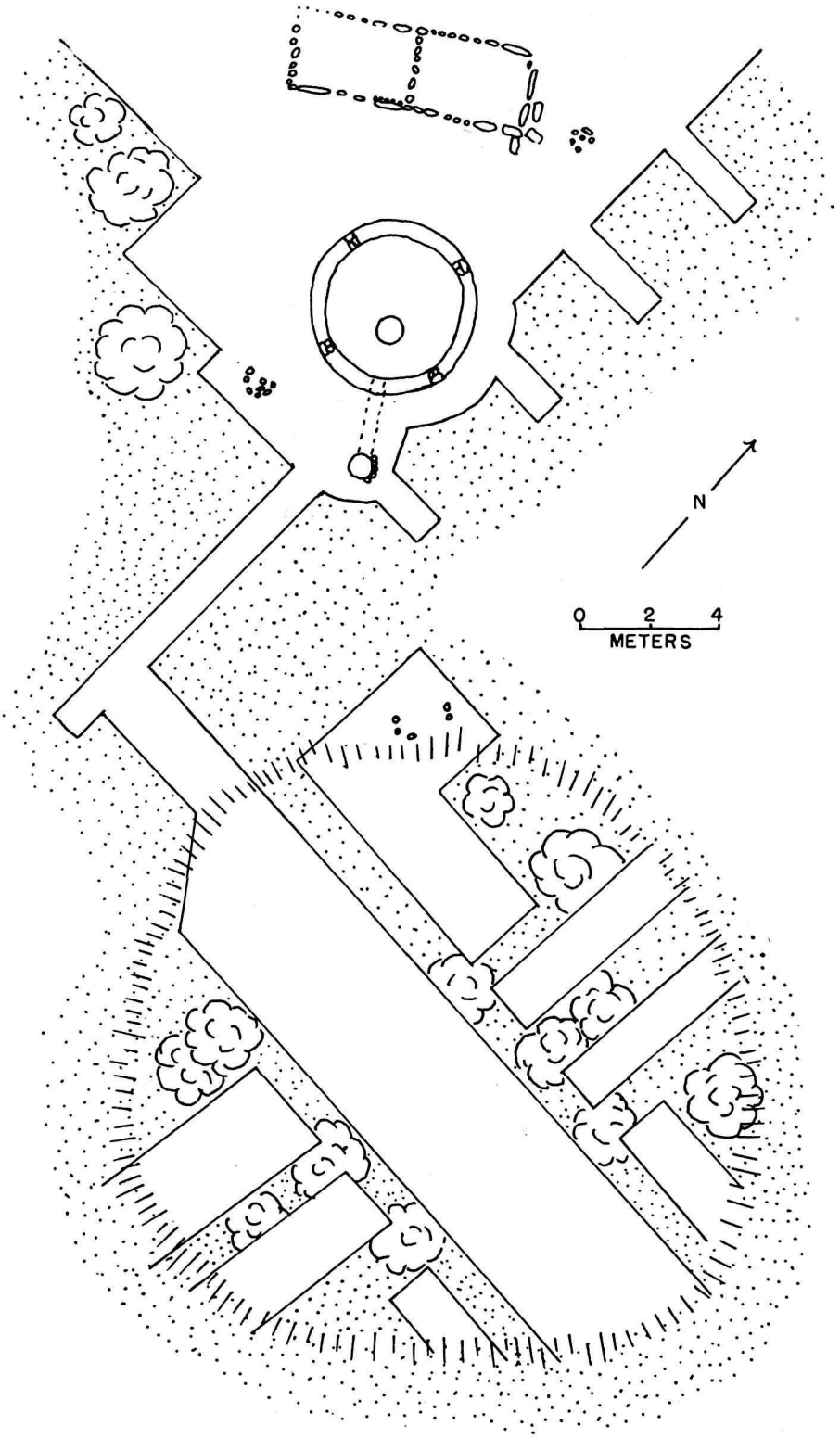


FIG. 9. PLAN OF SITE 102 PUEBLO, SHOWING EXTENT OF EXCAVATION

Pueblo

The pueblo consisted of two surface rooms, a kiva, three outside fireplace areas, and a debris mound. Remains of this occupation appear in the lower (southern) half of Figure 8, the ground plan of Site 102. Figure 9 shows the extent of excavation of the pueblo area.

Outside Fireplaces (Figs. 8, 9).

Each of the three fireplaces was composed of a small pile of burned sandstone fragments and pockets of ashes. No complete hearth was found; however, in each case two or more sandstone slabs outlined an arc of an ash deposit. The only artifact found in association with the fireplaces was a clay figurine, a crude bird, in the ash deposit southeast of the surface rooms.

Tree-ring dates: None.

Sherd counts: Appendix B, p. 115.

Debris Mound (Figs. 8, 9).

The maximum depth of refuse was 1.10 m. Pinyon and juniper trees growing on the mound were left standing; this limited excavation to about 75 per cent of the area.

Evidently the heaped refuse was not the only place used for interment by the occupants of the site. A single disturbed burial was found, the same fragmentary burial uncovered in a test trench in 1929 (Gila Pueblo Ruin Survey sheet for Site 102). The skeletal remains were of an adolescent (third molars not erupted, teeth not worn), probably of a female (orbits sharply defined, mastoids small). Fragments of parietals and occiput furnished evidence of lambdoidal deformation (lambdoidal deformation, as used here and on following pages, includes occasional examples verging on occipital flattening).

Stratigraphy: Two 1-meter square pillars were cut in 20 cm. layers; sherd counts showed little variation from top to bottom.

Artifacts:

Stone cup,—a trimmed and abraded natural concretion
Broken axe
Chipped knife
Hammerstone
Pendant of red metamorphosed shale
Smoothing stone
Sandstone slab, for sharpening awls—2
Polishing stone
Bone needle
Clay miniature of a carrying basket, punctate design
Pendant blank (?) of red metamorphosed shale
Sandstone concretion, shaped as a pipe blank (?) or mount for drilling beads (?)

Tree-ring dates: None.

Sherd counts: Appendix B, p. 115.

Masonry Rooms (Plates I, II, Figs. 8, 9, 10).

Walls: A combination of masonry blocks, slabs on end, and small sandstone fragments set in adobe plaster (Plate II). Some of the upright slabs had been faced with mud and sandstone chips, to increase the width of the wall base (Plate IIc). Probably a cross pole or wattle-and-daub upper wall was built on this foundation.

a Looking southeast over masonry rooms to kiva.

b Horizontal masonry and slab walls in east room.

c Slab faced with spalls in west room.

SITE 102, PUEBLO

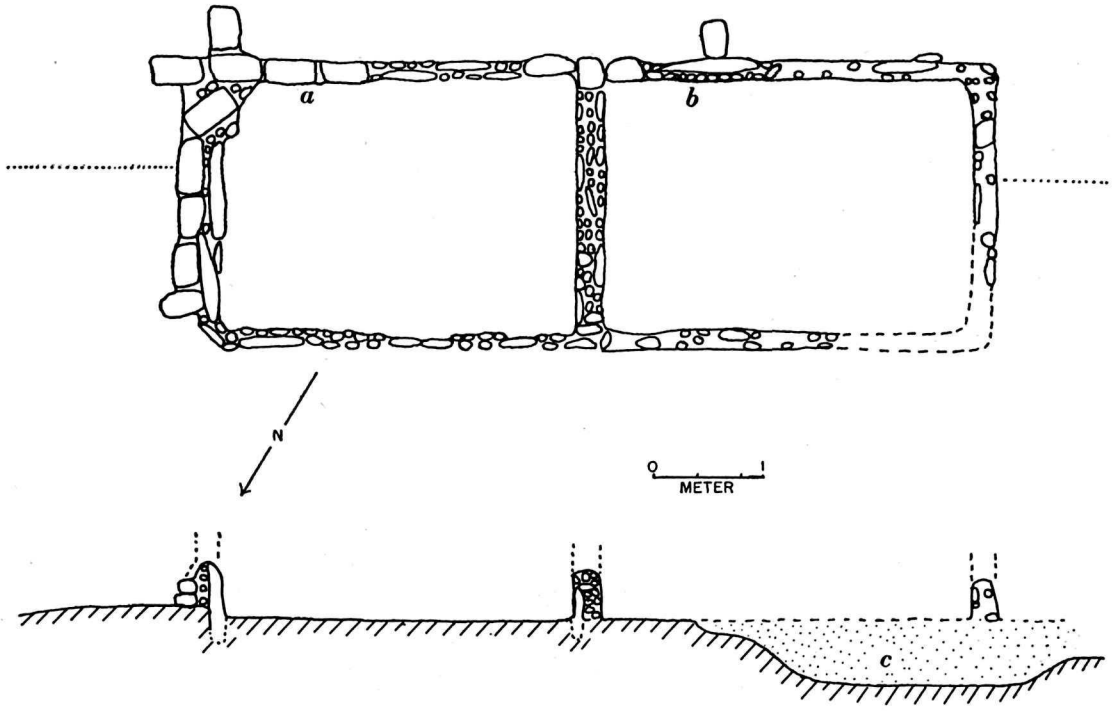


FIG. 10. PLAN AND PROFILE OF MASONRY ROOMS, SITE 102 PUEBLO

a, Wall of horizontal masonry; *b*, Slab wall, faced with plaster and spalls; *c*, Floor on fill of earlier occupation, shown in profile below.

Entrances: None was found; undoubtedly doorways were present in the walls at a higher level than the sections preserved.

Floors: The floor of the east room was slightly below the surface of the surrounding undisturbed soil. The floor of the west room was inadequately defined, as it overlay a waste earth pile (from an adjacent pit-house) and debris pockets from the earlier occupation. Neither room contained a fireplace, nor floor features of any sort.

Roofs: Very little rubble from fallen walls was found in the course of excavation, although the maximum height of existing walls did not exceed one-half meter. Perhaps some sort of log superstructure was raised on the stone and adobe foundation to support beam, crosspole, and earth-covered roofs.

Stratigraphy: All cultural accessories found in the fill of the east room can be assigned to the later or pueblo occupation. A section of the north wall of the room had been built over the filled-in ventilator of an adjacent pit-house. In the west room, the top cut—the fill above the probable floor level—contained a few sherds belonging to the pueblo occupation; the middle and bottom cuts (the approximate floor level, and the excavation to undisturbed soil) contained remains for the most part belonging to the earlier occupation.

Artifacts:

East Room		West Room	
Fill	Floor	.4 m.—Floor	Floor—.8 m.
	Awl sharpener	Pot lid	Fossil
	Handstone	Flake knife	Chipped drill
		Flake drill	

Tree-ring dates: None.

Sherd counts: Appendix B, p. 116.

Kiva (Plates IIa, III, Figs. 8, 9, 11).

Wall: Undisturbed adobe soil from the surface to the level of banquette, undisturbed caliche (a stratum of gypsum) from the banquette to the floor. Adobe plaster was used to even the banquette level, and to coat the exposed caliche surface; six distinct overlaying coats of plaster were preserved on both sides of the ventilator opening. No niches were present in the wall.

Entrance: Through the roof, directly over the fireplace. A pair of cup-like depressions in front of the ventilator opening probably served to steady the entrance ladder.

Ventilator: The height of the opening into the chamber is 45 cm., the width is 25 cm. (too small for possible use as an entrance). A stone slab (found as shown in Plate III) served to close the opening when desired. The eastern arc of the surface opening is outlined by a low masonry wall, constructed to seal off a pocket of loose debris (Plate IIIb).

Deflector: Two sandstone blocks originally placed one on top of the other, in an edge-to-edge position, approximately two-thirds of the distance from the ventilator opening to the fireplace. Before abandonment, the deflector had been dismantled, the slabs broken, and the fragments heaped to one side. Plate III shows the fragments fitted together at the location where they were uncovered.

Fireplace: A shallow, ash-filled depression; the surface was plaster-coated, and the mud forms a slight circumscribing rim at the floor level.

Floor: Of undisturbed caliche, evened with adobe plaster. Floor features are: the fireplace, two ladder pole rests, an oblong pocket which had been filled in and sealed over before the kiva was abandoned, and a shallow depression at the southwest base of the circumference wall which may have served as the opening to the underworld (as no "sipapu" was found in a more conventional place).

Roof: No evidence of the actual structure remained. The four small masonry pilasters (the only masonry within the structure), evenly spaced on the banquette, probably supported a cribbed log roof.

Stratigraphy: After the kiva had been abandoned, and was half filled with dirt and debris, a thin lens of ash was deposited. No perceptible differences existed between the pot-sherds found above or below the ash layer.

Artifacts:

Surface—1.0 m.	General Fill	Floor	Floor Pocket	Ventilator Area
Axe—3	Pot lid	Bone awl—8		Polishing stone
Polishing stone	Polishing stone	Bone needle		Hammerstone
	Hammerstone	Hammerstone		
		Polishing stone		
		Mano—10		
		La Plata B/W pitcher		
		Corrugated jar		
		Flat metate		
		Troughed metate		

Sherd counts: Appendix B, p. 116.

Tree-ring dates: The kiva had not burned. Five fragments of charcoal and splinters of decayed wood were collected from the fireplace and ventilator fills, none of these specimens dated. Five fragments of charcoal from the sealed floor pocket furnished two plus dates (the bark ring was not preserved in either specimen); the date marked with an asterisk is included in Appendix A.

Species	Dates Inside — Outside	Remarks	Rating
Pinyon	— 904 — 947 +*	Short	Excellent
Pinyon	— 904 — 934 +	Very short	Fair

a Floor, banquette, and masonry pilasters.

b Ventilator complex, with masonry wall on east side of vertical shaft.

SITE 102 PUEBLO, KIVA

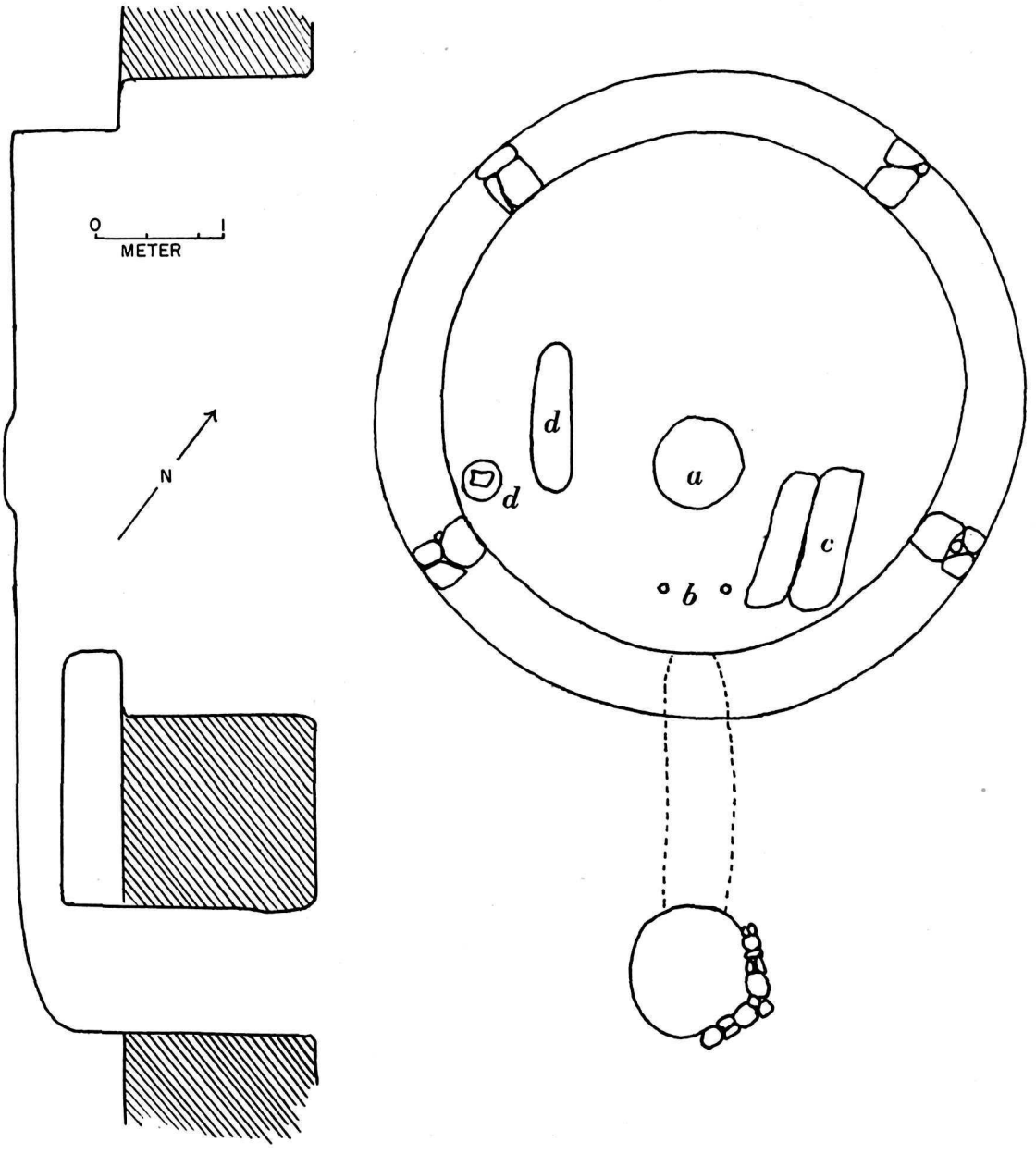


FIG. 11. PLAN AND PROFILE OF KIVA, SITE 102 PUEBLO

a Fireplace; *b*, Ladder sockets; *c*, Dismantled deflector; *d*, Floor pockets.

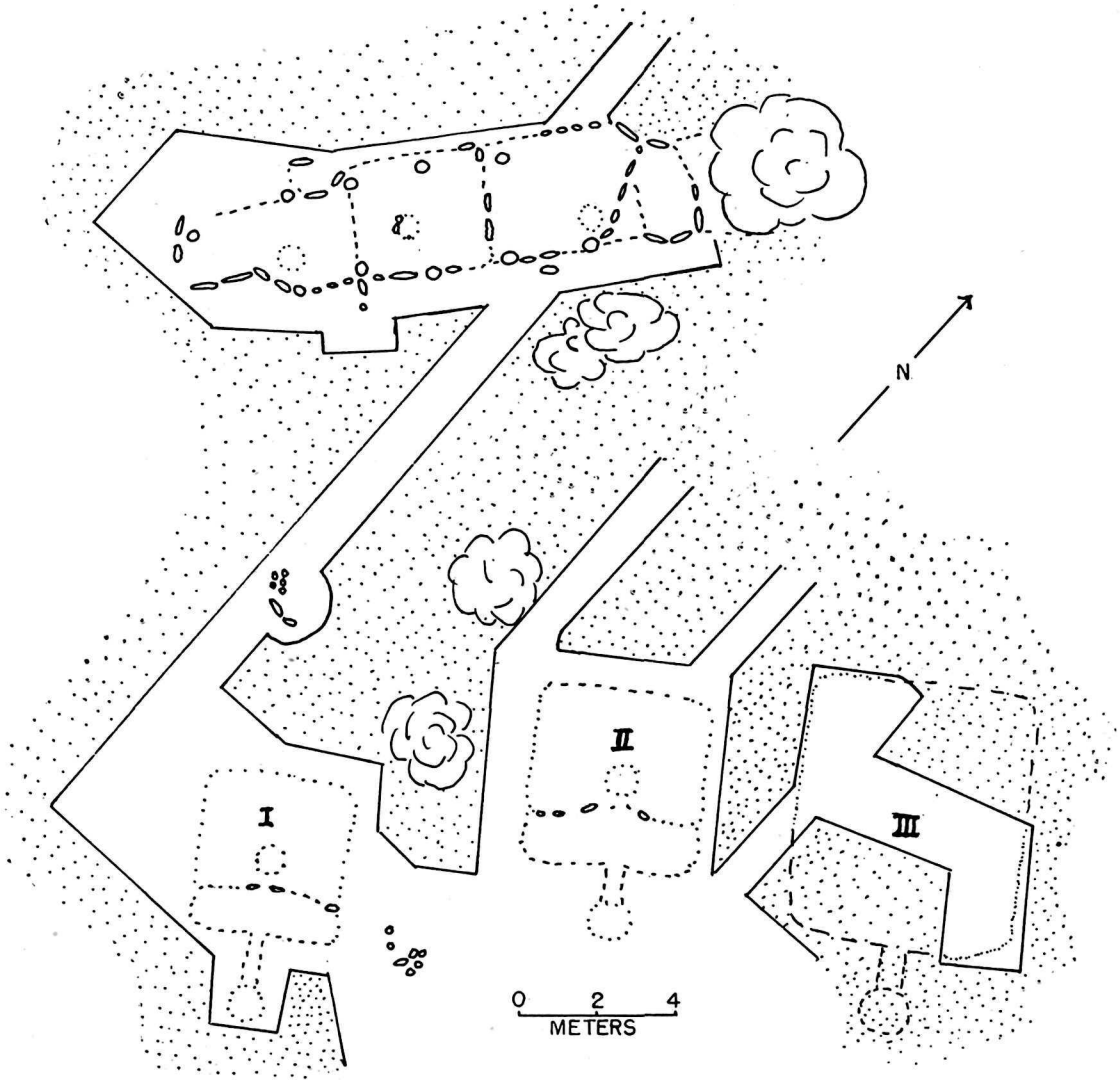


FIG. 12. PLAN OF SITE 102 VILLAGE, SHOWING EXTENT OF EXCAVATION

Outside Fireplaces (Figs. 8, 12).

Two fireplace areas, pockets of ashes containing and surrounded by burned sandstone spalls, appear to have been used by the pit-house and slab-room dwellers. No actual hearths existed; small fires were burned intermittently in each of the areas, either on the surface of the ground or in a shallow depression.

Artifacts:

E. of Pit-House I	N. of Pit-House I
Sawed sandstone pebble	Hammerstone
Hammerstone	Abrading stone
Corncobs	

Tree-ring dates: None.

Sherd counts: Appendix B, p. 117.

Village

The pit-house and slab-room village comprises the upper (northern) half of Figure 8, the ground plan of Site 102. Two pit-houses were completely excavated, a third was located and partly defined. A five-room section of floors, outlined by upright slabs and plaster, was uncovered. Two outside fireplaces were associated with the earlier occupation. Figure 12 shows the extent of excavation of the village; only a portion of it was uncovered: the arc of slab-outlined rooms appears to extend a full 30 m. to the northeast, to the ditch cut of the existing road; probably further trenching would locate additional pit-houses.

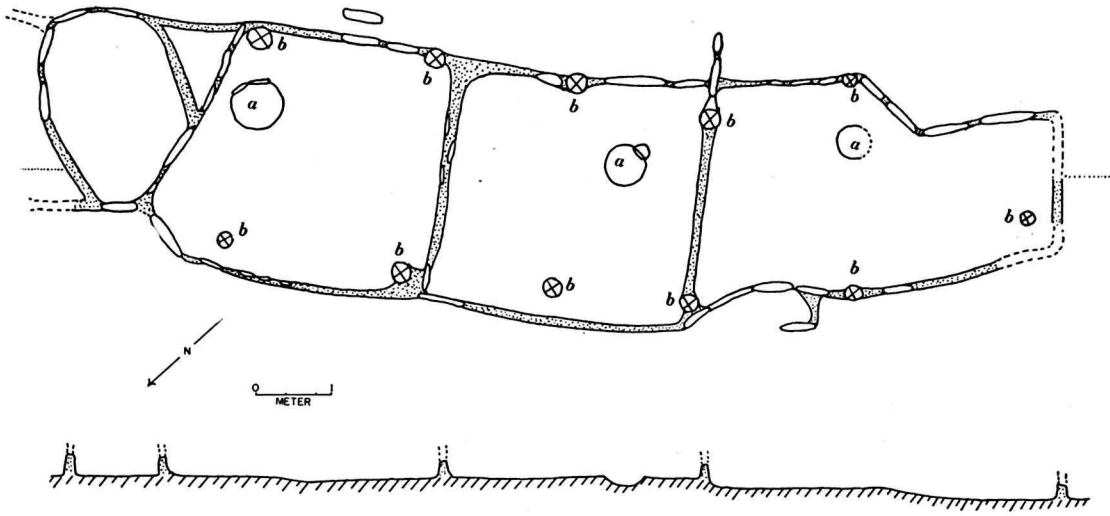


Fig. 13. Plan and Profile of Slab Rooms, Site 102 Village
a, Fireplaces; *b*, Post holes.

Slab Rooms (Plate IV, Figs. 8, 12, 13).

Walls: Of undisturbed adobe from the floors to the ground level, upright slabs, and adobe plaster. Inset post holes are evidence that some roof supports were structural parts of some walls. Many clods of burned plaster found in the fill of the rooms suggest that the upper portions of the walls were constructed of small poles and brush; the stick and twig imprints are clearly preserved in the burned clay which was daubed over them.

Entrances: Through the southeast walls, in the direction of the pit-houses; the plastered sill of a side entrance was preserved at the southeast corner of the west room, 20 cm. above the floor level.

Floors: Slightly below the level of the surrounding undisturbed soil. The large east room had a smooth plaster floor, well preserved around the fireplace; the evened surface of the undisturbed earth composed the floors of the other rooms. The three large rooms contained well-defined circular fireplaces, in two cases partially outlined by small sandstone slabs, set upright with top edges almost flush with the floor level. Fireplaces and post holes were the only floor features found.

Roofs: Four vertical log supports, either embedded in the floor, or incorporated in the walls, supported the roof of each of the larger rooms. The crosspole and brush superstructure—a surmise based on the charcoal in the fill—was covered with earth or plaster. The roof of the large center room had been capped with fitted sandstone slabs.

Stratigraphy: None. The floor levels were never more than 60 cm. below the present surface of the soil. Tree growth and rodent burrows had churned the earth fill. However, the only later pueblo remains found in the slab-room area were three surface sherds.

Occupation areas in front of the slab-rooms: No clear evidence. Several upright slabs projected southeast from the structures, but no definable floors, post holes, fireplaces, or other signs of living areas—such as those reported from similar sites (Morris, 1939, figs. 10, 15, 16, 18, 19, 21, 22; Brew, 1946, fig. 27; Martin, 1939, map 19)—were encountered. That such areas existed at this site is probable; they were present in a contemporaneous village (Site 1, p. 44).

Artifacts:

Outside W. Room	W. Room	Center Room	N. of Rooms
Flake knife	Axe—2	Hammerstone—8	Chipped drill
Hematite pebble	Obsidian flake	Floor polisher—4	
	Polishing stone—3	Pot lid	
	Hammerstone—2	Troughed metate—2	
	Mano	Mano—3	
		Piedra B/W bowl	
		La Plate B/W bowl—2	
		Lino Gray jar—3	
		Kana-a Gray jar—2	
		La Plata B/W jar	
		Clay pellet	

E. Room	S. of Rooms	Outside E. Room
Lino Gray jar—2	Bone awl	Axe
Lino Gray duck bowl	Mano	Hammerstone
Bone scraper	Hammerstone	
White Mound B/W jar	Grooved maul	
Floor polisher		
Hammerstone—4		
Mano—4		
Clay pellet		
Axe		

Sherd counts: Appendix B, p. 117.

Pit-House I (Plate V, Figs. 8, 12, 14).

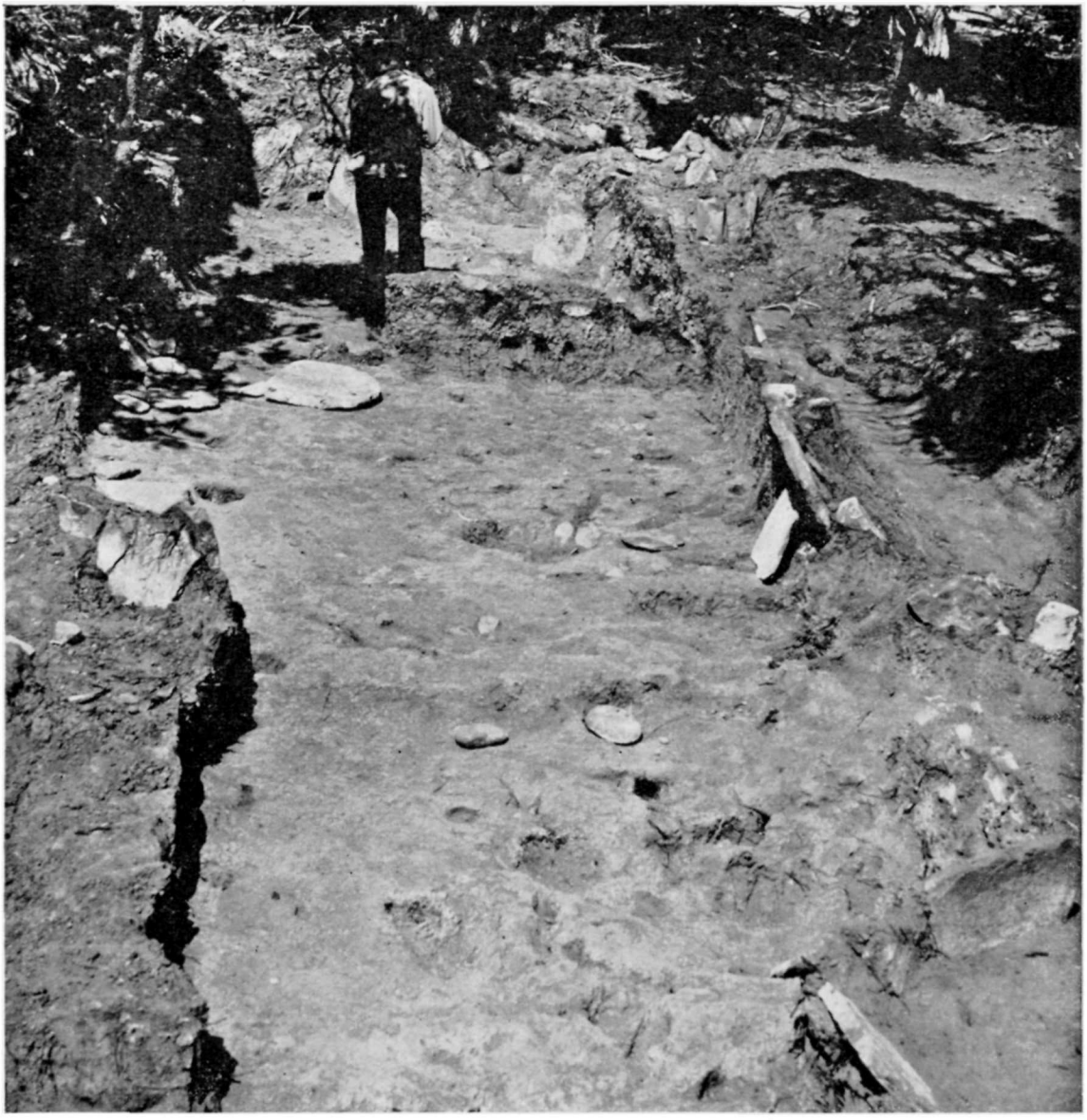
Walls: Undisturbed adobe and caliche soil, slightly incurving from floor to surface; three coats of a thin plaster of mixed adobe and caliche had been applied to the exposed surfaces. The north and east walls each contained a row of small pockets, four and six respectively, 40 cm. above the floor; they could have been used as supports for a platform composed of horizontal beams, but there was no conclusive evidence of such a structure.

Entrance: Through the roof, probably over the fireplace.

Ventilator: The height of the opening into the chamber is 35 cm., the width is 25 cm. (too small for possible use as an entrance).

Deflector: Center section of the floor partition. Two pole uprights could have supported a loose stone slab, kept in place or to one side (such a slab was found on the floor near the ventilator opening) at the convenience of the occupants.

Partition: Of upright poles and slabs, and evened with plaster of mixed adobe and caliche; the average height of the partition was over 30 cm. Passage between the main floor area and the compartment near the ventilator opening could have been effected fairly conveniently between the upright posts of the deflector.



Tree-ring dates: All slab-rooms had burned. Charcoal from the large east room furnished six reliable dates out of nine pieces studied. Charcoal from the large center and west rooms yielded five reliable dates out of six pieces studied. Dates marked with an asterisk are included in Appendix A.

Species	Dates Inside — Outside	Remarks	Rating
Pinyon	⊙ 726 — 820 +	Tight rings	Fair
Pinyon	⊙ 723 — 822 +	Tight rings	Fair
Pinyon	⊙ 776 — *835**		Good
Pinyon	⊙ 768 — 828 +*		Good
Pinyon	⊙ 724 — 812 +		Fair
Douglas Fir	⊙ 767 — 806 +	Short	Fair
Pinyon	— 778 — 812 +	Short	Fair
Pinyon	⊙ 761 — *844*	Tight rings	Fair
Pinyon	⊙ 777 — 822 +		Fair
Pinyon	⊙ 772 — 816 +*		Good
Pinyon	⊙ 785 — 817 +	Very short	Fair

SITE 102 VILLAGE, SLAB ROOMS, LOOKING NORTHEAST

Fireplace: Circular, shallow, overflowing with ashes. The depression and rim were plaster coated; several small slabs had been set on edge around the arc with top edges flush with the floor. A shallow oval depression, between the fireplace and the deflector, may have served as a "warming oven"; Morris reported the same feature in several pit-houses (1939, figs. 7, 8, 11, 12, 14) excavated in the La Plata valley a few miles to the south.

Floor: Of undisturbed caliche, evened with adobe plaster. Floor features, other than the partition, fireplace, and warming oven, include: two well-defined floor pockets, respectively northwest of the fireplace—60 cm. deep, and west of the ventilator opening—20 cm. deep; two shallow depressions, one in the northwest corner (depth 5 cm.), the second near the corner formed by the east end of the partition and the east wall (depth 10 cm.); a pair of oval troughs (depth 5 cm.) in the southwest section of the main floor space; four large post holes (maximum and minimum depths 35 and 20 cm.), two are incorporated in the partition; and seven subsidiary post holes which held timbers either supplemental to the main roof supports or serving to hold up racks or a platform.

Roof: The numerous charred beams found in the fill of the pit-house, and the positions of the post holes which contained the stumps of the main roof supports, permit a reliable reconstruction of the roof. However, as more structural details were preserved in Pit-House II, and as both pit-houses are strikingly similar, further details of roof construction will be considered in the subsection on Pit-House II.

Stratigraphy: The burned and collapsed roof, a 20 cm. stratum of burned lumps of plaster, charcoal and ash immediately above the floor, effectively sealed off the belongings of the original inhabitants from intrusions from the later occupation level; a few stray sherds belonging to the adjacent pueblo were found on the surface and in the upper portion of the fill.

Artifacts: Nothing was found in the ventilator fill or the top cut.

General Fill	1.5–1.7 m. (Charcoal Lens)	1.7 m.—Floor	Floor Pockets
Arrow point	Arrow point	Pipe—2	Hammerstone
	Flake knife	Awl—5	Grooved maul
	Galena pebble	Pendant	La Plata B/W ladle
		Needle	
		La Plata B/W ladle	
		Galena pebble	
		Polishing stone—2	
		Hammerstone—2	
		Flake knife—3	
		Flake scraper—2	
		Flake drill	
		Fossil shell	
		Kana-a Gray jar	
		Troughed metate—2	
		Mano—4	

Sherd counts: Appendix B, p. 117.

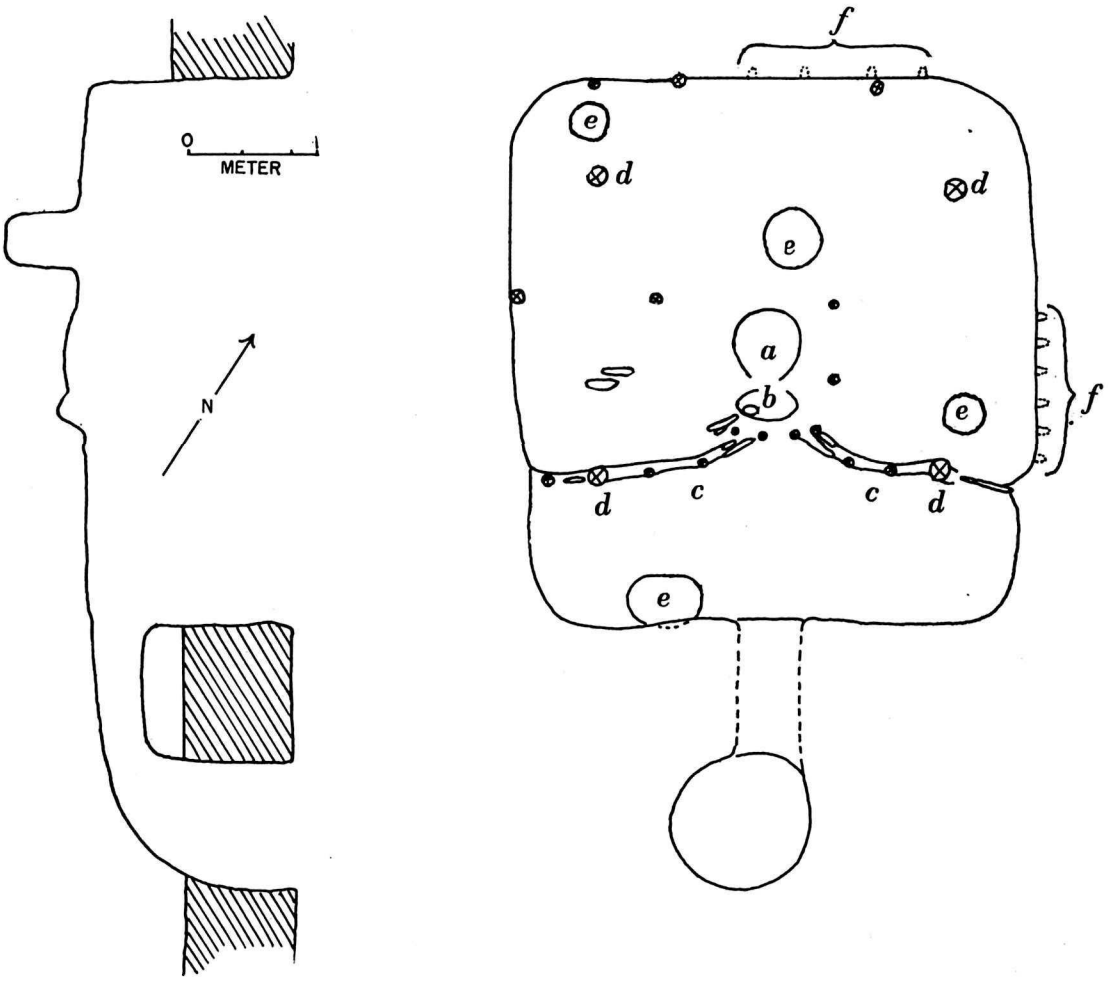
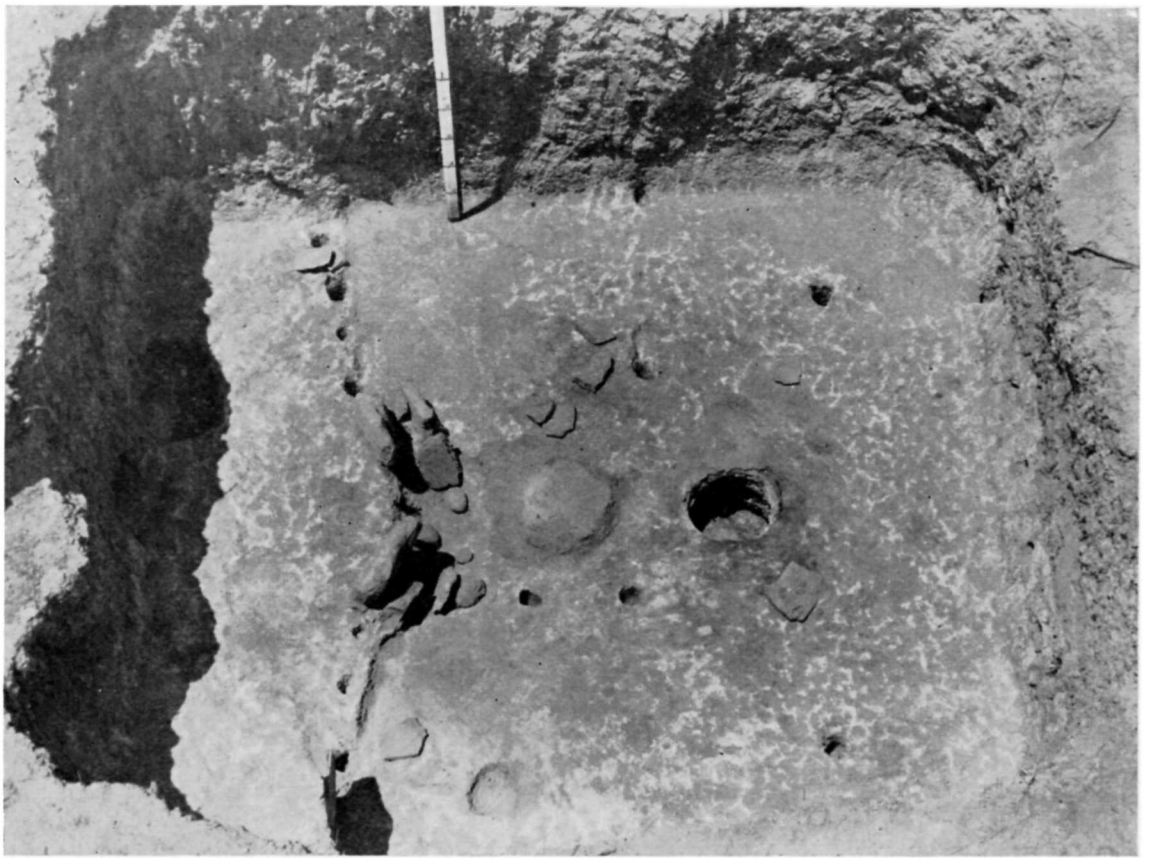


FIG. 14. PLAN AND PROFILE OF PIT-HOUSE I, SITE 102 VILLAGE

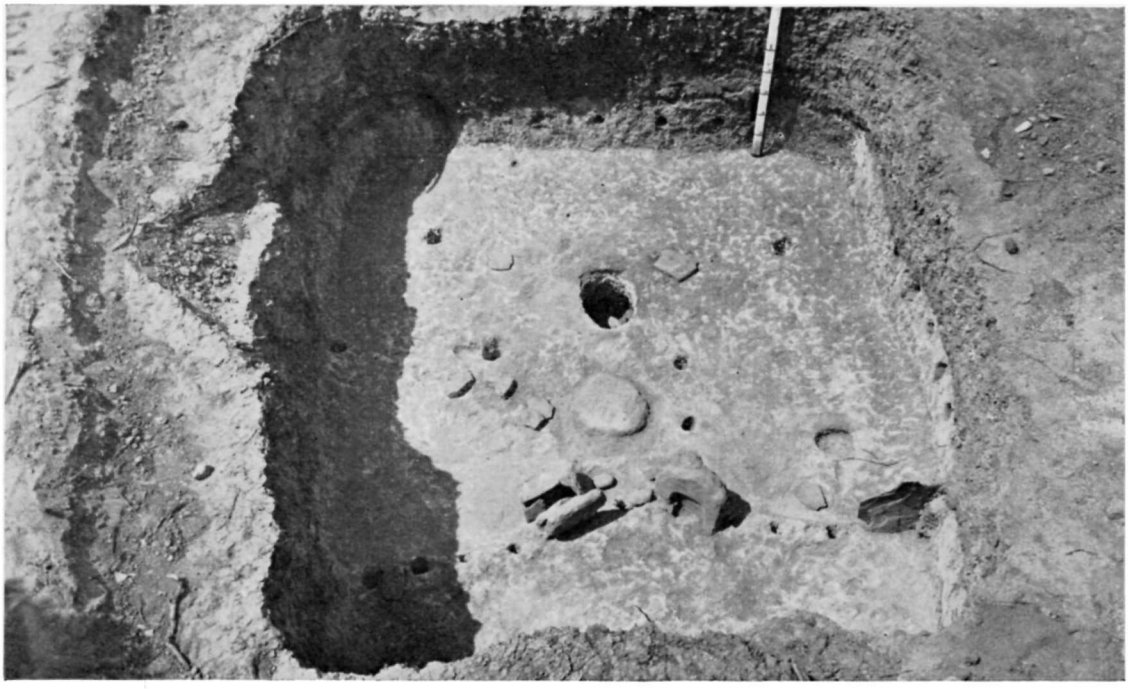
a, Fireplace; *b*, Warming oven; *c*, Partition; *d*, Post holes for four main roof supports; *e*, Floor pockets; *f*, Rows of niches in side walls.

Tree-ring dates: The pit-house had burned. Over ten pounds of charcoal were left at the Mesa Verde Museum for possible future value in the study of Carbon 14. Twelve of the charcoal specimens furnished eleven reliable dates, ten from the remains of the pit-house roof, one from a piece of charcoal found on the bottom of the deepest floor pocket. Dates marked with an asterisk are included in Appendix A.

Species	Dates Inside — Outside	Remarks	Rating
Pinyon	⊙ 749 — *829**		Excellent
Pinyon	⊙ 746 — *828*	Tight rings	Fair
Douglas Fir	⊙ 771 — 828 +*		Good
Douglas Fir	⊙ 781 — 831 +*		Good
Douglas Fir	⊙ 747 — 804 +*	Distorted	Good
Pinyon	⊙ 752 — *831**		Good
Pinyon	⊙ 775 — *831**		Good
Douglas Fir	⊙ 749 — 826 +*		Excellent
Douglas Fir	⊙ 748 — 811 +*		Good
Douglas Fir	⊙ 728 — 818 +*		Good
Pinyon	⊙ 797 — *832*	Short	Fair



a Looking southwest.



b Looking northwest.

SITE 102 VILLAGE, PIT-HOUSE I

Pit-House II (Plate VI, Figs. 8, 12, 15).

Walls: Undisturbed adobe and caliche, slightly incurving from floor to surface; at least four coatings of thin plaster had been applied to the exposed surfaces. A row of three small pockets, 35 cm. above the floor, had been cut into the eastern portion of the south wall.

Entrance: Through the roof, over the fireplace. This particular section of the roof had collapsed, with little derangement of the constituent parts; the construction and dimensions of the entrance could be determined quite accurately. The width of the entrance was almost 60 cm., the length over 70 cm.—determined by the distance between two of the three main horizontal beams which supported the roof. Three sandstone slabs may have been used to rim one or two sides of the opening.

Ventilator: The height of the opening into the chamber is 40 cm., the width is 30 cm.; two small upright poles, embedded in plaster, evened the sides of the opening and supported a tight-fitting slab door which could be placed to one side (found as shown in Plate VI) at the convenience of the occupants. The surface opening is circular, about 1 meter in diameter. The horizontal tunnel meets the vertical shaft in a small but well finished bell-shaped chamber, possibly used as a small store room. A section of the north wall of the eastern surface room of the later pueblo was constructed on the fill of the ventilator.

Deflector: Center section of the floor partition. Three pole uprights could have supported a stone slab, such as the door to the ventilator opening. These same pole uprights certainly did not facilitate passage from the main floor to the ventilator area compartment, and yet the considerable height of the partition wall bars any other easy means of access between the living spaces.

Partition: Of upright poles and slabs, evened with plaster of mixed adobe and caliche; the average height of the best preserved sections of the partition was over 70 cm.

Fireplace: The same as that described for Pit-House I.

Floor: Of undisturbed caliche, evened with adobe plaster. The average depth, below the surface of the surrounding soil, is 1.90 meters. Floor features, other than the partition, fireplace, and warming oven include: one well defined floor pocket (depth 20 cm.) in the northwest corner, and an uneven, roughly rectangular, subfloor area in the middle of the main floor space (maximum depth 20 cm.), which had been filled in and plastered over before the structure was abandoned; four large post holes (maximum and minimum depths—45 and 25 cm.), two are incorporated in the partition; and seven subsidiary post holes which probably held auxiliary roof supports.

Roof: Whole sections had collapsed on to the floor, when the structure burned, in such a way as to furnish evidence for a fairly exact reconstruction (Fig. 16). The four uprights, each having a butt over 15 cm. in diameter, supported a square of four beams (diameters of different sections of charcoal varied from 11 to 16 cm.). A fifth large beam, held by the two lateral beams of the square, aided in the support of the overburden of small poles, brush and earth, and served as the rear outline of the roof entrance.

Stratigraphy: The pit-house had been abandoned before the structure burned. A 5 to 10 cm. stratum of wind-blown sand and dust rested on the floor. This in turn was covered by a 30 cm. layer of burned clods, charcoal and ashes, the remains of the roof. All corrugated and other late sherds were found in the fill above the burned material.

Artifacts:

General Fill	Ventilator Fill	Surface—1.5 m.	1.5–1.8 m. (Charcoal Lens)	1.8 m.—Floor	Floor Pockets
Polishing stone	Hammerstone	Polishing stone	Corncobs	Hammerstone—3	Awl
Awl	Awl		Flake knife	Mano—2	Abrading stone
				Troughed metate	Arrow point
				Polishing stone—2	Clay pellet
				Incised pebble	Flake scraper—2
				Fossil shell	Sandstone saw (?)
					Flaked core
					Obsidian core
					Hammerstone

Sherd counts: Appendix B, p. 118.

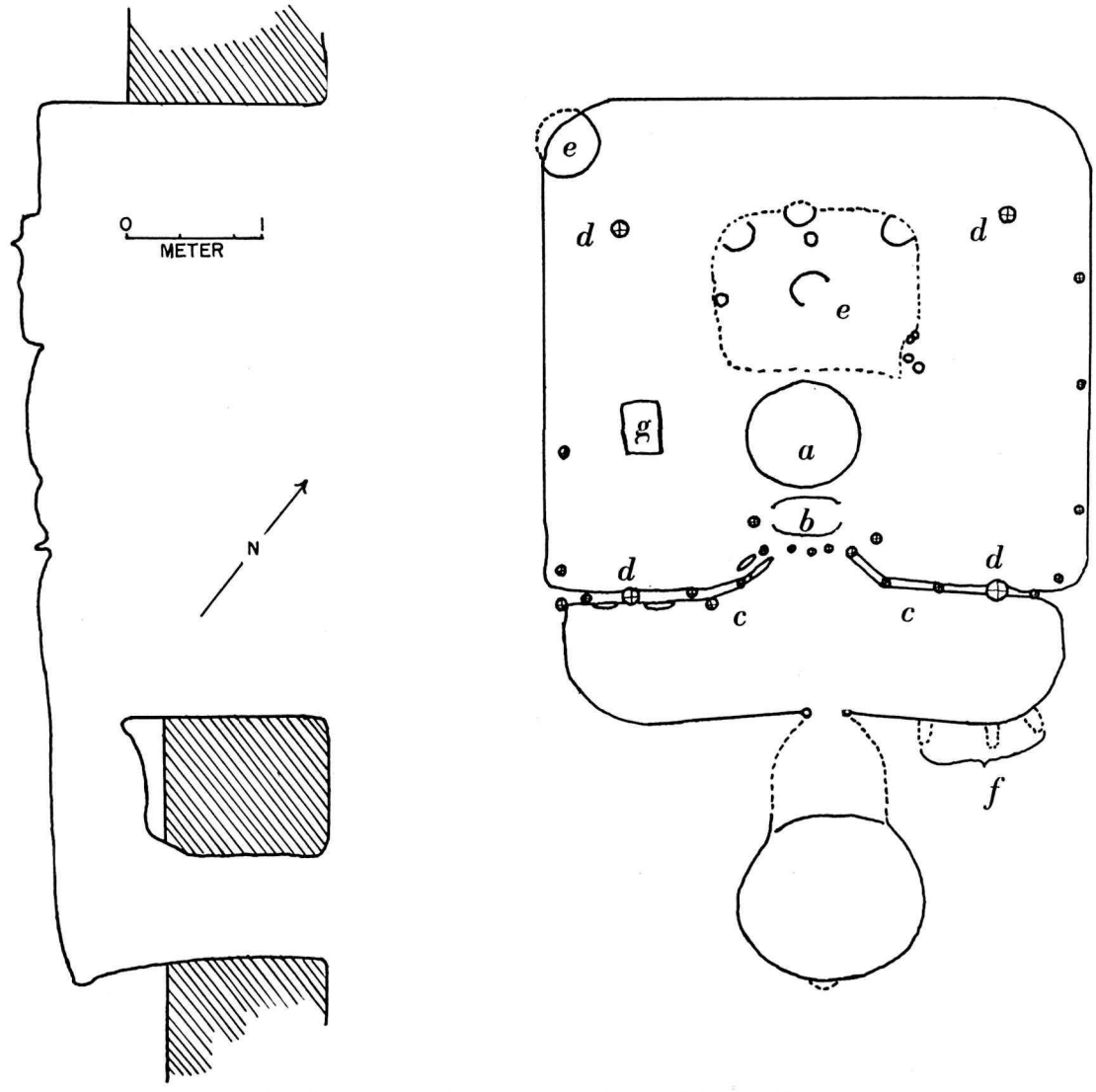


FIG. 15. PLAN AND PROFILE OF PIT-HOUSE II, SITE 102 VILLAGE

a, Fireplace; *b*, Warming oven; *c*, Partition; *d*, Post holes of four main roof supports; *e*, Floor pockets; *f*, Rows of niches in side wall; *g*, Metate embedded in floor.

Tree-ring dates: Over ten pounds of charcoal from the burned roof of the pit-house were left at the Mesa Verde Museum for possible future study of Carbon 14. Twenty-two of the charcoal specimens yielded twenty-two reliable dates. Dates marked with an asterisk are included in Appendix A.

Species	Dates Inside — Outside	Remarks	Rating
Pinyon	⊙ 726 — *832**	Tight outer rings	Good
Pinyon	⊙ 715 — *831*		Fair
Pinyon	⊙ 670 — 799 +	Tight rings	Fair
Douglas Fir	⊙ 737 — 807 +*		Excellent
Douglas Fir	⊙ 754 — 809 +*		Excellent
Douglas Fir	⊙ 758 — *835**		Good
Douglas Fir	— 761 — 822 +*		Good

SITE 102 VILLAGE, PIT-HOUSE II, LOOKING NORTHEAST

Pinyon	⊙ 763 – *835**		Good
Douglas Fir	⊙ 760 – *834*	Distorted	Fair
Douglas Fir	⊙ 756 – *835**		Excellent
Pinyon	– 769 – *831*	Tight rings	Fair
Pinyon	⊙ 668 – 838 +	Tight rings	Fair
Douglas Fir	⊙ 776 – 818 +*	Short	Good
Douglas Fir	⊙ 765 – 829 +		Fair
Pinyon	– 787 – *835*		Fair
Pinyon	⊙ 804 – *835**	Very short	Good
Pinyon	⊙ 786 – *840**		Excellent
Pinyon	⊙ 768 – *833**		Excellent
Pinyon	⊙ 782 – *832**		Excellent
Douglas Fir	⊙ 787 – *832**	Short	Good
Douglas Fir	⊙ 689 – 819 +	Tight rings	Fair
Douglas Fir	⊙ 752 – *835**		Excellent

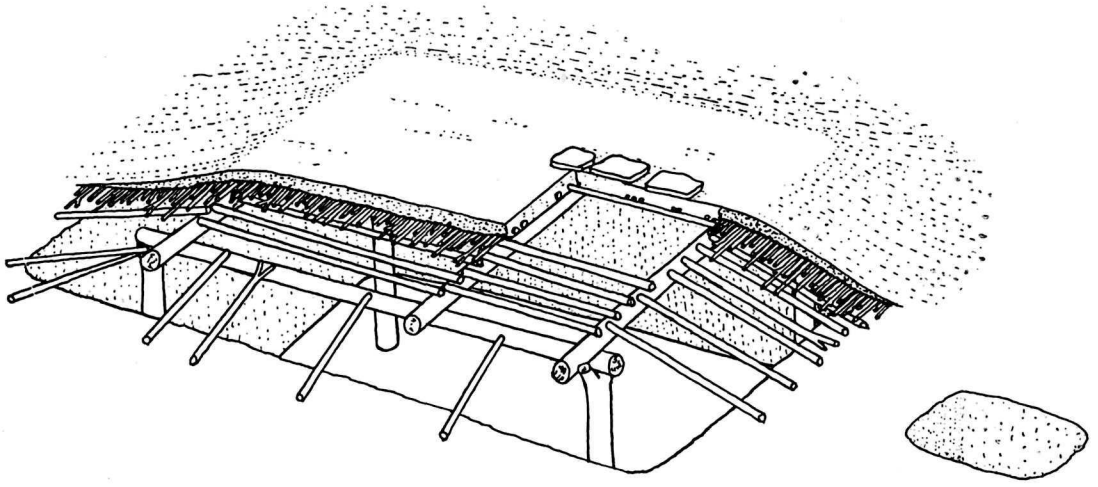


FIG. 16. RECONSTRUCTION OF ROOF, PIT-HOUSE II, SITE 102 VILLAGE

Pit-House III (Figs. 8, 12).

The dwelling was not completely excavated. It had not burned. It was conspicuously larger than the adjacent two pit-houses.

Partition: Absent, or not preserved in the section excavated.

Floor: Of undisturbed caliche, evened with adobe plaster. The average depth, below the surface of the surrounding soil, is 1.90 m. No floor features were encountered, ashes found near the middle of the floor undoubtedly represented an overflow from the fireplace.

Stratigraphy: The fill was extremely hard packed. A layer of wind-blown sand, at least 10 cm. in thickness, covered the well-defined floor. Except for three exasperating sherds (which may have slipped down a rodent burrow) all examples of pottery from the neighboring later occupation were found on the surface or high in the fill.

Artifacts:

General Fill	Surface—1.7 m.	1.7 m.—Floor
	Arrow point	Arrow point

Tree-ring dates: None.

Sherd counts: Appendix B, p. 118.

CHAPTER VI

EXCAVATIONS AT SITE 1

THE first site recorded by the Gila Pueblo survey in 1929 was a small surface pueblo, approximately 300 m. south of the Square Tower House to Sun Point road, on the same ridge and almost due south of Site 102. A low mound of tumbled masonry blocks suggested the presence of foundations of five or six surface rooms (it will be seen that surface indications can be misleading); a slight depression located a single kiva, southeast of the surface structures; a low but fairly extensive debris mound was evident still further to the southeast.

In 1941 I had trenched the kiva, in search of datable charcoal. As the roof had burned, many sections of charred logs were recovered; the latest date subsequently determined from the specimens was 1019+, bark dates at 1004 and 1005 furnished good evidence that the site was occupied during the early years of the 11th century.

The great majority of decorated sherds on the surface, and those found in the kiva trench, were Mancos Black-on-white. The few La Plata Black-on-white, Lino Black-on-gray, and Kana-a Gray sherds could be explained as drift from adjacent slab-room villages. Knowing that the kiva had a masonry wall (encountered in 1941, while trenching for charcoal), and that the surface rooms had been constructed predominantly of dressed stone, Site 1 held promise of being the next step from Site 102 in the local sequence of cultural development. Excavation proved this to be the case to a qualified extent: accessories of clay, stone, and bone showed little change from those found associated with the pueblo at Site 102; however, several new types of artifacts had become popular, and details of architecture showed decided improvement.

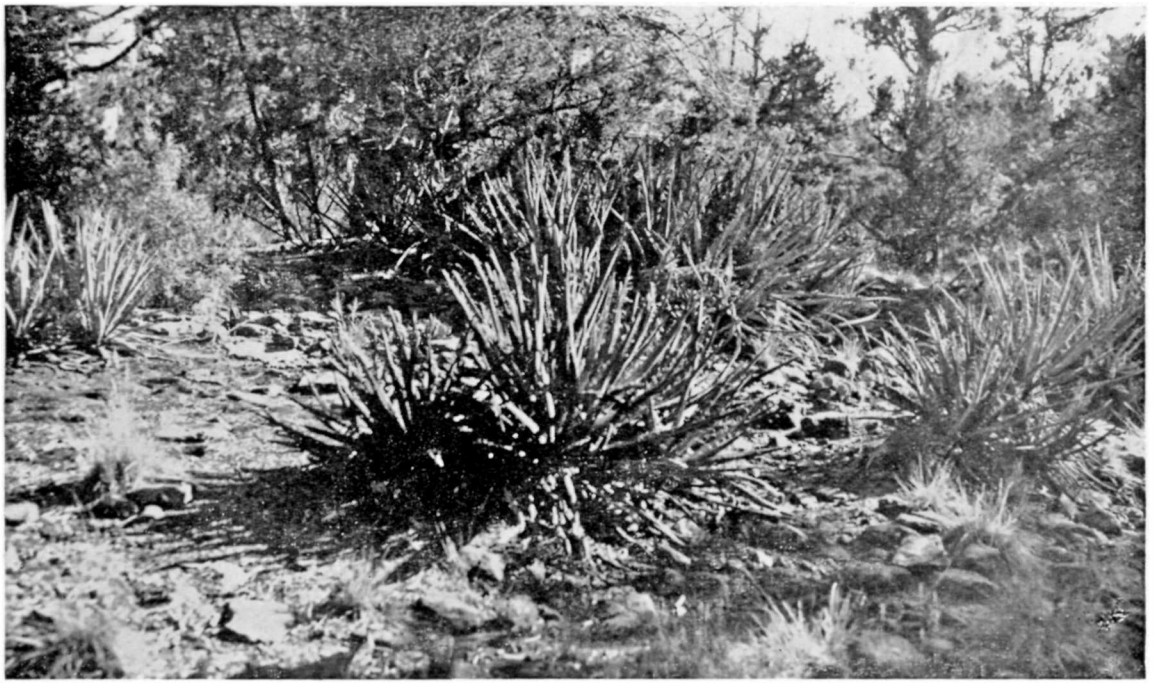
Approach trenches soon ran into evidence of an earlier occupation, slab-rooms and potsherds indicative of the Pueblo I stage of development. The method of excavation was altered, and carried out in the same sequence as was used for Site 102:

1. Excavation of the remains of the later occupation, the surface rooms and kiva depression.
2. Excavation of the slab-rooms, and test-trenching for pit-houses.
3. Excavation of stratified deposits.
4. Excavation of the debris mound.

Consideration of the remains of the two occupations again will be attempted in stratigraphic order, from top to bottom, the most recent first. The pueblo is the later construction; the village refers to the underlying slab-rooms.

Pueblo

The pueblo consisted of two surface rooms, a kiva, two outside fireplaces and the debris mound. Remains of this occupation appear throughout the vertical center portion of Figure 17, the ground plan of Site 1.



a Looking northeast. Masonry rooms before excavation.

b Looking northeast. Masonry rooms partly excavated.

SITE 1, BEFORE AND DURING EXCAVATION

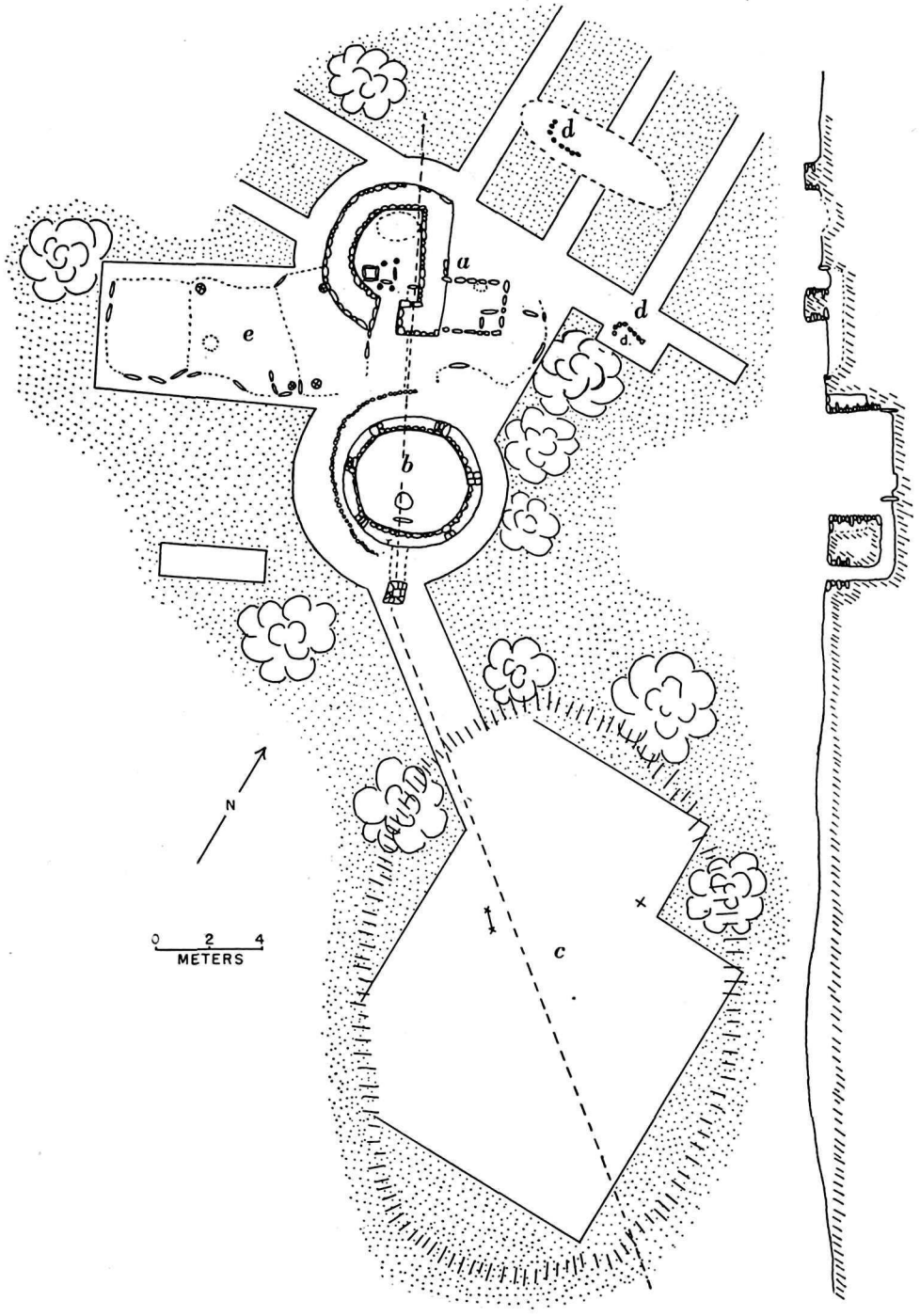


FIG. 17. PLAN AND PROFILE OF SITE 1, SHOWING EXTENT OF EXCAVATION

a, Pueblo masonry rooms; *b*, Pueblo Kiva; *c*, Pueblo debris mound; *d*, Pueblo fireplaces; *e*, Village slab rooms. Dotted line shows alignment of profile on the right.

Outside Fireplaces (Fig. 17).

The two outside fireplaces were evident before excavation as low mounds of burned sandstone fragments, the heap of fire-reddened stone north of the surface rooms was 7 m. long from east to west, about twice the extent of the rock pile to the east of the rooms. Excavation in each case uncovered an arc of burned sandstone blocks which outlined one side of an ash area.

Artifacts: The sherds of a restorable wide-mouthed jar, top half corrugated and bottom half plain, were scattered among the stone blocks of the fireplace east of the rooms.

Tree-ring dates: None.

Sherd counts: Appendix B, p. 118.

Debris Mound (Fig. 17).

The maximum depth of the refuse was 1.30 meters. Approximately nine-tenths of the mound was excavated. Several old trenches were signs of previous digging; no bone fragments or other sign of disturbed burials were noticed in the turned earth.

One burial and the scattered remains of a second skeleton were uncovered in the mound. The burial was only 15 cm. (depth to sacrum) below the surface of the northeast side of the refuse heap, the rim of the accompanying Mancos Black-on-white pitcher had been exposed and weathered. The remains were of an old adult (teeth worn, sections of sutures obliterated), male (robust bone structure, orbital edges rounded, mastoids large); the fragments of parietals and occiput showed marked lambdoidal deformation, slightly asymmetrical to the left side. The body had been placed with head to the north, resting on back and left side, flexed with knees to east, offering at right shoulder.

The scattered skeleton was strewn throughout the west central portion of the mound; the bones appeared to belong to one individual, an adult, probably a male. I believe that more than two deaths occurred during the occupation of the site (at least a 10-year period, judging from the bark dates from beams used in the two constructions of the kiva roof); it may not have been the custom to bury infants in the debris mound, and some adults may have been interred elsewhere.

Stratigraphy: Tests showed no definable differences in sherds from top to bottom.

Artifacts:

Clay pendant, miniature squash shape
Awl sharpener, grooved sandstone slab
Hammerstone
Broken axe
Polishing stone
Pot lid
Smoothing stone
Pitcher, Mancos Black-on-white, burial accompaniment

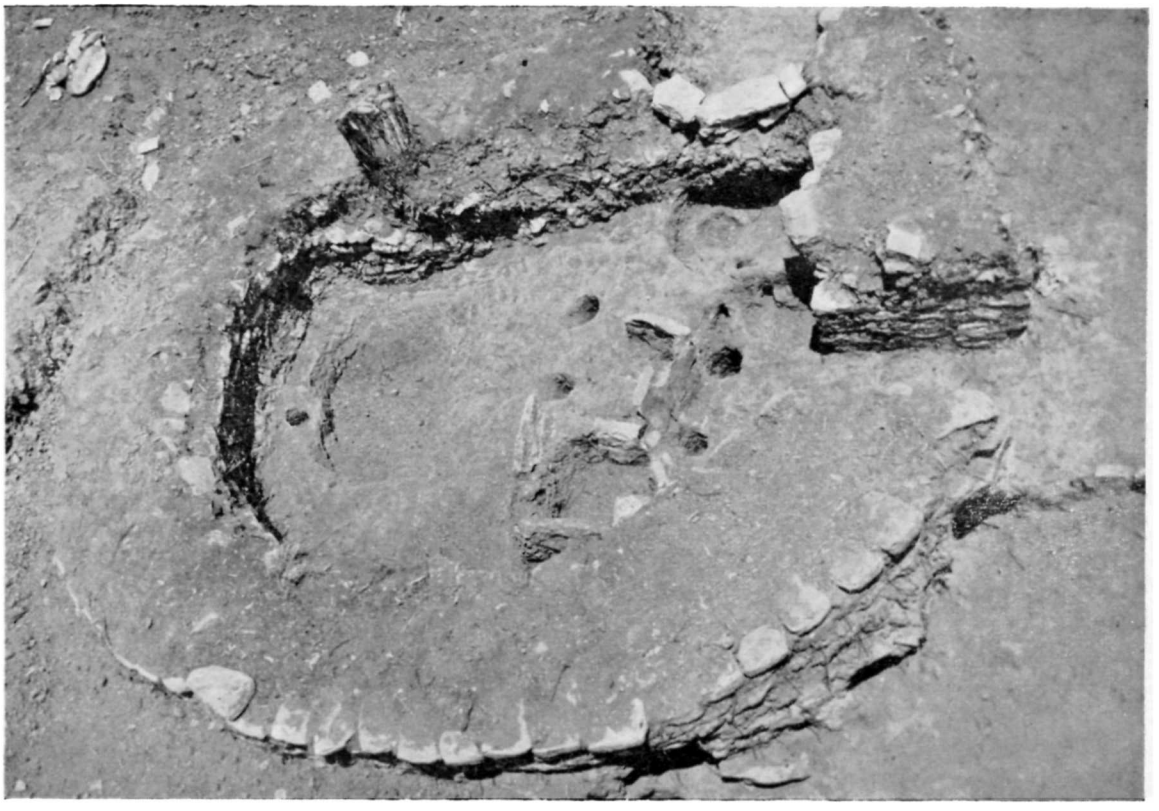
Tree-ring dates: None.

Sherd counts: Appendix B, p. 119.

Masonry Rooms (Plates VII, VIII, Figs. 17, 18).

A number of one-kiva, unit type, pueblos have been excavated in the San Juan drainage, and a characteristic feature reported: the location of several contiguous rectangular rooms northwest of a kiva. Site 1 conforms with other one-kiva pueblos, excavated in the vicinity of Mesa Verde, in general plan but not in the details of the surface rooms. The large western room is D-shaped. An adjoining small rectangular room had been projected from the southeast end of the straight side of the D. D-shaped structures were popular in Pueblo III times. Entire communities were sometimes built in such a manner that the over-all ground plan formed a D outline, such as Pueblo

a Looking southeast over masonry rooms to kiva; underlying slab rooms of village visible in right and left margins.



b D-shaped masonry room.

SITE 1, EXCAVATIONS IN PUEBLO

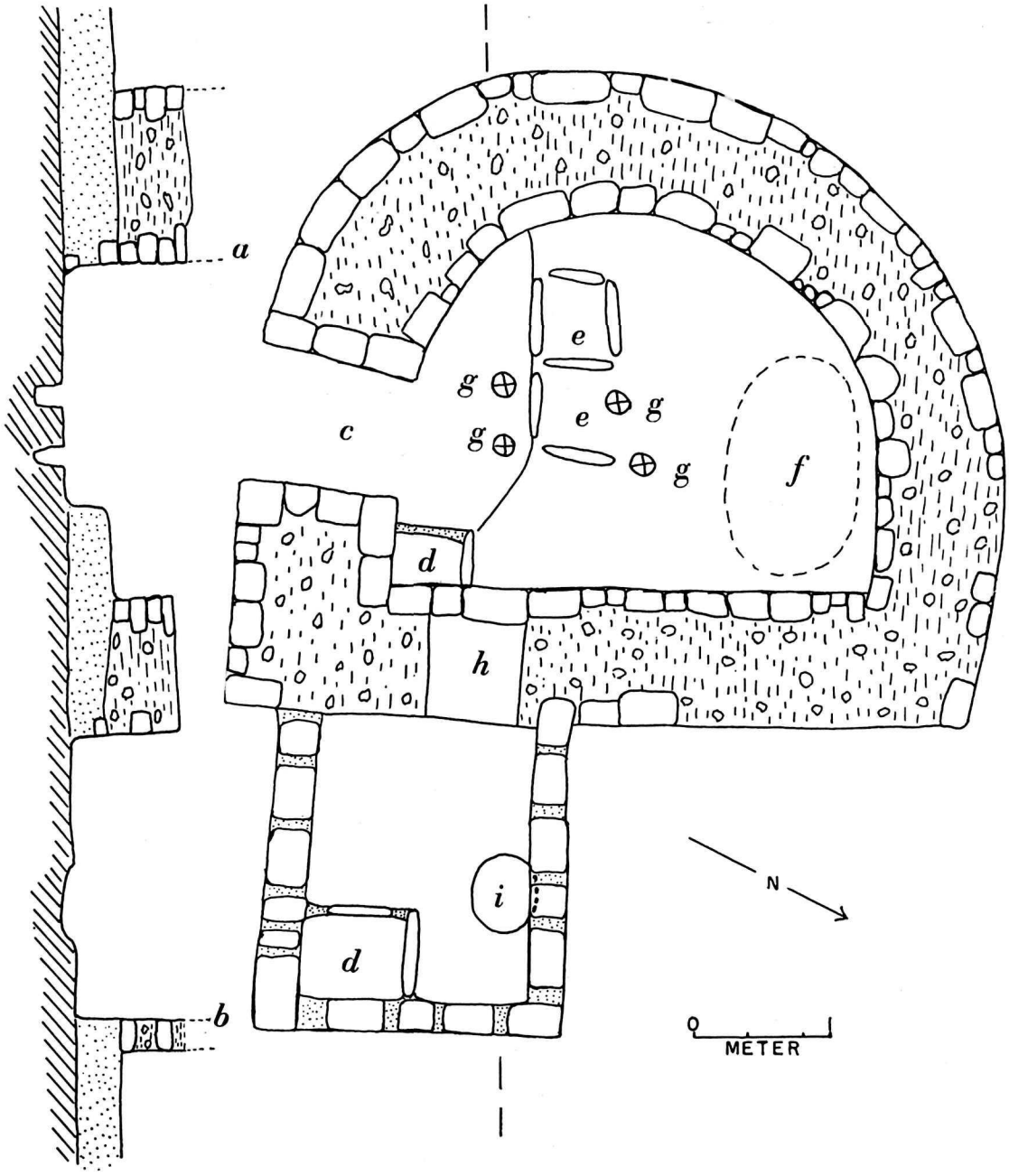


FIG. 18. PLAN AND PROFILE OF MASONRY ROOMS, SITE 1 PUEBLO

a, Rubble-filled masonry wall; *b*, Horizontal masonry wall; *c*, Entrance passage; *d*, Fireplaces; *e*, Bins; *f*, Floor pocket; *g*, Post holes; *h*, Connecting doorway; i, Niche partly under wall.

Bonito; some fortified buildings (e. g., Horseshoe House in Hackberry Canyon, Hovenweep National Monument) and buildings possibly used for particular ceremonies (Sun Temple, Mesa Verde National Park) were D-shaped. Fewkes (1916, fig. 1 and p. 101) mentioned the D-shaped kiva in Oak Tree House on Mesa Verde; the same author (1918, fig. 5) noted D-shaped towers in Yellow Jacket Canyon, 30 miles northwest of Mesa Verde. Room 4 in Cliff Palace on Mesa Verde is D-shaped. Nevertheless the D-shape is certainly not the rule, and it was a surprise to find a D-shaped structure at Site 1: early—A.D. 1024, of rubble masonry (therefore probably not a tower) similar to nearby Sun Temple, and occupying the position of contiguous rectangular rooms usually found in a one-kiva pueblo.

Walls: Of the D-shaped room—rock faced and rubble filled; of the rectangular room—coursed masonry. Locally, the D-shaped room is an early example of the construction of rubble-filled walls.

Entrances: The west room has a low (subfloor level) passageway opening to the south. The sides were of coursed masonry facing; lintels probably were of wood, as no suitable stone blocks were found in the fill. The east room was entered from the D-shaped room: the sill and outline of the sides of a rectangular door could be determined in the intervening rubble wall approximately 65 cm. above the minimum floor level; the east room also may have had an outside entrance, in a section of wall not preserved.

Floors: On a level with, or slightly below, the surrounding undisturbed soil. Both rooms had been built directly on the fill of the earlier occupation, the loose debris had compacted irregularly. Floors were poorly preserved; the evidence of their location was best determined by the positions of jars and other specimens, and by the level of the rim of the fireplace in each room. The floor space immediately inside the entrance of the D-shaped room is 20 cm. lower than the floor level throughout the rest of the living space. A fireplace had been constructed in the southeast corner, flush with the higher floor level, separated from the lower level by an upright slab (much of this fireplace is under the door to the adjoining rectangular room). Two slab-outlined bins served as a half-partition between the floor levels. Four postholes, a pair in each floor level, have no apparent reason; they, and a depressed area in the north section of floor in the D-shaped room, may be better assigned to the earlier occupation level in the site. The floor of the east room is less complicated: level with the rim of the fireplace in the southeast corner and with the bottom of a niche (partly undercutting the central section of the north wall) which contained a corrugated jar.

Roofs: Probably of crosspoles, brush and earth, supported on rafters. The postholes in the floor of the D-shaped room may have held roof-supporting uprights.

Stratigraphy: There was no determinable dividing line between the floors of the pueblo rooms and the fill, which covered the floors of the earlier occupation. Sherds and accessories from the top cut of fill undoubtedly belonged to the pueblo builders, as well as sherds and other specimens from the floor levels. Material from the bottom cut (floor pockets, fireplace cleanup, and so forth) was mixed with accessories belonging to the earlier slab-room village occupation. No artifacts other than a few sherds peculiar to the pueblo (*i. e.*, foreign to the village) were found in the bottom cut.

Artifacts: Those found in the bottom cut are considered in the village section.

D-shaped Room		East Room	
Surface—.6 m.	.6 m.—Floor	Surface—.6 m.	.6 m.—Floor
Hammerstone—3	Corrugated jar		Corrugated jar
Smoothing stone	Pot lid—2		
	Mancos Black-on-white jar		

Tree-ring dates: None, the rooms had not burned. Some charcoal found below the floors dated remains of the earlier occupation.

Sherd counts: Appendix B, p. 119.

Kiva (Plates VIII, IX, Figs. 17, 19).

Wall: Of coursed blocks of dressed sandstone, broken occasionally (especially around the base) by slabs on edge, built to an average height of 1 meter from the floor to the level of the banquette. When the kiva was constructed, six masonry pilasters had been spaced around the banquette. The

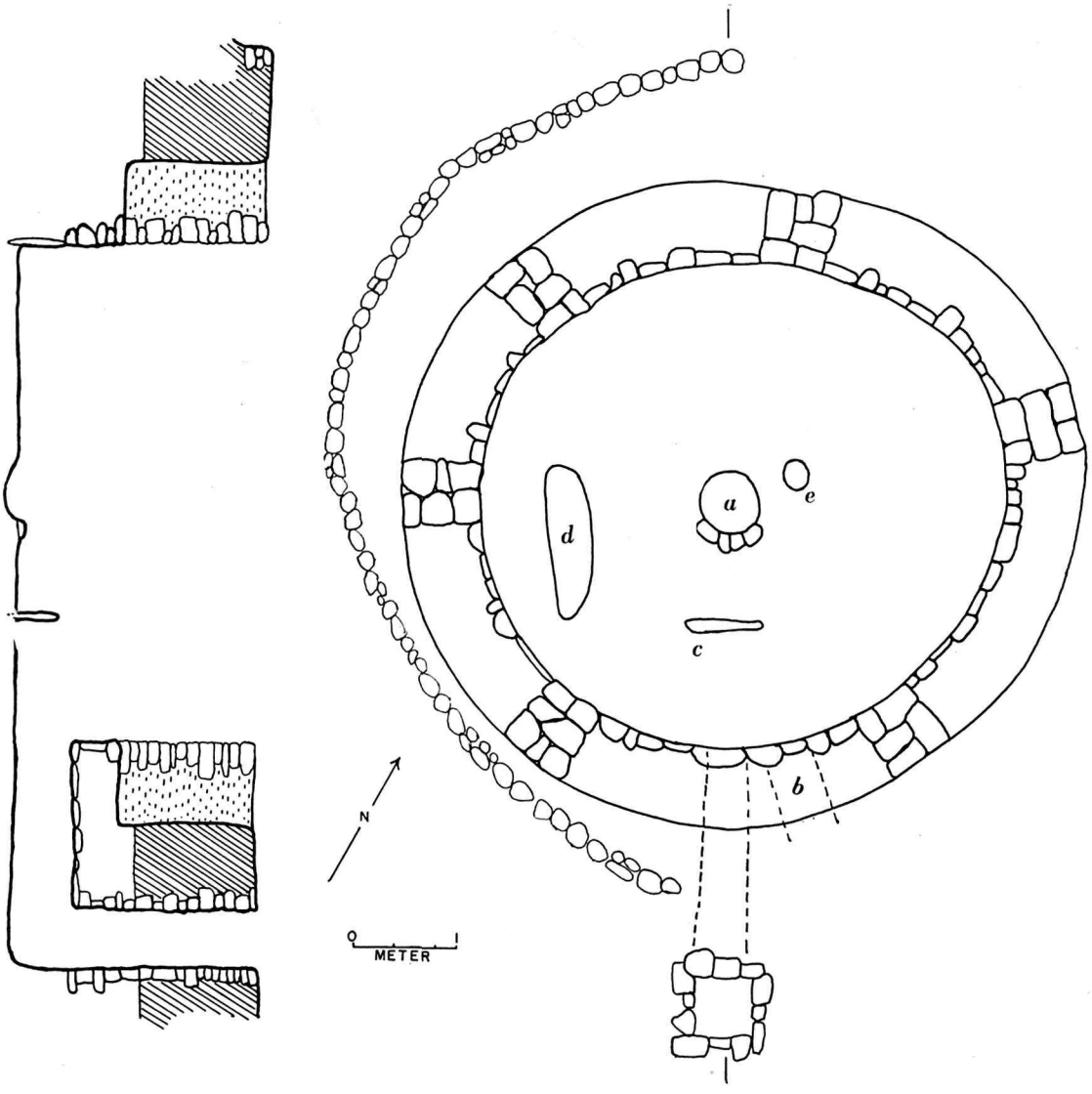


FIG. 19. PLAN AND PROFILE OF KIVA, SITE 1 PUEBLO
a, Fireplace; *b*, Walled-up ventilator; *c*, Deflector; *d*, Shallow floor pocket; *e*, Sipapu.

natural soil, evened with plaster, formed the banquette level; an incurving wall of undisturbed earth served as the wall continuation from the back of the banquette to the ground level. Later, the pilasters had been incorporated in a masonry continuation of the base wall; the kiva then had a straight wall from floor to roof on all sides, and no banquette. The width of the section of ban-

quette above the horizontal ventilator shaft may have been slightly greater than the width of any of the other sections; this was not determined, as the screening portion of the later wall construction (closing off the banquette space) was not disturbed; the possiblity of additional width is unlikely, as the position of the vertical ventilator shaft does not leave much extra space. A curving masonry wall, never over 40 cm. high, rimmed the west and south limits of the kiva. No niches were present in the kiva wall.

Entrance: Undoubtedly through the roof, directly over the fireplace.

Ventilator: The height of the opening into the chamber is 50 cm., the width is 35 cm. The sections of the horizontal and vertical shafts of the ventilator near the chamber and surface openings were masonry lined. The walled-up opening of an abandoned ventilator may be seen to the left of the present opening in Plate IXa and b.

Deflector: A sandstone slab set on edge halfway between the ventilator opening and the fireplace.

Fireplace: A shallow, ash-filled depression, with well plastered sides ending flush with the floor. Four small flat slabs embedded in the floor outline the southeastern arc of the hearth rim.

Floor: Of undisturbed caliche, evened with adobe plaster. Floor features, in addition to the fireplace and deflector, are: a pocket (sipapu, depth 15 cm.) northeast of the fireplace, and a large though shallow (depth 15 cm.) and poorly defined depression near the west wall.

Roof: First—a crib of logs supported by the six pilasters; later—probably a spanning rafter and crosspole structure. Although the roof had burned (once while the banquette was in use, again after the pilasters had been incorporated in a solid wall), few details of the last superstructure could be determined.

Stratigraphy: Charcoal and other refuse predating the kiva alterations were effectively sealed from the final occupation by the added wall sections. Several late sherds were found in the top cut of the kiva fill; they may have come from Square Tower House, 400 yards to the northwest.

Artifacts: None was found in the top cut, floor pockets, or ventilator fill.

General Fill	Floor
Miniature bowl	Clay figurine-bird
"Skinning knife"	

Tree-ring dates: Charcoal collected in 1941 from a trench dug in the kiva furnished thirteen reliable dates. Specimens found on the floor and in the lower fill, during the 1947 excavation, yielded eleven reliable dates for twelve sections studied; charcoal from sections of the sealed-off banquette furnished seven very satisfactory dates for eight sections studied. Dates marked with an asterisk are included in Appendix A.

1941, Trench:

Species	Dates Inside — Outside	Remarks	Rating
Douglas Fir	−930 — 983 +		Fair
Pinyon	⊙861 — 1003 +*		Good
Douglas Fir	−929 — 974 +*		Good
Douglas Fir	−946 — 995 +*		Good
Douglas Fir	−926 — 973 +*		Good
Douglas Fir	−943 — 986 +*	Short	Excellent
Douglas Fir	−945 — 989 +*	Short	Excellent
Pinyon	⊙915 — 1019 +		Fair
Pinyon	⊙937 — 984 +*		Excellent
Douglas Fir	−952 — 1015 +*		Good
Pinyon	⊙936 — *1005**		Good
Pinyon	⊙939 — 987 +*	Short	Excellent
Pinyon	⊙959 — *1004*		Fair

a Wall incorporating pilasters, belonging to later occupation, in place.

b Wall partly removed, showing banquette and pilasters of first occupation.

SITE 1 PUEBLO, KIVA

1947, Kiva floor and fill (last construction):

Douglas Fir	−927 − *1018**		Excellent
Pinyon	⊙927 − 1013 +		Fair
Douglas Fir	⊙913 − *1007**		Excellent
Douglas Fir	⊙854 − *1002**		Excellent
Douglas Fir	⊙976 − 1012 +	Short	Fair
Pinyon	−944 − *1024**		Good
Douglas Fir	⊙857 − 992 +*		Good
Douglas Fir	⊙895 − 973 +*		Excellent
Pinyon	−901 − 985 +*		Good
Douglas Fir	⊙936 − 982 +		Fair
Douglas Fir	−913 − 969 +*		Good

1947, Banquette (first construction):

Pinyon	⊙920 − 1013 +*	Excellent
Pinyon	−904 − 966 +*	Good
Pinyon	⊙922 − 976 +*	Good
Pinyon	−934 − 999 +*	Excellent
Pinyon	⊙921 − 990 +*	Excellent
Pinyon	−929 − *1014**	Excellent
Pinyon	−894 − 985 +*	Excellent

Sherd counts: Appendix B, p. 120.

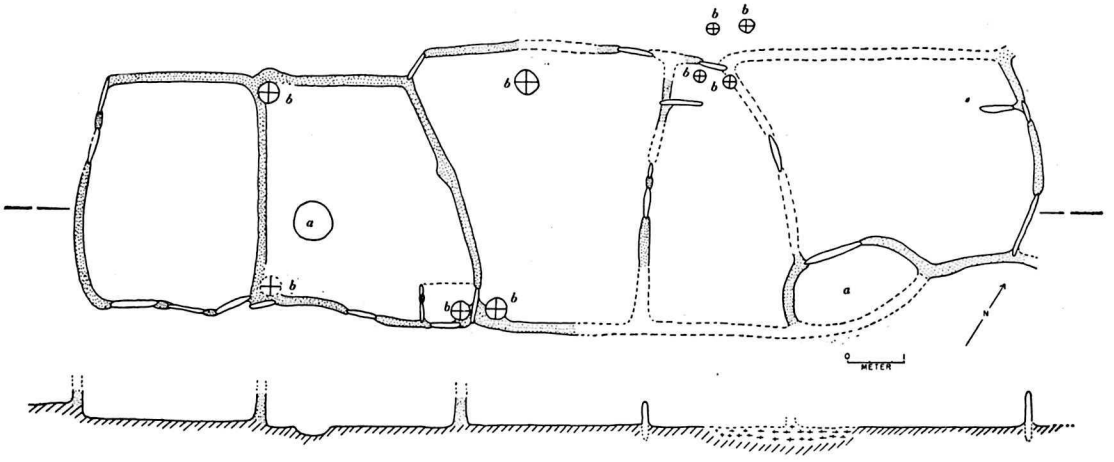


FIG. 20. PLAN AND PROFILE OF SLAB ROOMS, SITE 1 VILLAGE
a, Fireplaces; *b*, Post holes.

VILLAGE

Slab-outlined rooms were encountered in the western approach trenches to the surface rooms and kiva of the pueblo. The masonry rooms of the later occupation were found to have been built on the fill of other aligned slab-rooms. Test trenches failed to locate a pit-house, and the search was stopped when charcoal from the slab-rooms furnished dates within the range of dates determined for the earlier occupation of Site 102. However, there is some evidence that the kiva had been constructed in a pit-house excavation, evidence such as the stone slabs incorporated

in the base of the masonry wall. A five-room section of contiguous floors was uncovered, insofar as the overlying masonry rooms permitted. Figure 17 shows the extent of excavation of the village; uncovered slab-rooms extended to the northeast and probably to the southwest.

Slab Rooms (Plate VIIIa, Figs. 17, 20, 21).

Walls: Of undisturbed adobe from the floors to the ground level, upright slabs and adobe plaster. Lumps of burned plaster were common increments of the fill of the slab-rooms; they contained impressions of small poles and brush used in the construction of the upper walls and roof. The partition separating the two western slab-rooms had burned and fallen to the northeast, on the floor of the second room from the west; it consisted of close-fitting small pole uprights secured to occasional crosspoles; thick adobe plaster had been applied to fill the cracks and smooth the surfaces.

Entrances: Probably through the southeast walls, none was preserved.

Floors: Slightly below the level of the surrounding undisturbed soil. Sections of smooth plaster floor were found under the east pueblo room and in the area between that later structure and the kiva. The other slab-room floors consisted of the smoothed surfaces of undisturbed adobe soil. The second room from the west contained the only well preserved floor; it had a shallow circular fireplace in the southeast quadrant, a slab-outlined bin in the southeast corner, enclosing a post hole, and a second post hole for a main roof support diagonally opposite in the west corner. A good section of floor was uncovered south, outside, of the eastern slab-room excavated; assigned to the village occupation by the comparatively early sherds found on the floor itself, it is evidence of a living area, perhaps a jacal structure, southeast of the slab-rooms, similar to those reported from neighboring and nearly contemporaneous sites (Morris, 1939, figs. 10, 15, 16, 18, 19, 21, 22; Brew, 1946, fig. 27; Martin, 1939, map 19).

Roofs: The several rooms excavated seem to have been built at one time, and a minimum of upright logs used to support the weight of the combined roofs. The post holes were not spaced according to the greatest convenience for each room, yet the divisions between the rooms were clearly marked, either by plaster ridges or differences in floor levels. The roof superstructure probably was composed of crosspoles and brush, supported on rafters, and covered with earth and plaster.

Stratigraphy: Material found in the second slab-room from the west, between the collapsed partition and the floor, contained no recognizable intrusions from the later pueblo. Although the two levels of occupation, village and pueblo, could be determined in most sections excavated, cross-mixing of artifacts was common because of root growth and animal burrowing. The best stratigraphic evidence is architectural: the superposition of the pueblo rooms on fill covering the slab-room floors.

Artifacts: From the slab-rooms.

West	2nd from W.	3rd from W.	East Section	S. of East Section
Hammerstone—4	Chipped point	Bone scraper	Pitcher, White Mound B/W	Flake knife
Axe	Polishing stone	Pendant	Ladle, Piedra B/W	Floor polisher
	Jar, Kana-a Gray—12	Polishing stone	Jar, Kana-a Gray	Mano
	Jar, Lino Gray—5	Axe	Pipe—2	Clay pellet
	Pitcher, Piedra B/W	Floor polisher	Floor polisher	
	Bowl, La Plata B/R	Hematite pebble	Bone awl	
	Bowl, La Plata B/W	Hammerstone	Chipped point	
		Platter, Lino Gray	Clay pellet	
		Grooved maul	Clay figurine	
		Flake knife	Hammerstone	
			Smoothing stone	

Tree-ring dates: All slab-rooms had burned. Charcoal from the third room from the West, partly under the D-shaped pueblo rooms, furnished nine reliable dates. Charcoal from the two western slab-rooms yielded five dates. Dates marked with an asterisk are included in Appendix A.

Species	Dates Inside — Outside	Remarks	Rating
Pinyon	−788 — *845**		Good
Juniper?	−708 — *837*		Fair
Pinyon	⊙788 — 833 +*	Short	Good
Juniper	−792 — *843**		Good
Pinyon	−767 — 813 +		Fair
Pinyon	⊙789 — 826 +	Short	Fair
Pinyon	−794 — 828 +	Short	Fair
Pinyon	−772 — *845**		Good
Pinyon	⊙789 — 830 +*	Short	Good
Juniper?	⊙726 — 814 +		Fair
Juniper?	⊙766 — *840**		Good
Pinyon	⊙777 — 814 +*	Short	Good
Pinyon	⊙768 — 817 +*		Good
Pinyon	⊙793 — 837 +*	Short	Excellent

Sherd counts: Appendix B, p. 120.

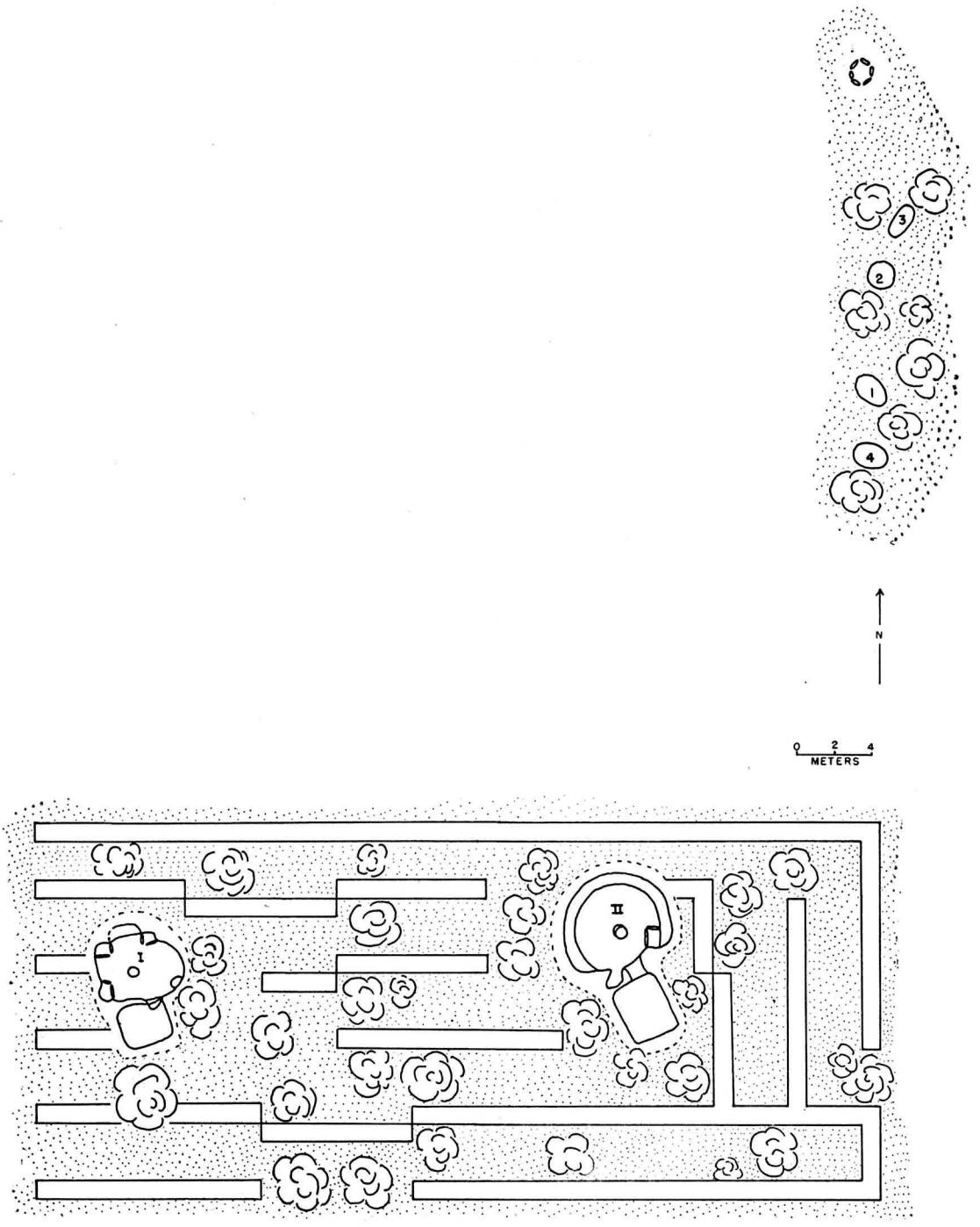


FIG. 21. PLAN AND PROFILE OF SITE 145, SHOWING EXTENT OF EXCAVATION
Roman numerals = Pit-Houses; Arabic numerals = Burials.

CHAPTER VII

EXCAVATIONS AT SITE 145

WHILE the Site 1 excavation was in progress, two fortunate finds were made in the neighborhood: the leg bones of a skeleton were noticed in the side of a shallow ravine approximately 60 m. southwest of Site 1; and a small area strewn with burned sandstone slabs, charcoal, and Lino Gray sherds was located about 120 m. southwest by south of Site 1. The consequent investigation resulted in the excavation of two pit-houses and an associated four-burial cemetery. A slab-lined fire pit a few meters north of the cemetery appeared to be of more recent date, judging by a number of Kana-a Gray banded-neck sherds mixed with the content of ashes and burned rocks.

The burials were easy to find, after the first one was noticed. All were located on the west slope of the ridge in the edge of the adobe stratum, before the underlying bed of caliche reached the surface. Narrow trenches were crisscrossed through the area insofar as tree and bush growth permitted.

The burned pocket proved to be the antechamber of a pit-house. The sherds and restorable vessels represented the same Basket Maker III types as those found with the burials. The pit-house also was located in the edge of adobe, before the underlying caliche stratum was exposed. Drift trenches at 4 m. intervals were started eastward from the pit-house area, and continued for 40 m. maximums, until drift refuse from Site 1 was reached; juniper and pinyon trees were avoided as much as possible by staggers and skips in the trench lines. Almost 200 m. of trench were dug before a second pit-house was found.

The western and eastern pit-houses and the cemetery will be considered in order of mention.

Pit-House I (Plate X, Fig. 22).

This structure was first encountered in approach trenches from the west. The excavation of the antechamber was postponed, because of its shallowness and consequent poor definition, until the dwelling itself had been cleaned. The west and north walls were comparatively easy to follow, as they had surfaces burned hard. This burned line of cleavage between the undisturbed earth and the pit-house fill was soon lost along the east and south walls; as the fill itself was extremely hard and contained little debris in the upper levels, the effort to outline the pit was abandoned in favor of excavating the dwelling by following the floor level from west to east. The smooth burned adobe floor surface, with an overburden of clay lumps and charcoal, gave way to an unburned surface approximately 15 cm. lower; this break was outlined before the overburden of the new floor level was removed.

The following pages present the evidence which seems to warrant this conclusion: a pit-house with antechamber was built by makers of Basket Maker III types of pottery; several centuries

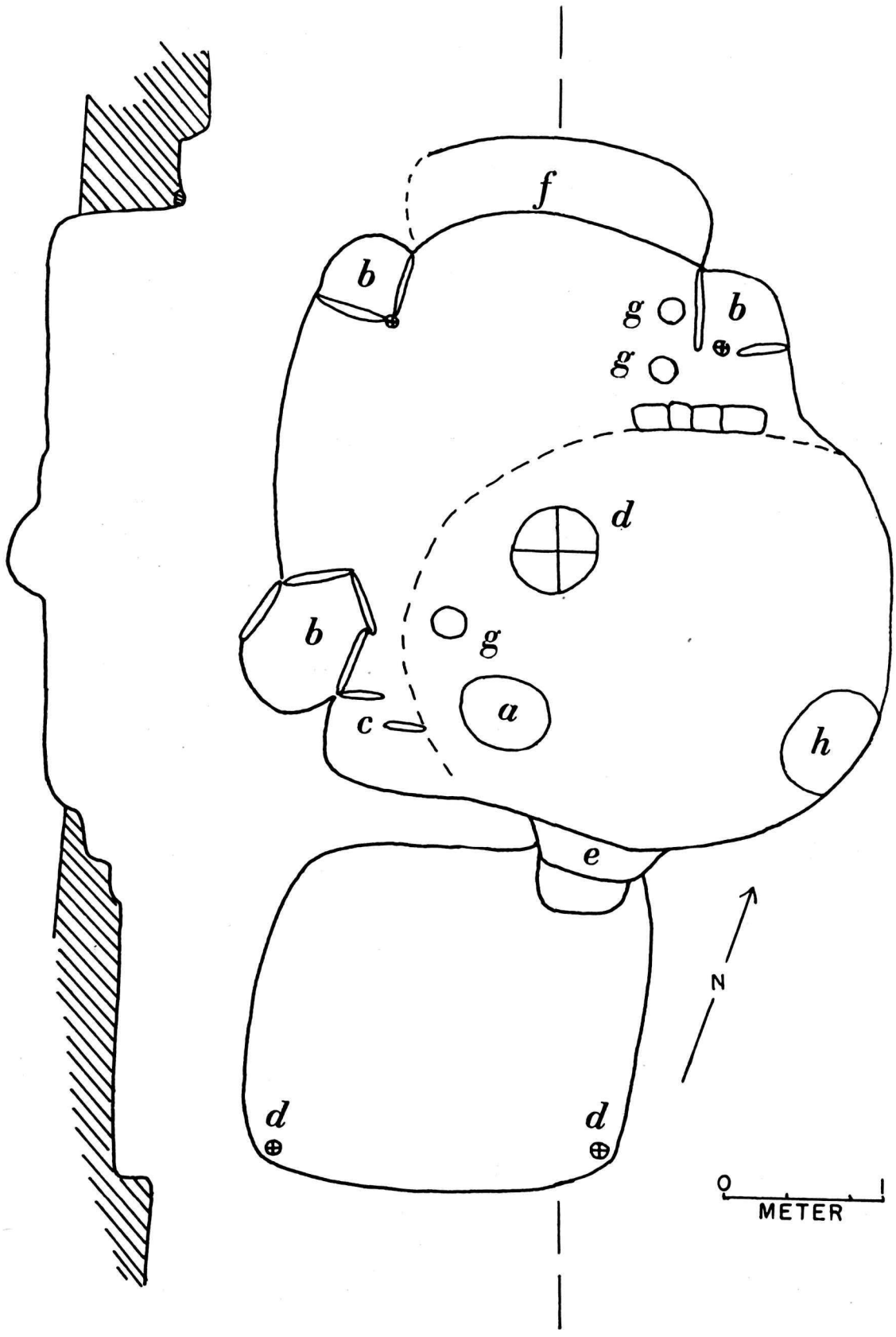
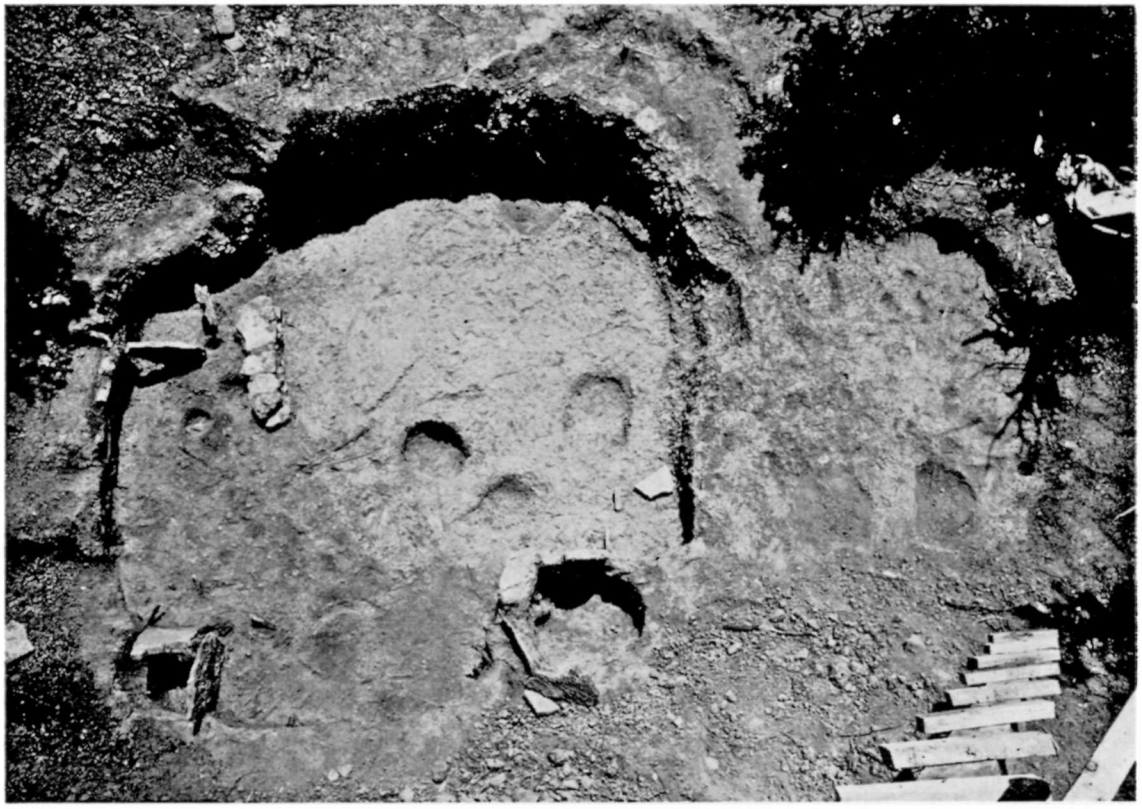


FIG. 22. PLAN AND PROFILE OF PIT-HOUSE I, SITE 145

a, Fireplace; *b*, Bins; *c*, Partition; *d*, Post Holes; *e*, Steps; *f*, Banquette; *g*, Floor pockets; *h*, Fireplace belonging to later occupation, enclosed by dashed line.

PLATE X



Later occupation shows as lighter surface in center.

SITE 145, PIT-HOUSE I, LOOKING NORTHEAST

PLATE XI

SITE 145, PIT-HOUSE II, LOOKING SOUTHWEST

after this structure was abandoned, part of the depression was cleaned out and deepened, by owners of wide-mouthed corrugated jars, covered by a tripod or lean-to roof, and used as a temporary dwelling or perhaps a "sweat house."

The earlier occupation, the pit-house, will be considered first, separate from the sweat house.

Walls: Of undisturbed adobe and caliche soil. A thin adobe plaster had been applied to the exposed surfaces on the west and north sides. A banquette terminated the north wall at a maximum height of 90 cm. above the floor; the front edge of the banquette had been reenforced and outlined by adobe "turtle-backs," smoothed lumps of thick plaster. A similar banquette may have outlined the west side of the pit, burned turtle-backs were found in the fill at the foot of the wall, but surface erosion had obliterated conclusive evidence. No banquettes had been built on the south and east sides.

Entrance: Two steps cut into the south wall led to the antechamber. The maximum depth of the antechamber floor from the present earth surface is 40 cm.; probably a side door, rather than a roof entrance, was used to enter and leave the dwelling.

Antechamber: The floor, a smoothed surface of undisturbed adobe, contained no features other than two post holes respectively in the southeast and southwest corners.

Partition: Two slabs embedded in the floor near the southwest corner are all that remain of a probable division in the floor space. The height of the slabs, including a fitted broken fragment, are 20 and 35 cm.

Fireplace: A shallow oval depression, 15 cm. deep, near and slightly west of the steps leading to the antechamber. The fireplace had been cut into, then filled with adobe plaster by the builders of the sweat house; however, it had been lined with adobe plaster which had burned, and thus was comparatively easy to define.

Floor: Of undisturbed caliche, evened with adobe plaster. The depth, below the surface of the surrounding soil, is 70 cm. along the west wall, 1.30 m. at the northeast corner. Floor features, other than the section of partition and the fireplace, include: a large center post hole, 30 cm. deep (it had been filled with adobe plaster when the sweat house was constructed); and two small floor pockets, each 15 cm. deep, near the northeast corner.

Storage bins: Small portions of the floor space were cut off by upright slabs in three corners, and probably a similar compartment originally occupied the southeast corner. The inside corner of each of the two northern bins had been strengthened by a small upright pole.

Roof: Probably a single center log upright supported the small ends of a circle of poles having the butt ends placed around the edge of the pit. The center upright may also have supported the ends of rafters leading to the tops of post uprights set into the southern corners of the antechamber; these rafters could have held a brush-and-earth roof over the antechamber, and increased the head room in the southern section of the dwelling.

Stratigraphy: Barring one corrugated and three Mancos Black-on-white sherds found on the surface of the pit-house fill, all pottery from the undisturbed sections (dwelling floor and antechamber) of the habitation was representative of Basket Maker III types. Not a single early sherd was found in the fill of the sweat house.

The later occupation, the sweat house, is unusual but not unique; two similar small pits, one circular and one D-shaped, have been found in the Twin Trees area.

Walls: Of undisturbed adobe and caliche soil. A short low section of horizontal masonry had been built along the northern limit of the floor, probably to hold back a pocket of loose fill.

Entrance: The steps leading to the south, cut into undisturbed adobe soil, had burned surfaces and thus appeared to belong to the pit-house, which had burned, rather than to this later construc-

tion. Probably a side entrance once existed at a low point in the southwest or west edges of the pit, but no evidence of its location was found.

Fireplace: A shallow oval depression, 10 cm. deep, against the base of the east wall.

Floor: Of undisturbed caliche, evened with adobe plaster. The depth, below the surface of the surrounding soil, is 1.40 m. along the east wall, approximate 90 cm. at the southeast corner.

Roof: Probably a tripod or lean-to structure. No post holes were found.

Stratigraphy: The only artifacts found in the fill were a few corrugated sherds, apparently all fragments of a single wide-mouthed jar.

Artifacts: Nothing was found in the sweat house; the undisturbed sections of Pit-House I furnished the following:

General Fill	Antechamber	Floor	NE Bin
Hematite pebble	Door slab	Miniature jar	Lino B/G bowl (¼)
	Lino Gray jar—5	Chipped point	
	Flake knife	Wooden scoop	
	Metate (¼)	Pendant blank	
	Hammerstone—2	Flake knife—2	
	Flake—16	Mud platter	
	Flaked core—3	Lino Gray jar—3	
	(Lino) Polished jar—3	(Lino) Polished jar—3	
	Sandstone pebble—2		

Sherd counts: Appendix B, p. 120.

Tree-ring dates: The pit-house had burned. Charcoal collected from the antechamber furnished seven dates for eight pieces studied. Charcoal from the pit itself yielded five dates for eight sections studied. Dates marked with an asterisk are included in Appendix A.

Species	Dates Inside — Outside	Remarks	Rating
Pinyon	−421 — 477 +*		Excellent
Pinyon	−407 — 492 +*		Good
Pinyon	−385 — 430 +	Short	Fair
Pinyon	−429 — 476 +		Fair
Pinyon	−460 — *522**		Good
Pinyon	−426 — 470 +		Fair
Pinyon	−438 — 497 +		Fair
Pinyon	−552 — 587 +	Very short	Fair
Pinyon	−526 — 579 +		Fair
Pinyon	−506 — 570 +		Fair
Pinyon	−522 — 562 +*	Short	Excellent
Pinyon	−500 — *572**		Good

Pit-House II (Plate XI, Fig. 23).

Walls: Of undisturbed adobe and caliche soil. A thin adobe plaster had been applied to the exposed surfaces below the level of the banquette. This banquette encircled all but the south side of the living space at an average height of 55 cm. above the floor; sections of the front edge of the banquette had been reenforced and outlined with adobe turtle-backs.

Entrance: A narrow passageway, 60 cm. wide, extended from the south side of the pit-house, 40 cm. above the floor level, for approximately 1 meter to meet the north wall of the antechamber. Two cup-like depressions in the east center section of the antechamber floor probably steadied a runged ladder which projected through an opening in the roof.

Antechamber: The floor, a smoothed surface of undisturbed caliche, contained four post holes, one near each corner. A shallow depression, 10 cm. deep, near the center contained a few ashes,

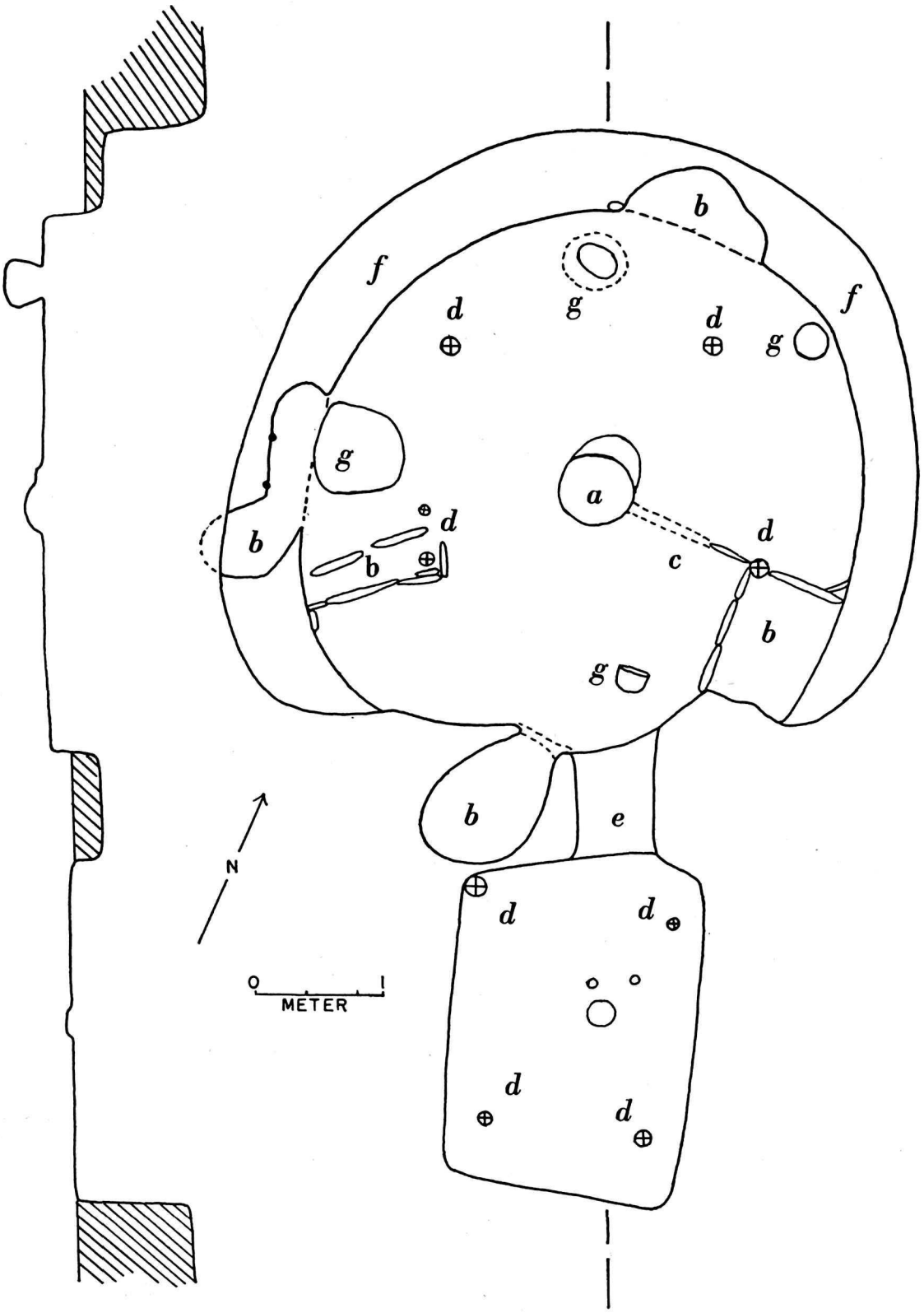


FIG. 23. PLAN AND PROFILE OF PIT-HOUSE II, SITE 145

a, Fireplace; *b*, Bins; *c*, Partition; *d*, Post holes; *e*, Passageway; *f*, Banquette; *g*, Floor pockets.

and may have served as a fireplace. Two cup-like pits immediately to the north of this depression probably held a ladder in position.

Partition: The floor space was divided; on the east side a slab-and-plaster extension from a corner bin to the fireplace comprised a low wall about 30 cm. in height; a rectangular slab-outlined bin in the southwest corner projected half the way from the wall to the fireplace.

Fireplace: A round depression, 25 cm. deep, having a shallow ledge on the north side. It had been lined with plaster, which formed a barely perceptible rim at the floor level.

Floor: Of undisturbed caliche, evened with adobe plaster. Floor features, other than the fireplace and partition, include four large post holes (average depth 25 cm.), one in each of the two north quarters of the floor space, one incorporated in the wall of the southeast bin, and one inside the southwest bin; a smaller auxiliary post hole had been dug just north of the southwest bin. Four pockets had been excavated in the floor, one in each quadrant: the one to the northwest is pear-shaped, 45 cm. deep; the shallow northeast pocket, 5 cm. deep, barely contained a thin sandstone slab; the semi-lunar pit, 15 cm. deep, to the southeast, had its straight north side formed by a slab embedded in the floor; the largest pit, against the west wall, is 35 cm. deep, it was filled with burned and broken sandstone rocks.

Storage bins: Two, in the southeast and southwest corners, had been constructed of upright slabs and plaster. An oval compartment had been cut out of the earth separating the south wall and the antechamber. Two storage recesses had been dug into the north and west walls, obliterating sections of the banquette; the back wall of the western recess had been stabilized by two upright posts.

Roof: Probably a rafter, crosspole and brush structure, covered with earth, and supported by four log uprights. The roof of the antechamber was similarly constructed; however, it probably contained a door in place of the smoke hole which undoubtedly was present in the roof of the pit-house itself.

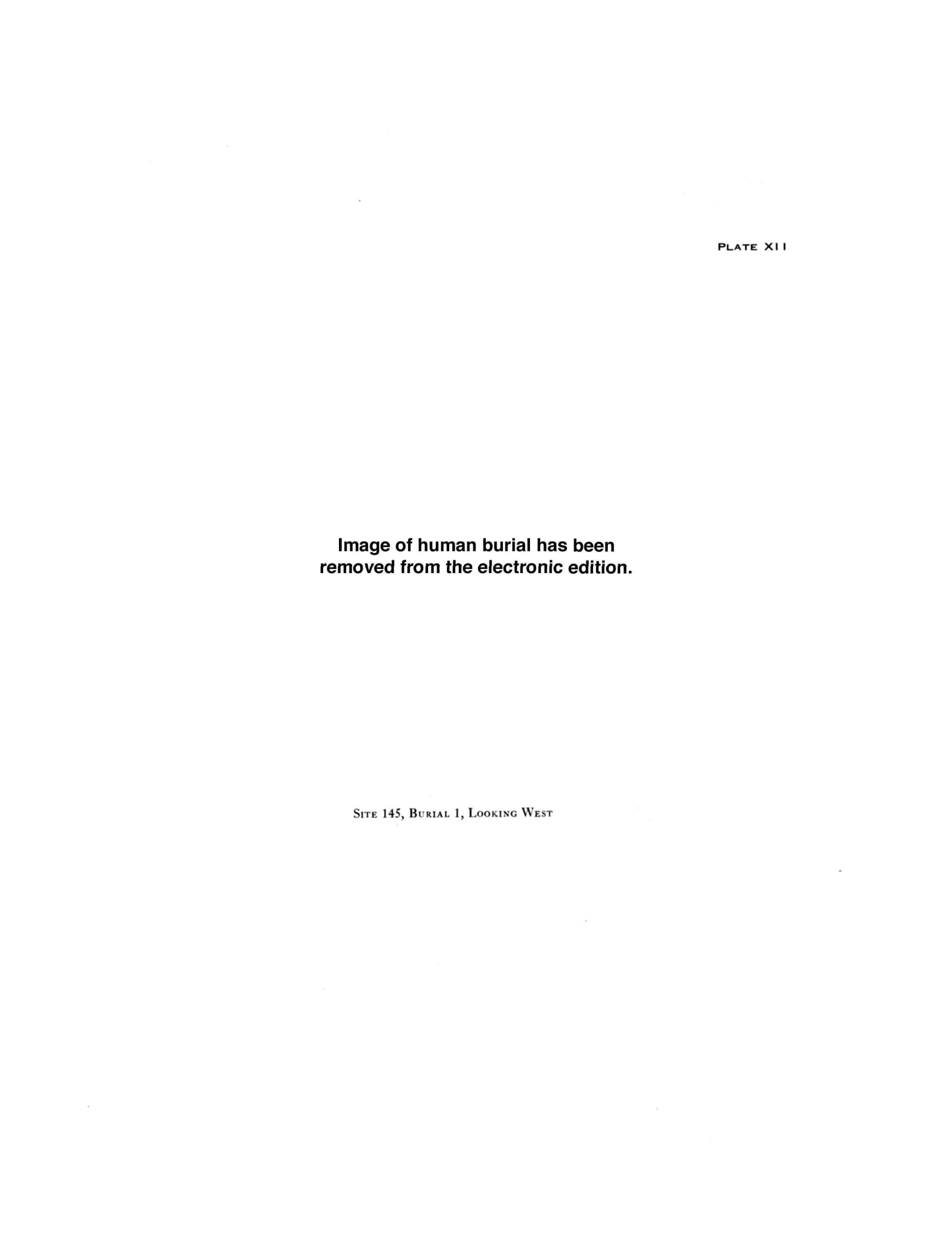
Stratigraphy: Four sherds, apparently drift from nearby pueblos, were picked up on the surface. All remains found in the fill and on the floors appeared to be the belongings of the pit-house occupants.

Artifacts:

Antechamber	Fill	Bench	Floor	SE Bin
Lino B/G bowl (¼)	Flake—7	Pot lid	Bone awl	Oliva shell
	Hammerstone—5		Pendant blank	
	Flake scraper—2		Pendant	
	Polishing stone—4			
	Mano			
	Sandstone pebble—2			
	Floor polisher—3			
	Cooking slab			
	Handstone—3			

Tree-ring dates: The pit-house had burned. Charcoal collected from the main living area furnished twenty-three dates for twenty-five pieces studied. Dates marked with an asterisk are included in Appendix A.

	Dates		
Species	Inside — Outside	Remarks	Rating
Douglas Fir	⊙606 — 641 +*	Short	Good
Pinyon	−574 — 644 +		Fair
Douglas Fir	⊙629 — 664 +	Short	Fair
Pinyon	−571 — 646 +		Fair



SITE 145, BURIAL 1, LOOKING WEST

Douglas Fir	⊙600 − 634 +	Very short	Fair
Douglas Fir	⊙585 − 663 +		Fair
Pinyon	−551 − 633 +		Fair
Douglas Fir	⊙606 − 647 +*	Short	Good
Douglas Fir	−563 − 655 +*		Good
Douglas Fir	⊙598 − 660 +*		Good
Douglas Fir	−619 − 662 +*	Short	Good
Douglas Fir	⊙627 − 658 +	Very short	Fair
Douglas Fir	−621 − 653 +	Very short	Fair
Douglas Fir	⊙621 − 654 +	Very short	Fair
Pinyon	−600 − *664*		Fair
Douglas Fir	⊙601 − *648* +*		Excellent
Douglas Fir	−615 − 654 +*	Short	Good
Douglas Fir	⊙606 − 639 +	Very short	Fair
Douglas Fir	⊙600 − *664**		Excellent
Douglas Fir	⊙605 − *657**		Good
Douglas Fir	⊙601 − *657**		Good
Pinyon	−614 − *664**		Good
Pinyon	⊙617 − *664**		Good

Sherd counts: Appendix B, p. 121.

Cemetery (Plate XII, Fig. 21).

Although the leg bones of the skeleton in Burial 1 were exposed, it was the best preserved of the four burials found. The bones belonged to an adult male, interred on his back with head to the west, flexed, with knees to the north. He was a comparatively tall man (length of right femur 43.2 cm., rugged bony structure, large mastoids, rounded orbital edges). Although the teeth were exceptionally well preserved and not unduly worn, the advanced degree of sutural obliteration suggests an age of near 40. The back of the skull was not deformed; the cranial index is very close to 75 (measurements of length, 184 mm., and width, 138 mm., are not precise). The single accompanying offering found was a disc bead of shell.

Burial 2 contained the femora, pelvis, and a few vertebrae of an adult female (bones large and well formed, sacrosciatic angle wide). The body had been interred on the back, flexed with knees to the east, head probably to the north. Mortuary offerings included a pestle (possibly a slender handstone) and a floor polisher.

Burial 3 was found practically on the surface; most of the bones were little more than yellowish stains in the adobe soil. Judging by the over-all length of the skeleton, buried in an extended position, and the small size of a mastoid and width of the sacrum, the interment was of an adult female. She had been buried on her back, head to the north, feet together and pointing south. Accompanying offerings found were: a small Lino Gray double-bowl, half of a Plain Polished bowl, a few sherds of a Plain Polished jar, a chipped scraper, and a small floor polisher.

Burial 4 was found comparatively deep, resting directly on the stratum of caliche which underlay the adobe soil, about 30 cm. from surface to sacrum. The bones were those of an adolescent, with second molars present, but no sign of third molars. The body had been buried face down, flexed, with knees to north and head to east. No offerings were found in the burial.

CHAPTER VIII

EXCAVATIONS AT SITE 34

VERY little was known about the stage of development which immediately preceded, was ancestral to, the spectacular Mesa Verde cliff-dwellings containing standardized kivas with altar alcoves, fine Mesa Verde Black-on-white pottery, and compound or blocks-of-rooms style of masonry architecture. The Lowry Ruin[1] had been excavated northwest of the Park; Aztec National Monument[2] is a well-known site southeast of Mesa Verde; tree-ring dates suggest occupation periods for the two ruins respectively at 1086–1106[3] and 1110–1121.[4] Parts of Aztec and Lowry had been reoccupied by Mesa Verde culture bearers over a century later. The initial builders of Aztec were members of the Chaco Branch. Pottery from the Lowry Ruin belongs preponderantly to the Mancos, McElmo, Mesa Verde Black-on-white sequence, however, some pottery and details of architecture show Chaco Branch connections.

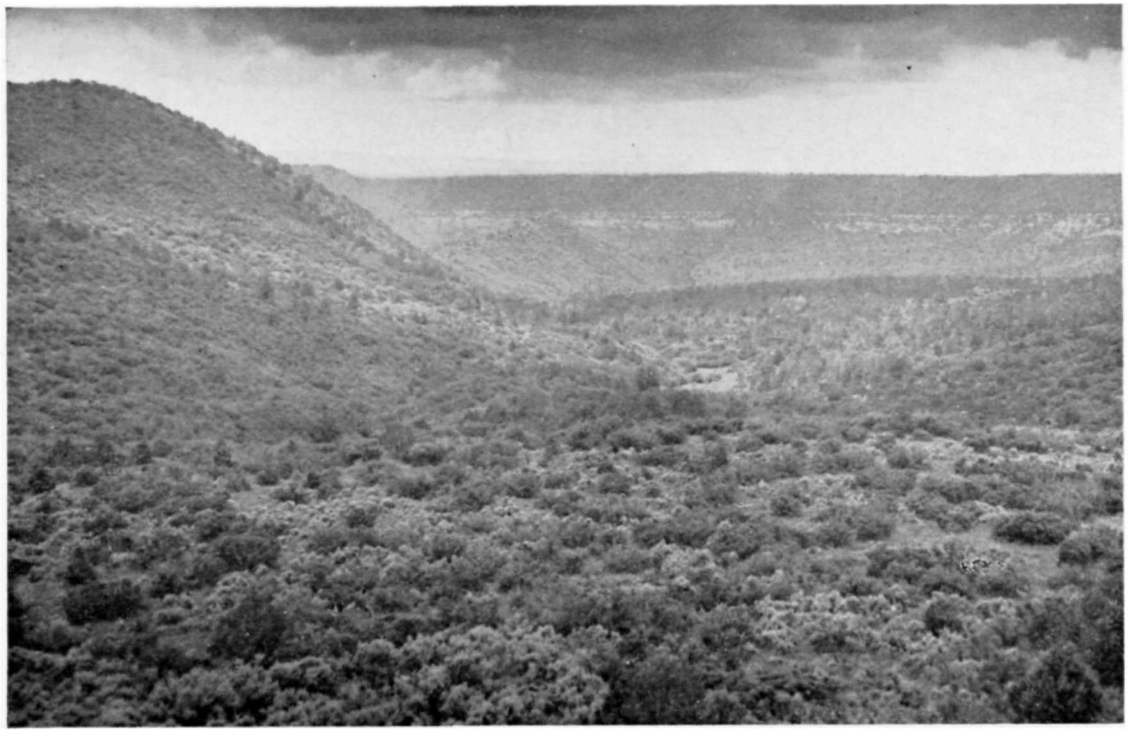
In the La Plata Valley, southeast of Mesa Verde, Morris excavated two surface ruins; the associated artifacts seemed to antedate slightly, perhaps duplicate to an extent, artifacts found in the Mesa Verde cliff-dwellings. A small one-kiva pueblo, Site 42,[5] furnished wood specimens for which tentative dates of 1158 were determined. Charcoal studied at Gila Pueblo from one of the pueblo compounds comprising Site 41[6] furnished three good dates at 1208 +, 1209 +, and *1225;* little evidence of contact with the Chaco Branch people to the south was found at this site.

In short, Chaco Branch characteristics appeared to dominate southeast of Mesa Verde at 1121 and the decades immediately preceding that date. Chaco influences were strongly felt northwest of Mesa Verde at 1106. The Mesa Verde characteristics preponderated, and outside influences seem to have been at a minimum at 1158, a few miles southeast of the Park. At 1225 the inhabitants of the La Plata Valley possessed the same traits and trait complexes as their Mesa Verde cave-dwelling neighbors on the north side of the Mancos Canyon.

The Gila Pueblo survey of ruins on Mesa Verde National Park furnished some information regarding the pre-cliff-dweller stage of the culture sequence. Thirty-three of the one hundred fifty-eight sites recorded had Mancos and McElmo Black-on-white pottery types in association, most of these surface ruins were units or small compound pueblos; two large groups are located in Morfield and Prater Canyons, individual sites are dotted over the mesas and canyon heads. Twenty-

[1] Martin, 1936.
[2] Morris, 1927, 1918, 1919, 1921, 1924, 1928.
[3] Martin, 1936, p. 201.
[4] Douglass, 1938, Oct.
[5] Morris, 1939, p. 114.
[6] Morris, 1939, pp. 85–113.

a Looking northeast toward Site 34.



b Looking south to Site 34 and associated pueblos.

VIEWS OF MESA AT HEAD OF LITTLE SODA CANYON

seven compound surface pueblos had Mancos, McElmo and Mesa Verde Black-on-white wares; most of these ruins are in three groups in the head of Soda Canyon, several are in the Far View cluster of sites on Chapin Mesa, and isolated pueblos are on Park and Wetherill Mesas. Four surface ruins furnished McElmo and Mesa Verde Black-on-white pottery types; two of these are small one-kiva pueblos on

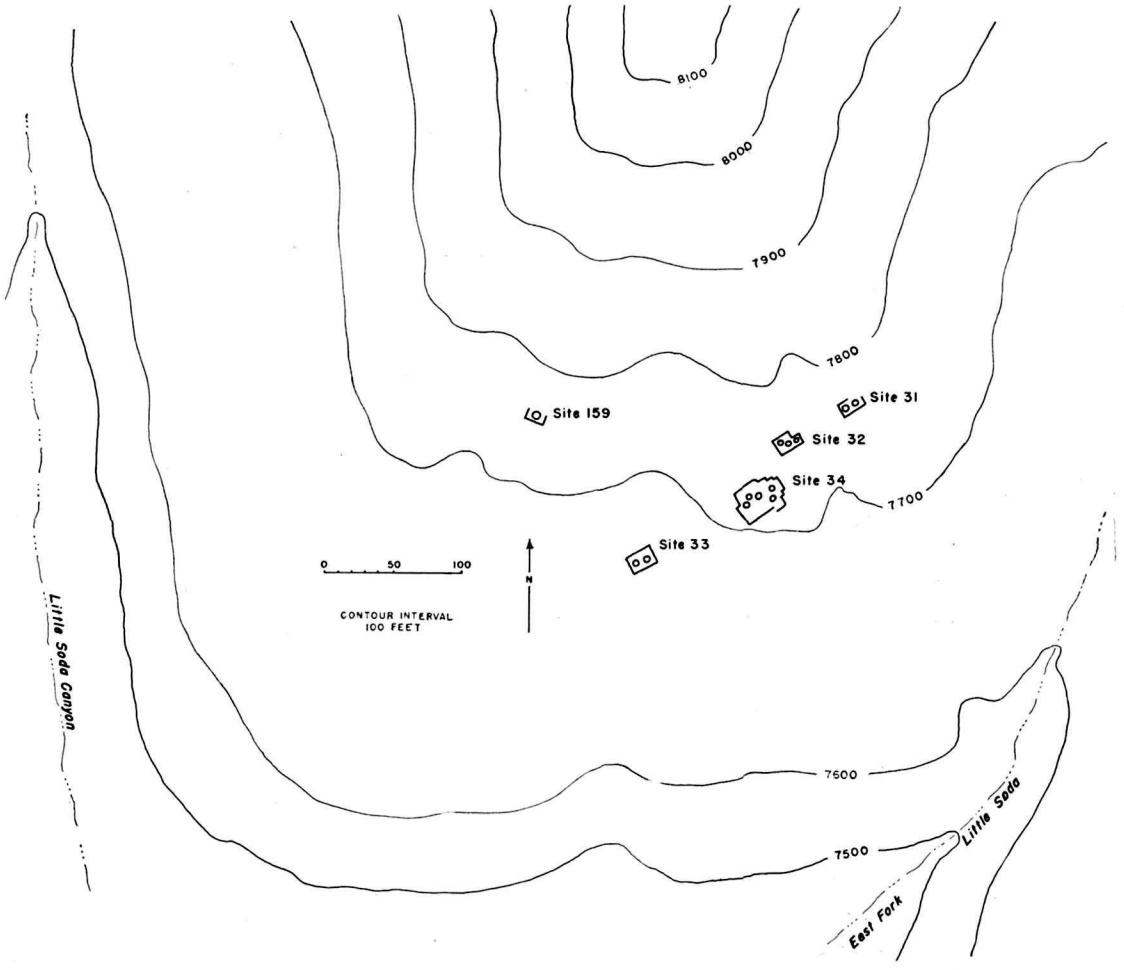


FIG. 24. MAP OF RUINS AT HEAD OF LITTLE SODA CANYON

the mesa above Square Tower House, one of which was excavated by Linton,[7] assistant to Fewkes, in 1919 and re-examined in 1947;[8] the remaining two are included in the groups of pueblos in the head of Soda Canyon.

The Soda Canyon sites (Fig. 24) appeared to hold the most promise of information. The largest pueblo in a group of five, showing Mancos, McElmo and Mesa

[7] Linton, 1919, unpublished manuscript. [8] Appendix E, p. 137.

Verde Black-on-white local pottery types as well as a sprinkling of intrusive Little Colorado Red wares, was selected for study.

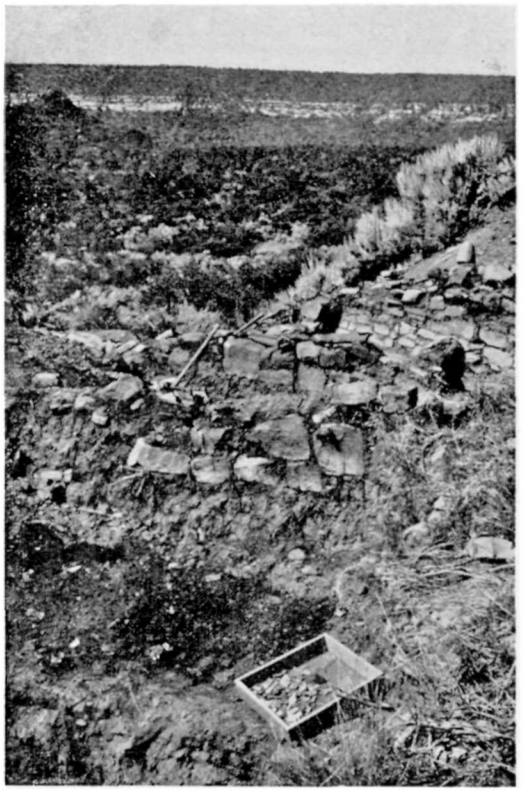
The excavation of a large ruin presents difficulties in removing the earth, recognizing and defining alterations and additions to the initial construction, and photographing related structures. In addition, Site 34 presented several peculiar problems: much of it was built on a 15-degree slope, nearly all walls had fallen to the southeast, and those still standing had buckled and tilted to the downhill side. The ruin was not to be cleaned for exhibit purposes, it had to be back-filled; this facilitated the handling of the earth but it necessitated careful mapping and photographing, as individual rooms and kivas were cleaned and then refilled almost immediately with dirt from adjoining structures.

The easiest way to move the dirt was to start at the foot of the slope and work uphill. The excavation progressed as follows:

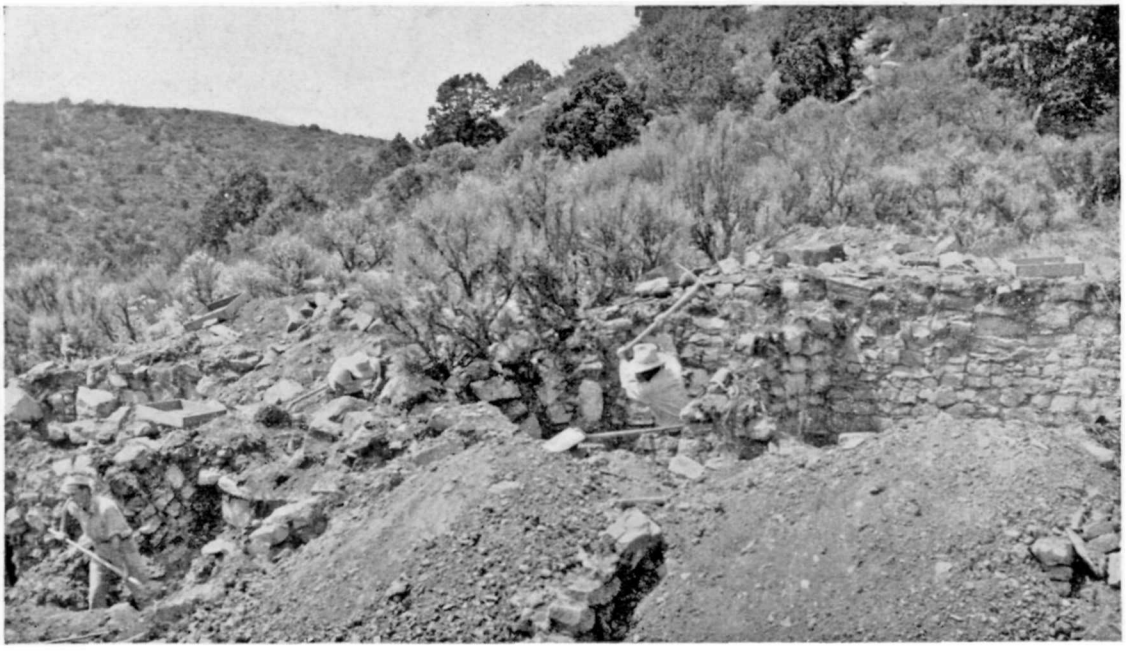
1. The center portion of the debris mound was excavated in two sections. A front of six 2-meter trenches was started at the southeast limit of the debris mound and the earth turned until the southeast walls of the pueblo were reached; narrow partitions of undisturbed earth were left between the individual trenches; after completing one 15-meter front (the partitions account for 3 meters), the process was repeated to excavate the northeast portion of the central section of the debris mound.
2. The outside walls of the pueblos were outlined on the downhill sides, the southeast side, and the east and southwest corners.
3. The southernmost rooms were emptied or defined (one row of three rooms was not cleaned out), and the adjoining courts cleared and mapped.
4. The kivas were emptied, and at the same time fill was removed from adjoining rooms to the northeast and southwest.
5. The tiers of rooms to the northwest and above the kivas were progressively excavated.

The description of the excavation of a large ruin presents difficulties. My conclusions are based on data secured during the trench by trench and room by room excavation of the site; however, I believe it to be unnecessarily detailed and tedious to present the evidence in that step-by-step fashion. Instead, I have correlated sherd counts (stratigraphic for particular areas, general for the debris mound, and complete for the rooms and kivas); lists of artifacts from delimited sections and constructions; and tree-ring dates determined for particular structures. Mutilated walls, secondary floors, and unaligned constructions furnished additional evidence regarding the gradual growth of the site, and much of this evidence may be checked in the accompanying maps and figures. In describing the site, the order of presentation will be as follows:

a Looking east over Kiva I.



b Looking south over Room 23.



c Looking west over Kiva V.

VIEWS OF SITE 34

a. Megalithic masonry; northwest wall, Room 17.

b. Coursed sandstone-block masonry; northwest wall, Room 41, grinding bins in foreground.

c. Coursed masonry walls, chinked with spalls; Rooms 20 and 28. Window on left, rectangular door at right.

EXAMPLES OF MASONRY AT SITE 34

1. The rooms, general characteristics and individual peculiarities.
2. The kivas, and enclosing courts.
3. The debris mound.
4. Burials, intramural, in the debris mound, and on the talus above the pueblo.
5. A reconstruction of the appearance of the pueblo, from first construction to final abandonment.

Masonry Rooms (Figs. 25, 26).

Shape: Usually rectangular, such as Rooms 17 and 36; sometimes almost square, as Rooms 11 and 44; rarely having a rounded corner (Rooms 7 and 26), or approximately D-shaped (Room 22). Straight walls and square corners were the rule, but any difficulty presented by a change in contour, earlier constructions, or demanding additional labor, apparently was met by following the line of least resistance.

Walls: All of masonry; usually of well-shaped coursed stone and often chinked with spalls (Plate XVc); occasionally part of a wall was constructed of a row of large sandstone blocks placed on edge either as the foundation of a wall (Plate XVIc) or in second story construction (Plate XVIa); one wall had been built of huge boulders, several of the stones weighed upwards of 500 pounds (Plate XVa).

Some walls had been heightened to form a second story (Plate XVIb). Rooms 27, 28, 32–34, 37, 38 were two-storied, Rooms 18, 31, and 36 may have been two-storied.

Walls varied in width from 20 to 35 cm., the narrower walls being in the northwest corner of the pueblo; excessively thick walls, with maximum widths of 65 cm., formed the northwest side of Room 17 and the northeast side, below the bench, of Room 27.

Much effort had been spent on retaining walls, long rows of large rocks set on end, sometimes two or three courses high, to form terraces on the southeast and west slopes below the pueblo. Remains of three retaining walls were found inside the pueblo itself: one served as the foundation of the southeast walls of Rooms 23 and 24, a second under the floors of Rooms 23 and 24, a third under the floor level of Room 22 and projecting to the southwest, though broken by the ventilator of Kiva III. Ends of retaining walls were found outside the northeast corner; these could be traced on the surface, and appeared to tie in with other similar retaining walls belonging to Site 33, about 30 meters to the northeast. A retaining wall to the west lessened erosion around the tower.

Entrances and doors: The main approach to the pueblo, at the time of abandonment, seems to have been uphill from the south into the southwest corner of the court enclosing Kiva IV. Detritus from the talus to the north had been deposited against the north and northwest sides of the pueblo to a height of 1.60 meters at

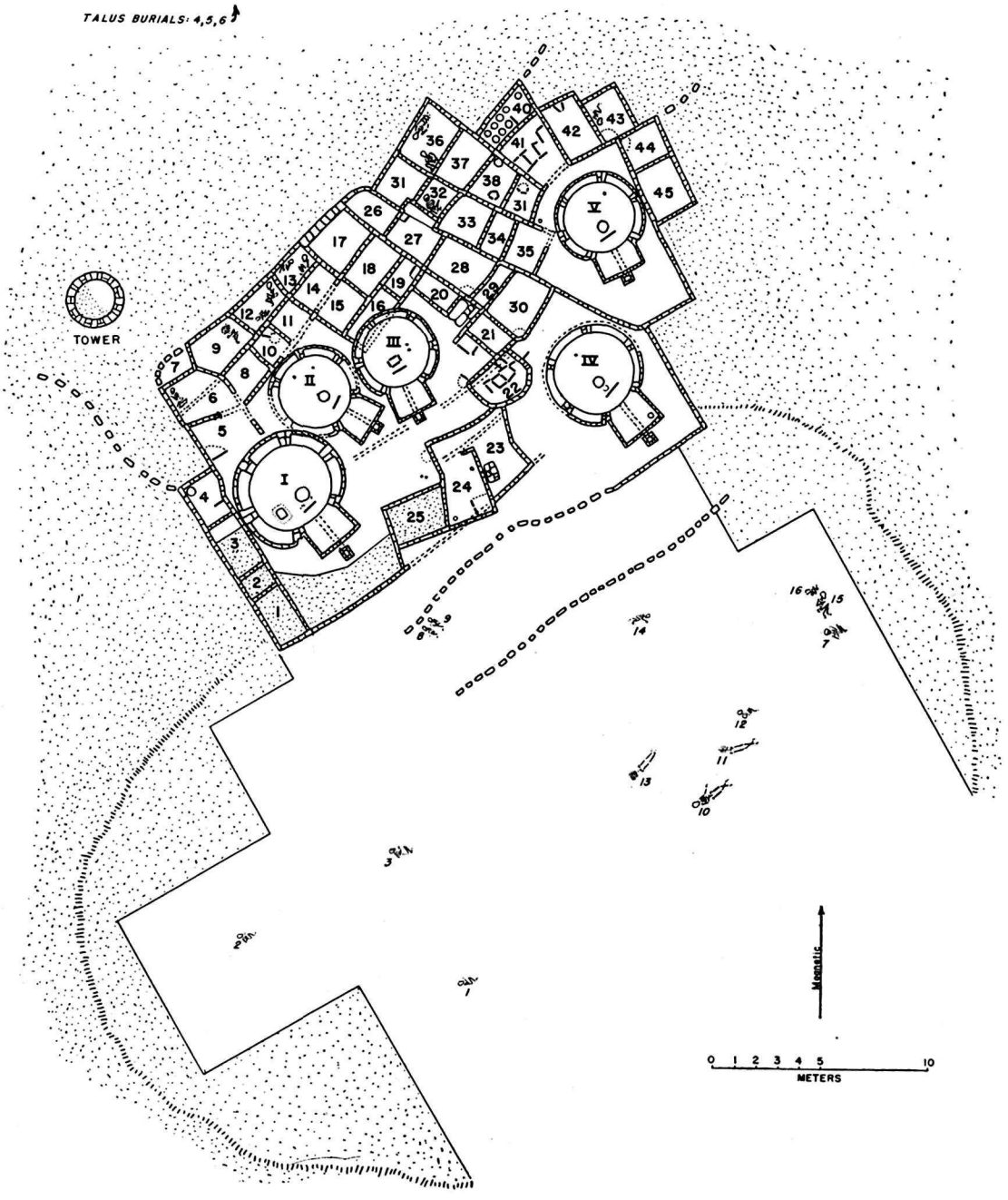


FIG. 25. PLAN OF SITE 34, SHOWING EXTENT OF EXCAVATION
Roman numerals = Kivas; Arabic numerals = Rooms; Italic numerals = Burials outside of Pueblo.

a. Second-story wall of megalithic stones on edge; northeast wall, Room 27.

b. Coursed masonry walls; chinked with spalls and pot-sherds, northwest wall of Room 36.

c. Footing of blocks placed on end; northeast wall of Room 30. Corner doorway on left.

EXAMPLES OF MASONRY AT SITE 34

some points; if this was the case during the time of occupation easy access could have been achieved from the north over the roofs of the one-storied outside rooms. Not a single doorway was found leading from a room to the outside, although many doorways were preserved which connected rooms or which opened on to courts (the slumping of walls into kiva depressions undoubtedly destroyed many more doorways than were found). An actual corridor connected Rooms 23 and 24.

Doorways were rectangular. One T-door between Rooms 20 and 28 subsequently had been altered to the rectangular shape (Plate XVIIb). As far as could be determined, all sills and lintels were of thin sandstone slabs, none of wood.

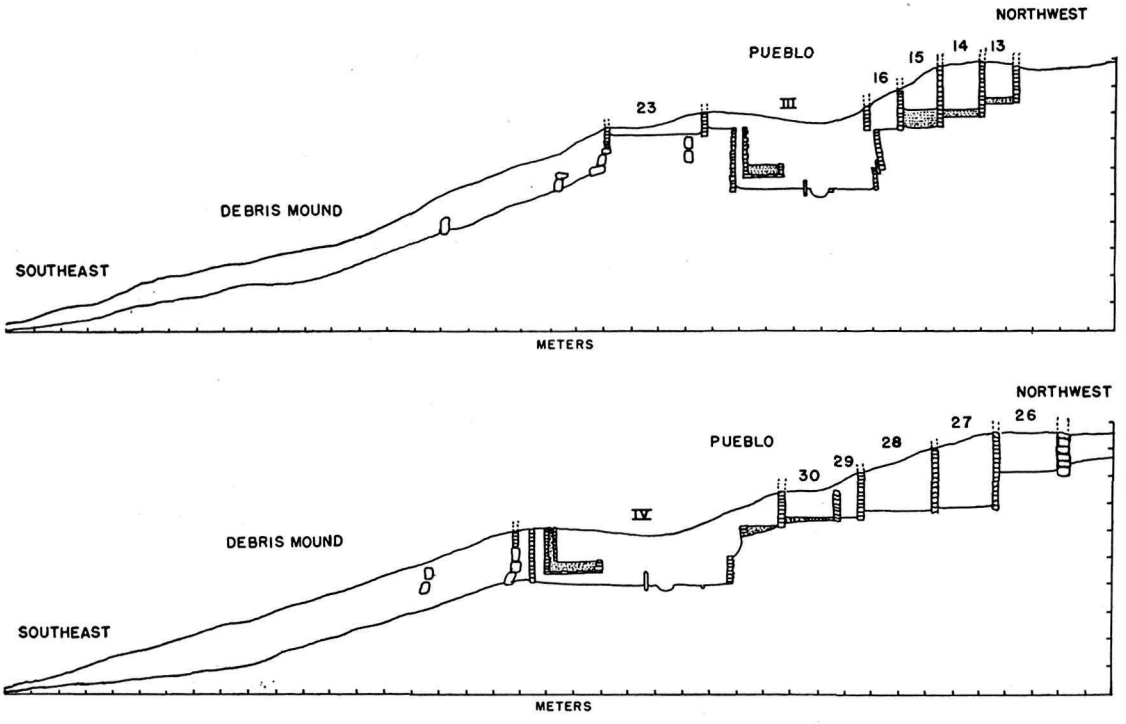


FIG. 26. PROFILES THROUGH KIVAS III AND IV, SITE 34
Alignment of profiles indicated by Arabic numerals of adjacent rooms.

Doorways varied in width from 35 (Room 32) to 60 cm. (Room 22), in height from 45 (Room 9) to 60 cm. (Rooms 28 and 33). Doors, thin slabs of shaped sandstone, found in the course of the excavation had minimum and maximum widths of 30 and 45 cm., heights from 35 to 55 cm. Usually doorways were placed in or near the center section of a wall; however, three corner doorways were found, one between Rooms 30 and 35, the second between Rooms 28 and 34, the third between Rooms 8 and 10.

Floors: All of smooth packed adobe, with the exception of the alcove between Rooms 20 and 21, which was flagged with sandstone slabs.

Fireplaces: Usually traces of a fire built in a convenient corner of a room; often on the floor level with no sign of a hearth construction (Rooms 7, 28, 30, 43, and 44), sometimes in a shallow depression (Rooms 4 and 38—north corner), occasionally bounded by one or more upright slabs (Rooms 19, 27, and 42), and three well-constructed basin-shaped hearths (Rooms 10, 38—south corner, and 39). Room 23 contained a raised hearth, flagged with sandstone slabs.

I do not attempt to differentiate between living rooms and storerooms by the presence or absence of fireplaces: logically, spacious Rooms 28 and 30 could have served as comfortable quarters, Rooms 10 and 39 would have been somewhat cramped, and Room 7 would have been extremely uncomfortable.

Two well-defined fireplaces were uncovered in the west court at the outside corners of Rooms 22 and 24 respectively, and one in the east court between Rooms 22 and 30. Room 5 did not have a south wall; its hearth might be termed an outside fireplace.

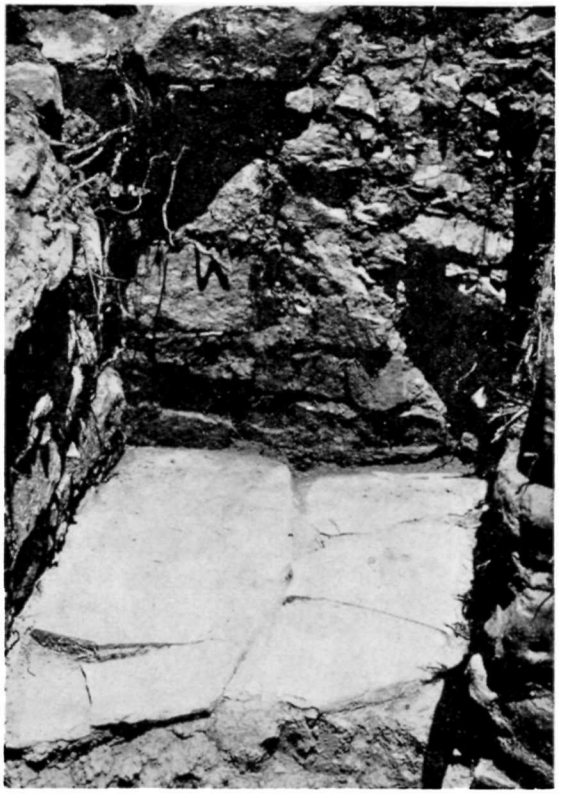
Traces of fires were of common occurrence southeast of the pueblo, especially within the section bounded by the two lowest retaining walls. Undoubtedly the area served as an ash dump, but many small piles of burned rock, pockets of charcoal and ashes, and large sherds of corrugated jars, attested to the use of the area for cooking purposes and possibly for pottery firing.

Bins and storage areas: Rooms 22 and 41 contained grinding bins, a row of four in each. Slabs on edge outlined the individual compartments. The floor of each bin was sloped slightly from front to back; grinding would have been done facing the door of Room 22, facing Kiva V in Room 41. Manos were plentiful in both rooms, but all metates had been removed.

Storage bins (floor areas outlined by one or more upright slabs) were found in Rooms 4, 24, and 40. A storage bin had been constructed outside Room 21, and the adjoining paved alcove may have served as a storage recess. Neither wall niches nor floor pockets were found in any of the rooms, although the ledge under the altered doorway in Room 28 may have served as a shelf (Plate XVIIb).

Roofs: Of rafters, crosspoles, brush and earth. The occasional post holes and offsets found in the walls of the two-storied rooms strongly suggest roof construction identical with that preserved in the nearby cliff-dwellings. Rooms 27 and 28 had burned; although the debris had been removed and the rooms subsequently occupied, some burned lumps of plaster, charred sticks and brush, and even a 15 cm. cross section of a scorched juniper log were found in the fill between the first and later floor levels.

Stratigraphy in the rooms: Determined by superimposed floor levels in Rooms 5, 6, 8–15, 27, 28, floors built on fill in Rooms 22–24, and subfloor burials in Rooms 6, 13, 32, and 43. Sherds of different named types furnished a great deal of evidence; two fragments of troughed metates on the bottom level of Room 15 could be assigned to a definite occupation level, with contemporaneous pottery wares.



a. Alcove with flagstone paving, between Rooms 20 and 21.

b. Walled-up lower portion of T-shaped doorway, Room 28.

c. Corrugated jar embedded in floor of southern recess of Kiva IV.

d. Grinding bins, Room 22.

UNUSUAL STRUCTURAL FEATURES, SITE 34.

Artifacts (Intramural burials and accompanying offerings are considered in a later section):

Room 4. Fill: hammerstone, pecking stone, McElmo B/W mug, bone scraper.
Room 5. Fill: axe—2.
Floor: hammerstone.
Room 6. Fill: mano, abrading stone.
Floor: hammerstone, axe—2.
Room 7. Fill: bone tube.
Room 8. Fill: mortar.
Room 9. Fill: shaped sandstone slab, cooking slab, bone awl, door-slab, McElmo B/W kiva jar fragments.
Floor: pecking stone—2.
Subfloor: igneous rock—3.
Room 10. Floor: hammerstone.
Room 11. Fill: hammerstone.
Room 12. Fill: pot lid, hammerstone.
Room 13. Fill: pot lid.
Subfloor: hammerstone
Room 14. None.
Room 15. Fill: hematite stick, chipped knife.
Floor: bone awl—3.
Subfloor: troughed metate fragments—2.
Room 16. Fill: pot lid—2, polishing stone, hammerstone.
Room 17. Fill: bone tube.
Floor: sandstone concretion.
Room 18. None.
Room 19. Fill: flake, concave scraper—2.
Room 20. None.
Room 21. Fill: pestle.
Floor: corrugated jar.
Room 22. Floor: axe, mano—7.
Subfloor: pecking stone—2.
Room 23. Fill: ocher pebble.
Floor: bone awl—5, bone tube.
Subfloor: hematite concretion, flake—8, pecking stone—2.
Room 24. Fill: hammerstone—2.
Floor: McElmo B/W kiva jar, Mesa Verde B/W bowl, pot lid.
Room 26. None.
Room 27. Floor (2d story): hammerstone.
Floor: cooking slab—2.
Subfloor: crystal, azurite pebble—3, hematite stick—2, pendant, "medicine" stone.
Room 28. Fill: worked deer bone, bone awl, clay disc fragment, clay lump, clay pellet, McElmo B/W ladle—½.
Floor: ocher pebble, corrugated jar—3.

Room 29. Fill: hammerstone, gypsum crystal, Tusayan polychrome kiva jar fragments.
Floor: axe—2.
Room 30. Fill: axe, pestle, chipped point, McElmo B/W figured sherd, Tusayan polychrome kiva jar fragments.
Floor: hammerstone—2, mano.
Room 31. Fill: pot lid, chipped knife.
Room 32. Floor: unfinished axe.
Room 33. Fill: axe, chipped saw—2.
Floor: Mesa Verde B/W bowl.
Room 34. Fill: handstone, axe.
Floor: pot lid.
Room 35. Fill: worked deer bone.
Floor: door-slab, axe grinder.
Room 36. Fill: bone awl—2, axe, hammerstone.
Floor: Mesa Verde B/W bowl.
Room 37. Fill: bone awl—2.
Floor: bone awl—2, unfinished axe, axe.
Room 38. Fill: polishing stone—2, chipped scraper.
Floor: shaped sandstone slab.
Room 39. Floor: bone awl.
Room 40. Floor: polishing stone, pecking stone, bone scraper, corrugated jar—7, McElmo B/W jar.
Room 41. Fill: McElmo B/W kiva jar—½.
Floor: pecking stone—16.
Room 42. Fill: sandstone concretion, axe.
Floor: McElmo B/W ladle—½.
Room 43. None.
Room 44. Fill: pestle, bone awl, pecking stone, perforated slab.
Floor: mano, bone awl—2, bone tube, miniature bowl.
Room 45. None.

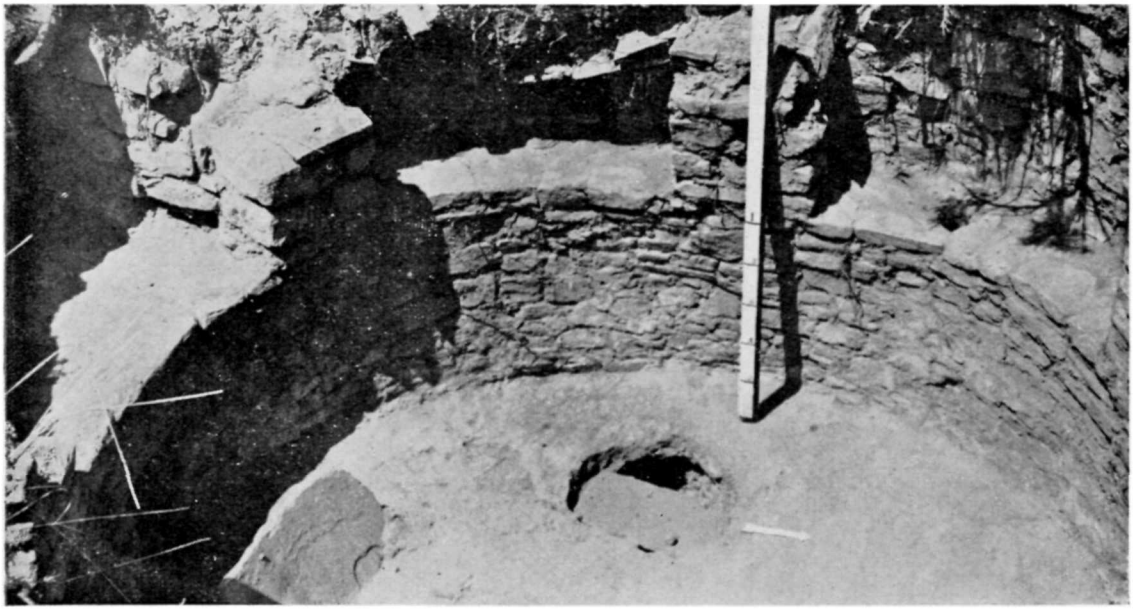
Tree-ring dates: Rooms 27 and 28 had burned; they had been subsequently repaired, but some charcoal was preserved under the upper floor levels. No dates were determined for specimens from Room 27. Charcoal from Room 28 furnished three reliable dates. Dates marked with an asterisk are included in Appendix A.

Species	Dates Inside — Outside	Remarks	Rating
Pinyon	−911 — 978 +*		Good
Juniper?	⊙1059 — *1100**	Short	Good
Ponderosa Pine	−1006 — $\overline{1068}$ +		Fair

Sherd counts: Appendix B, p. 121.

Kivas and Courts (Plates XVIII–XXII, Figs. 25, 26):

The retaining wall under the floor of Room 22, and projecting to the southwest, could have enclosed a court for Kiva II; the retaining wall was cut by the



a. Kiva I.

b. Kiva IV.

c. Kivas II and III; walls of room in background have slumped into Kiva III.

KIVAS AT SITE 34

KIVA II, LOOKING NORTHWEST, SITE 34

construction of Kiva III, and perhaps again when Kiva I was built. The retaining wall found under the floors of Rooms 23 and 24 would have satisfactorily bounded one side of a court for Kiva III; a southwesterly projection of that retaining wall stops at Kiva I. This suggests that the order of construction was: Kiva II, Kiva III, and Kiva I. The entire area enclosing these three kivas is designated as the West Court.

Kivas IV and V each are enclosed in separate well-defined courts. A retaining wall one meter in height separated the East Court, containing Kiva IV, from the North Court and Kiva V; no sign of a connecting ramp or steps was found along the dividing wall.

The kivas are remarkably similar in general appearance and in most details.

Orientation: Ventilator openings always to the southeast. Kivas I, IV, and V, all built in adequate spaces, were oriented with relation to magnetic north, 41 degrees E of S, 39 degrees E of S, and 27 degrees E of S respectively (using the ventilator shaft as the orienting line). Kivas II and III appear to be in cramped quarters, although the area surrounding them may have been open when they were built; their ventilator shafts extend respectively 63 degrees E of S and 20 degrees E of S.

Wall: Coursed masonry from the floor to the level of the banquette. The walls of Kivas I and IV had been plastered at least once; three coats of plaster had been applied in Kiva II; Kivas III and V had not been plastered.

Six spaced masonry pilasters divided the banquette into shelf compartments; the compartment over the horizontal section of the ventilator shaft was deepened to form the altar alcove. A masonry wall faced the back of each banquette compartment and extended to the courtyard level; the only variations were found in Kiva IV: undisturbed earth formed the backs of the three northern and western banquette compartments, and the back of the southern compartment was faced with slabs set on edge.

Each kiva had niches in the wall below the banquette level; the usual number was three, Kiva V had four. All niches were in the back of the kiva, to the north, opposite the ventilator opening. The two largest niches in Kiva III were much wider and deeper than the wall openings leading to them.

The alcoves in Kiva II and IV each had one corrugated jar embedded in the floor. Both jars had been damaged before they were put to use as stationary receptacles; one had a broken and roughly evened rim, the second a cracked base.

Entrance: Undoubtedly through the roof, directly over the fireplace, in every case.

Ventilator: Average height of the inside opening was 45 cm., varying from just under 40 in Kiva II to slightly over 50 cm. in Kiva I. Widths varied a few units

from 30 cm. The ventilator shafts, both vertical and horizontal, were lined with masonry in all kivas.

Deflector: A shaped sandstone slab set upright in the floor approximately two-thirds of the distance from the ventilator opening to the fireplace. In Kivas III and V, two upright slabs were used to form each deflector.

Fireplace: Kivas I, IV, and V each contained a shallow, circular, ash-filled depression; each was well coated and rimmed with plaster at floor level. The fireplace in Kiva II was the same except for an inset slab, which projected slightly above floor level, on the side nearest the ventilator opening. The Kiva III fireplace was square and outlined with blocks and slabs of sandstone; the fireplace was not well aligned, being markedly to the west side of the floor space.

The area between the fireplace and the deflector had been used for some specific purpose in Kivas I, II, and IV; a shallow trough, partly bounded by upright slabs in Kiva I, shaped in the plaster floor, was reminiscent of the warming ovens found in the pit-houses at Site 102.

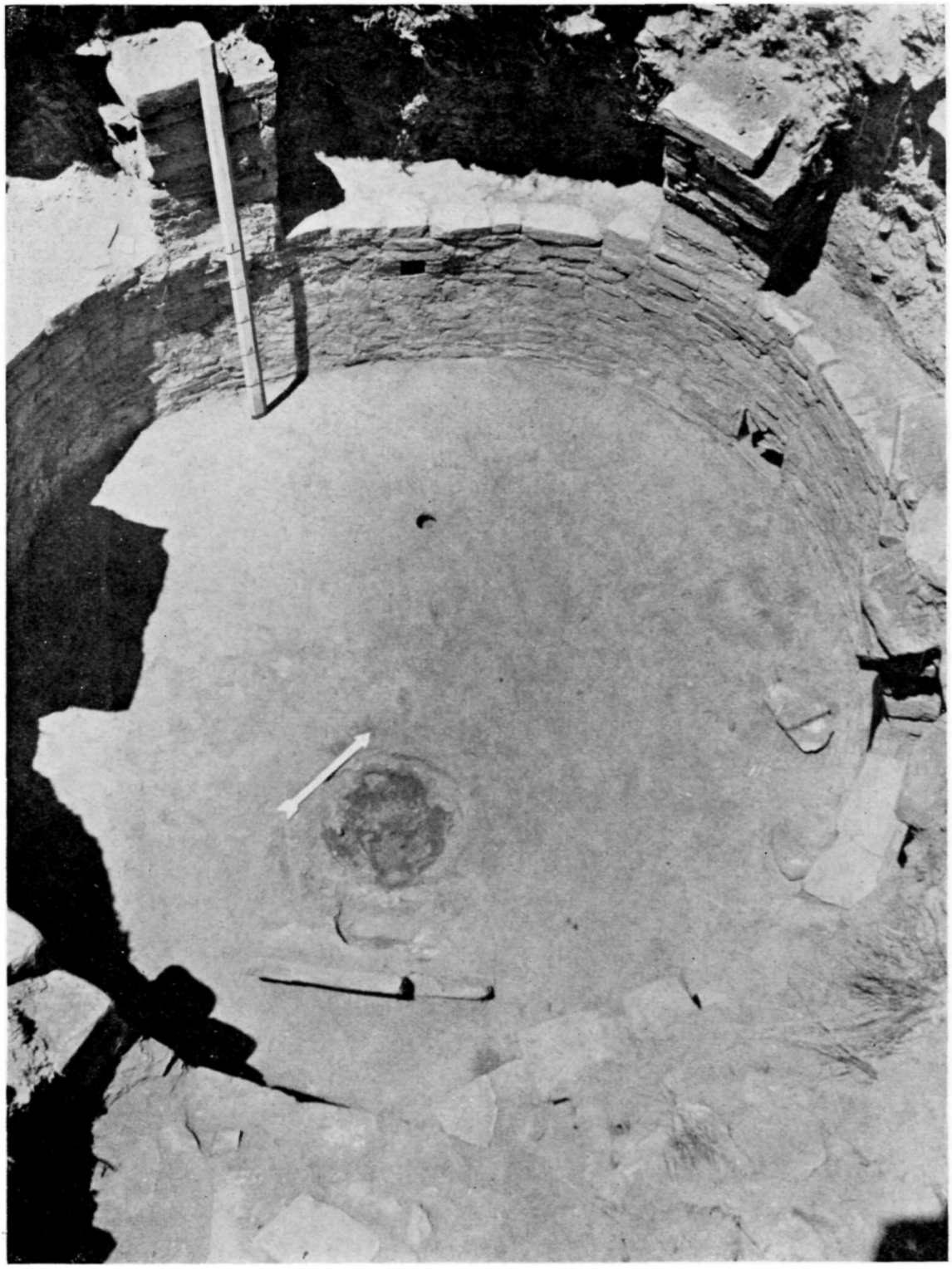
Floor: Of adobe plaster, at least 3 cm. thick, and reaching a maximum of 14 cm. in Kiva I. No sipapu was found in Kiva I; the 70 cm. deep slab-covered floor pocket southwest of the fireplace was a much better storage space than a possible "entrance to the underworld." Each of the other kivas had a conventional sipapu from 5 to 10 cm. deep, two each in Kivas II and III. The depths of the kivas were surprising, the floor level was over 2 meters below the court level in every case. Kiva V had the greatest depth, 2.35 m.

Roof: A cribbed log roof was supported by six pilasters. Decayed beams were found in the fill of each kiva, in place on pilasters in Kivas II and III. A detail of the alcove roof was preserved in Kiva III: the ends of the main cross beam support, embedded high in the side walls, in line with the arc of the banquette.

Stratigraphy: Kiva II had been abandoned before Kiva I was constructed; part of the Kiva I wall had been built on the southern banquette compartment of Kiva II. Kiva II may have been abandoned before Kiva III was constructed; the masonry wall facing the back of the southwest banquette compartment of Kiva III was built at the expense of the adjacent wall of Kiva II; if Kivas II and III were used contemporaneously, the Kiva II banquette compartment nearest Kiva III had an uneven wall composed of the rough backs of the stones used in the Kiva III construction. This evidence, plus the above-mentioned position of retaining walls, confirms the suggested order of construction: Kive II, Kiva III, then Kiva I.

Kivas II, III, and V were excavated in three levels: surface to banquette, banquette to 15 cm. above floor, and floor. Kivas I and IV were cleaned to within

Kiva III, Looking Northwest, Site 34



KIVA IV, SITE 34

15 cm. of floor, and the floor sherds and artifacts kept separate. All common pottery types were mixed throughout the fill in such similar proportions that there is no point in considering separately the contents of the different levels. Kivas abandoned during the occupation of the site logically would fill stratigraphically, kivas in use until the abandonment of the pueblo might be filled in an inverted stratigraphic way, the most recent surface rubbish collecting on the floors, and earlier rubbish redepositing on consecutive higher levels as the ground surface eroded.

Artifacts:

	Kivas			
I	II	III	IV	V
Fill:				
Sandstone ball—2	Axe	Sawed sandstone	Hammerstone—3	Bone Awl—3
Hammerstone	Bone awl—3	Sawed bone	Handstone	Sawed bone
Mano	Mortar	Bone scraper	Axe—2	Perforated bone
Fossil shell	Sandstone ball	Chipped scraper	Sandstone ball	Hammerstone
Bone tube	Handstone	Pot lid	Pendant	Axe sharpener
Bone awl—12	Hammerstone—2	Hammerstone—2	Hematite stick	
Hematite pebble	Pecking stone	Pecking stone—2	Bone tube	
Antler awl	Mesa Verde B/W bowl	Chipped scraper	Bone awl—4	
Pot lid		Grooved block	Clay bead	
Axe—2			Polishing stone	
Arrow shaft smoother			Niche cover	
Bench:				
"Skinning knife"	Pestle	Pecking stone—5	Corrugated jar	Niche cover
Axe	Bone awl—2	Sawed bone	Chipped point	Pendant blank
Hammerstone—3	Corrugated jar	Flake—5		Bone awl—5
Pecking stone		Mano		Chipped knife
		Hammerstone—4		Hematite pebble
		Antler scraper		
Niches:				
Smoothing stone		Sawed antler		
Floor:				
Chipped point		Bone awl—5	Axe	Bone awl—8
Antler awl		Medicine stone	Hematite pebble	Sandstone concretion
Sawed bone		Clay pellet	Clay figurine	Pecking stone
Polishing stone		Flat metate	Chipped drill	Flake—4
		Perforated slab	Polishing stone	
		Antler awl	"Sandal last"	
		Arrow shaft smoother	Maul	
		Chipped knife		

Tree-ring dates: None of the kivas had burned. A few roof beams, preponderately juniper, were found still in position on top of the pilasters in Kivas II and III; fragments of decayed wood were found in the lower portions of the fill in each kiva. Four of the five kivas were dated. Dates marked with an asterisk are included in Appendix A.

	Species	Dates Inside — Outside	Remarks	Rating
Kiva I				
	Ponderosa Pine	−1111 — 1183 +*		Good
	Juniper	⊙1146 — *1180**	Very short	Good
Kiva III				
	Douglas Fir	−904 — 995 +*		Good
	Douglas Fir	−885 — 983 +*		Good
	Douglas Fir	−929 — 1025 +		Fair
	Douglas Fir	−914 — 987 +*		Excellent
Kiva IV				
	Pinyon	−1060 — *1160**		Good
	Pinyon	−1106 — 1137 +	Very short	Fair
	Ponderosa Pine	−983 — 1162 +		Fair
Kiva V				
	Douglas Fir	−1028 — 1137 +		Fair
	Pinyon	−1044 — *1163*		Fair
	Douglas Fir	−1055 — 1155 +		Fair

Sherd counts: Appendix B, p. 126.

The court areas surrounding each kiva are not spacious; in each instance the kiva roof itself formed the major part of the court. Room 16 was obviously built after Kiva III was constructed, the southern corner and most of the east wall of the room had been erected directly on the cribbed roof of the kiva; this structural weakness became apparent while Kiva III was in use, several vertical post reenforcements had been set into the northwestern and northern banquette compartments to keep the wall from slumping; fortunately, Kiva III had filled almost completely before the walls and roof timbers under Room 16 collapsed, the walls forming the southern corner of the room had settled almost a meter, but the lower portions were still intact.

The courts were quite barren of features and information. Two stratigraphic tests were made in the area east of Kiva III, one in the outside corner formed by the junction of the western and northern walls of Rooms 22 and 23 respectively, the second in the alcove between Rooms 20 and 21. Sherds from the best preserved, least disturbed, court corners were kept separate.

Sherd counts: Appendix B, p. 128.

Artifacts: Specimens from the different courts or sections of the West Court, and presumably associated with the adjacent kivas, were not plentiful:

Corner west of Kiva I, outside Rooms 4 and 5: Mesa Verde Black-on-white mug.

Corner west of Kiva II, outside Rooms 5 and 8: axe—2, "skinning knife," bone awl.

Corner north of Kiva II, outside Rooms 11 and 15: hammerstone.

Alcove east of Kiva III, between Rooms 20 and 21: nothing above the flagged floor; the bottom stratigraphic cut below the slab floor contained one polishing stone and one bone awl.

KIVA V, SITE 34

Corner east of Kiva III, outside Rooms 21 and 22: bone tube, flake—2, pecking stone—7.

Corner southeast of Kiva III, outside Rooms 22 and 23: nothing in the top level, above the court floor; the bottom stratigraphic cut in debris around the base of the buried retaining wall contained a polishing stone, chipped point (the only one found having a base tang instead of side notches), fragments of a small red-on-brown bowl, bone awl—2, pecking stone—3, flake—5.

Corner east of Kiva I, outside Rooms 24 and 25, near the outdoor fireplace: corrugated jar—2.

Corner west of Kiva V, outside Rooms 35 and 39: corrugated jar—2 (one embedded in the floor, one smashed in the corner angle), hammerstone, bone awl.

Some charcoal was found in the alcove area east of Kiva III, in the middle stratigraphic cut in the fill under the flagged floor to the level of the court. Dates marked with an asterisk are included in Appendix A.

Species	Dates Inside — Outside	Remarks	Rating
Ponderosa Pine	−928 — 989 +		Fair
Ponderosa Pine	−934 — 989 +		Fair
Pinyon	−1064 — *1100**	Very short	Good
Douglas Fir	−1046 — 1102 +*		Excellent
Pinyon	−1052 — *1098**	Short	Excellent

Debris Mound (Figs. 25, 26).

Stratigraphy: The method of excavating the debris mound has been mentioned; the amount excavated is shown in Fig. 25. Thousands of sherds and many broken or lost artifacts were recovered from the rubbish deposit; the sections excavated contained 13 burials. No caches, hearths (other than the large open-fire area between the retaining walls) or traces of buildings were found.

Rodents had churned most of the rubbish deposit. Many stratigraphic tests were attempted; only two were in earth apparently undisturbed from top to bottom. One of these was in the debris mound proper, immediately below the lowest retaining wall; the second was in the detritus on the uphill side of the site, just outside Room 36. The sherd counts for the stratigraphic tests, and from the general excavations in debris, are included in Appendix B, p. 128.

The general sherds from the debris mound, excavations made along the outside wall of the pueblo, and from exploratory trenches, were classified in a different manner from the sherds obtained in rooms and kivas. After determining the probable occupation span of the pueblo from the middle 1000's to the late 1100's, and after securing some stratigraphic evidence confirming the Mancos, McElmo and Mesa Verde sequence of black-on-white pottery types, it is useful to break down the general classification of pottery types into more detailed subdivisions of

shape. These are of value in showing proportions which suggest not only the popularity of certain wares but also of certain shapes, and whether they were of local manufacture or traded in from adjoining regions. In the Appendix B tabulation the sums of classificatory counts do not equal the total counts, as many sherds showed several characteristics listed, and some sherds showed no classificatory characteristic. For example, many Mesa Verde Black-on-white bowls sherds were parts of vessel bottoms, and are listed only in the total count.

It is a temptation not to mention several sherds; namely, two that appear to be Ramos Polychrome indigenous to Chihuahua, northern Mexico, and four that resemble Mogollon Red-on-brown of which two are illustrated in Plate L.

Artifacts: Found in the debris mound and in rubbish scattered around the outside of pueblo:

Debris Mound

West Trenches	West-central Trenches	East-central Trenches	East Trenches
Hammerstone	Bone scraper	Mesa Verde B/W bowl (flared rim)—2	Chipped point—6
Bone awl—2	Sawed bone	Mesa Verde B/W bowl (figure design)	Flake—5
Clay pellet	Bone tube—5	Pot lid	Chipped scraper
Pecking stone	Bone awl—6	Hammerstone—2	Olivella shell
Abrading stone—2	Pot lid—2	Polishing stone—2	Bone scraper
Pot lid	Polishing stone—6	Clay pipe stem	Bone awl—4
Bone scraper	Hematite pebble—2	Petrified wood spall	"Medicine" stone—8
Bone tube	Pestle	Arrow shaft smoother	Stalactite
Pestle	Ocher pebble—2	Igneous rock temper—2	Obsidian flake
Chipped scraper	Pendant blank	Sandstone concretion—2	Hematite pebble
Shaped shale pebble	Disc bead	Chipped point—6	
	Clay bird's head	Disc bead—4	
	Chipped point—4	Olivella shell	
	Chipped knife—2	Shell pendant	
	Petrified wood spall	Turquoise chip	
	"Medicine" stone—14	Quartz crystal	
	Hematite stick	Gypsum crystal	
	Stone pendant—2	"Medicine" stone—29	
		Hematite pebble	
		Bone awl—16	
		Bone tube—11	
		Bone needle—2	

Surface finds in vicinity of pueblo:

Arrow shaft smoother
Pot lid
Sawed bone
Sandstone concretion
"Medicine" stone

Tree-ring dates: None.

Burials (Fig. 25).

Twenty-six burials were found in and around Site 34: thirteen in the debris mound, ten intramural, and three in the talus north of the pueblo. Skeletal material from seventeen of the burials was sufficiently well preserved to save.

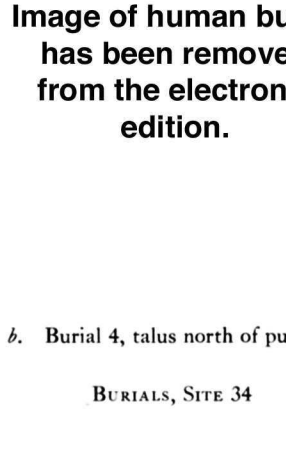
a. Slabs covering Burial 11, debris mound.

b. Burial 12, debris mound.

Image of human burial has been removed from the electronic edition.

c. Burial 5, talus north of pueblo.

a. Burial 17, Room 6.



b. Burial 4, talus north of pueblo.

BURIALS, SITE 34

Burial 1: Slab covered, depth to sacrum 30 cm. Infant, first molars still embedded. Lambdoid area deformed. Body tightly flexed on left side, head to west. No accompanying offerings. Bones not saved.

Burial 2: Slab covered, depth to sacrum 20 cm. Infant, very young. Skull too decayed to ascertain deformation. Body tightly flexed on back, head to west. No accompanying offerings. Bones not saved.

Burial 3: Not covered with slabs, depth to sacrum 80 cm. Old adult, teeth badly worn; female, wide sacrosciatic notch. Body loosely flexed on left side, head to northwest, knees to northeast. Accompanying offerings: 1 Mesa Verde B/W mug, 2 McElmo (or early Mesa Verde) B/W bowls, 1 McElmo B/W constricted canteen. A badger, fox or coyote had made a den in the burial area; the skull and many bones were missing, the mandible and other bones found were scattered and broken; bones not saved.

Burial 4 (Plate XXIV b): On talus north of the pueblo, the earth had eroded, exposing slabs, depth to sacrum 15 cm. Adult, teeth worn, some sutural obliteration; female, wide sacrosciatic notch, wide sacrum. Lambdoid area deformed. Body loosely flexed on back, head to southwest, knees to north. Accompanying offering: 1 Mesa Verde B/W mug. Bones saved.

Burial 5 (Plate XXIII c): On talus north of the pueblo, slab covered, depth to sacrum 15 cm. Adult, teeth worn, some sutural obliteration; female, wide sacrum. Body flexed on right side, head to west, knees to south. No accompanying offerings. Bones saved.

Burial 6: On talus north of the pueblo, slab covered, depth to sacrum 25 cm. Adult, teeth worn, some sutural obliteration; female, small mastoids, sharp orbital edges. Lambdoid area deformed. Pathology—lumbar abscess. Body flexed on left side, head to southwest, knees to northwest. Accompanying offerings: 1 McElmo B/W bowl, 1 McElmo B/W ladle. Bones saved.

Burial 7: Slab covered, depth to sacrum 80 cm. Adult, teeth worn, some sutural obliteration; female (?), small mastoids, fairly narrow sacrosciatic notch, medium width to sacrum. Lambdoid area deformed. Pathology—mastoid abscess. Body tightly flexed on back, head to west, knees to northwest. Accompanying offerings: 1 Mesa Verde B/W mug, 2 Mesa Verde B/W bowls, 1 deer-leg bone partly sawed longitudinally, 1 deer-leg bone scraper, 1 bone awl, 3 chipped knives, 5 flakes. Bones saved, though broken and scattered by animal burrowing.

Burial 8: Not covered with slabs, depth to sacrum 1.30 m. Child, first molars erupted. Lambdoid area deformed. Pathology—porous exostosis in roofs of orbits, on sphenoid (ostioporosis?). Body tightly flexed on right side, head to southwest. No accompanying offerings. Bones saved.

Burial 9: Not covered with slabs, depth to sacrum 1.10 meters. Infant, fontanelle open. Body tightly flexed on right side, head to west. No accompanying offerings. Bones saved (and fragments of an adjacent disturbed infant burial included).

Burial 10: Not covered with slabs, depth to sacrum 70 cm. Adult, teeth badly worn, some sutural obliteration; female (?), small mastoids, sharp orbital edges, rather narrow sacrosciatic notch. Lambdoid area deformed. Body extended face down, ankles crossed, head to southwest. No accompanying offerings. Bones saved.

Burial 11 (Plate XXIII a): Slab covered, depth to sacrum 70 cm. Adult, epiphyses closed; male (?), narrow sacrosciatic notch. Body extended face down, ankles crossed; no trace of skull, mandible, pectoral and arm bones, head would have been to west. No accompanying offerings. Bones not saved.

Burial 12 (Plate XXIII b): Slab covered, depth to sacrum 55 cm. Adolescent, third molars embedded. Lambdoid area deformed. Body tightly flexed on left side, head to west. Accompanying offering: 1 Mesa Verde B/W bowl. Bones crushed by heavy slabs in direct contact, and decayed by retained moisture—not saved.

Burial 13: Not covered with slabs, depth to sacrum 90 cm. Adult, epiphyses closed; female (?), wide sacrum. Body extended face up, legs straight; no trace of skull, mandible, pectoral and arm bones, head would have been to southwest. No accompanying offerings. Bones not saved.

Burial 14: Not covered with slabs, depth to sacrum 1.25 meters. Infant, fontanelle open. Body tightly flexed on left side, head to east. No accompanying offerings. Bones not saved.

Burial 15: Not covered with slabs, depth to sacrum 70 cm. Adult, some sutural obliteration; male, medium sized mastoids, narrow sacrosciatic notch, orbital edges rounded. Lambdoid area deformed, marked asymmetry to left. Body tightly flexed on left side, head to north, knees to northeast. Accompanying offerings: 2 Mesa Verde B/W bowls, 1 Mesa Verde B/W kiva jar (sherds scattered throughout burials 15 and 16). Bones saved (scattered by animal burrowings).

Burial 16: Not covered with slabs, depth to sacrum 50 cm. Adolescent, third molars embedded; female, sharp orbital edges, medium mastoids. Lambdoid area deformed, marked asymmetry to right. Pathology—mastoid abscess. Body flexed, head to west, knees to north. Accompanying offering: sherds of Mesa Verde B/W kiva jar assigned to Burial 15. Bones saved.

Burial 17 (Plate XXIV a): Cut into the lower floor in the west corner of Room 6, not covered with slabs, depth to sacrum from ground surface 1.80 meters (from upper floor level 45 cm.). Adult, advanced sutural obliteration; female, sharp orbital edges, very wide sacrosciatic notch. Lambdoid area deformed, marked asymmetry to right. Body loosely

flexed on right side, head to northwest, knees to south. Accompanying offerings: 1 hematite stick, 1 Mancos B/W bowl, 1 small corrugated jar, 1 Mancos B/W jar, 1 large bottom sherd of a Mancos B/W jar. Bones saved.

Burial 18: North corner on the lower floor of Room 9, not covered with slabs, depth to sacrum from ground surface 40 cm. (from upper floor level 15 cm.). Adult, teeth worn; male, narrow sternum, very narrow sacrosciatic notch. Skull not found, all other bones undisturbed. Body flexed on back, head would have been to north, knees were to east. Accompanying offering: 1 Mesa Verde B/W bowl. Bones saved.

Burial 19: Cut into the upper floor of the north corner of Room 12, not slab-covered, depth to sacrum from ground surface 60 cm. Adult, teeth worn, one-third molar erupted in mandible; female (?), medium wide sacrosciatic notch. Skull not found, the disarticulated bones of an incomplete skeleton had been heaped together as a secondary interment. Accompanying offerings: 2 Mesa Verde B/W bowls, 1 McElmo B/W mug. Bones saved.

Burial 20: On the lower floor in the center of Room 12, not slab covered, depth to ilium from ground surface 65 cm. (from upper floor level 15 cm.). Child, epiphyses unattached. An ilium, femur and several ribs had been buried together as a secondary interment. Accompanying offerings: 1 bone scraper, 1 Mesa Verde B/W spherical canteen.

Burial 21: On the lower floor in the center of Room 13, not slab covered, depth to sacrum 1.30 meters. Adult, teeth worn; male (?), medium large mastoids, tibia and mandible robust. Lambdoid area deformed. Cranium was crushed under a large block of sandstone; pelvic bones and femora were missing (possibly removed by animal burrowing). Body flexed on right side, head to northeast, knees to northwest. Accompanying offerings (shared with Burial 22): 1 hematite stick, 1 small corrugated jar, 1 Mesa Verde B/W mug. Bones saved.

Burial 22: On lower floor against northwest wall of Room 13, not slab covered, depth to sacrum 1.35 meters. Child, second molars embedded. Skull and many other bones not found (possibly removed by animal burrowing). Body tightly flexed on right side, head would have been to northeast, knees to north. Accompanying offerings (shared with Burial 21) in space between the two burials.

Burial 23: Against northwest wall in lower story fill of Room 32, not slab covered, depth to sacrum from ground surface 1.30 meters (45 cm. above lower story floor level). Adult, teeth worn, some sutural obliteration; male, medium sized mastoids, narrow sacrosciatic notch. Lambdoid area deformed. Body loosely flexed on back, head to northwest, left knee to north, right knee to southwest. Accompanying offerings: 1 smoothed block of sandstone containing a groove presumably made by sharpening bone awls, 1 small corrugated jar, 2 McElmo B/W bowls, 1 Wingate B/R pitcher. Bones saved.

Burial 24: On northwest center section of floor in Room 36, not slab covered, depth to sacrum 1.75 meters. Adult, advanced sutural obliteration, teeth worn; male, prominent mastoids, very narrow sacrosciatic notch. Lambdoid area deformed, but comparatively little. Pathology—several vertebrae fused, sacrum fused to both ilia. Body flexed on back, head to southwest, knees to northwest. Accompanying offerings: 4 Mesa Verde B/W mugs (one having a false bottom, containing clay pellets or pebbles which rattle). Bones saved.

Burial 25: On floor in southwest corner of Room 36, not slab covered, depth to sacrum 1.95 meters. Young adult, sutures fairly open, teeth slightly worn; male, smooth orbital edges, narrow sacrosciatic notch. Lambdoid area deformed. Body flexed on back, head to southwest, knees to southeast. Accompanying offerings: 2 Mesa Verde B/W mugs. Bones saved.

Burial 26: Under floor against west wall of Room 43, not slab covered, depth to sacrum from ground surface 1.70 meters (from floor level 25 cm.). Infant, eight teeth had erupted. Body flexed on right side, head to southeast, knees to east. Accompanying offering: 1 small jar reworked from a Mancos B/W pitcher. Bones not saved.

The above information on the 26 burials found in and around Site 34 contains several striking points:

1. The impoverishment of the inhabitants, judged by mortuary offerings: ten burials were made without pottery or other durable artifacts.

2. The skeletal remains show a great deal of pathology; health was not good in the community.

3. Half the 26 burials were found in the debris mound, substantiating the generally accepted opinion that the rubbish heap was the usual place of interment, through the Mancos Mesa Phase (Pueblo II) and McElmo Phase (early Pueblo III). Five, less than half, of the rubbish heap graves contained mortuary offerings and all these were Mesa Verde Black-on-white pottery vessels, locally assignable to the Montezuma Phase (late Pueblo III). The ten intramural burials all had mortuary offerings; two can be placed in the Mancos Mesa Phase, one in the McElmo Phase, and the remaining seven in the Montezuma Phase. Two of the three talus burials may be assigned respectively to the

McElmo and Montezuma Phases. The total number of assignable burials found is seventeen: thirteen in the Montezuma Phase, two each in the McElmo and Mancos Mesa Phases.

4. Eight of the thirteen debris mound burials were slab covered; all three of the talus interments were slab covered; not one of the intramural burials was found under sandstone slabs.

5. The talus burials, found by chance on an eroding steep slope, may represent a generally used method of burial. Graves are uncommon in the nearby cliff-dwellings of the Montezuma Phase; in many of the caves interment space was somewhat limited; burials may have been placed in the slopes below the caves, in the talus.

History of Occupation (Fig. 25).

A plausible reconstruction of the founding and gradual growth of Site 34 can be postulated by considering the data presented by the architecture (superposition, associated pottery types, assigned tree-ring dates), the stratigraphic tests—proportionately suggestive but convincing only in the instances of Room 15 and the west court corner formed by Rooms 22 and 23, the general sherd counts (72.20 per cent Mesa Verde Black-on-white, 13.03 per cent McElmo, and 11.75 per cent Mancos, for the decorated wares), and the position of the burials and the offerings accompanying them. I believe the pueblo to have been occupied continuously from about 1025 to the end of the 1100's.

1. Kiva II and adjacent Rooms 8, 10, 11, 14, and 15, and possibly the uphill retaining wall under Room 22 represent the first construction; probably another room or rooms then occupied the space later used for Rooms 5 and 6; Burial 17 (though not Burial 26) may have been made during this occupation.

2. Sometime after 1025, Kiva III was built; additional rooms were added, Room 7 northeast to Room 17, and from there southeast to Room 20; the retaining wall now under Rooms 23 and 24 probably was built at this time.

3. Rooms 26 through 30 were added by 1100; Room 21 probably, Room 16 possibly, were erected during the same period of building.

4. Kivas IV and V were built soon after 1160, and Rooms 31 through 45 were added. The retaining wall immediately south of Kiva IV was constructed, at least in part, to contain the kiva court. Kiva II was abandoned by this time.

5. Kiva I was built in the 1180's, Rooms 1 through 4, and 22 through 25, quite likely represent the same period of construction, and many of the Rooms 5 through 15 were modified by new floor levels or by wall alterations (5 through 9). The west retaining wall and the tower were added after the construction of Room 4.

6. The pueblo was abandoned around 1200. It contained little of the fine late Mesa Verde Black-on-white, bowls decorated both inside and outside, typical of the later cliff-dwellings; and everything, even the metates was taken away.

All evidence except Burial 26 substantiates, or at least is compatible with, this attempted reconstruction. The one offering found with Burial 26 was a worn and reworked Mancos B/W vessel—originally a pitcher. My first inclination is to

refer the burial to Mancos B/W times; however, certain small pottery vessels are comparatively durable (note the large number of complete mugs found and the small number of mug sherds, compared with the masses of bowl and jar sherds), either because of heavy construction or because of infrequent usage, certain vessels conceivably could have lasted a long time until they became heirloom pieces, finally to be broken and discarded or buried with the owner. Burial 26 may have been a comparatively late burial, in keeping with the postulated late construction of Room 41, in which the interment was found.

CHAPTER IX

REPRESENTATIVE ARTIFACTS

FRAGILE and perishable specimens are seldom recovered from exposed surface ruins; the desiccating conditions prevalent in most southwestern cave sites have preserved a much more complete representation of the handiwork—utilitarian, esthetic and religious—identified with certain of the stages of cultural development. Gila Pueblo excavations on Mesa Verde were made exclusively in surface ruins: the major aim of the project was to fill in some of the long gap in the knowledge of local cultural development between Step House, a cave site dated at 625 A.D., and the great cliff-dwellings of the 1200's. Ruins of the intervening centuries were found in the open, but undoubtedly some early occupation levels underlie the later cliff-dwellings.

Artifacts recovered from the excavations are described under conventional headings of wood, stone, bone antler, and shell.[1] Artifacts of the same materials, but from different ruins, are grouped together. Inferential evidence is included, if based on actual specimens or traces; at times this inferential evidence is expanded by reference to better preserved specimens from neighboring cave sites.

Wood

Most wood and charcoal found had been parts of construction timbers or served as fuel. Evidence of the use of bark and other vegetable fibres is included under this heading.

Artifacts:

Scoop: an oval slab of aspen or cottonwood, approximately 13 cm. long, 8 cm. wide, and 2 cm. thick, was on the floor of Pit-House I, Site 145. It had been charred and shattered, only fragments could be saved. Similar scoops have been reported from Basket Maker II and III cave sites (Plate XXVa); "experiment has shown that they are excellent tools for scraping out loose sand (as in digging a cist); they would also have served admirably, if used in pairs, for transporting embers or for handling hot stones in basket cookery" (Nusbaum, 1922, pp. 116–17).

Bast wrapping: the bodies in Burials 7 and 12 at Site 34 had been cushioned and covered by shredded juniper bark; traces of bast were noticed in Burial 6 at the same ruin. The material had disintegrated, the remnants preserved under the stone slabs covering the graves powdered at a touch. No sign of cordage or knotting could be determined. Morris noted bast wrapping in several burials uncovered at Site 41, in the La Plata Valley southeast of Mesa Verde; describing Burial 30/68, he wrote (1939, p. 93): "The remains were upon a bed of cedar bark . . ."

Inferential Evidence:

Cordage: bone needles were found in the kiva and debris mound at Site 102, and in the pueblo and debris mound at Site 34. Cordage of yucca- (Plate XXVb), apocynum-, and cotton-fibres, and of juniper bark, has been collected from neighboring cave sites.

[1] Kidder, 1932.

Handles: grooved axes and mauls, large chipped blades with base notches, and drills were present in all occupation levels at Sites 102, 1, and 34; they furnish evidence of different kinds of wooden handles (Plate XXVc and d).

Basketry: the imprints of coiled baskets were preserved on the exteriors of one pottery vessel and a number of sherds: a mud platter and fragments of a second, from Site 145 (both pit-houses); the base of a Lino Gray jar from the village at Site 102; Mancos Black-on-white bowl sherds from the debris mounds at Sites 102 and 1; and Mancos and McElmo Black-on-white bowl sherds from Site 34. Two basket shapes are represented (Plate XXVe); one is shallow with curving sides, the second (imprints on several McElmo Black-on-white sherds) is deep with straight sides flaring to a rim of greater diameter than the base.

Ladders: ladder sockets, pairs of cup-like depressions approximately 30 cm. apart, found on the antechamber floor of Pit-House II, Site 145, and on the floor of the kiva, Site 102, suggest the use of two-pole runged ladders.

Stone

Objects and artifacts of stone account for many of the specimens catalogued from each ruin. Odd concretions and fossils, raw materials not of local occurrence, and flakes and cores, make up a large amount of the stone material; however, they are mentioned, as they must have been of interest or use to the occupants of the sites.

Chipped Implements:

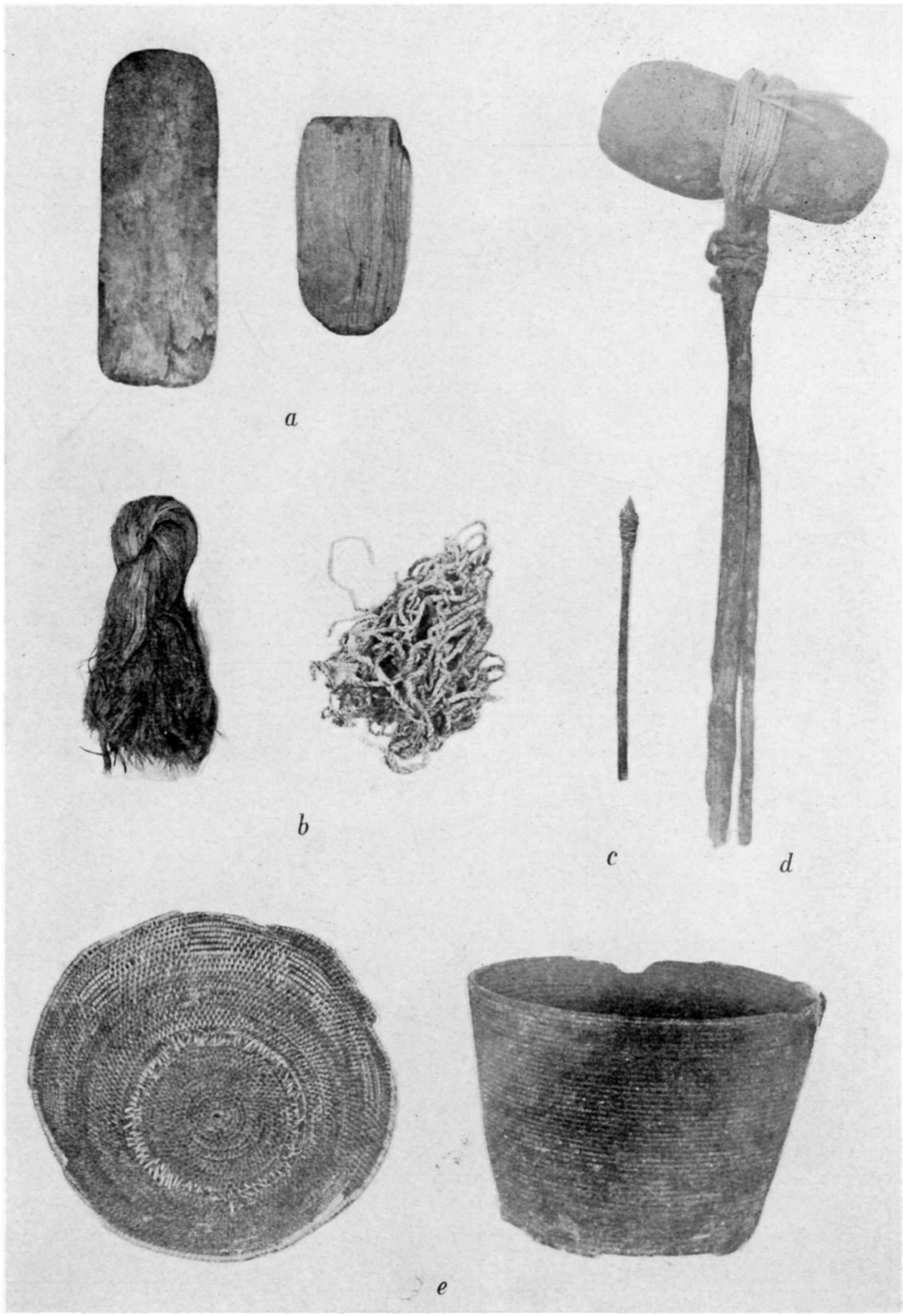
Flakes (Plate XXVI a): large chips, struck from rocks breaking with a concoidal fracture, were common finds in every excavation. Often several large flakes were found grouped together in a corner of a floor area. "A large proportion of such chips were of a shape or thickness that made it impossible to work them into formal implements. But, as they stood, their extremely keen edges made them markedly serviceable for cutting purposes . . . that shapeless chips were saved for use is clearly evident from quantities of them found, sometimes hidden away in jars, and occasionally buried with the dead" (Morris, 1939, p. 127). The few specimens of obsidian and agatized wood must represent trade materials, as no local sources are known.

Cores (Plate XXVI b): rocks from which flakes had been struck were found in all excavations. Most of them appear to be residuals from the manufacture of flake implements; however, the pit-house dwellers of Site 145 may have used some exceptionally large cores as choppers (cleavers, hand-axes) and heavy scrapers, after flakes had been removed to fashion an intentional linear edge which bears small secondary fractures attributable to wear (Plate XXVIb).

Scrapers (Plate XXVI c and d): flakes showing secondary chipping to fashion end, side, and concave scrapers were rare. End (snub, turtle-back) scrapers were recovered from Site 145, the pueblo at Site 102, and Site 34. Side scrapers were found in Site 145. Three concave scrapers were found in Site 34, two in Room 19, and one in the debris mound.

Points (Plate XXVII a and b); suitable flakes, shaped by secondary chipping, were found in every site. The single point from Site 145 may have been attached to a spear-thrower dart; specimens from Sites 102, 1, and 34 undoubtedly were used as arrowpoints. Without exception, points from Sites 145, 102, and 1 have base notches; with one exception, found in the lowest debris deposit under the West Court, points from Site 34 have side notches.

Drills (Plate XXVII c): suitable flakes, retouched to form slender points, were found in the village at Site 102, the pueblo at Site 1, and Site 34. Lengths varied; the butt ends sometimes were abrupt terminations of the shafts, more often conspicuously wider than the shafts. "The majority were presumably attached to the ends of short wooden shafts" (Kidder, 1932, p. 24).



PERISHABLE OBJECTS

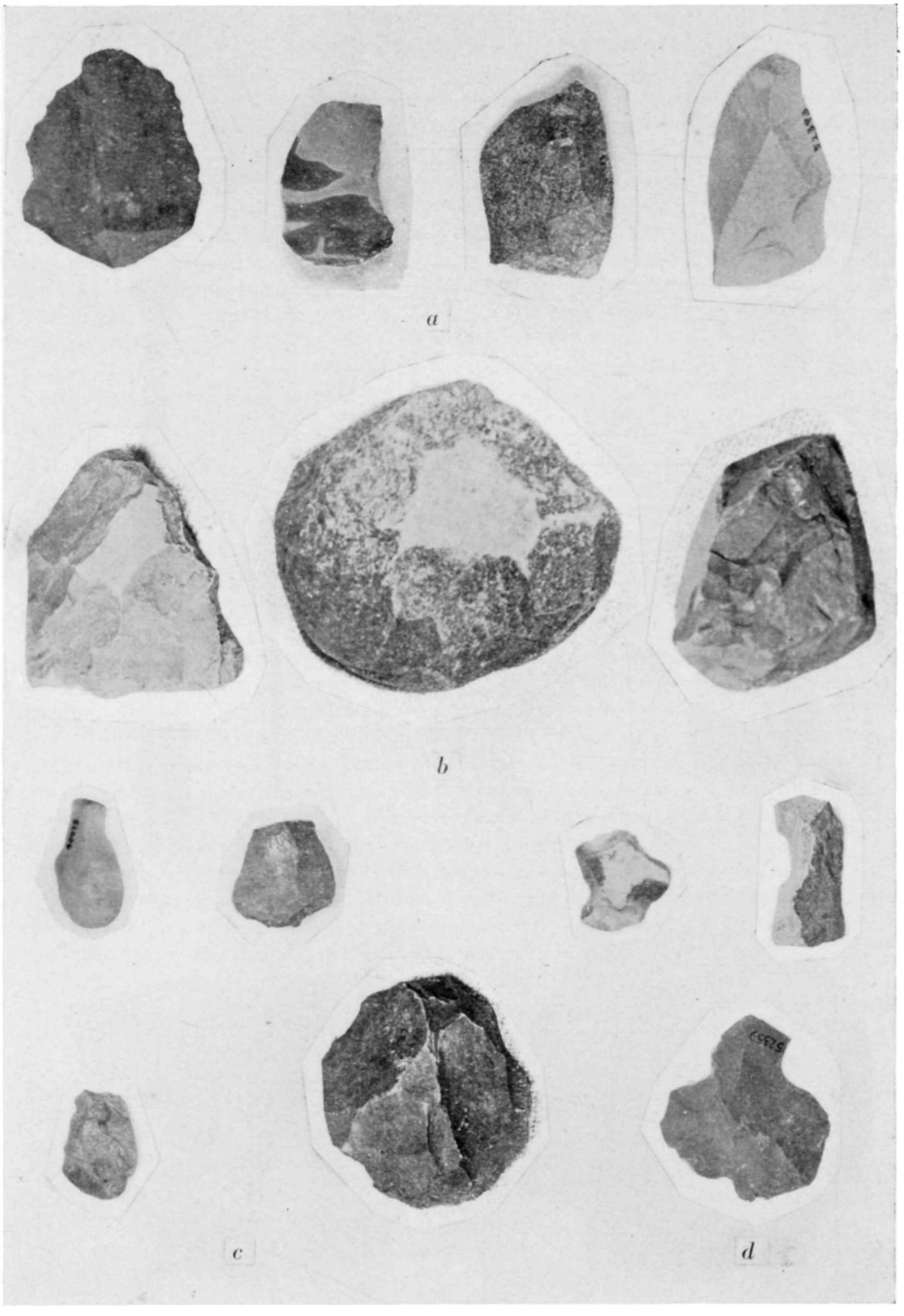
a Wooden scoops, similar to charred specimen from Site 145. (From Cigarette Cave, Comb Ridge, southeastern Utah.)

b Yucca fiber hank and cordage. (From Johnson Canyon, southwestern Colorado.)

c Hafted drill. (From Johnson Canyon, southwestern Colorado.)

d Hafted stone axe. (From Mesa Verde cliff dwelling.)

a, *b*, and *c* in Gila Pueblo collections; *d* and *e*, Mesa Verde Museum collections.



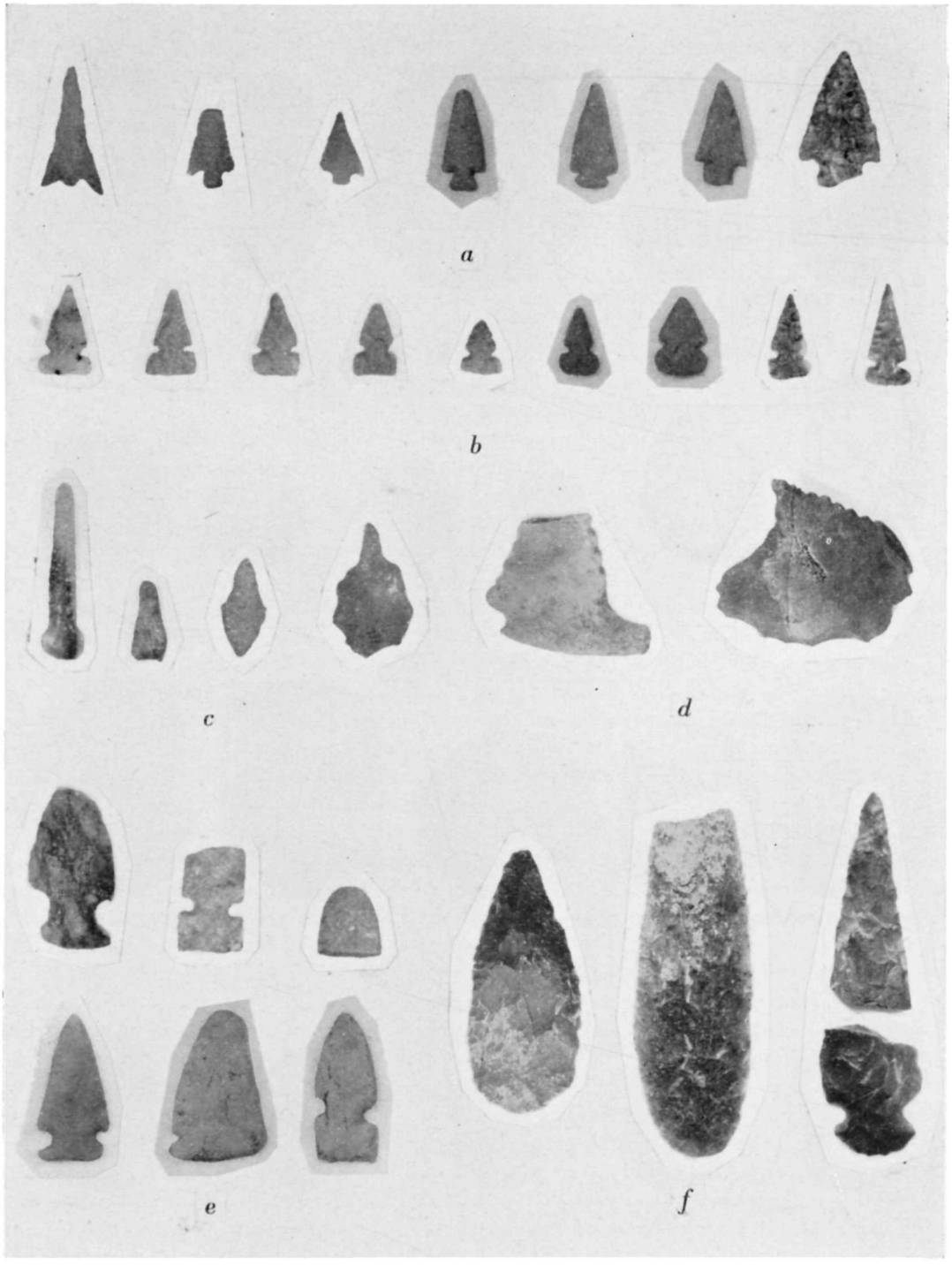
STONE OBJECTS FROM THE EXCAVATIONS

a Flakes: first, Site 102 Village; second and third, Site 34; fourth, Site 145.

b Cores: Site 145.

c Scrapers: upper left, end scraper, Site 34; upper right, end scraper, Site 102 Pueblo; lower left, end scraper, and lower right, side scraper, Site 145.

d Concave scrapers: Site 34. Scale: one-half natural size.



STONE OBJECTS FROM THE EXCAVATIONS

a Base—tang points: first, second, Site 102 Village; third, Site 102 Pueblo; fourth and fifth, surface of mounds adjacent to Site 34; sixth, Site 34; seventh, Site 145.

b Side—notched points: Site 34.

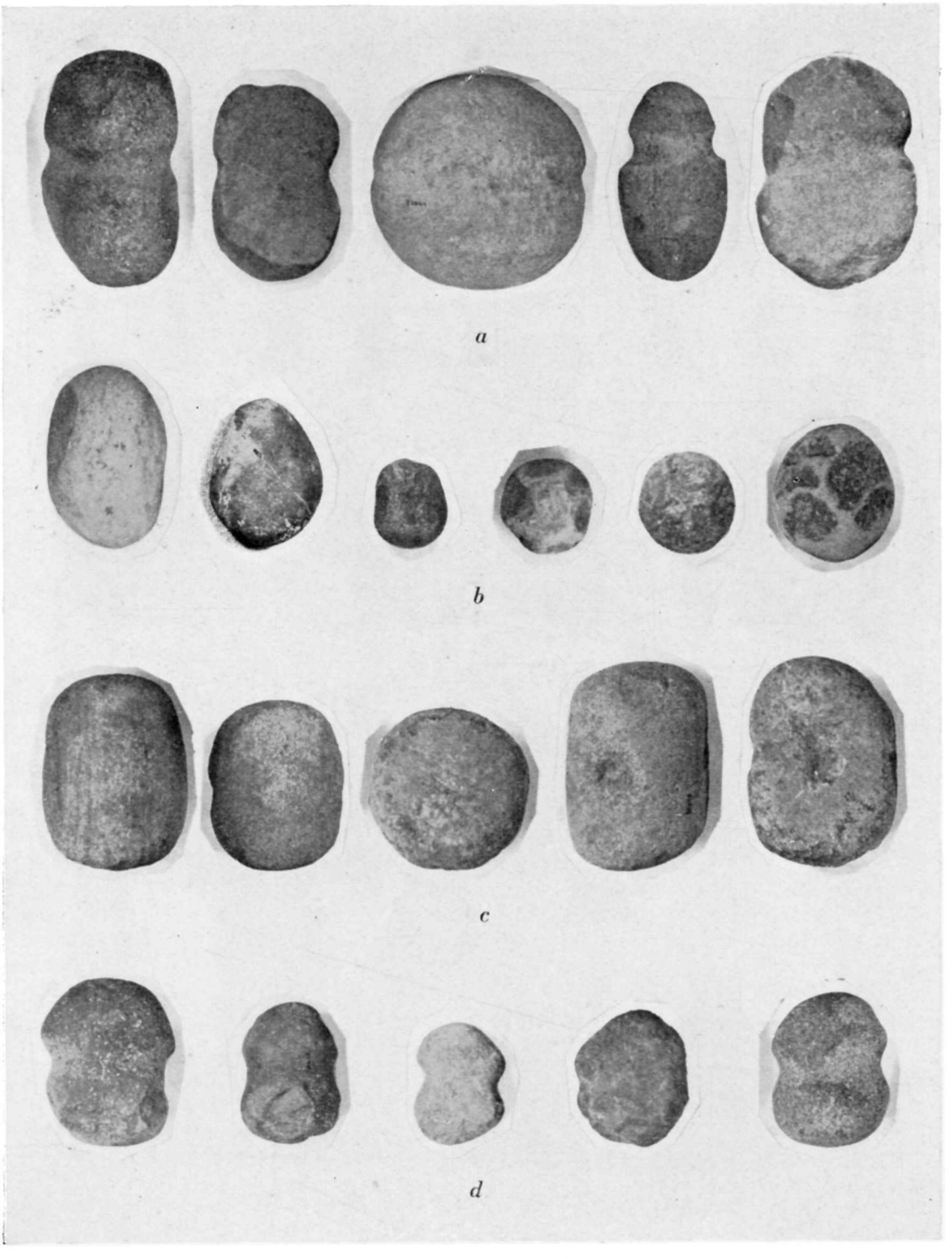
c Drills: first, Moccasin Mesa Pueblo, contemporaneous with Site 34; second, Site 34; third, Site 102 Village; fourth, Site 1 Pueblo.

d Saws: Site 34.

e Blades, probably knives: upper left, Site 34; upper center and upper right, Site 102 Village; lower row from Site 34.

f Blades, probably knives: Site 34.

Scale: One-half natural size.



STONE OBJECTS FROM THE EXCAVATIONS

a Mauls: first, Site 102 Village; second, Site 1 Pueblo; third, Site 34; fourth, Site 102 Village; fifth, Site 102 Pueblo.
b Pecking stones: first, Site 102 Pueblo; second, Site 145; last four, Site 34, show hard usage.
c Hammer stones: first and second, Site 34; third, Site 1 Pueblo; fourth, Site 102 Village; fifth, Site 1 Village. Last four show pitted finger-grips.
d Grooved hammerstones: Site 34.

Scale: One-quarter natural size.

Saws (Plate XXVII d): two flakes with spaced secondary chips removed from one or two edges were recovered from the fill of Room 33, Site 34. Similar implements "were surprisingly effective when tried on modern lumber" (Brew, 1946, fig. 171 and legend).

Blades (Plate XXVII e and f): all large flake implements showing careful shaping and secondary chipping are here described as blades. Examples from the village and pueblo at Site 102, and from Site 34, are leaf-shaped (one end pointed, the other blunt). Two from Site 34 are blunt at both ends; and several from the same ruin (and one from the village at Site 102) were notched to facilitate hafting (or they may have served as large points).

Artifacts fashioned by pecking, by pecking (or chipping) and grinding, and by grinding alone, are considered in order of mention.

Mauls (Plates XXVIII a and XXXIII c): igneous boulders or blocks of hard sandstone, grooved for handle attachment, were fairly common in all levels of occupation at Sites 102, 1, and 34; none was found in Site 145. "Most of the mauls and hammers show little evidence of wear" (Morris, 1939, p. 137). Some may have been "pemmican pounders" (Kidder, 1932, p. 55). A few exceptionally large mauls "were used in breaking building stone" (Morris, 1939, p. 138).

Pecking stones (Plate XXVIII b): all sites excavated contained numbers of small river boulders, battered and shaped by use. "Wherever stone reduction was attempted without chipping or fracture, the pecking stone was the tool employed, and it was equally favored during all periods from Basket Maker III onward" (Morris, 1939, p. 128).

Hammerstones (Plate XXVIII c and d): igneous or hard sandstone boulders, with or without pitted grips to facilitate grasping, occurred in all sites excavated. Many of them appear to have received hard usage, but not the wear and fractures that might be expected from pounding on other rock. Pitted hammerstones "are conspicuously numerous in Pueblo I sites" (Morris, 1939, p. 128). Grooved hammerstones, some apparently "the remnants of worn out axes" (Brew, 1946, p. 235), were found in the Site I Pueblo and Site 34.

Mortars (Plate XXIX a): several large sandstone blocks containing pecked and worn indentations were found in Site 34. None was found in the other ruins excavated.

Pestles (Plate XXIX b): a single cylindrical pestle was found in Site 145. A variety of shaped stones, which could have been used as pestles, were recovered from Site 34: one sandstone ball was found with a mortar, and it neatly fitted the mortar cavity; a small sandstone cylinder, a bilobate sandstone concretion with one end worn smooth, and an igneous rock "pemmican pounder" with one end ground flat, all could have been used as pestles.

Metates (Plates XXIX c and f): hard sandstone slabs and blocks, either flat or troughed, were uncovered at all sites. Complete or fragmentary specimens of the troughed variety were found in Sites 145 (in both pit-houses), 102 and 1—both the villages and the pueblos, and 34—in the debris mound and beneath the floor of Room 15. A single flat metate was on the kiva floor in Site 102; the narrowness of the boulder selected and transported to the site may account for the lack of side ridges; the specimen is unusually thick for the later flat type, common at Site 34.

Manos (Plate XXIX d and e): all sites excavated contained varieties of two-handed manos, fashioned of hard sandstone. Manos with one side only used as a grinding surface were the commonest type in Sites 145, 102, and 1 (both villages and pueblos); occasional specimens from the unit pueblos showed wear on both sides, and two of these specimens had finger grips in the center of each of the thin edges; all showed a slightly convex grinding face (in long cross-section), to conform with the width of the concave troughs. Site 34 furnished a number of these manos; but a majority of the specimens from this ruin are straight in long cross-section, and many are beveled on the side showing wear from grinding.

Axes (Plate XXX a, b, and c): suitable river boulders of igneous or metamorphased rock, with side notches or a full groove for hafting, and with one end ground to form a bit, were found at all ruins except Site 145. Side-notched axes occurred exclusively in the villages at Sites 102 and 1, and were the commonest type in the Site 102 pueblo. Side-notched specimens were found in the pueblo at Site 1 and at Site 34, but the full-grooved variety was the rule. Specimens from the earlier sites show a minimum of alteration of the original river boulders; axes from the later ruins often were smoothed and evened on all surfaces. Only one double-bitted axe was found, in Site 34.

"Skinning Knives" (Plate XXX d): chipped and ground blades of "phyllite (hornstone), an indurated shale which takes a high polish, and in most cases . . . shaped so that the vari-colored banding of the stone forms a pleasing decoration" (Morris, 1915, p. 682), were found in the pueblo at Site 1 and in Site 34. One "skinning knife" of black slate was recovered from Site 34. An outcrop of hornstone is located a short distance from the marker on the junction point of the four southwestern states; I have picked up several dozen chipped blanks and rejects at the quarry. Suitable slate may be found "a few miles west of the La Plata Valley, between the San Juan and the south rim of the Mesa Verde plateau" (Morris, 1939, p. 139); another source of hard black slate is exposed on the south side of the San Juan Canyon, near the horse trail leading to the river crossing below Grand Gulch. Morris believes that "the tools were used more for planting, cultivating, and weed cutting than for actual excavation. . . . Upon careful examination the edges show worn grooves and minute striations, produced by the scratching of sand grains, extending longitudinally on the implement" (Morris, 1939, p. 139). The butt ends of some "skinning knives" have been shaped for hafting; Nordenskiold found one with a handle attached (Nordenskiold, 1893, p. 97 and Plate XXXVI number 10). A handle in the American Museum of Natural History, catalogued "from Mesa Verde or Grand Gulch regions" (H/10104), resembles a heavy straight digging stick with a concavity in one side of the lower end, wrappings of sinew and yucca leaf strips hold the butt end of the blade snugly in the prepared groove. The blade in this instance is of mountain sheep horn fashioned in the shape of a "skinning knife."

Handstones—rubbing and smoothing stones (Plate XXXI a): small river boulders were found in all sites; perhaps many of these were collected as suitable raw material for particular artifacts (axes, hammerstones, pecking stones, polishing stones), but were never altered nor used; others show wear on one or more surfaces, exceptional examples have been ground to the appearance of one-hand manos.

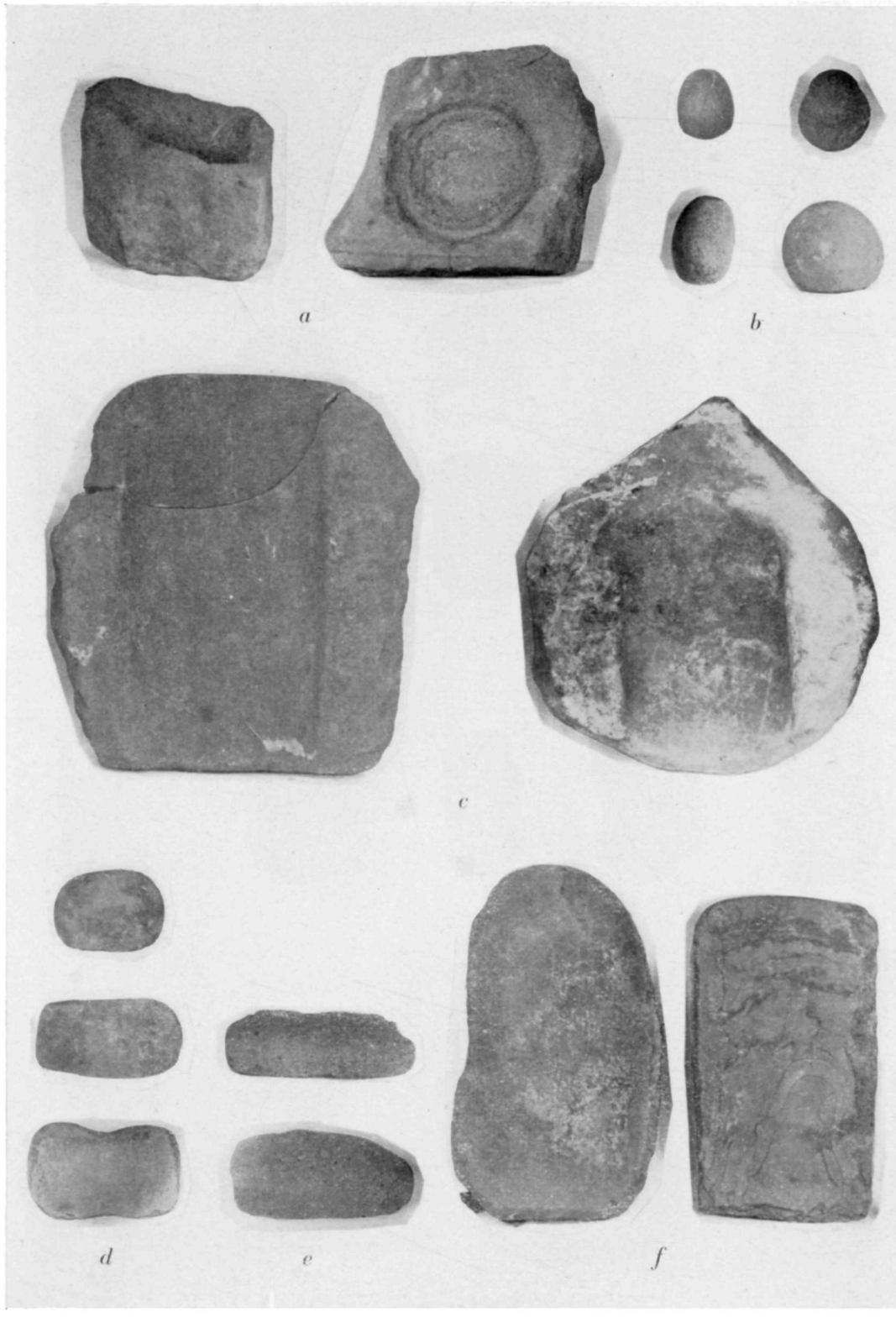
Arrowshaft straighteners (Plate XXXI b): two small slabs of sandstone, each containing a single perforation, were found in Site 34. They may have been used to realign warped arrowshafts.

Arrowshaft smoothers (Plate XXXI c): small tablets of exceptionally gritty sandstone, with a longitudinal groove in one surface, were found in the pueblos at Sites 102 and 1, and in Site 34.

Pot lids (Plate XXXI d): thin discs of sandstone, shaped by chipping and often smoothed by grinding, were found in all sites excavated; one was in place, covering the mouth of a Mancos Black-on-white jar, in the Site 1 pueblo. A single well-polished specimen of igneous rock was recovered from Site 34.

Niche covers (Plate XXXI e): slabs of sandstone, chipped and ground to an even rectangular shape, were occasional finds in Site 34. Similar objects have been found in place, closing wall niches in kivas, in several Mesa Verde cliff-dwellings.

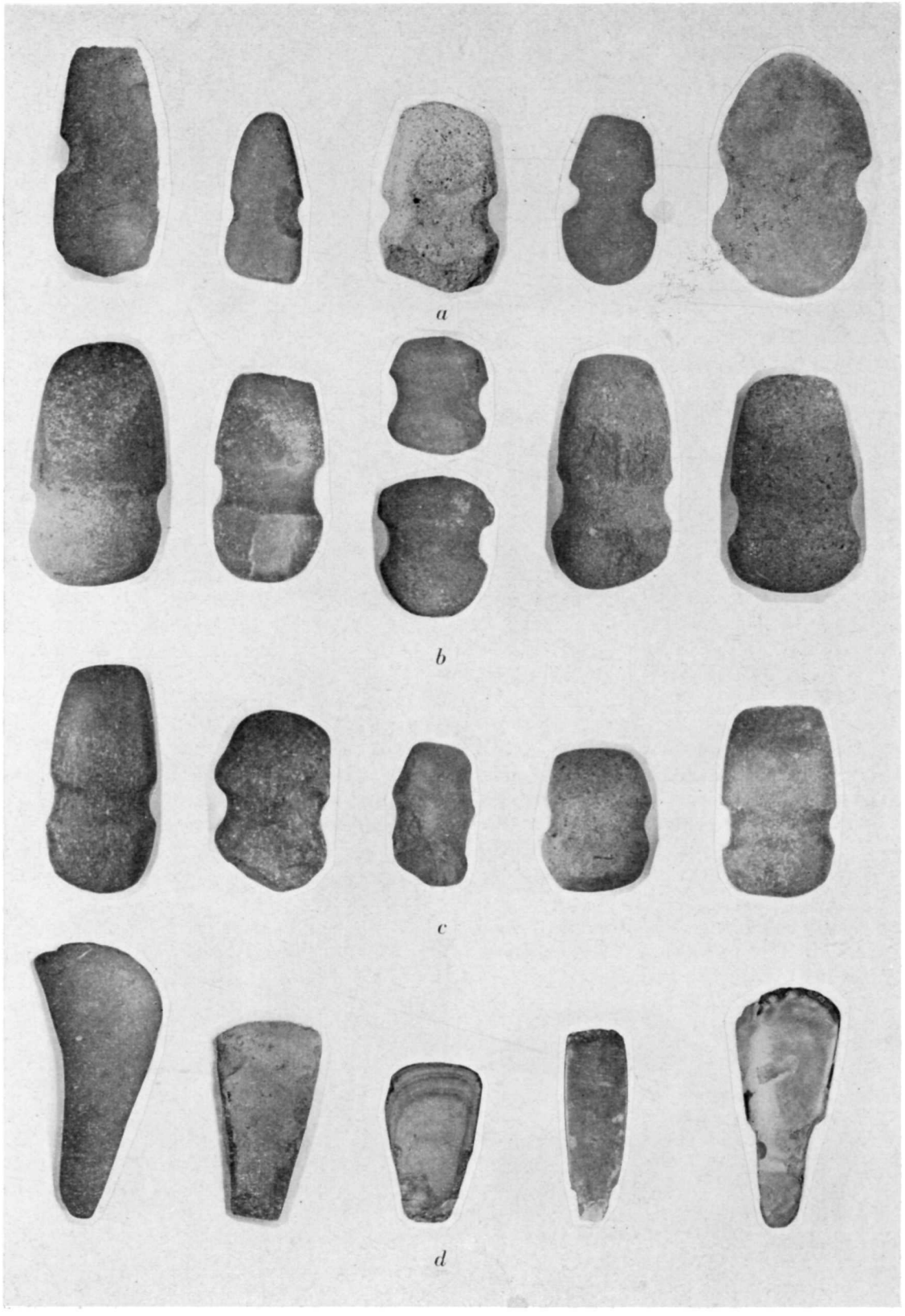
Sandal lasts (Plate XXXII a): one complete and two fragmentary "flat stones, shaped like 'jog-toed' sandals" (Kidder and Guernsey, 1919, p. 105), were found in Site 34; two were of sandstone, one of hornstone. Kidder and Guernsey believed the artifacts to be convenient, if non-essential, patterns for sandal manufacture. Morris is of the opinion "that there is a definite rela-



STONE OBJECTS FROM THE EXCAVATIONS

a Mortars: Site 34.
b Pestles: upper left, Site 145; upper right and lower pair, Site 34.
c Troughed metates: first, Site 102 Pueblo; second, Site 102 Village.
d Manos: top and center, Site 102 Village; bottom, Site 1 Pueblo.
e Beveled manos: Site 34.
f Flat metates: first, Site 102 Pueblo; second, Site 34.

Scale: One-eighth natural size.



STONE OBJECTS FROM THE EXCAVATIONS

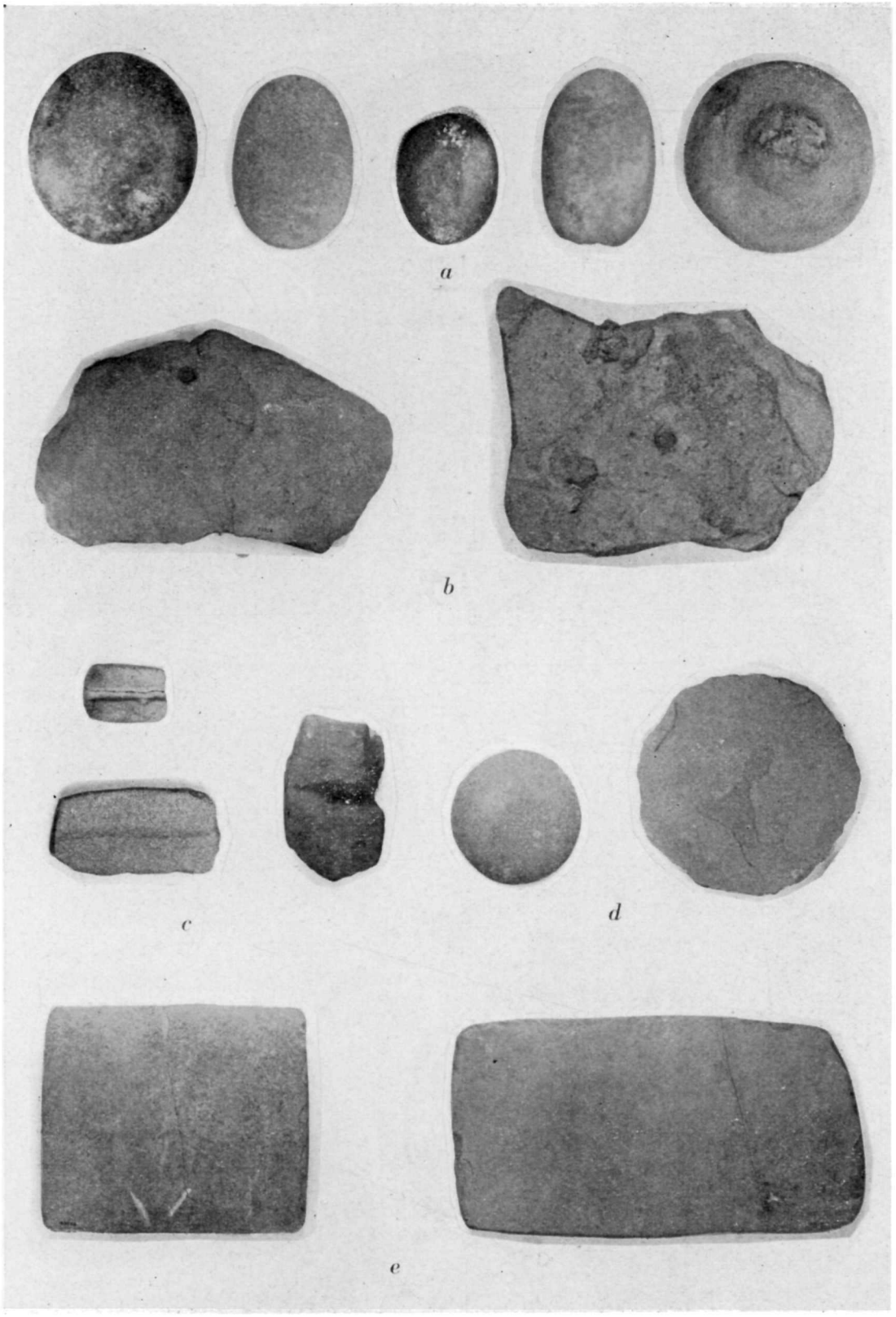
a Notched axes: first, Site 34; second, Site 1 Village; third, Site 34; fourth, Site 102 Village; fifth (doublebitted), Site 34.

b Grooved axes: Site 34.

c Grooved axes: Site 34.

d "Skinning knives": first, slate, Site 34; second, hornstone, Site 34; third, hornstone, Johnson Canyon, southwestern Colorado; fourth, slate, White Mound, northeastern Arizona; fifth, hornstone, east side of Lukachukai Mountains. (Last three are in Gila Pueblo collections.)

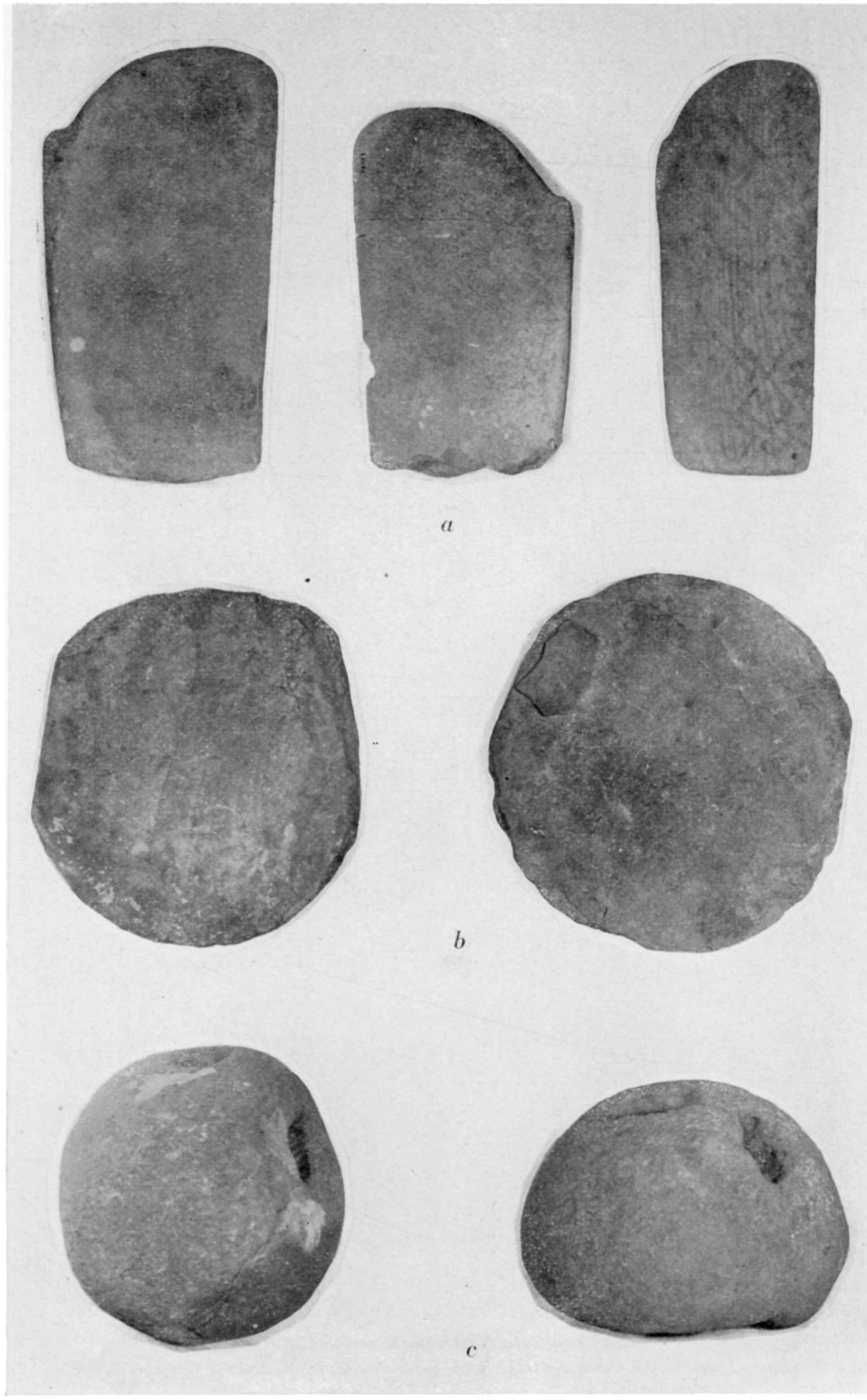
Scale: One-quarter natural size.



STONE OBJECTS FROM THE EXCAVATIONS

a Handstones: first, Site 34; second, Site 102 Village; third, Site 145; fourth, Site 102 Village; fifth, Site 34.
b Arrow straighteners: Site 34.
c Arrow smoothers: upper and lower left, Site 34; right, Site 1 Pueblo.
d Pot lids: Site 34.
e Niche covers: Site 34.

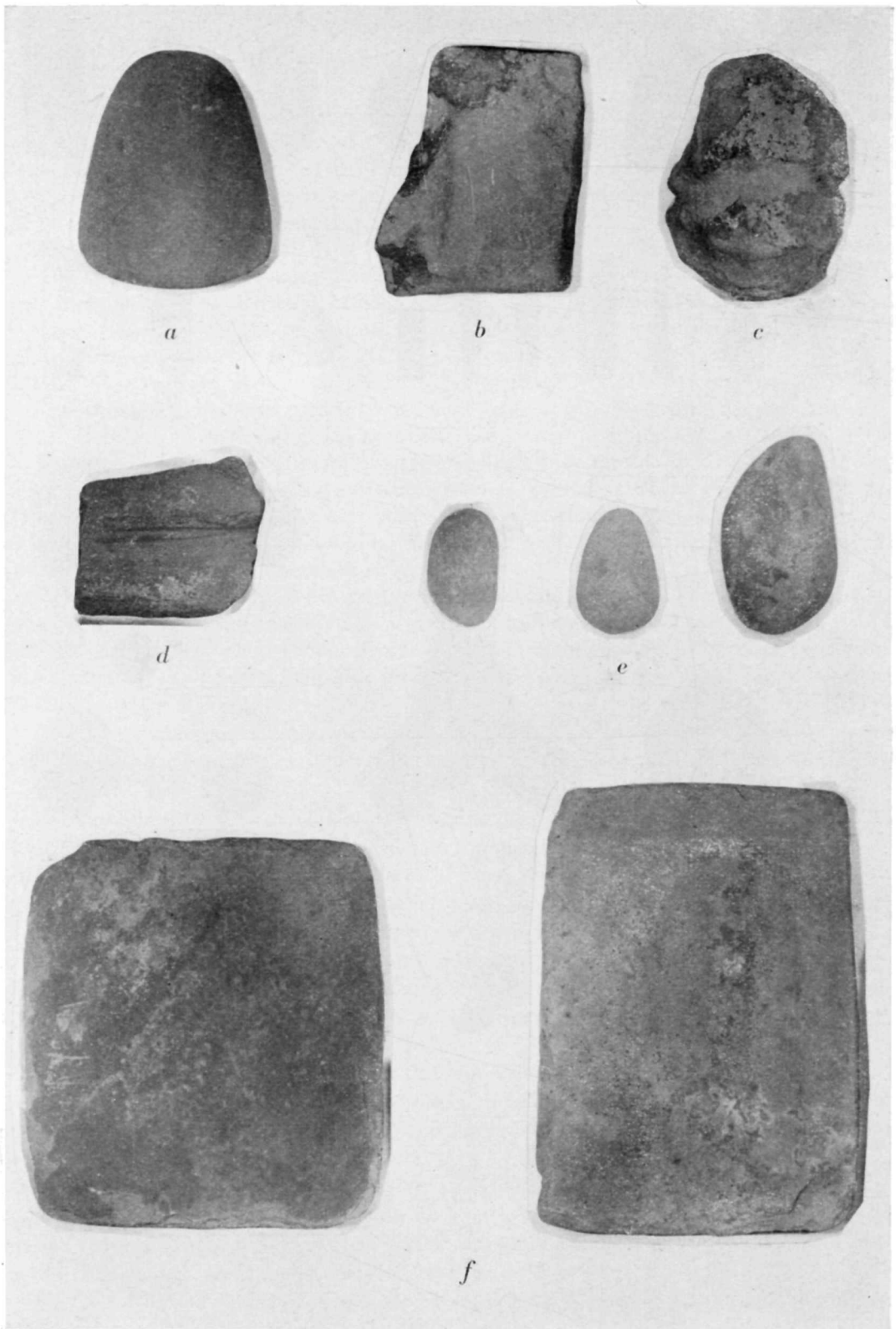
Scale: One-quarter natural size.



STONE OBJECTS FROM THE EXCAVATIONS

a Sandal lasts: first and third, Mesa Verde Museum collections; second, Site 34.
b Cooking slabs: Site 34.
c Perforated sandstone balls; Site 34.

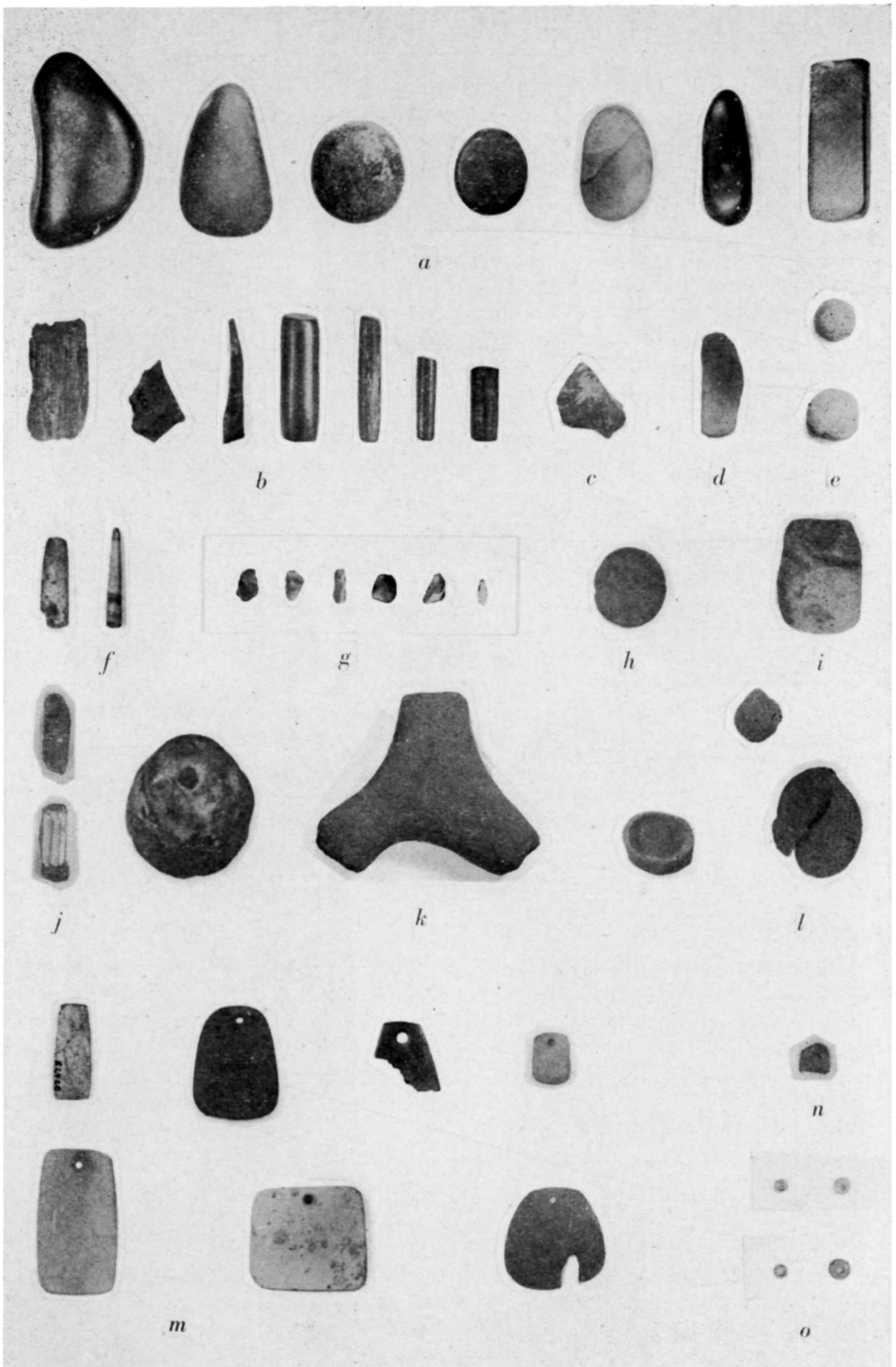
Scale: One-quarter natural size.



STONE OBJECTS FROM THE EXCAVATIONS

a Corn-mound: Site 34.
b Axe-sharpener: Site 34.
c Heavy maul for quarrying stone: Site 34.
d Awl and scraper sharpener: Site 34.
e Floor polishers: first and second, Site 102 Village; third, Site 145.
f Doors: Site 34.

Scale: One-eighth natural size.



STONE OBJECTS FROM THE EXCAVATIONS

a Polishing stones: first, Site 145; fifth, Site 102 Pueblo; others, Site 34.
b Hematite (iron ore): first, Site 1 Pueblo; second, Site 145; others, Site 34.
c Galena (lead ore): Site 102 Village. *d* Ochre: Site 102 Pueblo. *e* Azurite (copper ore): Site 34.
f "Medicine" sticks: first, Site 34; second, White Mound, northeastern Arizona (Gila Pueblo collections)
g "Medicine" stones: Site 34. *h* Incised pebble: Site 102 Village. *i* Sawed pebble: Site 102 Pueblo.
j Quartz crystals: Site 34. *k* Concretions: first, Site 102 Pueblo; second, Site 34; third, Site 102 Pueblo.
l Fossil shells: upper, bivalve, and lower, gastropod, Site 102 Village.
m Pendants: top row—first, Site 145; second, Site 102 Village; third, Site 145; fourth, Site 34; bottom row—first, Site 1 Village; second, Site 34; third, Site 102 Pueblo. *n* Turquoise: Site 34. *o* Beads: Site 34.

Scale: *a* through *l*, one-half natural size; *n* through *o*, natural size

tionship between jog-tied sandals and the stones in question. . . . Neither . . . occurs outside the San Juan region but both are present throughout its area" (Morris, 1939, p. 132).

Cooking slabs (Plate XXXII b): large sandstone discs, rarely complete, were found in all sites excavated. Many could have served as covers to wide-mouthed jars; however, all were reddened by burning, and all had smoothed flat surfaces.

Perforated sandstone balls (Plate XXXII c): six of these unusual objects were found in Site 34. At least one other example was found in 1915 in a neighboring cliff-dwelling, Oak Tree House; it is not mentioned by Fewkes but I remember seeing the artifact during the 1920's, grouped at the front of the cave with other heavy stone objects, such as metates, floor polishers, and a "corn mound" (Fewkes, 1916 b, p. 112).

Corn mound—corn goddess or phallic symbol (Plate XXXIII a): two examples, carefully smoothed sandstone cones with rounded tops, were found at Site 34. A fragmentary specimen was recovered from the fill of Kiva IV. A complete corn mound had been left on the floor in a corner of Room 4; it had a flat bottom, and a small hole drilled in the top.

Axe sharpeners (Plate XXXIII b): troughs worn into the surfaces of sandstone ledges and boulders are of common occurrence near many Mesa Verde ruins, particularly around the late cliff-dwellings. Several axe or "skinning knife" sharpeners were found at Site 34, each a single trough worn into a sandstone of building block size.

Awl sharpeners (Plate XXXIII d): narrow grooves and slots occur in the same locations as the axe sharpening troughs, and in conjunction with them. Small blocks of soft sandstone were found in Sites 102, 1, and 34, which were cut by one or more straight grooves. One large block from Site 34 was almost cut in two by a long wide groove, perhaps worn by the sharpening of bone scrapers and antler points and chisels.

Abrading stones (not illustrated): several small blocks of gritty sandstone show evidence of wear on one or more surfaces; examples were found in Site 145, the pueblos at Sites 102 and 1, and Site 34. A few abrading stones from the last-mentioned ruin were ground to pebble size.

Floor polishers (Plate XXXIII e): flat river boulders, varying in diameter from 15 to 30 cm., were encountered in all sites excavated, although common only in Site 145.

Doors (Plate XXXIII f): one oval slab of sandstone, probably a hatch cover, was found in Site 145. Thin sandstone slabs, pecked and ground to a rectangular shape, were found in the Site 102 village pit-houses and in the pueblo kiva, and throughout Site 34. In the earlier sites such slabs may have served a double purpose: to seal off the ventilator shaft, and, in the pit-houses, to serve as a cold air deflector when placed between the fireplace and the ventilator opening. No shaped slabs were in place in doorways in Site 34; however, several were found on room floors near doorways which they fitted

Polishing stones—pot polishers (Plate XXXIV a): "small, smooth pebbles . . . used to finish the surfaces of pottery vessels after they have been moulded, sun-dried and slipped, but before they are decorated and fired" (Kidder, 1932, p. 63 a and fig. 40), were found in all sites excavated; they were plentiful only in Site 34.

Hematite sticks—paint cylinders (Plate XXXIV b): "paint cylinders of hematite or similar iron oxides . . . gradually shaped from larger stones by grinding from them dust to be used as pigment" (Morris, 1939, p. 131), were found in Site 34. Small hematite pebbles were recovered from Sites 145, and the pueblo and village at Site 102.

Lead ore—galena? (Plate XXXIV c): two small pieces were found during the course of the excavations, one each in the villages of Sites 102 and 1.

Ocher (Plate XXXIV d): a number of pebbles were found in Site 34; all show signs of rubbing, one is worn almost to marble roundness.

Azurite (Plate XXXIV e): three worn, spherical pebbles were found with several other objects (a quartz crystal, two hematite sticks, a broken pendant), in Room 27 of Site 34.

Fetish—"medicine cylinder" (Plate XXXIV f): a single finger-shaped stick of banded limestone was found in Site 34. It was ground smooth and, though slightly tapered, it resembled a hematite stick in size and shape. No stone carvings were found during the course of the excavations.

Medicine stones (Plate XXXIV g): tiny pebbles of hard stone, polished apparently by long contact with each other (in a medicine pouch?), were numerous in Site 34. Some specimens, though rubbed smooth, still retained the form of haphazard flakes and chips, others are so worn that they resemble closely the stones from a turkey's gizzard, and that may be just what they are. Two examples had been small chipped points, wear had almost obliterated the fracture scars.

Incised pebble (Plate XXXIV h): a rounded fragment of sandstone, incised with a full groove, was found in the Site 102 village.

Sawed pebble (Plate XXXIV i): a small block of gritty sandstone had been cut in two, joining grooves outlined the fractured end.

Quartz crystals (Plate XXXIV j): two small examples, with fractured bases, were recovered from Site 34. Neither showed signs of wear.

Concretions (Plate XXXIV k): pebbles or boulders of sandstone, of odd shape or conspicuous because of an iron oxide deposit, occurred in all sites excavated, they were particularly common in Site 34. Several showed traces of use: a tube-shaped deposit of iron ore in sandstone, from the pueblo at Site 102, had ends pitted naturally. Apparently the pits had been evened, and perhaps used as a mount for drilling beads. A small cup-shaped concretion, found in the Site 102 pueblo, showed signs of wear. A wedge-shaped concretion of hard sandstone, found in Site 34, had wear striations on the thin edge.

Stalactite (not illustrated): a section of brown lime formation, about the size and shape of a finger, was picked up on the surface of Site 34.

Fossils (Plate XXXIV l): hard gray shell casts of a small bivalve were found in the village and pueblo of Site 102 and in Site 34. A sandstone cast of a strongly spiralled gastropod was recovered from the Site 102 village.

Gypsum crystal (not illustrated): a whitish tabular fragment, unworked, was found in the debris mound at Site 34.

Igneous rock (not illustrated): several crumbly fragments were found in Site 34; presumably this rock, when pulverized, would have made a satisfactory pottery temper.

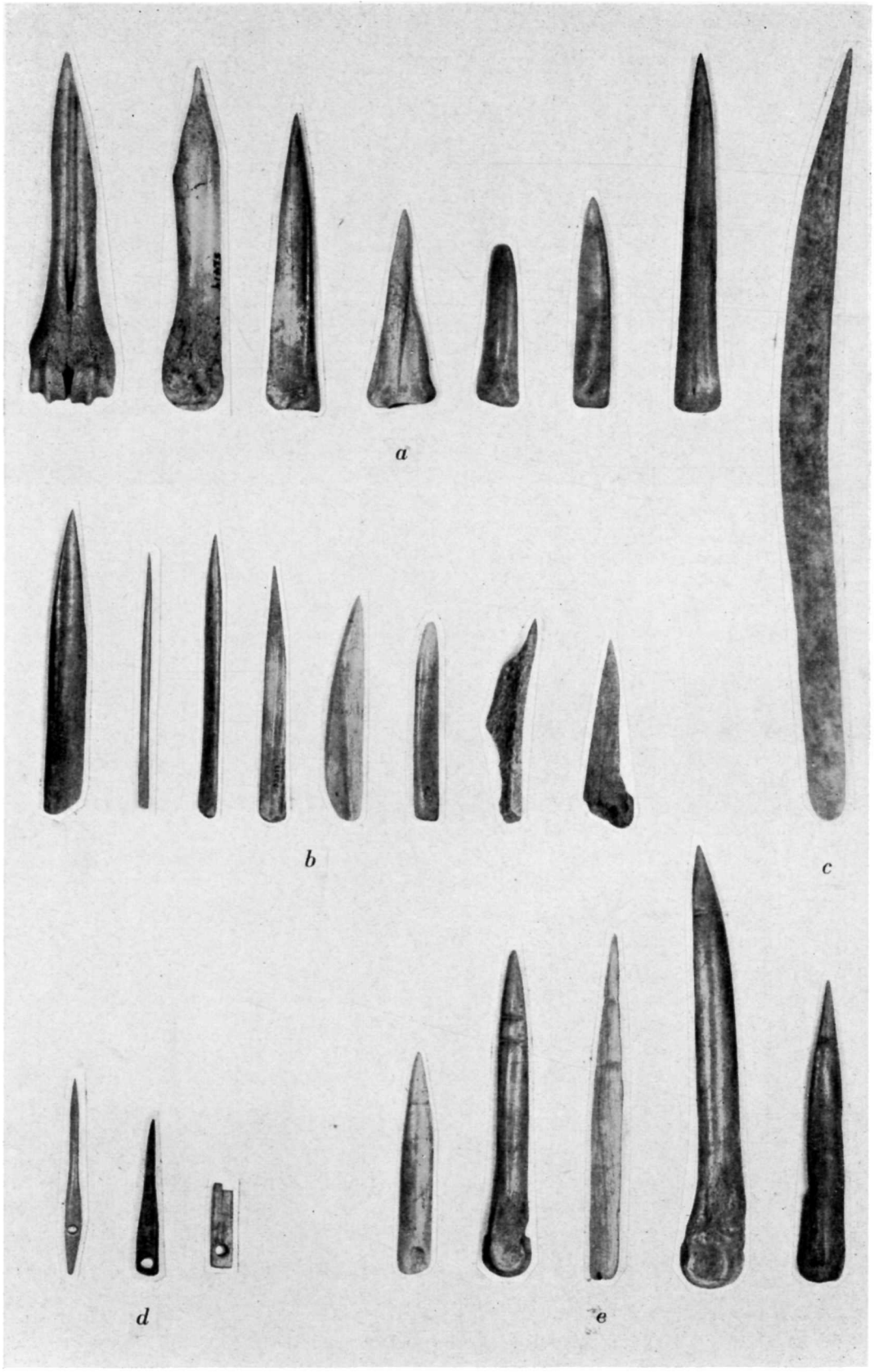
Pendants (Plate XXXIV m): finished pendants and undrilled blanks, thin rectangular sections of a fine-grained red or white stone or hematite, were found in all ruins excavated excepting the pueblo at Site 1.

Turquoise (Plate XXXIV n): one smoothed chip was picked up on the surface of debris mound at Site 34.

Beads (Plate XXXIV o): small disc beads of red, white, or gray stone were found on surface of debris mound at Site 34.

Bone

Artifacts fashioned from animal bones were found in all sites; implements made of bird bone were found in the pueblos at Sites 102 and 1, and at Site 34. The last-mentioned ruin furnished an unusually rich collection of bone accessories. Kidder's classification (1932) is followed insofar as it is applicable. Appendix C lists bone identifications.



BONE OBJECTS FROM THE EXCAVATIONS

a Bone awls of deer metapodial with joint unaltered: first, Site 34; second, Site 145; others, Site 34.

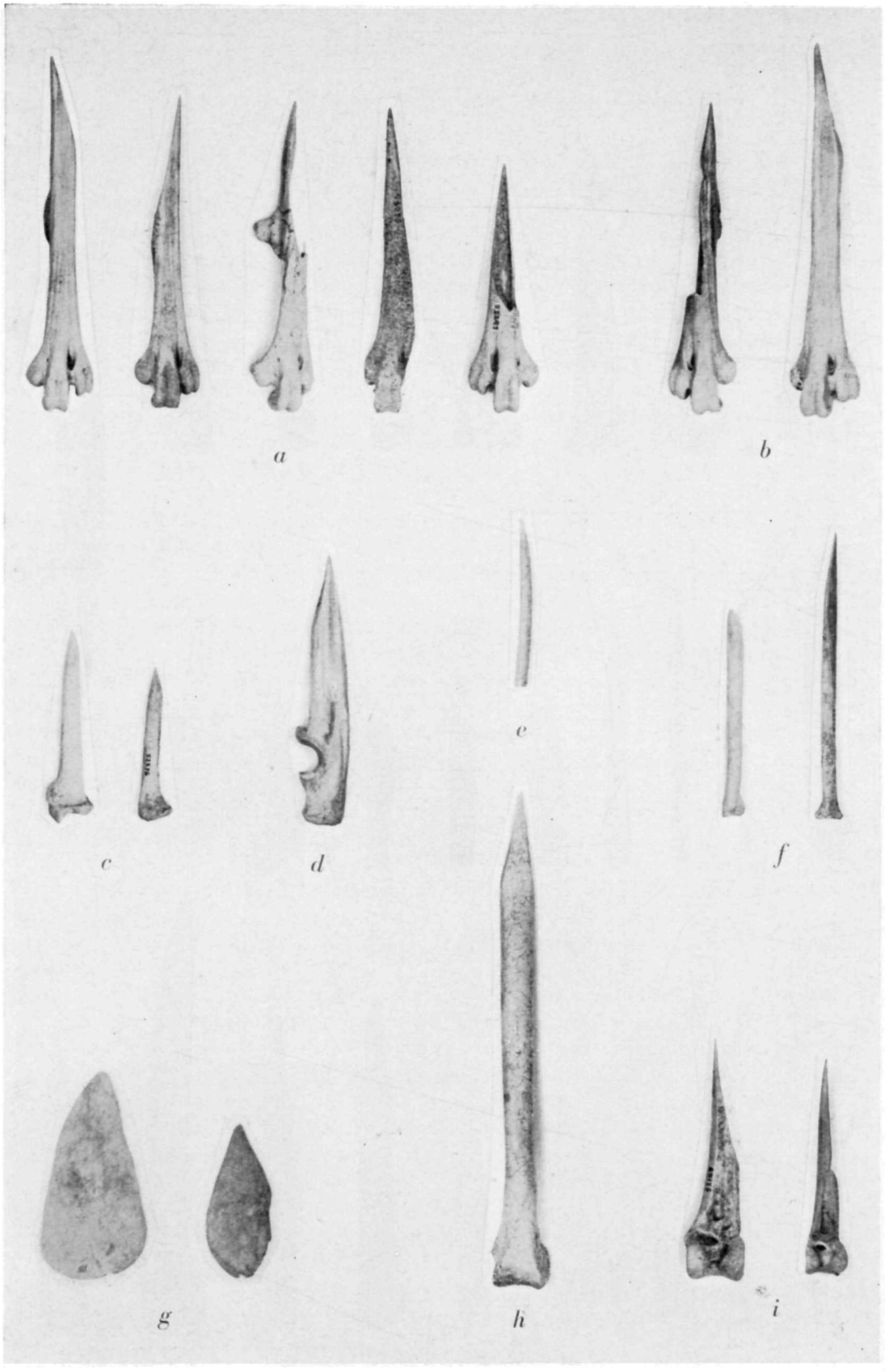
b Splinter awls of deer metapodial with joint removed: from Site 34; first six, shaped overall; others, rough splinters, with finished points.

c Awl of mammal rib: Site 102 Pueblo.

d Needles of mammal bone: first and third, Site 34; second, Site 102 Village.

e Weaving tools: Site 34.

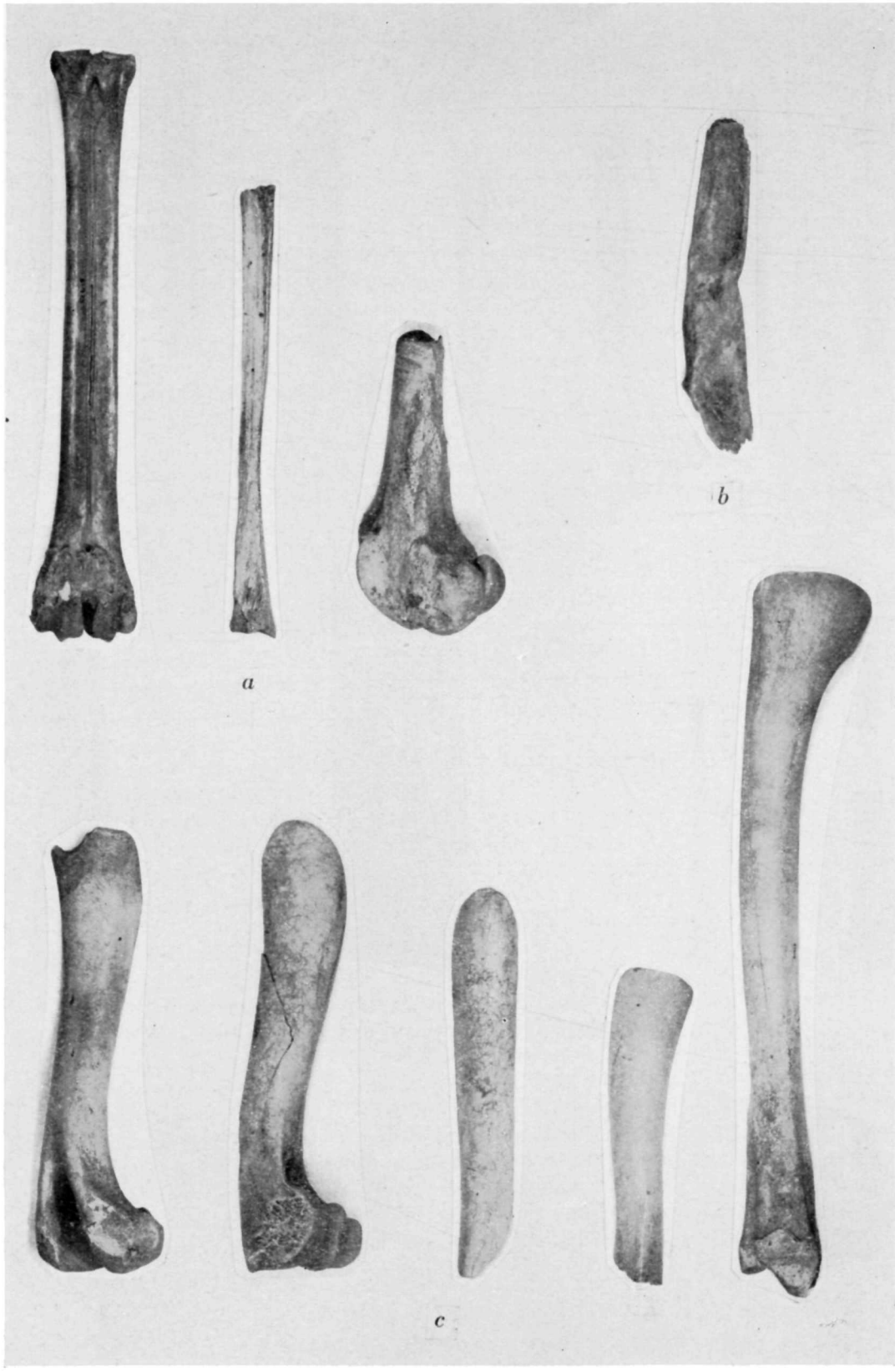
Scale: One-half natural size.



BONE OBJECTS FROM THE EXCAVATIONS

a Turkey bone awls: Site 34.
b Turkey bone weaving tools: Site 34.
c Awls of mammal leg bones: Site 34.
d Awls of mammal ulna: Site 34.
e Awl of bird bone: Site 34.
f Awls of rabbit bone: Site 34.
g Bone spoons (?): Site 102 Village.
h, i Awls of turkey bone: Site 34.

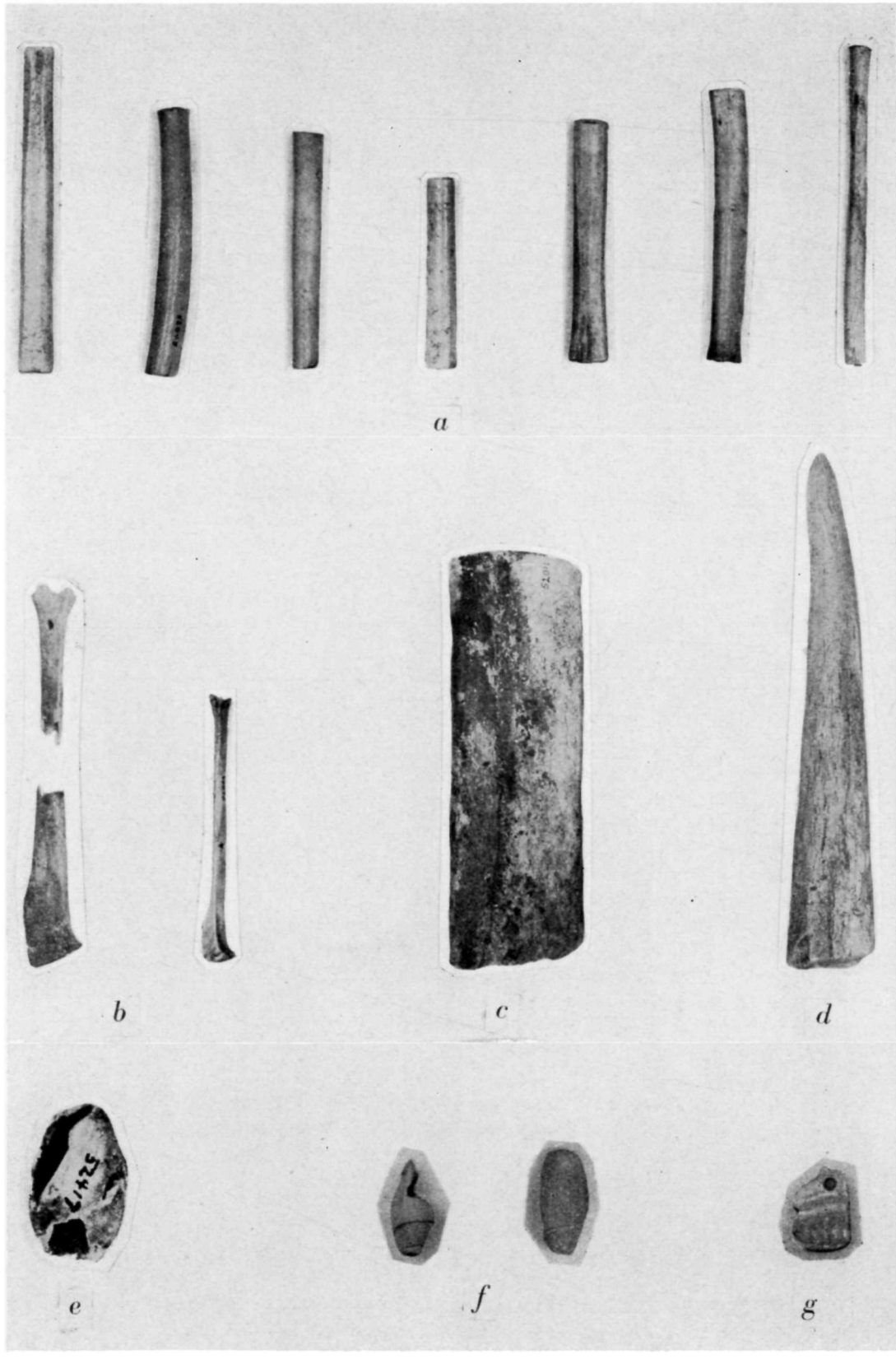
Scale: One-half natural size.



BONE OBJECTS FROM THE EXCAVATIONS

a Worked bones of deer: Site 34.
b Rubbing tool of deer scapula: Site 34.
c Bone scrapers of deer: Site 34.

Scale: One-half natural size.



BONE, ANTLER, AND SHELL OBJECTS FROM THE EXCAVATIONS

a Tubes of turkey and rabbit bone: Site 34.
b Tinklers (?) of rabbit bones: first (jack rabbit), Site 102 Pueblo; second (cottontail), Site 34.
c Chisel of antler: Site 34.
d Flaker of antler: Site 34.
e Oliva shell: Site 145.
f Olivella shells: Site 34.
g Shell pendant: Site 34.

Scale: *a* through *d*, one-half natural size; *e* through *g*, natural size.

"As to the specific uses of awls of various classes, little can be said. There can be no question that they were used most commonly in piercing hides or tough fabrics preparatory to sewing and in the manufacture of coiled basketry, but indubitably they also had a multitude of minor functions" (Morris, 1939, p. 119).

Awls of mammal leg bones (Plates XXXV a and b, XXXVI c, d, and f), usually deer metapodial, were found in all sites. Examples with the head (articulation, joint, condyle) of the bone intact were found in Site 34. Implements made from bone halves, after the metapodial had been split longitudinally through the heads and shafts, were found in all sites (the only bone awl from Site 145 is of this type); such awls are especially representative of the Basket Maker II and III periods, although they persist to historic times (Kidder, 1932, fig. 171). Site 34 furnished several specimens showing the head of the bone partly worked and smoothed. Excepting Site 145, awls made of bone shafts (with the heads completely removed) were found in all the ruins excavated. A number of splinter awls were found in Site 34, rough slivers of bone with one end pointed.

Awls of mammal ribs were not common (Plate XXXV c); a set of three from the kiva at Site 102 were the only examples found.

Needles (Plate XXXV d) are represented by rare finds in the pueblos at Sites 102 and 1, and Site 34. Each was carefully shaped from a splinter of a mammal bone shaft.

Weaving tools (Plates XXXV e and XXXVI b): a number of bone awls are marked with one or more transverse grooves near the pointed ends; all of these specimens bear high polish from wear.

Awls of leg- and wing-bones of birds (Plate XXXVI a, e, h, and i), usually turkey, were rare finds in the pueblos at Sites 102 and 1, and extremely common in Site 34. Three turkey burials were uncovered in the Site 102 village: "In remains from the early horizons, if one comes upon the bone of a turkey, almost always it will be found in position . . . indicating definite interment. In contrast, scattered turkey bones are to be expected in Pueblo III refuse deposits" (Morris, 1939, p. 120). While agreeing with Morris, I want to point out that the evidence from the pueblos at Sites 102 and 1 suggests that turkeys were eaten, and their bones used for implements, in the Mancos Mesa Phase.

Awl spatulas—spoons? (Plate XXXVI g): two were found in the Site 102 village, both fashioned from fragments of deer bone.

Worked bones (Plate XXXVII a): many bones showing signs of transverse or longitudinal sawing were found in Site 34. Undoubtedly some are fragments discarded after the usable section of bone had been secured; others represent artifacts in different stages of manufacture.

Rubbing tool (Plate XXXVII b): a smoothed section of deer scapula, bearing an encircling groove near the center, was found in Site 34. It could have been used to soften and straighten yucca fibre in the manufacture of cordage.

Scrapers (Plate XXXVII c): all examples are from Site 34. A single deer-scapula scraper was found; all others were end scrapers "with broad spoon-like blade . . . perhaps the most distinctive bone implement from the San Juan country" (Morris, 1939, p. 121).

Bone tubes, "turkey calls" (Plate XXXVIII a): cut and smoothed sections from the shafts of bird and rabbit bones were common finds at Site 34; none was found in the other ruins excavated.

Perforated bones, "tinklers" (Plate XXXVIII b): rabbit leg bones, with proximal ends evened and ground until the bone cavities were exposed, and with single perforations in the shafts, were found in the Site 102 pueblo and Site 34. Specimens from the earlier ruin are all of jack-rabbit, both of jack-rabbit and cottontail from the later. An example in the Mesa Verde Museum, from a cliff-dwelling, has a cord inserted through the opening in the ground end, and secured by a simple knot tied on the outside of the perforation. It could not have been used as a whistle; it may have been attached to a skirt or shawl and, in company with similar objects, served as a tinkler.

Antler

Although deer bones, both unworked and fashioned into artifacts, were plentiful in all sites excavated, fragments and implements of antler were very rare. Exposed to weathering conditions, antler does not preserve as well as bone; only eight specimens were found, all in Site 34.

Chisel or scraper (Plate XXXVIII c): a rectangular slab cut from an antler shaft (probably softened by boiling until it could be flattened), ground at both ends to form wide cutting edges, was found behind a beam still resting on a pilaster in Kiva III.

Flakers or awls (Plate XXXVIII d): "This term is used for convenience, the true purpose of the implements being uncertain" (Kidder, 1932, p. 282). Three of these heavy awls were found, two near the fireplace in Kiva I and one on the floor of Kiva III.

Anvil for flaking stone? (not illustrated): a short section of antler shaft, bearing a number of haphazard transverse cuts and scratches, was found in the northeast niche of Kiva III.

Unworked antler (not illustrated): a complete five-tined specimen was found on the floor of Kiva IV. Two broken sections were recovered from the debris mound.

Shell

Fossil shells have been described with objects of stone. Only five marine shell specimens were recovered from the excavations: two in Site 145, three in Site 34.

Oliva shell (Plate XXXVIII e): one example, with the apex of the spire ground away to permit stringing, was found in the southeast storage bin of Pit-House II, Site 145.

Olivella shell (Plate XXXVIII f): two were found in the debris mound at Site 34; both had been prepared for stringing.

Pendants (Plate XXXVIII g): the single mortuary offering with Burial 1, Site 145, was a button with a perforation through the center. It was made from the central section of a glycimeris or similar shell. A small rectangular pendant, shaped from a fragment of an unidentifiable shell, was found in the debris mound at Site 34.

Land shells: none was found that appeared to have been used in prehistoric times. A number of very small (average diameter approximately 2.5 mm.), tightly spiralled, flat snail-like shells were noticed under the slabs which covered several of the burials at Site 34.

CHAPTER X

ASSOCIATED POTTERY

POTTERY types are treated elsewhere in Chapter IV where ruin surveys are described, and in Appendix B where sherd counts for individual sites and structures are tabulated. In this chapter I group wares which are similar, rather than attempt to search for stray intrusive examples which may have been heirlooms or copies. Some specialists may recognize an occasional Gallup or Black Mesa Black-on-white specimen in the illustrations of Mancos Black-on-white sherds.

Two new wares are named in conformance with the binary system.[1] One of them already has been recognized; the second is based on slender evidence (a handful of sherds), but it is distinctive enough to warrant identification.

Odd sherds and rare debatable intrusives have been accounted for in Chapters V–VIII describing the excavations, and in Appendix B. Incised, punctate, and red-wash specimens could easily reflect the whims of individual potters, as well as show influence from an unknown foreign source; the possible examples of Mogollon Red-on-brown and Ramos Polychrome, from Site 34, are not sufficiently clear cut to establish unquestionable contact with southern New Mexico and northern Chihuahua, although their presence suggests that possibility.

The technological studies which Miss Shepard has made of sherd samples from the Mesa Verde excavations are included in this chapter. Our studies were made independently; our conclusions are kept separate in order to strengthen agreements and emphasize disagreements.

Miss Shepard's findings on the paste of early pottery[2] are as follows:

"A small series of sherds from early deposits was examined with the binocular microscope in order to ascertain the proportion of rock-tempered pottery. The samples were too small for statistical summary by type, but the following outline will indicate the frequency of the two main tempering materials:

"Site and Types	Temper: Rock	Temper: Sand
"Site 145, Pit II, B. M. III, dates *664* Lino Gray, Twin Trees Polished, La Plata Black-on-white	27	6
"Site 102, Pueblo I, slab rooms, dates *840* Lino Gray, Kana-a Gray, B. M. III and Pueblo I Black-on-white	32	0
"Site 1, Pueblo I, slab rooms, dates *840* Lino Gray, Kana-a Gray, B. M. III and Pueblo I Black-on-white	18	2

"Only one other paste occurred among these types. It contained a mixture of sherd and rock and was represented by four black-on-white pieces from the Site 1 village. There is no clear differ-

[1] Simpson, 1945, p. 27. The binominal system of Gladwin, 1930; Kidder, 1932, p. xxv.

[2] Shepard, statement in correspondence, July, 1949.

ence in the ratio of rock- and sand-tempered pastes in the various types within the three sites. The rock is intermediate in composition, consisting largely of feldspar with some prisms of pyroxene and hornblende. It is porphyritic or holocrystalline in texture, and with the binocular microscope is indistinguishable from the rock temper of La Plata pottery which was classified as andesite and diorite. The sand is variable, but generally subangular, coarse and sparse. A fine-grained abundant sand is associated with ferruginous particles.

"The small sample of B. M. III and P. I pottery which I examined was distinctly heterogeneous in appearance. Spreading quality of paint, weight of line, scale of design, quality of line work and class of elements all varied within wide limits. Lack of uniformity may reflect an experimental period preceding the establishment of standards of workmanship and style or it may result from the mingling of indigenous and imported pottery from different sources. Igneous rock could be obtained on Mesa Verde from pebbles in an ancient gravel deposit, but this fact does not in itself dispose of the question of intrusives. It may be of interest, therefore, to compare the paste of B. M. III Black-on-gray from neighboring regions:

"Region	Temper	
	Rock	Sand
"La Plata district		
Paint: 33 iron oxide, 67 organic	99	1
"Red Rock, vessels from collections of Dr. E. H. Morris and University of Colorado		
Paint: 27 iron oxide, 1 organic	25	3
"Durango, four sites		
Paint: 2 iron oxide, 5 organic, 34 lead glaze	11	30
"Shabik'eshchee village, Chaco Canyon		
Paint: 18 iron oxide, 1 organic	1	18

"In the two regions having a strong preponderance of rock-tempered pottery, rock was available locally; in the La Plata valley as drift boulders, and in the Red Rock district as cobbles from the Carrizo mountains in the bed of Red Wash. To complete the record, it may be noted that plain ware in the La Plata corresponds in paste to the painted ware; but in the Red Rock district plain ware is mainly sand-tempered. A possible explanation is that the production of painted ware in the latter district was restricted to the settlements near Red Wash, and plain ware was made throughout the region. In Chaco Canyon where rock-tempered B. M. III pottery is rare, there is no reported source of intrusive rock, and it is a reasonable inference that the one single example found among sherds from Dr. Robert's excavation came from either the La Plata or the Red Rock district. The situation in the neighborhood of Durango is less clear. The pottery decorated with a thin and spotty lead glaze in vegetal medium is present in notable proportion, and has been considered an indigenous variety of B. M. III, because lead ores occur in this district and not in others. The two kinds of tempering material could, of course, have been used by Durango potters; but the lead ore may also have been secured by people of other districts, and in either case there was doubtless more-or-less trade. Only three lead-glaze paints were included among the Mesa Verde sherds examined, and these were rock-tempered. If the lead glaze variety of B. M. III in the La Plata valley is all rock-tempered, the hypothesis of multiple centers of production would gain support.

"The distribution of paint types in the area under consideration can be roughly sketched. The La Plata valley is divided, with organic paint characteristic of the section north of the state line where most of the B. M. III sites are located and iron oxide paint preponderating in the south.

The latter paint is typical of Mesa Verde on the North, Red Rock on the West and Chaco Canyon on the South. Occurrences in the Durango district are less certain because the sample studied may have been intentionally selected for glaze paint. The lack of correspondence in paint type between the Upper La Plata and Mesa Verde sites is noteworthy.

"As compared with black-on-white and plain ware, the red ware in the Mesa Verde sample is distinguished by a greater variety of rock temper and also by the appearance of sherd temper in a few pieces of black-on-red types from the Site 1 village. A fine-textured, reddish igneous rock unlike any found in black-on-white pastes is conspicuous and points to a distinct source for at least part of the red ware.

"This preliminary examination can do no more than show that the ceramic picture is complex and draw attention to the question of the ceramic independence of the early Mesa Verde people. There is reason to expect that general, systematic survey will indicate the answer."

Site 145 Village Pottery (Plate XXXIX)

New types

Morris recognized (1936, pp. 35–6), although he did not name, a distinctive pottery ware found in Obelisk, Broken Flute, and other caves in the Red Rock Valley, northeastern Arizona: "light mustard brown to pale light orange, fine grained, rather soft, highly polished over a slightly wavy or dimpled surface . . . sand tempered. Forms: bowls and squash pots." Some pottery from Site 145 (and from Step House) conforms to this description; however, it may not be identical and so merits a local name until proper relationship is determined.

1. Twin Trees Plain.
   Synonym: Lino Polished.
   Area: Southwestern Colorado.
   Type sites: Step House and Site 145, Mesa Verde.
   Paste: fine grained, rather soft.
   Temper: sand.
   Construction: coiled, some molded in baskets.
   Surface: scraped and polished; partially oxidized, color ranges from yellow through orange to brown and gray.
   Forms: bowls, squash pots, jars.
   Type specimens: National Park Service Museum, Mesa Verde, Colorado (Step House and Site 145 collections); Gila Pueblo (two vessels and sherds from Site 145).
   Notes: Four Corners Phase, early to late Basket Maker III (see Conclusions, p. 103). Tree-ring dates: Step House, 625± (Douglass, 1938, p. 12); Site 145, 477+ to *664* (Appendix A).
2. Twin Trees Black-on-white.
   Synonyms: none.
   Area: Mesa Verde, Southwestern Colorado.
   Type site: Site 145, Mesa Verde.
   Paste: fine grained, rather soft.
   Temper: sand.
   Construction: coiled, molded in baskets.
   Surface: scraped and highly polished, inside and out.
   Designs: the same as Lino Black-on-gray, although executed in mineral paint, "usually modified basket or fabric designs, rectilinear. Occasional use of zoomorphic and anthropomorphic figures" (Hawley, 1936, p. 22).

Forms: bowls, sometimes having a thickened rim built up from the top of the basket mold, a characteristic of mud platters.

Type specimens: National Park Service Museum, Mesa Verde (sherds, Site 145 collection); Gila Pueblo (sherds, Site 145 collection).

Notes: Four Corners Phase, early to late Basket Maker III (see Conclusions, p. 103). Tree-ring dates: Site 145, 477+ to *664* (Appendix A).

Named types

A total of 1,099 sherds and vessels were found in the pit-houses and cemetery. The following is a listing of the recognized types, and their approximate percentages of occurrence:

Mud platters, "unfired vegetable reinforced mud bowls" (Morris, 1936, p. 35)	0.5%
Lino Gray; 8 squash pots and jars, 726 sherds	67. %
Twin Trees Plain; 6 squash pots and jars, 1 bowl, 285 sherds	26. %
Lino Black-on-gray; 2 bowls, 53 sherds	5. %
Twin Trees Black-on-white; 10 sherds	1. %
Fugitive Red ware; 4 sherds	0.5%
Smudged Interior ware; 2 sherds	—
La Plata (?) Black-on-red; 1 sherd	—

Sites 102 and 1, Village Pottery (Plates XL, XLI, XLII)

A total of 9,510 sherds and vessels were found in the slab-rooms and pit-houses. No new pottery wares were identified. Rosa Smoothed and Rosa Black-on-gray have been reported from Pueblo I ruins in the Mancos Canyon (Reed, 1944, p. 54); I believe the questionable "Rosa" decorated sherds from the Mesa Verda excavations are within the range of La Plata Black-on-white. Kana-a and Lino Gray type percentages are computed proportionately based on the number of identifying rim sherds found.

Named types

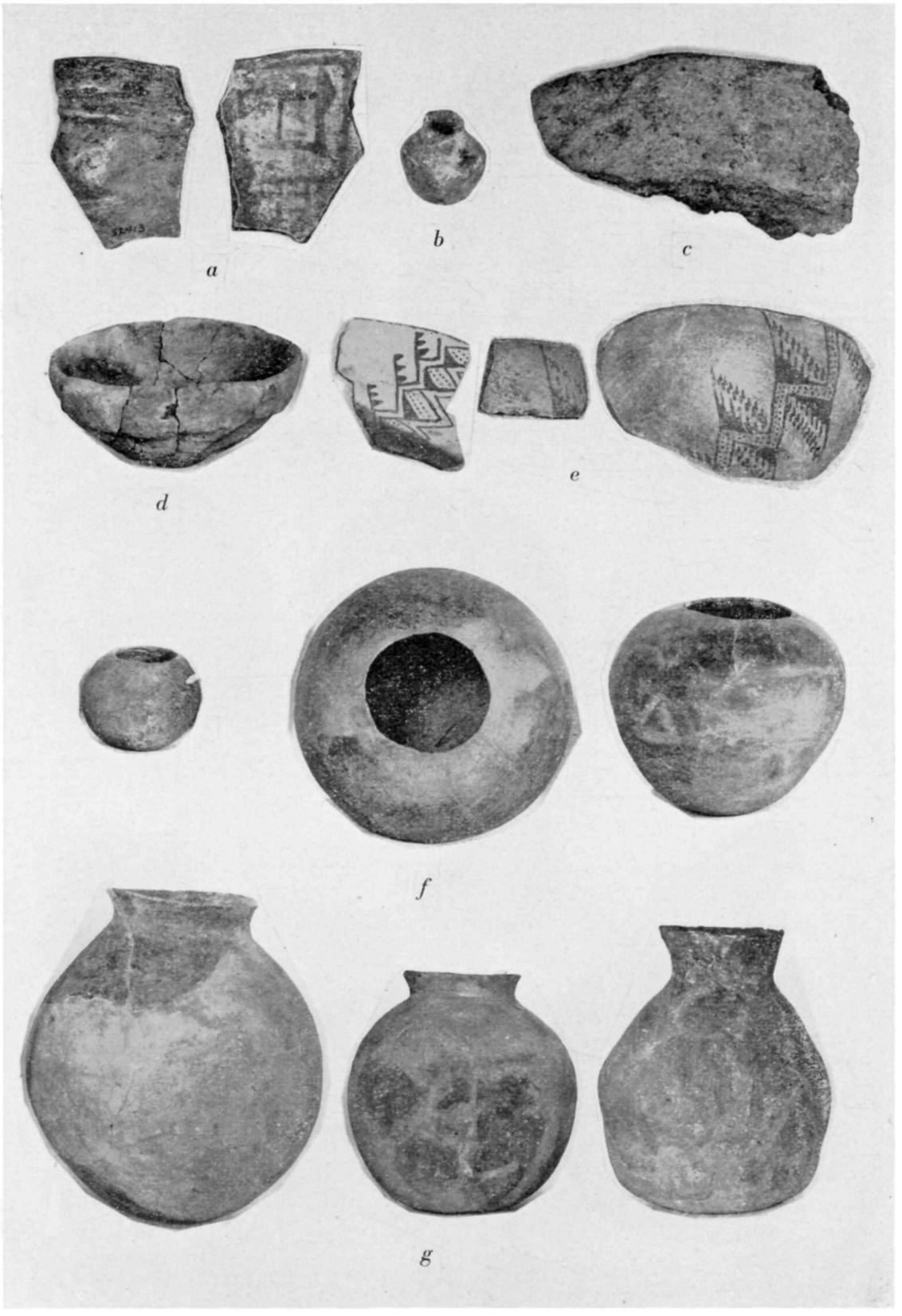
The following is a listing of the recognizable types and their approximate percentages of occurrence:

Lino Gray; 11 jars, 1 platter, 1 pitcher, 5,628 sherds	59%
Kana-a Gray; 16 jars, 3,291 sherds	35%
Twin Trees Plain; 3 sherds	—
Lino Black-on-gray; 41 sherds	0.5%
La Plata Black-on-white; 4 bowls, 1 squash pot, 2 ladles, 200 sherds	2%
La Plata Black-on-red; 1 bowl, 171 sherds	2%
Abajo Red wares; 35 sherds	0.5%
Piedra Black-on-white; 1 pitcher, 1 bowl, 70 sherds	1%
White Mound Black-on-white; 2 squash pots, 21 sherds	—
Fugitive Red ware; 3 sherds	—
Smudged Interior ware; 8 sherds	—

The persistence of pottery types generally identified with the Basket Maker III Period into Pueblo I should be noted: Lino Gray, in the early 800's was the most common local ware; Lino Black-on-gray was almost extinct, but La Plata Black-on-white—with mineral paint, often glazed—persisted in quantity.

Sites 102 and 1, Pueblo Pottery (Plates XLIII, XLIV, XLV)

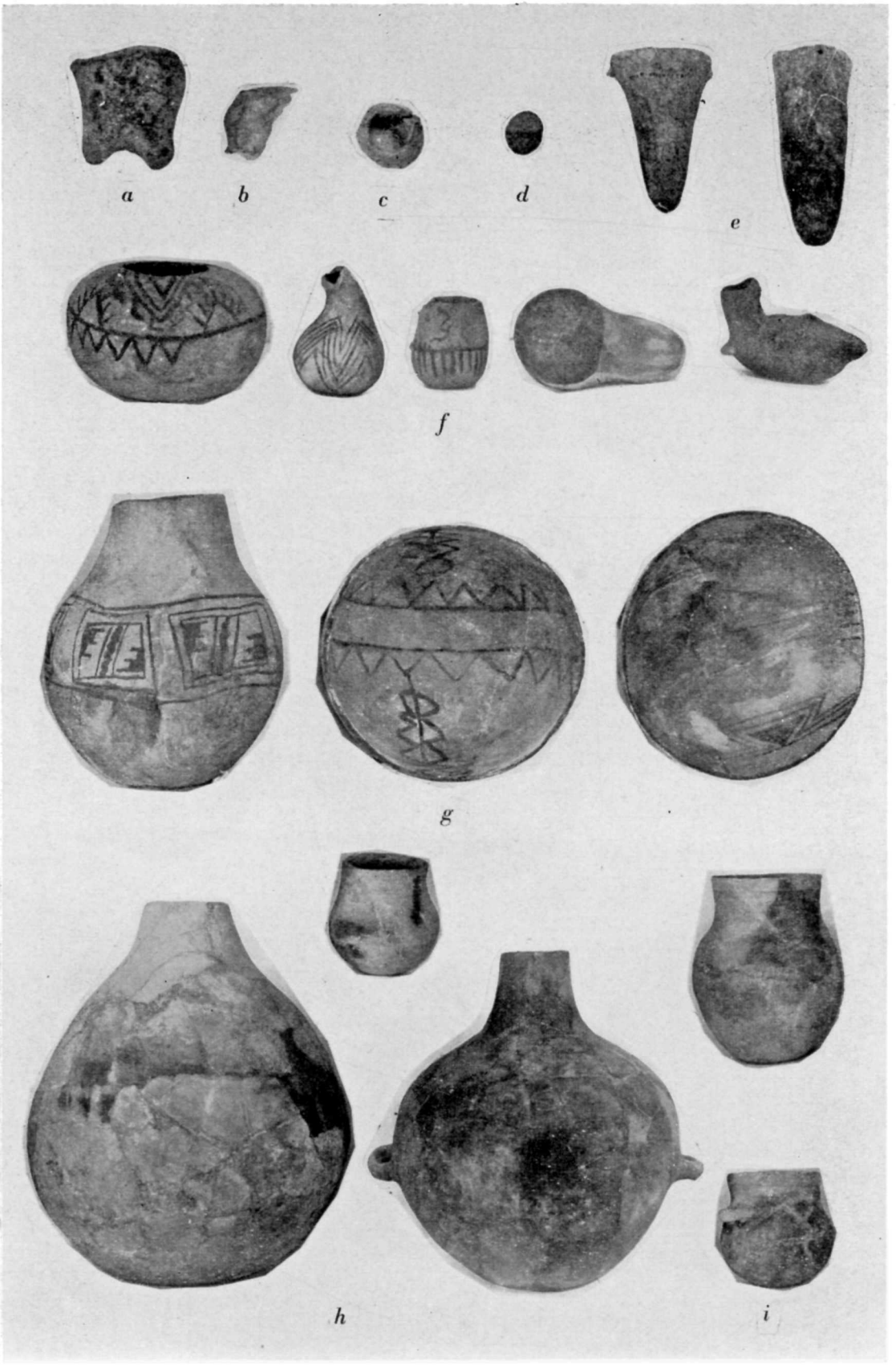
Identical pottery types were found in the two pueblos, however, the percentages vary considerably. For this reason, separate consideration is given the ruins in the following lists of recognizable pottery types and their approximate percentages of occurrence.



POTTERY FROM THE EXCAVATIONS, FOUR CORNERS PHASE

a Twin Trees Black-on-white: Site 145.
b Toy jar: Site 145.
c Mud platter sherd: Site 145.
d Mud platter: Site 145.
e Decorated wares from Site 145; first, Lino Black-on-gray; second and third, Twin Trees Black-on-white.
f Spherical jars from Site 145; first and second, Lino Gray: third, Twin Trees Plain.
g Jars from Site 145: first and second, Twin Trees Plain; third, Lino Gray.

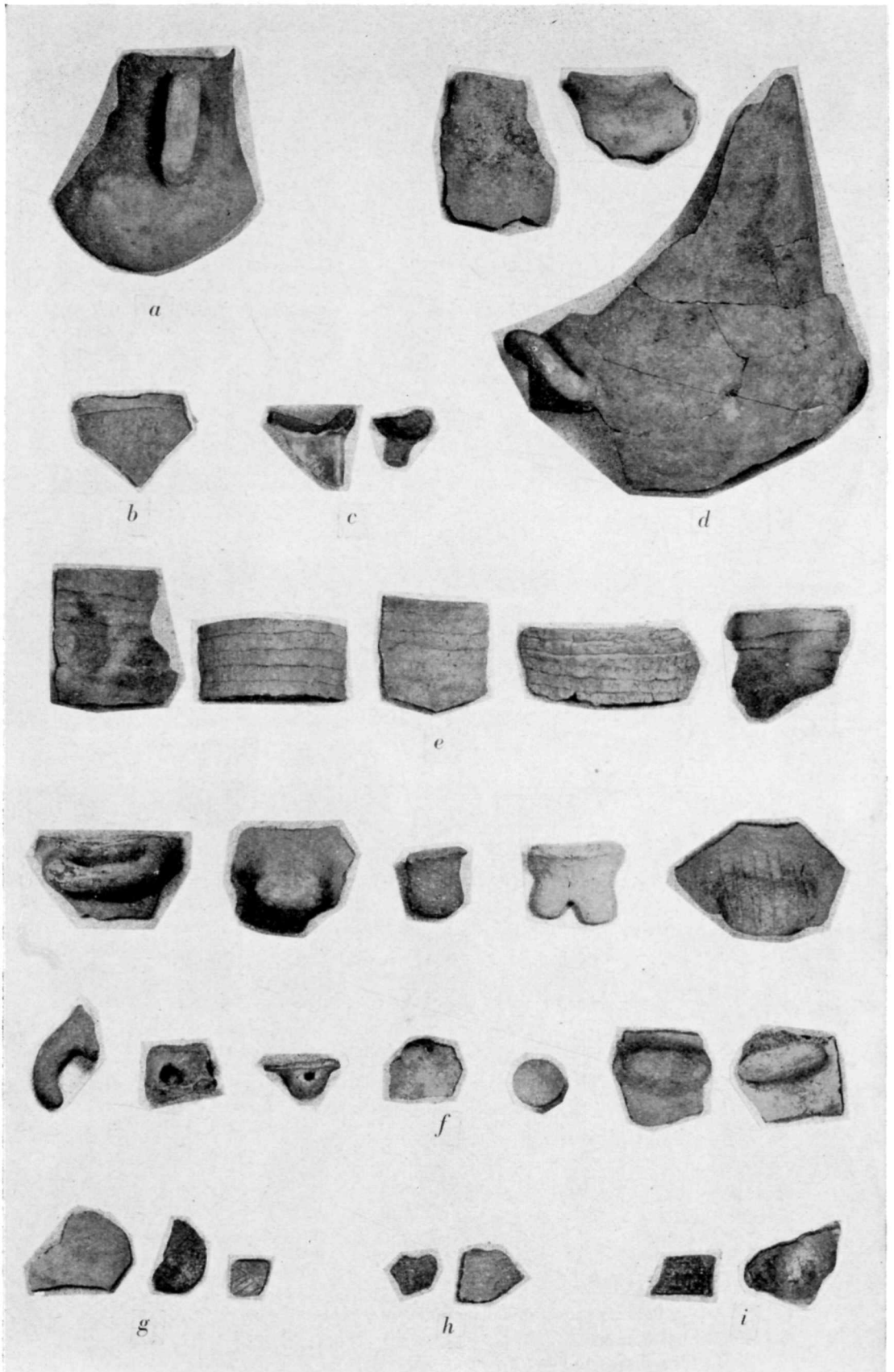
Scale: *a* through *c*, one-half natural size; *d* through *g*, one-fourth natural size.



POTTERY FROM THE EXCAVATIONS, CHAPIN MESA PHASE

a Model birfurcated basker: Site 102 Village.
b Moulded bird's head: Site 102 Village.
c Toy bowl: Site 1 Village.
d Clay bead: Site 1 Village.
e Pipes: Site 102 Village.
f Small pottery vessels: first and second, Site 102 Village; third, Site 102 Pueblo; fourth and fifth, Site 102 Village.
g Decorated wares: all from Site 1 Village.
h Lino Gray jars: all from Site 102 Village.
i Kana-a Gray jars: both from Site 1 Village.

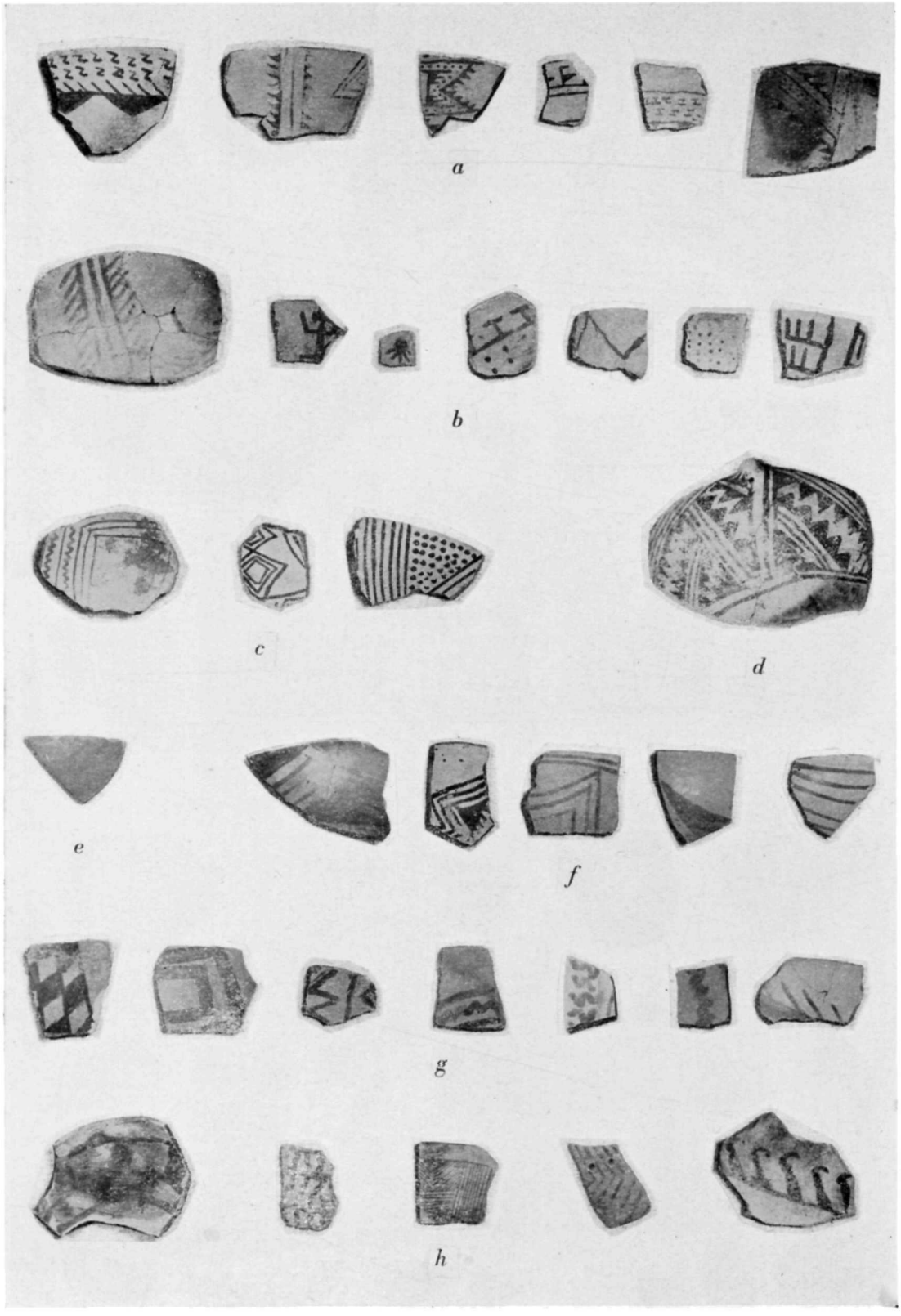
Scale: *a* through *e*, one-half natural size; *f* and *g*, one-fourth natural size; *h*, one-eighth natural size.



POTTERY FROM THE EXCAVATIONS, CHAPIN MESA PHASE

a Lino Gray pitcher: Site 102 Village.
b Lino Gray platter: Site 1 Village.
c Lino Gray ladles: Site 1 Village.
d Lino Gray jars: Site 102 Village.
e Kana-a Gray jars: first and second, Site 1 Village; others, Site 102 Village.
f Lino Gray handles.
g Lino Gray incised.
h Lino Gray punctate.
i Smudged Interior ware.

Scale: one-fourth natural size.



POTTERY FROM THE EXCAVATIONS, CHAPIN MESA PHASE

a Lino Black-on-gray.
b La Plata Black-on-white.
c Piedra Black-on-white.
d White Mound Black-on-white.
e Fugitive Red.
f La Plata Black-on-red.
g Abajo Red wares: first through sixth, Red-on-orange; seventh, Polychrome.
h Miscellaneous sherds.

Scale: one-fourth natural size.

Site 102 Pueblo

Sherds from mixed deposits have not been included.

Lino Gray; 2,868 sherds	50.5%
Kana-a Gray; 1,364 sherds	23.5%
Corrugated; 1 jar (wide-mouthed), 539 sherds	9.5%
Lino Black-on-gray; 24 sherds	0.5%
La Plata Black-on-white; 1 pitcher, 65 sherds	1 %
La Plata Black-on-red; 109 sherds	2 %
Abajo Red wares; 22 sherds	0.5%
Piedra Black-on-white; 68 sherds	1 %
White Mound Black-on-white; 9 sherds	—
Mancos Black-on-white; 667 sherds	11.5%
Fugitive Red ware; 2 sherds	—
Smudged Interior ware; 4 sherds	—
Coiled wares; 4 sherds	—

Site 1 Pueblo

Sherds from mixed deposits have not been included.

Lino Gray; 535 sherds	15%
Kana-a Gray; 376 sherds	10.5%
Corrugated; 2 jars (wide-mouthed), 1,628 sherds	46%
Lino Black-on-gray; 6 sherds	—
La Plata Black-on-white; 28 sherds	1%
La Plata Black-on-red; 20 sherds	1%
Abajo Red wares; 5 sherds	—
Piedra Black-on-white; 9 sherds	0.5%
White Mound Black-on-white; 2 sherds	—
Mancos Black-on-white; 1 pitcher, 1 jar, 882 sherds	25%
Fugitive Red wares; 2 sherds	—
Smudged Interior wares; 3 sherds	—
Coiled wares; 25 sherds	1%
Twin Trees Plain (probably drift from Site 145); 5 sherds	—
McElmo Black-on-white; 2 sherds	—

In view of the tree-ring dates, approximately 950 for the Site 102 pueblo and 1025 for the pueblo at Site 1, two shifts in the sherd percentages are worth emphasizing. First—At 950 Lino Gray totalled half of all pottery found, corrugated sherds totalled a scant 10 per cent; these proportions are almost reversed by 1025. Second—Kana-a Gray and Lino Gray were locally concurrent; the former was never as popular as the latter and older ware; they both waned as corrugated ware became popular.

Miss Shepard's technological observations on the later black-on-white pottery from Site 34[3] follow:

"Technological Observations on the Later Black-on-white Pottery from Site 34:

> "The three principal black-on-white types from site 34, Mancos, McElmo, and Mesa Verde were examined microscopically to learn whether or not paste composition or other technical features would clarify their relations and particularly if it would give any evidence of the origin of McElmo. Rock-temper, as well as sherd-temper, was found in the first sample examined and in order to determine its relative frequency and compare the style of the paste varieties of each type, a sample of 823 sherds was classified by paste. The largest sample was of Mancos (394 sherds) and the smallest of Mesa Verde, the most standardized type (130 sherds).

[3] Shepard, statement in correspondence, July 1949.

"Both sherd- and rock-tempered pastes occur in all three black-on-white types. One description will therefore suffice. Both pastes are dense, appear fine textured, and have the same color range in gray and grayish white. The body is hard, occasionally vitrified. Small, black, slaggy spots—prominent in some of the vitrified pastes—are probably formed by the reduction of iron oxides, present in small granules, and the subsequent fluxing action of the ferrous oxide produced. Between five and ten per cent of the pastes are vitrified. The sherd temper, which is medium to fine in grain size and frequently sparse, is inconspicuous because it generally matches or blends with the paste in color and texture, appearing to be a part of it. The rock is of intermediate composition: either andesite or diorite. The feldspars are mainly oligoclase or andesine, slightly to moderately altered; and the dominant ferromagnesian mineral, variable in proportion, is a hornblende or pyroxene. The texture is either holocrystalline or porphyritic. In some pastes the temper consists largely of rock fragments; in others of separate crystals of the minerals that compose the rock. No difference was noticed in the proportion of the varieties of rock in the three pottery types. Mixtures of the two tempering materials are occasionally found and the relative proportion of the two ingredients is highly variable. In judging the ratio of rock to sherd, allowance must be made for the difference in visibility of the two. The opaque white crystals of feldspar and scattering of dark prisms of hornblende and pyroxene with black grains of magnetite are more noticeable than the sherd particles. In some instances the rock fragments are rare and have been derived from sherd temper which itself was rock-tempered; but this explanation does not account for all the mixtures, because, in a few pastes, the rock fragments are distinctly in excess of the sherd particles. It would seem, therefore, that some potters were familiar with both tempering materials and at times combined them. The same variable mixture of rock and sherd was found in some La Plata Valley pottery. Minor pastes in Site 34, occurring mainly in Mancos Black-on-white, include medium quartz sand, sandstone and sand derived from it, a fine-textured paste with no visible temper, sand and calcareous inclusions, and a dark igneous rock, sanidine basalt. Frequencies are as follows:

Temper	Mancos		McElmo		Mesa Verde	
	No.	%	No.	%	No.	%
Sherd	241	61.2	255	85.3	94	72.3
Andesite and diorite	72	18.3	20	6.7	33	25.4
Sherd and rock	27		13		2	
Sand	15		7		—	
Fine-textured	32		—		—	
Sandstone	1		—		1	
Calcareous	3		—		—	
Sanidine basalt	3		—		—	
Disguised by vitrification	—		4		—	
Total	394		299		130	

Only iron oxide paint is included in Mancos, only organic in McElmo.

"The principal question raised by this analysis is how to explain the pottery tempered with diorite and andesite. Is it intrusive or indigenous; and, if the latter, why was there lack of uniformity in the practice of tempering? Before considering this question, a word may be said regarding the rare pastes. The sherds tempered with sanidine basalt undoubtedly represent intrusive pottery from the district east and northeast of the Chuska Mountains.

The rock which is rare and mineralogically unusual occurs in a flow on Washington Pass. It constitutes the principl tempering material in the Bennett Peak area. A few examples of it were found in the La Plata collection. Occasionally, sandy pastes were likewise found among La Plata sherds as well as in those from Mesa Verde. As sand is ubiquitous and these pastes are always a small minority in all sites where they appear, it is probable that they merely reflect rare individual deviation in practice.

"When the Mesa Verde pottery was analyzed, I did not anticipate a considerable proportion of rock temper, nor did I know of a source of the rock on Mesa Verde. The diorites and andesites are of a class which is characteristic of many laccolithic formations in the Southwest, those nearest Mesa Verde being the La Plata and the Ute Mountains. Rocks from these formation often occur some distance from their source; for example, cobbles on the banks of the La Plata River in southern Colorado and northern New Mexico were transported there from the La Plata Mountain during a period of rapid erosion. Such rock could not, of course, be transported to Mesa Verde by the present drainage system. When I discussed the question of the source of the rock with Dr. Morris, he recalled an extensive gravel deposit including pebbles of a variety of rocks which must have been laid down before the present valleys were formed. It is at Mesa-top level on the east side of the Park, and the north rim of Mancos Canyon. Mr. Don Watson, Park Archaeologist, kindly collected igneous pebbles from this gravel as well as a sample of all other varieties of rock in it, including quartzite, sandstone, conglomerate and slate. He also submitted samples from two outcrops of igneous rock—a dyke at the junction of Spruce and Navajo Canyons, and a volcanic neck on the east side of Mancos Canyon, just outside the Park. Rock from the native outcrops, like the fragments found in the excavation of Site 34, are moderately dark and of the class of lamprophyres. They are all distinguished by a high percentage of biotite. This mineral is rare in the rock-tempered pottery. When sixty-four rock-tempered sherds of Mancos Black-on-white were reexamined, biotite was found in only three and in these there were only a few flakes. The lamprophyres were not, therefore, used for temper in the pottery examined. On the other hand, the igneous pebbles from the old gravel deposit are mainly andesites and diorites which correspond with those in the pottery. Since river drift containing similar rock occurs in other parts of the area where this group of black-on-white types make up the main decorated ware, the source of the rock-tempered pottery in Mesa Verde cannot be definitely proven; but as long as there is a local source, native production is a simpler hypothesis than importation, and I will tentatively accept it in considering the bearing of paste composition on the question of the relationship of the three types.

"The fact that the earliest pottery known from the Mesa is tempered almost exclusively with andesites and diorites suggests that the Mesa was settled by people from a region where the custom of using this kind of rock temper had already been well established. It is most unlikely that potters in the habit of using sand would search out the old gravel bed and select from it particular kinds of pebbles.

"The continuance of rock temper after sherd temper had been introduced and particularly the fluctuation in ratio from type to type of the two materials is not as easily interpreted as the nearly exclusive use of rock in the beginning. Sherd and rock may of course have been used indiscriminately by the same potters and the mixtures which have been noted suggest that this was sometimes true. But mixtures are not common and it would seem that only the persistence of a tradition of superiority of rock among certain potters would account for the continued use of rock after a material present in abundance at the potter's very doorstep had been shown to be satisfactory. When two kinds of tempering materials are used indiscrim-

inately, the pottery should be identical in all respects except paste; but if certain potters or groups of potters use different tempers, they may also follow other distinct ceramic practices. Therefore, any correlation of such features as clay, finish, shape and decoration with temper would indicate a significant ceramic tradition. Since the two paste varieties of the three black-on-white types under consideration have not been recognized by archaeologists, there is obviously no conspicuous and constant difference in exterior appearances. The general similarity of the types everywhere is well recognized. The fact that the area abounds in good quality, buff-firing clays and that similar firing methods were everywhere followed has much to do with the general uniformity of color and hardness. Furthermore, the custom of slipping is directly related to quality of clay. Only a portion of Mancos, McElmo and Mesa Verde Black-on-white from Site 34 is slipped; and, although there is some correlation of surface finish with quality of clay, there is none with temper. Consequently, differences should be sought in workmanship, shape and decoration, rather than in composition of material or fundamental techniques; and only minor differences can be expected. Unfortunately, the sherds classified by paste were of limited value for the study of shape and design. Only draftsmanship and elements of design could be compared and no differentiation was found in the former. One difference in design, which may be significant, was found between sherd- and rock-tempered varieties of Mancos Black-on-white. The wavy or squiggle hatch occurred in 6.7% of the sherd-tempered pottery (total sample—241 sherds) against 25% in the rock-tempered pottery (total sample—72). A difference in a single element is not convincing, and yet the spread in frequency is great enough to weigh in the total evidence. There were insufficient rock-tempered McElmo sherds for statistical comparison, and even the Mesa Verde sample was small; yet, it too shows an interesting variation in design. Oblique and vertical hatch carried to the rim or to a single heavy framer was approximately twice as frequent in the rock- as in the sherd-tempered vessels. The indications of independent origin found in design are therefore slight; but they should not be ignored, particularly in view of the fact that the sample showed only limited design traits.

"The question of the relationship of Mancos and McElmo Black-on-white is one which can best be studied from evidence of the entire area in which they predominate, rather than from that of a single district. I will therefore draw upon data from the La Plata. But first a word regarding the classification of these two types. It is noteworthy that all characteristics listed by Dr. O'Bryan except surface finish, wall thickness, paste and paint are exhibited by only a small percentage of sherds. Shape and decoration, although of the utmost importance in defining the types and studying their relationships, are of limited value in sherd classification. Nor are the features common to all sherds equally reliable. Differences in surface finish are subtle and not constant; they may create an impression upon comparison of large groups of sherds, but are of limited use in actual sherd sorting. The same is true of wall thickness since there is a considerable overlap in range of each type; and finally, pastes are not uniform. By contrast, the difference in paint is a simple, qualitative one recorded by every decorated sherd. Consciously or unconsciously, most archaeologists probably base their classification primarily on this criterion. I do not imply that field classifications are entirely true to paint, because roughly ten per cent of the sherds bear a faint, poorly-fired and weathered paint which cannot be identified without laboratory tests; but the error introduced is probably not serious because only a few of these sherds bear other diagnostic features. If we accept paint as an arbitrary criterion of McElmo, the observation that the change from iron oxide to organic paint was clear cut and complete follows from our definition, but does not necessarily state a fact of ceramic history.

"It is clear from a comparison of Mancos and McElmo Black-on-white that new ideas affecting methods of pottery making, decorative taste, vessel shape and very possibly vessel function were introduced with McElmo. The first question that arises is: had a new people settled in the region or were foreign ideas taking effect? The comparison of paste has some bearing on the question, since—of all pottery features—it is perhaps the least likely to be affected by foreign contacts. It may be significant that McElmo paste differs from that of Mancos in both the La Plata and Mesa Verde district, but there is a puzzling lack of correspondence of change in the two districts. Since conditions were complex they are best summarized by tabulation and a truer picture is obtained if the La Plata is subdivided.

	La Plata District		Mesa Verde
	Valley Proper	Western Section	*Site 34*
Temper Resources	Rock in River Drift	Igneous Rock Not Reported	Rock in Gravel Deposit
Rock temper in:			
Mancos B/W	Av. 16.7%	Av. 12.5%	18.3%
McElmo B/W	Av. 77.0%	Av. 13.0%	6.3%
Mesa Verde B/W	Av. 72.8%	25.8—4.0%	25.4%

"In addition to the change in temper, there is in the La Plata district a difference in clay which may be significant. An inferior red-firing clay was used more frequently for McElmo than for any previous type. The proportion is as high as fifty per cent in some sites. The increase in wall thickness of McElmo also suggests the use of a weaker clay. It is quite conceivable that a new people coming into the valley might not at first locate the best clays, but it is difficult to understand why potters who had merely adopted a new pigment and different stylistic concepts should at the same time become careless in the choice of clay. It is plain, however, from lack of paste uniformity, that McElmo was not made by people with fixed ideas about temper. If they came into the region as immigrants, they readily adapted their methods to the resources of their new environment. The difference in the two sections of the La Plata are explained by resources; but the reasons for the reversal of La Plata valley occurrences in Mesa Verde, where both materials were available and presumably being used by local potters, is not clear. The suggestion that potters who used sherd temper were less conservative and adopted more quickly new ideas of style and technique seems far fetched. If McElmo were made by a new people coming onto the Mesa, they might choose the temper most easily obtained. But our present data is inadequate; theorizing will be more fruitful when the picture of occurrence is more complete. We need to know more about the introduction of sherd temper on the Mesa, the paste composition of utility wares, temper frequencies in different sites and correlations between paste and design. The preliminary analysis of paste has shown that conditions were complex, and I believe it also indicates that technical features considered together with other archaeological evidence can contribute to an understanding of events during this period.

"The relation of McElmo and Mesa Verde is well recognized. Distinctive Mesa Verde features, such as pearly surface finish, squarish, ticked rims and the mug first appear in McElmo, and many sherds in mixed lots cause the archaeologist to pause and ponder whether they are McElmo or sloppily made Mesa Verde. Reed even goes so far as to question the 'reality of "McElmo Black-on-white" as vaguely defined in the literature on southwestern Colorado.'[4] His doubt in turn raises a point regarding the limitations of the concept of

[4] 1944, p. 51.

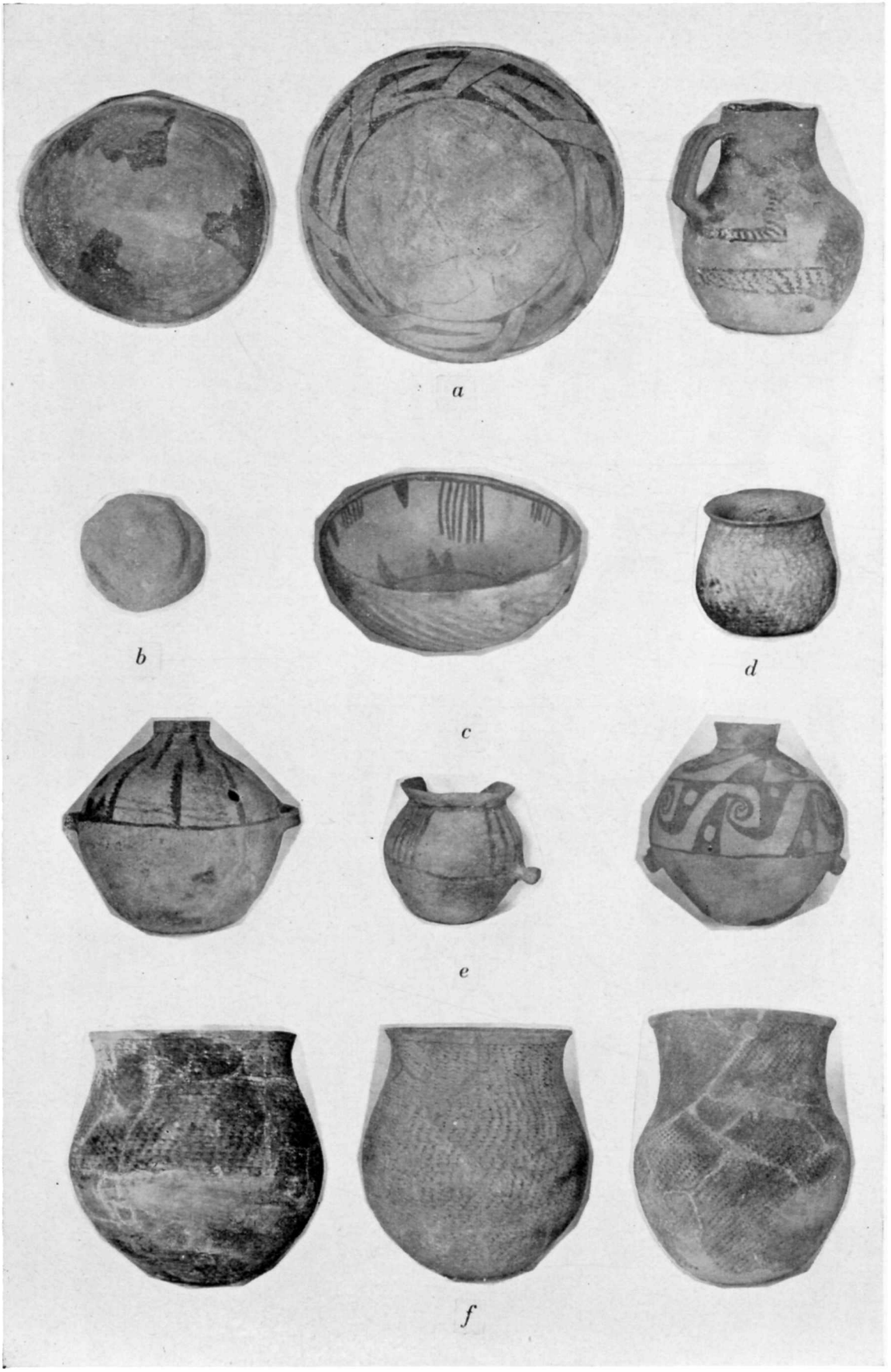
pottery type as commonly accepted in Southwestern archaeology. There are two kinds of variation which must be dealt with in classification, distinguished as continuous and discontinuous. Mancos and McElmo are discontinuous types. The change from iron oxide to carbon paint is one of kind rather than degree, and there is a presence-absence relation in design elements, such as the wavy line, and in vessel shapes, such as the pitcher and mug. It is true that sherds occur in both types which cannot be differentiated, except by paint, because they lack distinctive design elements and do not show vessel shape or rim form; but such sherds are in no sense transitional; they are merely lacking in significant detail of style. McElmo and Mesa Verde Black-on-white, on the other hand, illustrate continuous variation. Judging from the features of these types, I think we are justified in concluding that, during the period of their production, potters were gradually improving their methods, exhausting the possibilities of familiar materials within the limits of fixed practices, standardizing shapes, elaborating decorative design, stabilizing it by repetition, and raising the standards of the craft by refinements in modeling and draftsmanship. But they were not experimenting with new materials and techniques, nor were they introducing foreign or wholly new and original styles. Consequently, there are only gradual modifications of features and changes in the relative frequency with which distinctive traits occur; there are no sharp breaks which predetermine divisions of the series. The subdivision of a continuous series necessarily makes classification arbitrary because it splits something which is of one piece. Subdivision of a discontinuous series may also be arbitrary as with the selection of criteria which do not directly reflect trends in craftsmanship or style, but this fault is avoidable. In the case of the continuous series, different archaeologists relying primarily on personal impressions will make the division at different points; consequently, too much reliance cannot be placed on reported frequencies of the types defined from such a series. One means of meeting the dilemma—that is, one way of recording the steps in a transition between types which represent a direct development, is to give more attention to specific features and their correlation. Only in this way can the history of a style, such as that of Mesa Verde Black-on-white, be understood. It is one of the limitations of the pottery type concept that mechanical use of it tends to obscure transitions, since all pottery is thrown into distinct compartments. Nevertheless, it is undeniably true that the early and late parts of a continuous development may be distinguished easily and may be useful indicators of chronological difference. This is undoubtedly true of McElmo and Mesa Verde Black-on-white."

Site 34, Pueblo Pottery (Plates XLIII–L)

Site 34, occupied from Mancos Mesa Phase (Pueblo II and early Pueblo III) through the McElmo Phase (early Pueblo III), into the Montezuma Phase (late Pueblo III) furnished examples of many named pottery types as well as transitional and hybrid wares. The change from mineral to organic applied paints, the gradual removal of the Chaco influences reflected in designs and shapes, and the stages of development and standardization of Mesa Verde Black-on-white, explain the pottery variations found. There is no apparent need to describe and name short-lived transitional types.

"There are numerous sherds [from Mancos Canyon excavations] so intermediate typologically between Mancos and Mesa Verde as almost to merit separate classification, but there is still no internal stratigraphic evidence that any of these 'McElmo' types are intermediate in time."[5]

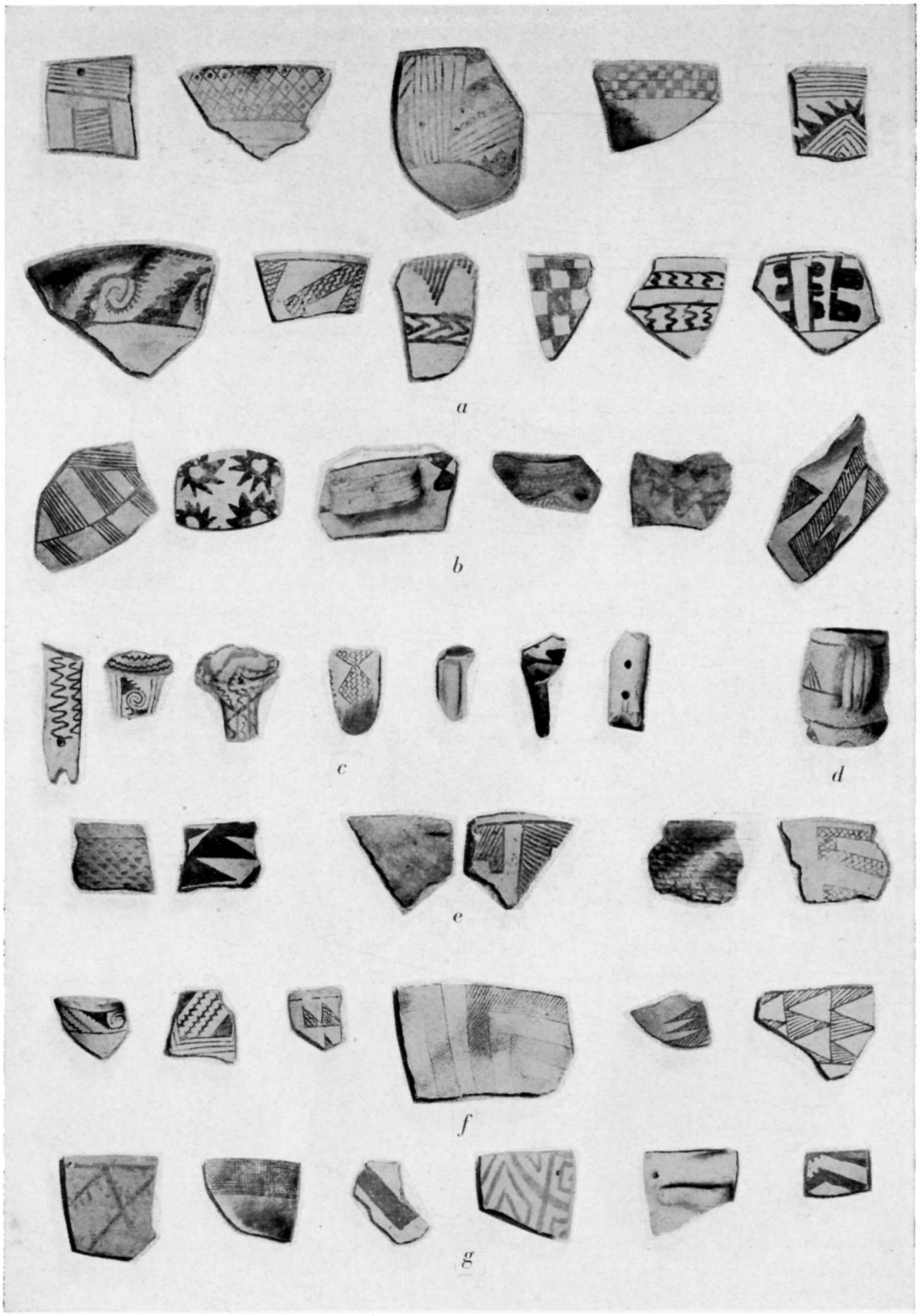
[5] Reed, 1944, p. 54.



POTTERY FROM THE EXCAVATIONS, MANCOS MESA PHASE

a Mancos Black-on-white: first and second, Site 34: third, Site 1 Pueblo.
b Jar lid, Mesa Verde Museum collections.
c Mancos Black-on-white with corrugated exterior: Mesa Verde Museum collections.
d Small corrugated jar: Site 34.
e Mancos Black-on-white jars: first, Site 1 Pueblo; second, Site 34; third, Mesa Verde Museum collections.
f Corrugated jars: first and second, Site 1 Pueblo; third, Site 102 Pueblo.

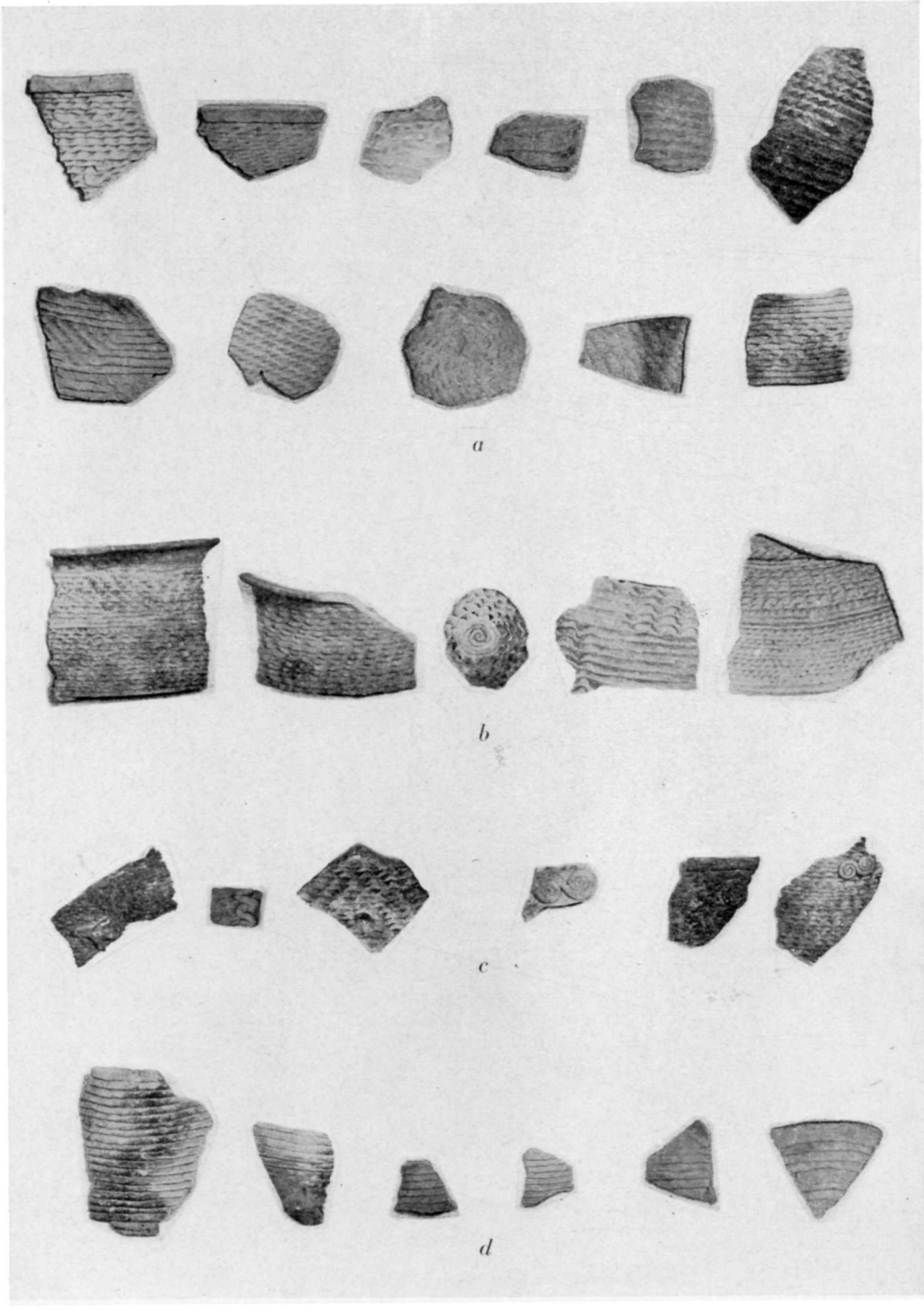
Scale: *a* through *d*, one-fourth natural size; *e* and *f*, one-eighth natural size.



POTTERY FROM THE EXCAVATIONS, MANCOS MESA PHASE

a Mancos Black-on-white bowls.
b Mancos Black-on-white jars.
c Mancos Black-on-white ladles.
d Mancos Black-on-white pitcher.
e Mancos Black-on-white with corrugated exterior.
f Chaco Black-on-white wares.
g Miscellaneous Black-on-white wares.

Scale: one-fourth natural size.



POTTERY FROM THE EXCAVATIONS

a Corrugated wares of the Mancos Mesa and McElmo Phases.
b Corrugated wares of the McElmo and Montezuma Phases.
c Clay fillet designs on corrugated jars.
d Coiled wares.

Scale: one-fourth natural size.

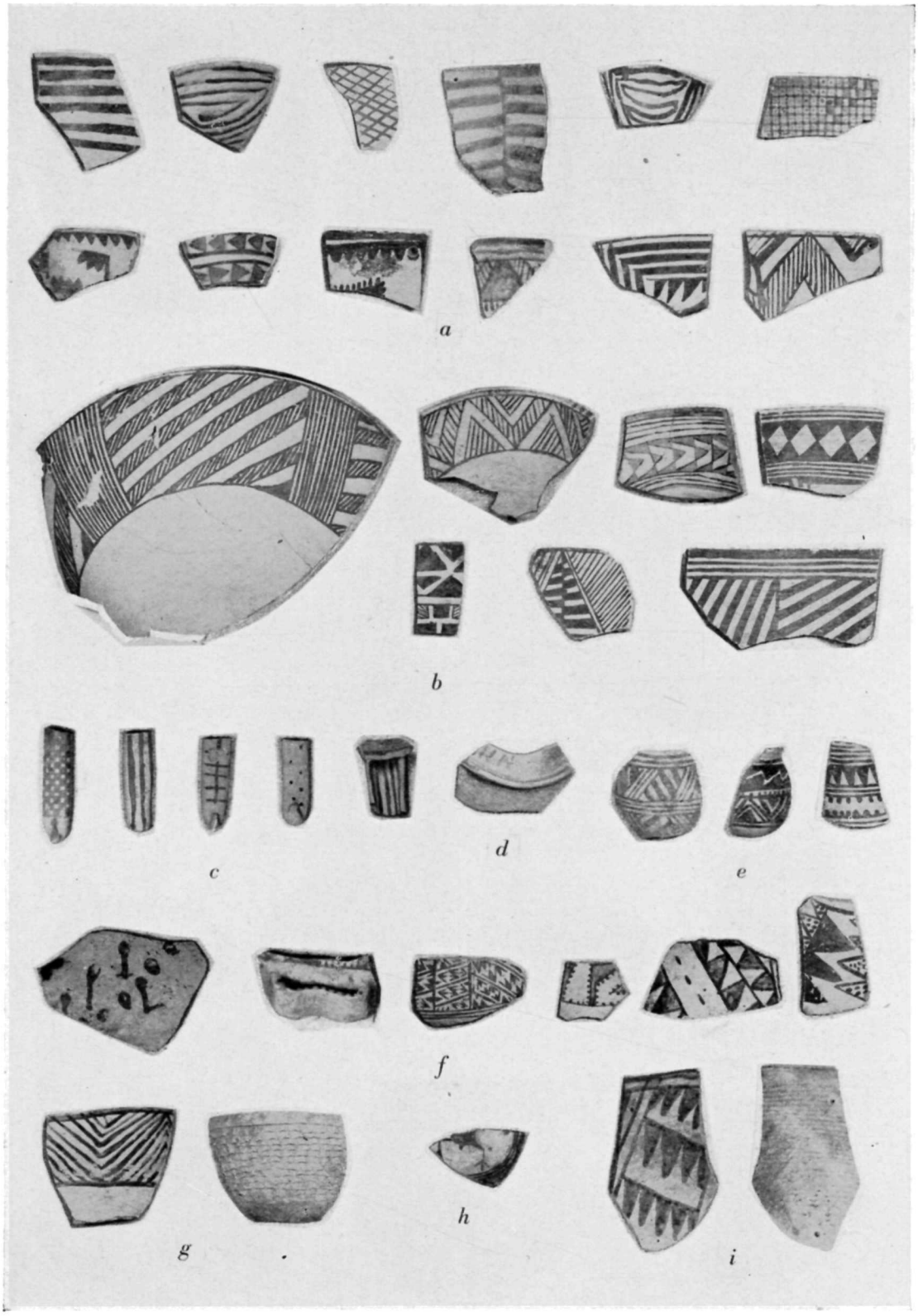
POTTERY FROM THE EXCAVATIONS, MCELMO PHASE

a and *b*. McElmo Black-on-white bowls.

c McElmo Black-on-white vessels: first, mug, Site 34; second, kiva jar, Site 34; third, constricted canteens, Site 34.

d Jars: first and third, corrugated vessels; second, Black-on-white jar, Mesa Verde Museum collections.

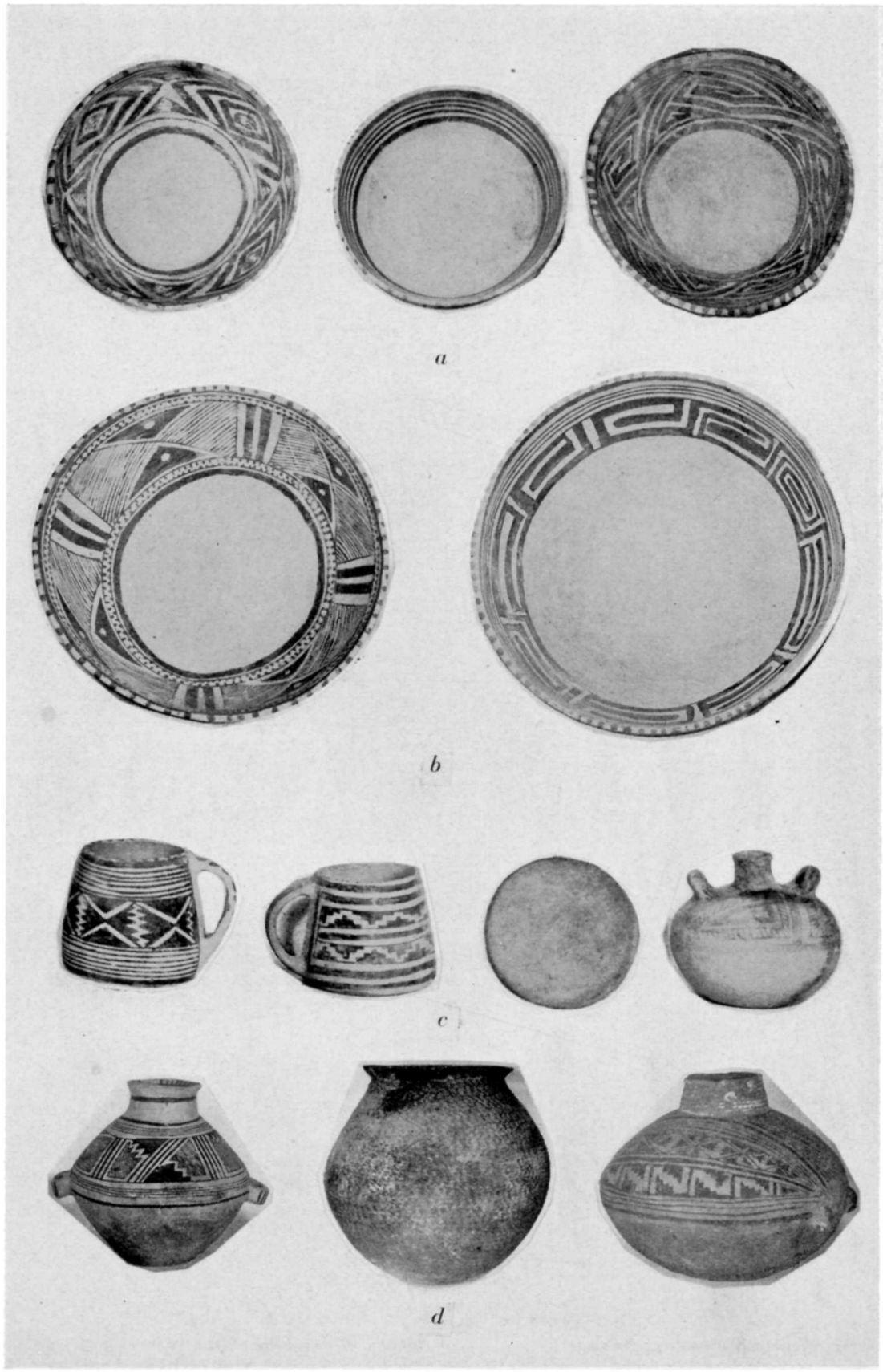
Scale: *a* through *c*, one-fourth natural size; *d*, one-eighth natural size.



POTTERY FROM THE EXCAVATIONS, MCELMO PHASE

a and *b* McElmo Black-on-white bowls.
c McElmo Black-on-white ladles.
d McElmo Black-on-white kiva jar.
e McElmo Black-on-white mugs.
f McElmo Black-on-white jars.
g McElmo Black-on-white with corrugated exterior.
h McElmo Black-on-white figure.
i McElmo Black-on-white with basket imprint exterior.

Scale: one-fourth natural size.



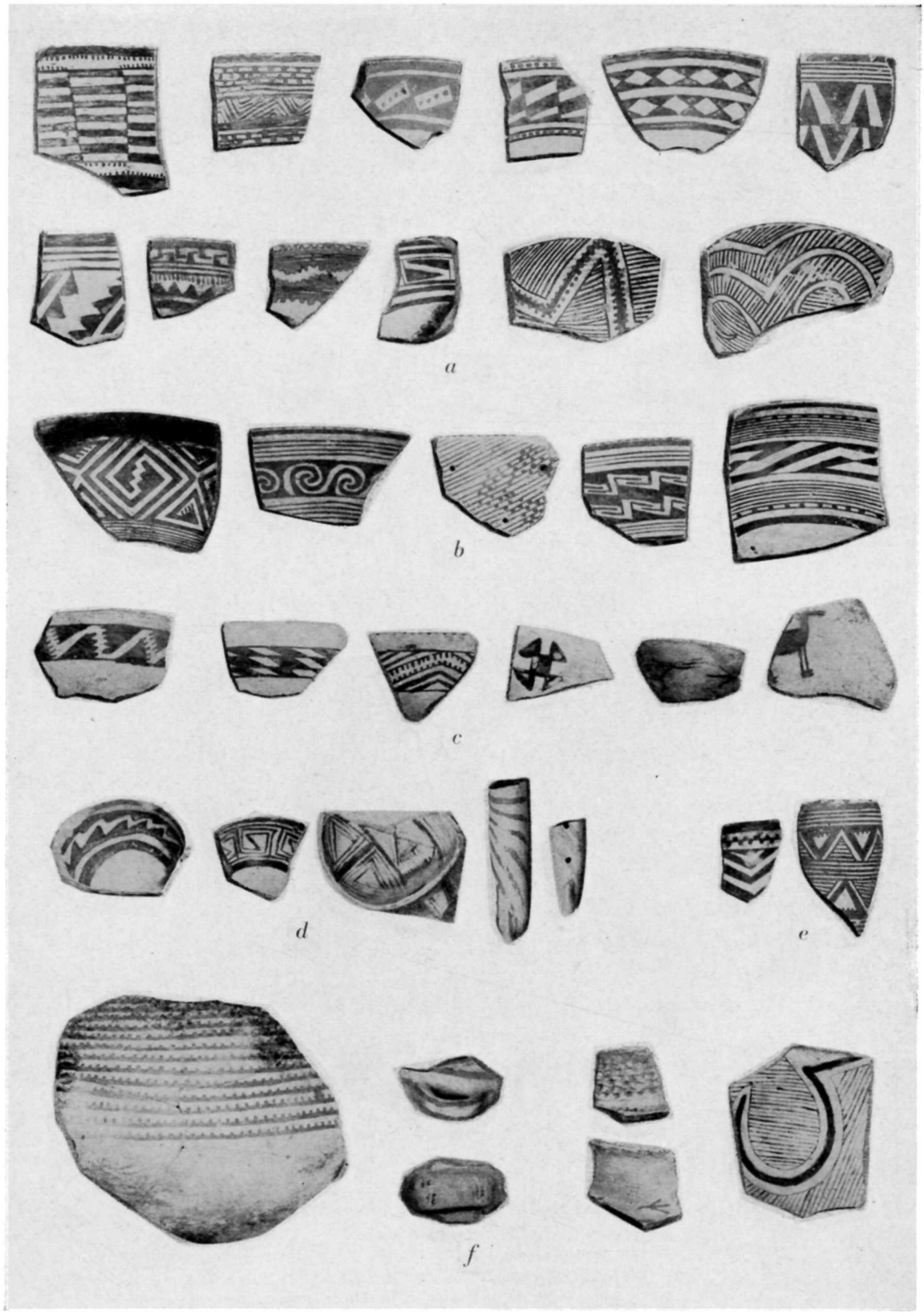
POTTERY FROM THE EXCAVATIONS, MONTEZUMA PHASE

a and *b* Mesa Verde Black-on-white bowls.

c Mesa Verde vessels: first and second, mugs; third, lid to kiva jar; fourth, spherical canteen, all from Site 34.

d Jars: first and third, Mesa Verde Black-on-white, Mesa Verde Museum collections; second, narrow-mouthed corrugated, Site 34.

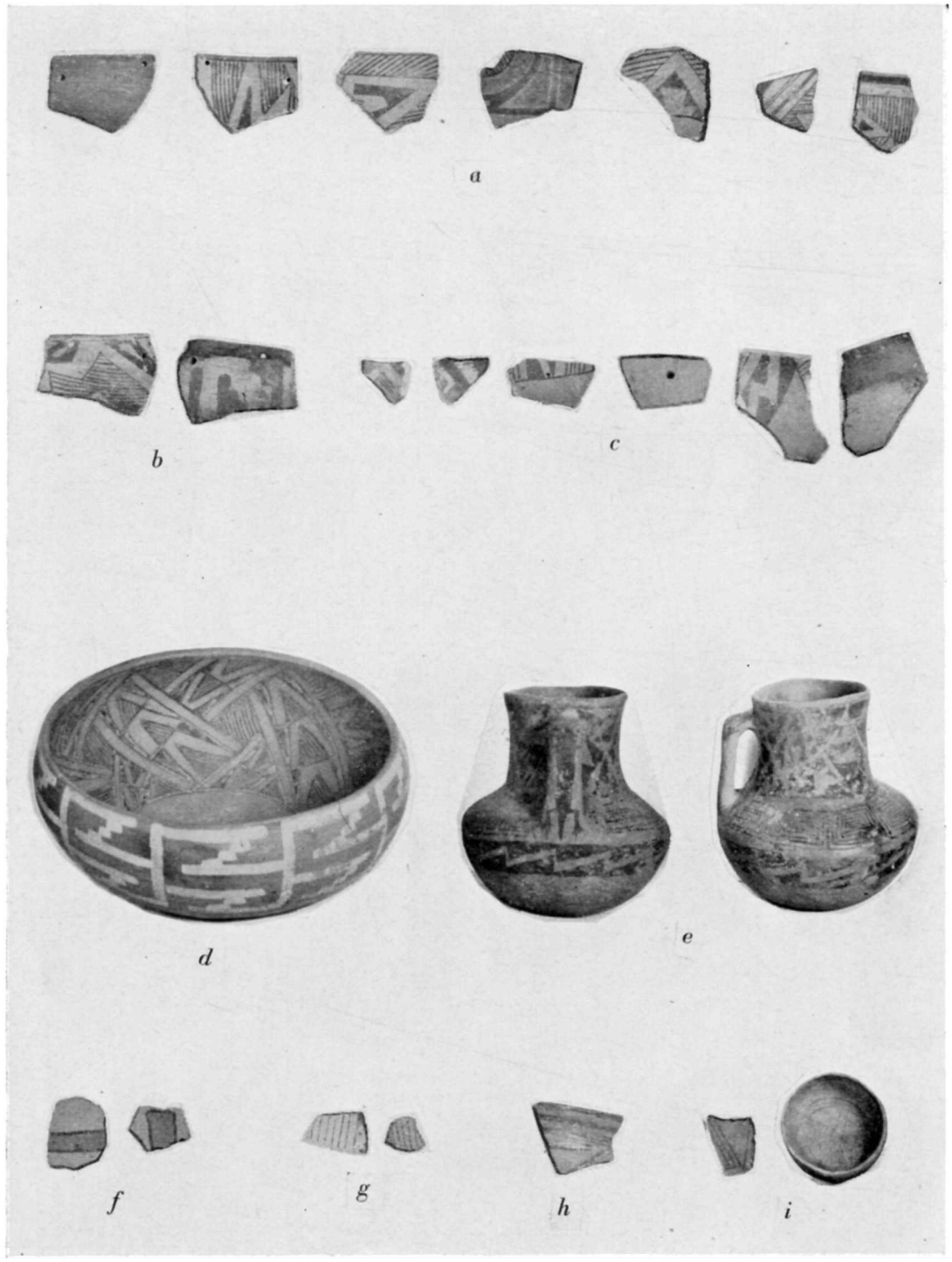
Scale: *a* through *c*, one-fourth natural size; *d*, one-eighth natural size.



POTTERY FROM THE EXCAVATIONS, MONTEZUMA PHASE

a Early Mesa Verde Black-on-white bowls.
b Classic Mesa Verde Black-on-white bowls.
c Exterior designs on Classic Mesa Verde Black-on-white bowls.
d Mesa Verde Black-on-white ladles.
e Mesa Verde Black-on-white mugs.
f Mesa Verde Black-on-white jars.

Scale: one-fourth natural size.



POTTERY FROM THE EXCAVATIONS, INTRUSIVES

a Wingate (Little Colorado) Black-on-red.
b Houck Polychrome.
c St. Johns Polychrome.
d St. Johns Polychrome bowl, Gila Pueblo collections.
e Wingate Black-on-red pitcher: Site 34.
f Tusayan Polychrome.
g Ramos (?) Polychrome.
h Green glaze on red.
i Mogollon (?) Red-on-brown.

Scale: one-fourth natural size.

Undoubtedly, inferior Mesa Verde potters continued to make many McElmo vessels; however, the break from Mancos to Mesa Verde Black-on-white wares is great, and an intervening or bridging ware, such as McElmo, is helpful in explaining Mesa Verde Black-on-white which is highly standardized in design and form. The evidence derived from ruin surveys, Site 149 (see Appendix E), and the stratigraphy of Site 34 suggests that McElmo Black-on-white was manufactured while some potters were still making Mancos wares; it also was made when Mesa Verde pottery was manufactured, after Mancos Black-on-white had become a dead ware (at least locally).

Named types

The following is a listing of recognizable types and their approximate percentages of occurrence:

Lino Gray; 337 sherds	1.5%
Kana-a Gray; 176 sherds	0.5%
Corrugated; 18 jars, 4 small jars, 20,983 sherds	56.0%
Lino Black-on-gray; 4 sherds	—
Abajo Red wares; 3 sherds	—
Piedra and La Plata Black-on-white wares; 135 sherds	0.5%
Chaco Black-on-white wares (Hosta Butte, Red Mesa, and Wingate); 119 sherds	0.5%
Mancos Black-on-white; 1 pitcher, 1 bowl, 2 jars, 3,878 sherds	10.0%
Fugitive Red wares; 7 sherds	—
Smudged Interior wares; 19 sherds	—
Coiled wares; 159 sherds	0.5%
McElmo Black-on-white; 2 mugs, 2 kiva jars, 3 ladles, 1 canteen, 1 jar, 5 bowls, 2,768 sherds	7.5%
Tusayan Red wares (Bluff Black-on-red and Tusayan Polychrome); 1 kiva jar, 63 sherds	—
Little Colorado Red wares (Wingate B/R, St. Johns and Houck Polychromes); 1 pitcher, 96 sherds	—
Mesa Verde Black-on-white; 11 mugs, 1 kiva jar, 1 canteen, 6 bowls, 8,444 sherds	23.0%

In a preceding chapter (pages 22–23), I noted some of Shepard's differentiations between Early Pueblo III Black-on-white pottery decorated with mineral paint—Mancos, and with organic paint—McElmo. Superficially, there is nothing distinctive in the paste of the two types; however, Mancos Black-on-white contains sherd temper about 85 per cent of the time, McElmo Black-on-white is tempered with igneous rock in approximately 75 per cent of the examples. Mancos vessels are smoothed and polished; McElmo pottery is better polished. Mineral paint was applied on Mancos pottery; McElmo vessels were decorated with organic paint, which often has a streaky—opposed to dense—appearance and often the design has a smudgy or polished-over tone as the paint has soaked into the clay. Wavy line hatching is common on Mancos pottery, practically absent on McElmo; Mancos often has fine line hachure, McElmo lines are heavier; Mancos designs

often "hang" from the rim, McElmo designs are in a limited band paralleling the rim and more of the area is painted. Mancos pottery is comparatively thin, and the rims are pinched; McElmo is thicker (though usually not as heavy as Mesa Verde Black-on-white) and the rims are squared off and sometimes ticked—dotted with paint. Mancos bowls are usually deep and steep-sided; McElmo bowls are usually hemispherical. Mancos ladles have solid or bowl-extension handles, McElmo specimens often have hollow handles (never the bowl-extension type). The bottoms of Mancos decorated jars may or may not be indented, McElmo water jars (ollas) are consistently indented. Mancos pitchers are fairly common, mugs are almost non-existent; the reverse hold true for McElmo.

CHAPTER XI

FOODSTUFFS

ANIMAL and bird bones were plentiful (excepting Site 145, which yielded only a few deer bones), and occasional remains of edible plants were found in all ruins. The animal remains have been identified; a list of the modern fauna of possible utility and bone identifications comprise Appendix C.

Mammals

"It is obvious that the early peoples fed upon the flesh of animals as often as opportunity permitted, and it is to be supposed that they regarded more of the local creatures edible than we are inclined to today."[1] In addition to deer and rabbits (both cottontail and jack), other animals represented in the collections of bones include:

1. Villages at Sites 102 and 1: squirrel.
2. Pueblos at Sites 102 and 1: squirrel and fox.
3. Site 34: squirrel, porcupine and other rodents, skunk, badger, coyote, fox, bobcat, beaver, mountain sheep, pronghorn and bison.

All of these examples were found as loose bones (dogs occurred only as burials, the skeletons were articulated), some of them were calcined, suggesting that the meat had been cooked and removed for food.

Birds

Turkey bones were plentiful in all ruins, with the exception of Site 145. In the villages at Sites 102 and 1 only turkey burials were found, no turkey bone implements or scattered bones; probably the birds were kept only for feathers. A few stray turkey bones were recovered from the pueblos at Sites 102 and 1, and a single awl from the first-mentioned ruin. The commonest type of awl from Site 34 was made from the upper portion of a turkey tibiotarsus. Other birds represented in the bone collections include:

1. Villages at Sites 102 and 1: crow.
2. Site 34: grouse and a small hawk.

Plants

Undoubtedly "full advantage was taken of the wild foods which the none too provident environment afforded."[2] Most evidence of plant foods has perished, particularly from surface ruins, and much of the little that remains cannot be identified. Inferentially, from materials found in neighboring cliff-dwellings and

[1] Morris, 1939, p. 118.
[2] Morris, 1939, p. 118.

the presence of useful plants, the prehistoric people ate the young leaves and fruit of prickly pear cactus, the fruit of broad-leafed yucca, roots of wild celery and Mariposa Lily, chokecherries and wild raspberries and currants, a number of grass seeds, and perhaps acorns. They chewed strips of yucca leaves and pinyon resin; they smoked Mountain Lover and shredded juniper bark.

Charred remains from the excavations include:

1. Corn from all sites.
2. Beans from Pit-House II, Site 145.
3. Squash, from Site 34.
4. Pinyon nuts, from Site 145 and the village at Site 102.

CHAPTER XII

CONCLUSIONS

RESEARCH conducted on Mesa Verde by Gila Pueblo was concerned primarily with filling in the gaps in the knowledge of the local cultural development, in particular the great gap from the early 600's to the late 1100's. The excavations, and related tree-ring dates, furnish new information at five separate places in the calendar, which substantially clarifies the record of cultural progress and change during the six centuries in question.

Nine important problems regarding the archaeology of Mesa Verde were enumerated in the Introduction (page 1). The excavations did not furnish evidence of the presence or absence of early man (Folsom, Cochise, etc.) in the area; the existence of the hypothetical Basket Maker I state of cultural development; the local residence of agriculturists of the Basket Maker II period; nor reasons for the abandonment of the Four Corners country. Excavations, and dated wood specimens collected from neighboring ruins, did explain the local status of the Basket Maker III remains in relation to contemporaneous groups in adjacent regions; sources of some trade objects, and diffused ideas acquired during the Basket Maker III and Pueblo I periods; the existence and approximate time limits of a local Pueblo II stage of development; degree of Chaco influences on Mesa Verde culture in the 1000's and early 1100's; and the times of construction of several towers and other fortified sites.

Combining the information presented in the preceding chapters with the data contained in publications of research carried out in areas adjoining Mesa Verde, a general outline of the cultural stages between approximately 525 A.D. and 1200 may be attempted. Using tree-ring dates as a yardstick, I add two new phases, indicated in the following list by italics, to the Gila Pueblo system of classification:

Basket Maker Root
San Juan Stem
Mesa Verde Branch

Four Corners Phase, *ca.* 550–700 (Basket Maker III)
Chapin Mesa Phase, *ca.* 700–900 (Pueblo I)
Mancos Mesa Phase, *ca.* 900–1050 (Pueblo II)
McElmo Phase, *ca.* 1050–1150 (early Pueblo III)
Montezuma Phase, *ca.* 1150–1300 (late Pueblo III)

The cultural content of each of these five phases is described below.

Four Corners Phase, *ca.* 550–700

The architectural remains and the accessories from Site 145 afford confirmatory and supplementary evidence to identify tentatively a phase of approximately 150 years duration. Step House[1] and the Earth Lodges[2] on Mesa Verde, and the Red Rock Valley sites[3] in northeastern Arizona are interesting when considered singly; I believe them to be much more informative when their similarities are identified and grouped as representative of regional rather than particular cultural growth. Many dissimilarities exist between the sites, future research may warrant division of the Four Corners Phase into several more restricted phases. Most of the dissimilarities can be explained by local environmental conditions, slight variations in times of occupation, and the flexibility and experimentation—the lack of standardization—characteristic of the stage of development.

I include Obelisk Cave[4] with tree-ring dates of 477 to 488, and Pit-House I at Site 145 with dates of 477 + to *572*, as representative of the Four Corners Phase. I believe that these sites were occupied in the middle 500's in the first instance, about 600 in the second. There is evidence which suggests the local introduction of the stone axe at about 600; before that date seasoned logs which may have been dead for decades were collected for use in buildings, after that date growing trees were cut for use in constructions.

The Four Corners Phase is identified architecturally by pit-house dwellings, either in caves or in the open. The pit-houses usually are circular, and usually oriented to the southeast (exceptions are in caves, where the structures are oriented towards the cave front, regardless of the direction; for example, Step House faces northeast). Four vertical roof supports were customary. A low partition across the width of the floor, projecting from each side wall to meet the fireplace, was the rule. Storage bins and floor pockets usually were incorporated in every dwelling. Individual pit-houses may or may not have a banquette. They vary in depth from 1/3 to 2 meters. They may have roof entrances or side entrances; in surface sites, the side entrance often is expanded into an antechamber. The pit-houses do not have a ventilator other than the entrance passage and a probable smoke hole in the roof, nor a deflector.

Stone implements of the Four Corners Phase include: larger than average chipped points having base notches, heavy choppers and scrapers made from cores, numerous handstones (small river boulders and pebbles), floor polishers (large flat river boulders), and troughed metates. The grooved maul and axe were introduced about 600, near the middle of the period. Characteristic perishable artifacts are sandals of yucca fibre, carefully woven and often decorated, usually scallop-toed, sometimes round-toed (from the later caves in Red Rock Valley), fringed

[1] Nusbaum, manuscript.
[2] Lancaster and Watson, 1943.
[3] Morris, 1936 April.
[4] Morris, 1936 April.

aprons of yucca fibre, and coiled baskets of many forms. Bone awls were usually fashioned from deer metapodial. Marine shells, oliva and olivella, were common ornaments.

The domestic dog was kept. Hunting was subsidiary to the cultivation of maize, squash, and—after 600— beans.

The pottery is distinctive. Mud platters were used throughout the period. Lino Gray and Twin Trees Plain were the common utility types. Lino Black-on-gray and a similar ware with designs applied in mineral paint were the usual decorated types; La Plata Black-on-white and Twin Trees Black-on-white were local variations. Smudged Interior and Polished Red wares were known; these may have been imported or locally made as copies of southern wares.

The skulls of the people were not deformed. I believe most skulls to be dolicho- and mesocephalic, less round-headed than those from remains representative of later phases. Interments were made north, usually uphill, from surface dwellings, in rubbish accumulations, or in the least desirable sections of caves.

Chapin Mesa Phase, *ca.* 700–900

The villages at Sites 102 and 1 appear to be a convincing blend of the characteristics of the Abajo Phase to the northwest, and the La Plata Phase to the southeast. With slightly later tree-ring dates, slightly later developments in adjoining regions also are represented, such as White Mound and Piedra pottery types—Morris also found similar examples of contact in the La Plata.[5] In the consideration of the local cultural development on Mesa Verde, it is easier to designate the blend by a separate phase name rather than to use a hybrid combination, such as the La Plata-Abajo Phase.

Sites representative of, or closely affiliated with, the Chapin Mesa Phase are:

Pipeline Excavation, Mesa Verde, *ca.* 700.[6]
Site 2, Ackmen-Lowry area, *ca.* 770.[7]
Group C-3, Piedra River,[8] *ca.* 770.[9]
Site 13 (Abajo Phase type site), Alkali Ridge, *ca.* 775.[10]
Site 33, Johnson Canyon, *ca.* 835.[11]
Site 102 village, Mesa Verde, *ca.* 840.
Site 1 village, Mesa Verde, *ca.* 840.
Site 1, Ackmen-Lowry area, *ca.* 870.

Sites occupied by contemporaries of the people of the Chapin Mesa Phase, and showing some affiliations, are:

[5] 1939, Plates 222 d and 224 i; Plate 249 a–i.
[6] Smiley, 1949. (Included because Kana-a Gray was found in the pit-house.)
[7] Martin, 1939.
[8] Roberts, 1922.
[9] Haury, 1938.
[10] Brew, 1946.
[11] Morris, 1939.

White Mound, West Puerco,[12] *ca.* 800.
Site 1, Governador,[13] *ca.* 825.

The Chapin Mesa Phase is identified architecturally by pit-house dwellings in the open, bordered to the northwest by one or more rows of contiguous slab-rooms; sometimes a community included a single pit-house, occasionally dozens of pit-houses and hundreds of slab-rooms comprised some of the largest communities constructed in the San Juan drainage. The pit-houses usually are square with rounded corners, and usually oriented to the southeast. A partition, often vestigial, rarely over 70 cm. in height, divides the floor at right angles to the orientation axis, near the southeast side of the fireplace; heavy stone implements, such as metates, usually are found in the space southeast of the partition. Storage bins are rare. Individual pit-houses may or may not have a banquette. They often exceed 2 m. in depth, floor levels are seldom less than 1 meter below the surface of the surrounding soil. The earlier pit-houses usually have an entrance passage from an antechamber; later pit-houses have roof entrances; a ventilator replaced the side entrance-antechamber complex. Many pit-houses contain stone slabs which were used to close the ventilator opening or to act as a cool-air deflector when placed in front of the fireplace.

The rectangular surface rooms, always northwest of the pit-house, have foundations of slabs set in adobe, with a plastered superstructure of poles and brush. The northwestern or back row of rooms served as storage and living quarters; often—particularly in the smaller sites—the front row of floor spaces was roofed over, walls, if present, were of brush. Floors usually are slightly below the soil surface. Rooms were entered through doors in the southeast walls. The roofs of the single-storied structures appear to have been used as working areas and storage spaces.

Stone implements of the Chapin Mesa Phase include: chipped points having base notches, a few drills and end scrapers, rare large blades with side notches—probably knives. River boulder handstones, and floor polishers occur, but are not numerous. Troughed metates were used exclusively. Grooved mauls and side-notched axes and hammerstones with pecked finger grips are plentiful. Bone awls were usually fashioned from deer metapodial; bone needles and spatulas, or spoons, are present occasionally. Stone pendants are the usual ornaments; marine shells are very rare.

The domestic dog was kept. The turkey was raised for its feathers, not for food. Hunting was of secondary importance; maize was grown in quantity, judging by the frequent charred remains found in burned storage rooms; beans and squash were cultivated.

[12] Gladwin, 1945.

[13] Hall, 1944.

The pottery has been divided into several types. Lino Gray, a survival from the preceding phase, was manufactured, but Kana-a Gray (banded neck) came increasingly in vogue—first appearing about 700 (in the Pipeline Excavation). Lino Black-on-gray, La Plata Black-on-white and—later—Piedra Black-on-white, were the usual decorated types. Red wares enjoyed a regional height of popularity, both as La Plata Black-on-red and as Abajo Red-on-orange. Intrusive Black-on-whites from White Mound and perhaps Rosa (Governador) are found, as well as a few Smudged Interior specimens presumably from the south.

No burials were encountered in the Mesa Verde village excavations, and very few in sites in adjoining areas. Four measurable skulls from the Governador excavations were long-headed with a "bun" occiput. At the other extreme of head form, Brew[14] found three adult skeletons, two with pronounced lambdoidal deformation, one with marked occipital deformation, in Site 13 on Alkali Ridge. In the La Plata drainage:

> "Cemeteries dating early in the period show that amalgamation of the two types was not complete. The round skulls are predominant, but the dolichocephals are still represented. For instance, on the Piedra in southwestern Colorado, Roberts identified six undeformed long-skulls among a total of 104 interments, but, he adds, 'Some of the skulls gave a distinct impression of being long-headed despite the deformation.'"[15]

Skulls found at White Mound were not deformed, and appear to be mesocephalic.[16]

Mancos Mesa Phase, *ca.* 900–1050

The pueblos at Sites 102 and 1 furnished the tree-ring dates for Mancos Mesa ruins. Small one-kiva pueblos are scattered throughout the San Juan drainage; a few have been excavated, but in general they have been ignored in favor of earlier and later remains. I believe that the Phase characteristics described below are rather clouded by the great number of concomitant changes; the 75-year span between the two sites dated compels me to disagree with Morris, who says:

> "There was an interval during which the changes allocated to Pueblo II took place, that interval would appear to be measurable by decades rather than centuries. . . . I anticipate that eventually for the San Juan area the cultural modifications attributable to this interim will be distributed between Pueblo I and the Great Period, thus extirpating Pueblo II from the chronological column."[17]

Representative sites include:

Site 102 pueblo, Mesa Verde, *ca.* 950.
Site 1 pueblo, Mesa Verde, *ca.* 1025.
Four sites in the Ackmen-Lowry area, no dates.
Six sites on Alkali Ridge, no dates.

[14] Brew, 1946, Appendix A, p. 317.
[15] Morris, 1939, p. 29.
[16] Gila Pueblo collections.
[17] 1939, p. 35.

The Chaco country, south of the San Juan River, contains quantities of similar and probably contemporaneous ruins. From 900 to 1050 cultural progress appears to have been spear-headed by the Chaco people, influences were primarily from south to north, from Chaco to Mesa Verde and adjoining areas north of the San Juan River.

The Mancos Mesa Phase is identified architecturally by unit type communities of masonry construction, one kiva—rarely more—with one or two rows of contiguous surface rooms to the northwest. The kivas are round and have a banquette; six is the usual number of pilaster roof supports (they vary in number from four to eight), they rarely have the southern recess characteristic of later structures —the kiva at Site 11, Alkali Ridge, is an exception.[18] Each kiva contains a ventilator opening to the southeast, a deflector between the inside ventilator opening and the fireplace, and a sipapu in the floor area north of the fireplace. The surface rooms are usually of masonry, rarely of slab and adobe or upright post construction; they were used for storage and as dwellings. Rubbish was heaped in one area southeast of the living area, a change from the earlier practice of scattering refuse.

Stone implements of the Mancos Mesa Phase include: chipped points having base notches, drills, a few end scrapers, leaf-shaped and side-notched knives. Handstones are plentiful, pecking stones and floor polishers are rare. Troughed metates were the rule, but flat metates were known. Numbers of grooved mauls and side-notched axes occur, as well as hammerstones with pecked finger grips. "Skinning knives" and sandal lasts had been introduced. Awls, needles, and spatulas of deer bone are common accessories, tubes and bone scrapers less frequent. Many stone and sherd pendants were made; marine shell ornaments were rare.

The domestic dog and turkey were kept, the latter for its feathers (most turkey bones are found as interments), although occasionally it was eaten (accounting for the presence of a few turkey bone artifacts). Hunting was of secondary importance to the cultivation of maize, beans, and squash.

The pottery of the Mancos Mesa Phase is distinctive; however, the decorated wares represent a mingling of ideas, predominantly Chaco influence on local manufacture, and a great variety of designs. Wide-mouthed corrugated jars gradually replaced the older Lino and Kana-a Gray utility types. The all-inclusive Mancos Black-on-white ware, and some persisting La Plata and Bluff Black-on-red, comprise the decorated pottery. Chaco, Little Colorado, and Tusayan vessels were introduced from the south and west.

Most interments were made in the debris mound, southeast of the pueblo; occasionally infants were buried under outdoor fireplaces. Skulls show lambdoidal or occipital deformation, usually symmetrical—suggesting the absence of a "bun" occiput and congenital dolichocephaly.

[18] Brew, 1946, figs. 21, 88a.

The McElmo Phase, *ca.* 1050–1150

McElmo Black-on-white pottery is present on a number of Mancos Mesa Phase sites on Mesa Verde; tentative tree-ring dates (bark rings not preserved) of 1052 and 1057 were determined for Sites 115 and 72 respectively. Confirmatory evidence was secured from Site C-6 in the Cahone group of pueblos, 40 miles northwest of Mesa Verde; several McElmo vessels were found on the floor of a burned kiva which furnished bark dates of 1060.[19] McElmo Black-on-white pottery is also present in a number of Montezuma Phase cliff-dwellings and small surface pueblos; two examples are Sites 149 and 121 on Mesa Verde, furnishing bark dates respectively at 1190 and 1196. No pure McElmo site has been excavated, nor has any been reported in surveys, but the appearance of the pottery suggests the veracity of the McElmo Phase, originally conceived to bridge the great differences between the decorated pottery types characteristic of the Mancos Mesa and Montezuma Phases.

The McElmo Phase is identified architecturally, using the evidence presented by the growth of Site 34, by unit and compound pueblos of masonry construction. Most of the rooms, sometimes two-storied, are grouped to the northwest of one or more kivas; the kivas are enclosed, either by walls or single tiers of rooms, on the remaining three sides. The kivas are round, and have a banquette, which supports six pilasters; the southern recess is an established architectural feature, wall niches are customary. Each kiva contains a ventilator—opening to the southeast; the deflector, fireplace, and sipapu arrangement is a carry-over from the Mancos Mesa Phase. The masonry rooms, usually rectangular, vary in size to meet the needs of storage areas and dwellings. Debris was deposited to the southeast of the living area.

Stone implements of the McElmo Phase include: chipped points having either base or side notches, drills, a few end and concave scrapers and saws, leaf-shaped and side-notched knives. Pecking stones replaced handstones in frequency; floor polishers were present, usually found in kivas. Troughed metates gave way to the flat form. Grooved mauls occurred, but grooved hammerstones, of the battered-axe type, were more frequent; the grooved axe replaced the side-notched axe. "Skinning knives" and sandal lasts were standard, though not common. Awls, needles, tubes, and scrapers, of mammal and bird bone, persisted; perforated rabbit leg bones represented a new artifact. Pendants of stone and sherd, and stone-disc beads were the customary ornaments; marine shells were rare.

The domestic dog and turkey were kept; the latter was eaten, and the feathers and bones used for clothing and tools. Hunting remained secondary in importance to the cultivation of maize, beans, and squash.

[19] Mr. Ansel Hall, Mancos, Colorado, granted permission to use this information.

Corrugated narrow-mouthed jars gradually replaced the wide-mouthed type of the preceding phase. The decorated pottery displayed a change from inorganic paint, distinctive of Mancos Black-on-white of the preceding phase, to organic paint. Designs became more complicated, bowl rims thicker, and often marked with dots. The mug made its first appearance. Much McElmo Black-on-white might be called carelessly-made Mesa Verde Black-on-white of the succeeding phase; it may also be called developmental, or proto-Mesa Verde ware,[20] and this is substantiated by tree-ring dates and contemporaneous divergences from Chaco inorganic-paint wares which reached new heights of excellence and popularity south of the San Juan River.

Most interments were made in the debris mound southeast of the pueblo; occasionally burials were made in rooms or in the nearby talus. Skulls show lambdoidal or occipital deformation, usually symmetrical.

The Montezuma Phase, *ca.* 1150–1300

The great cliff-dwellings in Mesa Verde National Park are representative of the Montezuma Phase, the culmination of the Mesa Verde Branch. Less spectacular but contemporaneous unit and compound pueblos occur on Mesa Verde, and in adjoining areas where suitable caves are rare or lacking entirely.

The splendid Chaco development ended, or moved to a new undetermined locality, before the Montezuma Phase began. The cliff-dwellings of Mesa Verde appear to have been the strongholds of a tenacious northern group of Pueblo culture bearers, a people with formalized communal practices and standardized cultural techniques. In response to some pressure or pressures, an increasing number of the occupants of the broad valleys moved into the retreat area of Mesa Verde. In the 1200's, a slow and intermittent southward migration took place, as suggested by the reoccupation of the Chaco pueblo at Aztec by Mesa Verde people.[21] The area was completely abandoned by 1300, on the evidence of tree-ring dates for towers and fortified pueblos.

The Montezuma Phase was characterized architecturally by unit and compound pueblos of stone masonry, located both in the open and in caves. The rooms, often two- or three-storied, were usually grouped northwest of the kivas. This arrangement was adhered to in most cave sites as well, since only shelters having a southern exposure were occupied. The kivas were enclosed by walls or tiers of rooms; often kivas and rooms, sometimes an adjoining tower, were connected by tunnel passageways. In size, ceiling height, and structural details, the rooms and kivas resemble those of the McElmo Phase. However, two new details of construction involved the method of dressing stone: the exposed surface of each block was dressed by repeated blows of a pecking stone to produce a dimpled

[20] Kidder, 1924, pp. 65–67, Pl. 27a.

[21] Gladwin, 1945, p. 129.

effect; and the courses of stone often were stabilized by the insertion of rows of small spalls in the mortar. Debris was heaped southeast of the surface sites, thrown down the talus or in the unused sections of the cliff-dwelling.

Stone implements of the Montezuma Phase included: side-notched chipped points, drills, very few scrapers, leaf-shaped and side-notched knives. Pecking stones were plentiful; handstones and floor polishers rare. Grooved mauls were replaced (excepting a few large quarrying mauls) with grooved hammers of igneous rock; axes were full grooved, occasionally double-bitted. Flat metates and manos with one side bevelled were the rule. "Skinning knives," sandal lasts, disc jar lids, and niche covers were carefully wrought in stone. Corn mounds and perforated sandstone balls were new accessories. The plentiful bone implements were identical with those possessed by the people of the preceding phase; scrapers made of deer scapulas increased in frequency. Stone pendants, disc beads, lignite buttons, and some turquoise beads and inlays comprised most of the ornaments; marine shells were rare.

The domestic dog was known but not numerous; turkeys were kept for meat, feathers, and the bones were used as raw material for tools. Hunting remained of secondary importance to agriculture.

Mesa Verde Black-on-white pottery reflected a local standardization of form and design unusual even in the Southwest. Mugs, hollow-handled ladles, kiva jars with a rim moulded to facilitate sealing, thick-rimmed bowls, spherical and submarine-shaped canteens, all well polished and decorated with heavy geometric designs in organic paint, make up a pottery style easy to recognize. The standard utility vessel was the narrow-mouthed corrugated jar. Among the rare decorated intrusives from the southwest and west, Little Colorado Red wares and St. John's Polychrome in particular were most common.

Cemeteries of the Montezuma Phase remain undiscovered. A few intramural burials have been found, and others have been occasionally encountered in the talus, below cliff-dwellings or near surface sites; some interments were made in refuse accumulations southeast of pueblos or in the backs of caves. Skulls show lambdoidal and occipital deformation, usually symmetrical.

APPENDIX A

TREE-RING DATES FOR MESA VERDE RUINS

THE following tabulation lists the dated ruins on Mesa Verde National Park, from the oldest to the most recent, according to the most recent date determined for each site. Each ruin is identified by a Gila Pueblo survey number, and by name or location.

The second column contains dates published for the particular sites, dates which have appeared in the Tree-Ring Bulletin for the most part, in articles by Douglass, Peterson, Getty, Schulman and Smiley. In many cases the different authors have published studies of the same or overlapping collections of specimens; however, duplication of dates has been avoided by comparison of the catalogue numbers whenever possible.

The third column contains heretofore unpublished dates determined at Gila Pueblo by Gladwin, Dennison and O'Bryan. All of the dates included in this column are from records having a "good" or "excellent" correlation with the Mesa Verde District master charts.

The fourth column summarizes the range of dates for each site. Each date listed represents the outermost definable ring on a specimen; if the date is in italics, the bark ring was preserved; if the date is followed by a plus (+) sign, the bark ring could not be determined. The letters "e," "g," "f" and "p" preceding a date identify the record as "excellent," "good," "fair" or "poor."

Site G. P. Survey No. Name or Location	Dates (Douglass *et al.*)	Dates (Gladwin *et al.*)	Range (*Douglas *et al.*) (†Gladwin *et al.*)
M. V. #145, Pit I		e 477+ g 492+ g *522*	
Twin Trees Area		e 562+ g *572*	† 477+— *572*
M. V. #135		g 582+ g 584+ e 588+	
Earth Lodge B.		g 590+	† 582+— 590+
M. V. #37	612±	e 526+ g 534+ g 535+	* — 612±
Earth Lodge A.		g 538+ g 563+ e 575+	† 526+— 575+
M. V. #153		g 601+ e 617+ e 619+	
Twin Trees Area		e 619+	† 601+— 619+
M. V. #134	e 610+ 625±	g *593* g 608+ g *609*	* 610+— 625±
Step House		g 611+ g *618* e *626*	† *593* — *626*
		g *626*	
M. V. #4		g 642+ g 653+	
Twin Trees Area			† 642+— 653+
M. V. #145, Pit II		g 641+ g 647+ e 648+	
Twin Trees Area		g 654+ g 654+ g 655+	† 641+— *664*
		g *657* g *657* g 660+	
		g 662+ e *664* g *664*	
		g *664*	

M. V. #140	684+	686+	690+	e 609+	g 695+	g 697+	* 684+— 700+
	690+	692+	692+	g 697+	e 699+	g *700*	† 609+— *702*
Pipeline Excavation	694+	695+	695+	g *700*	g *700*	g *701*	
	696+	698+	700+	e *702*			
	700+	700+	700+				
	700+						
M. V. #107				g 819+		e 831+	
Wetherill Mesa				e *836*			† 819+— *836*
M. V. #102 "village"				g 804+	e 807+	e 809+	
Twin Trees Area				g 811+	g 816+	g 818+	† 804+— *840*
				g 822+	e 826+	g 828+	
				g 828+	e *829*	g *831*	
				g *831*	g 831+	g *832*	
				g *832*	e *832*	e *833*	
				g *835*	g *835*	e *835*	
				e *835*	g *835*	g *835*	
				e *840*			
M. V. #1 "village"				g 814+	g 817+	g 830+	
Twin Trees Area				g 833+	e 837+	g *840*	† 814+— *845*
				g *843*	g *845*	g *845*	
M. V. #102 "unit"				e 947+			
Twin Trees Area							— 947+
M. V. #1 "unit"				g 966+	g 969+	e 973+	
Twin Trees Area				g 973+	g 974+	g 976+	† 966+—*1024*
				e 984+	g 985+	e 985+	
				e 986+	e 987+	e 989+	
				e 990+	g 992+	g 995+	
				e 999+	e*1002*	g1003+	
				g*1005*	e*1007*	e1013+	
				e*1014*	g1015+	e*1018*	
				g*1024*			
M. V. #155				g1018+	g1051+	e1052+	
Weber Canyon Mouth							†1018+—1052+
M. V. #72				e1057+			
Morefield Canyon							† —1057+
M. V. #139				g 907+	e 988+	e1009+	
Far View House				g1017+	e1025+	g*1060*	
				g1020+	g*1060*	e1060+	† 907+—1062+
				g1060+	g1062+		
M. V. #152				g1101+			
Broken Cave							† —1101+
M. V. #137				g1091+	e*1106*		
Hoot Owl House							†1091+—*1106*
M. V. #131	e1132+						* —1132+
Kodak House							
M. V. #34				g 978+	g 983+	e 987+	
Soda Canyon				g 995+	e*1098*	g*1100*	* 978+—1183+
				g*1100*	e1102+	g*1160*	
				g*1180*	g1183+		
M. V. #123	1112	e1119+	g*1184*	g*1055*	e*1064*	e1115+	*1112 —*1184*
Oak Tree House							†1055 —1115+
M. V. #122	e1171+	e*1174*	1184	g*1110*	e1174+		*1171+—1184
Hemenway House							†*1110* —1174+
M. V. #149				g1181+	e*1190*		
Fewkes Unit Pueblo							†1181+—*1190*

M. V. #133				g1138+	e*1194*		
N. of Balcony House							†1138+—*1194*
M. V. #121	e 958+	e 964+	e1022+	g1140+	e1171+	e*1196*	* 958+—1022+
Bone Awl House							†1140+—*1196*
M. V. #127	g*1199*	f*1202*					**1199* —*1202*
Painted Kiva							
M. V. #115				e1013+	e1025+	e1053+	
Cliff Canyon				g*1176*	e*1207*	e*1208*	†1013+—*1208*
M. V. #138	989+	1214+					* 989+—1214+
Pipe Shrine House							
M. V. #147				g1234+			
Ruin No. 12							† —1234+
M. V. #151				g*1232*	g*1243*		
Ruin No. 20½							†*1232* —*1243*
M. V. #130				e1240+	g*1244*		
Navajo Canyon (opp. Wickiup)							†1240+—*1244*
M. V. #146				e*1250*	e*1251*	e*1251*	
Ruin No. 11							†*1250* —*1251*
M. V. #129				g1236+	e*1252*		
Sun Point Cliff-Dwelling							†1236+—*1252*
M. V. #114	e1066+	e1181+	1194	e1114+	g1140+	g1184+	*1066+—1259
Square Tower House	f1241+	f*1242*	f1243+	e*1185*	g*1215*	e*1243*	†1114+—*1250*
	p1246+	1259		e*1243*	g*1244*	e*1250*	
M. V. #118	e*1066*	1066+		g*1032*	e*1055*	e*1060*	**1066* —1066+
Mug (Jug) House				g*1063*	e*1066*	e1066+	†*1032* —*1262*
				e*1074*	g*1204*	g1229+	
				g*1230*	g*1262*		
M. V. #124	f1259+	f1260+		g*1153*	g*1263*		*1259+—1260+
New Fire House							†*1153* —*1263*
M. V. #125	1174	g1241+	f*1261*	g1218+			*1174 —1265
Ruin No. 16	1265						† —1218+
M. V. #148				g1209+	g*1268*		
Ruin No. 13							†1209+—*1268*
M. V. #126	1073	1175	e*1210*	e*1211*	g*1237*	g1237+	*1073 —*1273*
Cliff Palace	g*1264*	p*1266*	f*1267*	g*1239*	g*1246*	e*1247*	†*1211* —*1273*
	f*1273*	f*1273*		e*1268*	e*1270*	e*1271*	
				g*1273*	e*1273*		
M. V. #119	e1117+			e1064+	e*1127*	e1166+	* —1117+
Spring House				e*1176*	g1209+	g*1212*	†1064+—*1273*
				g1248+	g*1264*	g*1264*	
				g*1264*	g*1266*	g1268+	
				g*1270*	g*1270*	e*1272*	
				g*1273*			
M. V. #128	f*1273*			g*1274*			* —*1273*
Buzzard House							† —*1274*
M. V. #120	e1020+	f*1230*	f*1230*	g1038+	g*1238*	g1242+	*1020+—*1274*
Spruce Tree House	*1231*	*1234*	f*1235*	g1248+			†1038+—1248+
	f*1240*	g*1243*	f*1244*				
	e*1244*	*1246*	*1247*				
	g1247+	f*1250*	e*1251*				
	p*1251*	p*1251*	p1251+				
	g*1254*	e*1254*	e1270+				
	f1273+	e*1274*					
M. V. #132	1184	g1204+	e1211+	g1192+	g*1237*	e*1248*	*1184 —*1274*

Long House	f1246+ g1267+ *g1274*	f*1263* e*1268*	p1267+ g*1273*	e*1254* g*1264* e*1268* e*1277*	g*1262* e*1267* g*1268*	g*1263* e1267+ g*1275*	†1192+—*1277*
M. V. #117	f*1190*	*1204*	g1206+	g1096+	g*1128*	e*1206*	**1190* —*1272*
Balcony House	g*1272*			g*1279*			†1096+—*1279*

APPENDIX B

SHERD COUNTS FROM THE EXCAVATIONS

Site 102 Pueblo

Outside Fireplaces:

Type	N of Debris Mound	SW of Kiva	SE of Rooms
Mancos B/W	2	6	3
Corrugated	1	7	33
Piedra B/W			3
La Plata B/W	1	4	1
La Plata B/R	1	9	2
Kana-a Gray (Rims)		5	1
Lino Gray (Rims)	1	29	4
Kana-a and Lino Gray	16	219	60
Lino B/G		1	1
Smudged Interior		1	

Debris Mound:

Type	Shape	Classificatory Count	Total Count
Mancos B/W			387
	Effigy (foot)	1	
	Bowl	96	
	Bowl, coiled outside	1	
	Bowl, corrugated outside	4	
	Dipper,	28	
	Handles: solid round 4		
	solid flat 6		
	hollow round 2		
	half "gourd" 2		
	Jar and pitcher	253	
	Kiva jar	4	
Corrugated (all rim sherds were from wide-mouthed jars)			181
Piedra B/W bowl			40
La Plata B/W			49
	Bowl	41	
	Jar and pitcher	8	
Abajo R/O bowl			17

La Plata B/R		77
Bowl	61	
Jar and pitcher	13	
Kiva jar	3	
White Mound B/W bowl		9
Kana-a Gray (Rims)		119
Lino Gray (Rims)		179
Kana-a and Lino Gray		2296
Lino B/G bowl		18
Plain, polished interior bowl		146
Plain red bowl and jar		41
Red, corrugated outside		2
Smudged Interior		3
Red exterior	2	
Plain exterior	1	
Coiled		4
Incised		2
Punctate		2

Masonry Rooms:

Type	East Room Fill and Floor	East Room Surface —.4 m.	West Room .4 m.— Floor	West Room Floor —.8 m.
Mancos B/W	7	2		
Corrugated	8	2	1	3
Piedra B/W	2		1	3
La Plata B/W	1	1	6	5
Abajo R/O			1	3
La Plata B/R	2		10	13
Kana-a Gray (Rims)	1	2	1	
Lino Gray (Rims)	3	2	26	30
Kana-a and Lino Gray	30	47	235	422
Lino B/G			1	4
Fugitive Red			4	1
Polished Brown				2

Kiva:

Type	General Fill	Surface —1.0 m.	Floor	Floor Pocket	Ventilator Fill
Mancos B/W	145	24	61	8	11
Corrugated	203	49	43		12
Piedra B/W	21				2
La Plata B/W	3	1	3		1
Abajo R/O	4	1			
La Plata B/R	12		2		4
Kana-a Gray (Rims)	15	1	2		2
Lino Gray (Rims)	68	13	4	1	19
Kana-a and Lino Gray	742	103	108	6	134
Lino B/G	4				
Fugitive Red	2				

Site 102 Village

Outside Fireplaces:

Type	E of Pit-House I	N of Pit-House I
Piedra B/W	2	1
La Plata B/W	7	
Abajo R/O		1
La Plata B/R	4	1
Lino B/G	3	1
Kana-a Gray (Rims)	14	5
Lino Gray (Rims)	33	4
Kana-a and Lino Gray	324	78
Corrugated	6	
Mancos B/W	3	
Fugitive Red	3	

Slab Rooms:

Type	Outside W Room	W Room	Center Room	N of Rooms	E Room	S of Rooms	Outside E Room
Piedra B/W	4	3	5		4	5	1
La Plata B/W	9	5	12	1	8	5	7
White Mound B/W	2		2		2		
Abajo R/O	3	1	2			2	1
La Plata B/R	7	6	15	3		3	3
Lino B/G	4	2	2		2	3	1
Kana-a Gray (Rims)	37	18	33	3	70	16	1
Lino Gray (Rims)	72	30	28	14	110	20	19
Kana-a and Lino Gray	703	283	374	115	1257	238	156
Polished Brown (mica content)	3						
Corrugated	1			1			
Mancos B/W	1			1			

Pit-House I:

Type	General Fill	Ventilator Fill	Surface —1.5 m.	1.5–1.7 m. (Charcoal Lens)	1.7 m.— Floor	Floor Pockets
Piedra B/W	3		7	5	2	
La Plata B/W	3	1	17	8	4	2
White Mound B/W	1		2		1	
Abajo R/O			4	1		
La Plata B/R	6	1	14	7	4	
Lino B/G	2		4	2	1	
Kana-a Gray (Rims)	4	2	28	18	7	1
Lino Gray (Rims)	12	4	51	30	6	1
Kana-a and Lino Gray	159	70	548	225	98	15
Corrugated	3	4	3			
Mancos B/W	11	2	5			

Pit-House II:

Type	General Fill	Ventilator Fill	Surface —1.5 m.	1.5–1.8 m. (Charcoal Lens)	1.8 m.—Floor	Floor Pockets
Piedra B/W	9	3		5		
La Plata B/W	40	4	7	13	13	
White Mound B/W	2		1		6	1
Abajo R/O	6		4		1	
La Plata B/R	20		9	2	11	1
Lino B/G	4		2	2		
Kana-a Gray (Rims)	32	1	20	9	22	
Lino Gray (Rims)	50	9	32	19	59	
Kana-a and Lino Gray	713	81	481	79	365	2
Corrugated	65	2	19			
Mancos B/W	16		8			
Mancos B/W, corrugated outside	1					

Pit-House III·

	General Fill	Surface —1.7 m.	1.7 m.—Floor
Piedra B/W	4	4	
La Plata B/W	14	9	
Abajo R/O	3	1	
La Plata B/R	27	9	
Lino B/G		2	
Kana-a Gray (Rims)	14	7	3
Lino Gray (Rims)	66	20	4
Kana-a and Lino Gray	441	89	20
Corrugated	49	7	1
Coiled	1		2
Mancos B/W	24	8	

Site 1 Pueblo

Outside Fireplaces:

Type	N of Surface Rooms	E of Surface Rooms
Mancos B/W	49	16
Corrugated	169	91
La Plata B/W	1	5
La Plata B/R	3	3
Kana-a Gray (Rims)	1	
Kana-a and Lino Gray	81	7

Debris Mound:

Type	Shape	Classificatory Count	Total Count
Mancos B/W			519
	Bowl	167	
	Bowl, corrugated outside	18	
	Dipper	30	
	Handles: solid round 7		
	solid flat 1		
	hollow round 3		
	half gourd 2		
	Jar and pitcher	300	
	Kiva jar	4	
Corrugated wares (all rim sherds were from wide-mouthed jars)			1229
Piedra B/W bowl			4
La Plata B/W			19
	Bowl	18	
	Jar and pitcher	1	
Abajo R/O bowl			4
La Plata B/R bowl			18
White Mound B/W bowl			2
Kana-a Gray (Rims)			22
Lino Gray (Rims)			39
Kana-a and Lino Gray			698
Lino B/G bowl			5
Plain, polished interior bowl and platter			31
Plain red, bowl and jar			6
Smudged interior, plain exterior			3
Coiled			19
Incised			3
Red-on-white (intentional?)			4
Fugitive Red bowl			2
Red wash, fugitive (jar interiors)			4
Polished Brown			2
Black Mesa B/W bowl			1

Masonry Rooms:

Type	D-shaped Room		East Room	
	Surface —.6 m.	.6 m.— Floor	Surface —.6 m.	.6 m.— Floor
McElmo B/W				1
Mancos B/W	9	37	29	44
(Corrugated outside)				1
Corrugated	19	40	83	80
Coiled		2		1
La Plata B/W		3		4
La Plata B/R				
Kana-a Gray (Rims)		1	1	2
Lino Gray (Rims)		1	2	2
Kana-a and Lino Gray	1	15	9	16
Polished Brown				1

Kiva:

Type	Surface —1.5 m.	General Fill	1.5 m.— Floor	Floor Pocket	Ban- quette	Ventila- tor Fill
McElmo B/W						1
Mancos B/W	11	129	21	4	48	23
(corrugated outside)		1	1		2	
Corrugated	7	87	22	1	43	13
Coiled	1	1			1	
Piedra B/W		1				
La Plata B/W		1			1	
Abajo R/O		1				
La Plata B/R	1				1	2
Lino B/G		1				
Kana-a Gray (Rims)	1	4			1	
Lino Gray (Rims)		2				1
Kana-a and Lino Gray	5	36	7	2	31	14
Polished Brown		1			1	

Site 1 Village

Slab Rooms:

Type	West	2nd from W	3rd from W	East Section	S of East Section
Piedra B/W			1		
La Plata B/W	1	1	4		5
White Mound B/W		1			
Abajo R/O			3		2
La Plata B/R	6	1		4	7
Lino B/G		1	2	1	
Kana-a Gray (Rims)	12	7	14	8	15
Lino Gray (Rims)	19	9	3	4	14
Kana-a and Lino Gray	249	132	159	113	247
Smudged Interior		1	5		2
Corrugated	19		9	18	15
Mancos B/W	11		3	24	10
Red wash			2		

Site 145

Pit-House I:

	Pit-House I			Sweat House	
Type	Antechamber	Fill	Floor	Fill	Floor
Lino Gray	177	26	21		
Twin Trees Plain	13	13	3		
Mud Platter			1		
Lino B/G		8	2		
Twin Trees B/W		1			
Polished B/R	1				
Smudged Interior	1				
Corrugated		1		22	
Mancos B/W		3			

Pit-House II:

Type	Antechamber	Fill	Bench	Floor	SE Bin
Lino Gray	92	290	2	112	5
Twin Trees Plain	58	137	1	56	2
Mud Platter	1	2	2	1	
Lino B/G	10	21	1	11	
Twin Trees B/W		1	1	1	
Fugitive Red		2		2	
Smudged Interior		1			
Corrugated		2			
Mancos B/W		1			
McElmo B/W		1			

SITE 34

Rooms:

In this and following tables, plain wares include the partly smoothed bottoms of corrugated jars (Plate XLIII f).

	Rooms					
	4	5		6		7
Type		to upper floor	to lower floor	to upper floor	to lower floor	
Mesa Verde B/W						
bowl, inside decorated	53	22	2	17		2
both sides decorated	6					
jar	39	46	8	13		3
ladle				2		
mug	1					
McElmo B/W						
bowl	4			4		4
jar	2	5		4	2	5
ladle		2		1		2
mug		2	1			
other			1 kiva jar 1 duckbowl			
Mancos B/W						
bowl	6	8	3	6	3	2
jar	3	8	1		2	1
ladle		1		1		
other		1 canteen			1 pitcher	
Lino Gray and Kana-a Gray (mixed)		3	1	1		2
Plain		9				2
Coiled	1					
Corrugated	170	9	10	80	26	62
Bluff B/R		1				
Fugitive Red		1				

Type	Rooms 8 to upper floor	8 to lower floor	9 to upper floor	9 to lower floor	10 to upper floor	10 to lower floor
Mesa Verde B/W						
bowl, inside decorated	10	2	8		29	3
both sides decorated	3				1	
jar	18	2	13	3		
ladle			1			
mug			1		1	
McElmo B/W						
bowl	13		5	2	9	
jar	2				1	
ladle	1				2	4
mug		1				
Mancos B/W						
bowl	4	10	4	3		
jar	4	18	1	4	1	4
ladle						1
other	kiva jar			pitcher	kiva jar	canteen—4 pitcher
Lino Gray (Rims)		1				
Kana-a Gray (Rims)		2				1
Lino Gray and Kana-a Gray (mixed)			2	2		1
Plain	4				1	
Corrugated	46	25	67	9	79	15
Bluff B/R				1		

Type	Rooms 11 to upper floor	11 to lower floor	12 to upper floor	12 to lower floor	13 to upper floor	13 to lower floor
Mesa Verde B/W						
bowl, inside decorated			9		20	
both sides decorated	(Mixed		1		1	
jar	with		17		30	2
mug			1		1	
McElmo B/W	northern					
bowl	corner		8		9	
jar			9	3	9	
ladle	of		2	1		
Mancos B/W	adjacent					
bowl		1	10	1	5	1
jar	court		9	5	2	2
ladle	sherds)		1			1
Lino Gray and Kana-a Gray (mixed)			2		3	
Plain				1		
Corrugated		28	42	8	97	4
Little Colorado Red ware				1		
Smudged Interior					2	

Type	Rooms 14	15 to upper floor	15 to lower floor	16 (partly included with Kiva III)
Mesa Verde B/W				
bowl, inside decorated	(Sacks	43		10
both sides decorated		3		2
jar	broken	34		5
ladle		3		1
other	and sherds	canteen kiva jar		
McElmo B/W	mixed			
bowl		21		5
jar	with	11		
ladle				1
other	Debris	canteen—3		
Mancos B/W				
bowl	Mound	4	14	6
jar			30	2
ladle	count)		1	1
Lino Gray (Rims)			1	
Kana-a Gray (Rims)			1	1
Lino Gray and Kana-a Gray (mixed)		1	4	3
Plain		3		
Coiled		1	2	
Corrugated		118	69	38
Little Colorado Red wares				2
Bluff B/R			1	1
Fugitive Red				1

Type	17	18	19	Rooms 20	21	22 to floor	22 subfloor fill
Mesa Verde B/W							
bowl, inside decorated	5	(Sack	18	49	12	10	2
both sides decorated				1	1	7	
jar	8	broken	42	39	9	21	4
ladle				3			
		sherds					
McElmo B/W							
bowl	1	included	17	13	2	13	4
jar			4	6	2		
ladle	1	with		2			
other				kiva jar			
Mancos B/W		Debris					
bowl	3		11	16	19	21	15
jar	5	Mound)	18	29	11	20	22

ladle		3	2	1	1	5
other	kiva jar pitcher	pitcher—2	pitcher		pitcher	pitcher—3 canteen
Lino Gray (Rims)			1			2
Lino Gray and Kana-a Gray (mixed)		2	9			1
Plain	1	4	4	1	3	3
Coiled		2	5			4
Corrugated	16	89	239	5	71	47
Little Colorado Red ware		1				
Smudged Interior			1			
Fugitive Red			2			
Red-on-brown			1			
Lino B/G						1

Type	Rooms				
	23		24		26
	to floor	subfloor fill	to floor	subfloor fill	
Mesa Verde B/W					
bowl, inside decorated	3		39	12	9
both sides decorated	1		1	1	2
jar	8	2			12
ladle			1		
McElmo B/W					
bowl	3	7	10	1	6
jar	14	8	11	13	7
ladle			1	1	
other			kiva jar		
Mancos B/W					
bowl	10	16	3	10	4
jar	21	9	7	10	14
ladle		5		2	4
Lino Gray (Rims)					1
Lino Gray and Kana-a Gray (mixed)	2	5			1
Plain	2		4		3
Coiled				1	
Corrugated	31	46	41	56	136
Red-on-brown		1			

Type	Rooms				
	27		28		29 and 30
	to upper floor	to lower floor	to upper floor	to lower floor	sherds mixed
Mesa Verde B/W					
bowl, inside decorated	18	5	27	13	24
both sides decorated			1		1
jar	34	2	31	21	24
ladle			3		

other		pitcher			
McElmo B/W					
bowl	13	2	16	5	19
jar			18	21	27
ladle	1				
mug				1	1
Mancos B/W					
bowl	16	10	28	19	20
jar	21	4	22	22	58
ladle	1	1	4	1	5
other		pitcher			pitcher kiva jar
Lino Gray (Rims)	1		2	3	4
Kana-a Gray (Rims)				1	
Lino Gray and Kana-a Gray (mixed)	8		34	14	19
Plain	2			1	4
Coiled	1	2	10	10	12
Corrugated	61	19	359	83	213
Little Colorado Red wares			2		
Bluff B/R	1				
Tusayan Red wares					3

Type	Rooms								
	31	32	33	34	35	36	37	38 fill	38 floor
Mesa Verde B/W									
bowl, inside decorated	25	30	60	9	36	17	4	45	27
both sides decorated	3	1	6	3	1	1		1	2
jar	14	19	20	15	52	24		23	12
ladle			1		1		1	1	1
mug	2		1						
McElmo B/W									
bowl	17	9	16	18	24	9	3	11	1
jar	9	3	10	13	9	12	1	13	3
ladle	3		4	2		2		1	
other	pitcher—3								
Mancos B/W									
bowl	15	10		14	23	19	1	10	1
jar	10	21	13	16	25	24	2	11	3
ladle			1	1		2		1	
other	pitcher		kiva jar		pitcher	pitcher kiva jar			
Lino Gray (Rims)		1			1			1	
Kana-a Gray (Rims)	1								
Lino Gray and Kana-a Gray (mixed)		1		2	3	2		1	
Plain	6	2	4	3	2	2		2	

Coiled				1					
Corrugated	113	58	215	166	152	82	182	157	41
Little Colorado Red Wares					1	1			
Tusayan Red Wares						3			
Smudged Interior		1							
Fugitive Red					1				

Type	Rooms						
	39	40	41	42	43	44	45
Mesa Verde B/W							
bowl, inside decorated	28	4	29	85	9	23	17
both sides decorated	1		2	15	3	1	
jar	25	7	21	40	3	11	18
ladle	1	2	1				1
mug				1			
McElmo B/W							
bowl	11		9	7		12	15
jar	7	1	2	8		3	14
ladle	2	1	2	4		2	
Mancos B/W							
bowl	11	3	4	16		16	26
jar	15	4	8	11	4	20	55
ladle	1					2	2
other							pitcher—3 duckbowl
Lino Gray (Rims)		1				1	4
Kana-a Gray (Rims)						2	3
Lino Gray and Kana-a Gray (mixed)	1		2	1		3	14
Plain	1		2		1		
Coiled							20
Corrugated	82	10	101	203	13	69	151
Little Colorado Red wares	2		3	1			
Bluff B/R				1			
Fugitive Red							1
Red-on-white						1	

Kivas:

Types	Kivas				
	I	II	III	IV	V
Mesa Verde B/W					
bowl, inside decorated	50	70	160	82	87
both sides decorated	6	5	4	2	5
jar	46	52	165	93	39
ladle	2	6	2	6	4
mug		6	2	2	
McElmo B/W					
bowl	35	47	70	40	21
jar	9	11	32	16	6

ladle	3	8	5	2	2
mug				1	
other				canteen	
Mancos B/W					
bowl	58	53	85	101	27
jar	91	58	108	123	30
ladle	13	2	5	11	7
other		kiva jar canteen—2	duckbowl	duckbowl canteen kiva jar	kiva jar
Lino Gray (Rims)		1	1	2	
Kana-a Gray (Rims)				4	
Lino Gray and Kana-a Gray (mixed)	19	14	25	45	2
Plain	5	3	9	8	2
Coiled	13	4	6	29	11
Corrugated	414	401	778	525	323
Little Colorado Red wares		3	1		1
Bluff B/R	3		1		
Tusayan Red ware				1	
Smudged Interior		1	1	1	

Courts, Stratigraphic Tests:

	Corner W of Rooms 22 and 23			Alcove between Rooms 20 and 21		
	Surface —.8 m. (to court level)	.8–1.5 m. (to base of retaining wall)	1.5–1.7 m. (to sterile soil)	Surface —1.1 m. (to slab floor)	1.1–1.7 m.	1.7–2.1 m. (to sterile soil)
Mesa Verde B/W						
bowl, inside decorated	27	4		42	8	2
both sides decorated	4			4		
jar	20	2		28	15	1
ladle	1					
McElmo B/W						
bowl	5	14		15	8	2
jar	4	9		12	9	5
ladle	1					
Mancos B/W						
bowl	15	16	10	22	17	20
jar	18	25	8	18	16	35
ladle	3	3				1
other				kiva jar—2		kiva jar
Lino Gray (Rims)	2					2
Kana-a Gray (Rims)			1			
Lino Gray and Kana-a Gray (mixed)	1	15	3	10	10	9
Plain		1			2	
Coiled	1			4	1	11
Corrugated	178	120	21	118	70	42
Little Colorado Red wares		2	2		1	
Smudged Interior	1					

Courts, Corners:

In order to conserve space in the following tabulation, I have designated the different corners by letters:

A. Court corner west of Kiva I, between Rooms 4 and 5.
B. Court corner north of Kiva II, between Rooms 11 and 15. (Count contains sherds from Room 11.)
C. Court corner east of Kiva III, between Rooms 21 and 22.
D. Court corner west of Kiva V, between Rooms 35 and 39.

	A	B	C	D
Mesa Verde B/W				
bowl, inside decorated	19	74	12	9
both sides decorated	1	3	1	2
jar	19	33	10	10
ladle		4		2
mug		1		
McElmo B/W				
bowl	7	25	11	4
jar	11	20	7	5
ladle	1	3	1	
other		kiva jar	pitcher—3	
Mancos B/W				
bowl	6	39	15	10
jar	17	40	17	9
ladle		5	1	1
other		duckbowl	pitcher—2	
Lino Gray (Rims)		1		
Lino Gray and Kana-a Gray (mixed)	1	3	2	1
Plain	4	21	1	2
Coiled	1	2		1
Corrugated	53	576	78	89
Bluff B/R			1	
Tusayan Red wares	1	1		

Debris, Stratigraphic Tests:

Type	Debris Surface —.9 m.	Mound .9–1.2 m.	Test 1.2–1.7 m.	Outside Surface —.6 m.	Room 36 .6–.9 m.	Test .9–1.2 m.
Mesa Verde B/W						
bowl, inside decorated	30	7	5		2	
jar	21	7	4	Sterile	2	
mug	1					
McElmo B/W				(wash		
bowl	7	1	6		2	1
jar				from	1	2
ladle			1			
mug			1	talus)		

Mancos B/W					
bowl	13	4	31		8
jar	18	3	51		17
ladle	1				1
Lino Gray and Kana-a Gray (mixed)	1		3		
Plain	3				1
Coiled	2				
Corrugated	95	16	62	10	30
Bluff B/R			1		1
Smudged Interior	1				

Debris Mound:

Jar sherd totals include indeterminable pitcher, kiva jar, and canteen sherds.

Type	Shape	Classificatory Count	Total Count	Percentage
Mesa Verde B/W	bowl:		5656	
	inside decorated	3425		
	both sides decorated	333		
	rims ticked	1403		
	rims plain	119		
	flared rims	12		
	jar:		2328	
	neck plain or decorated	109		
	neck corrugated	6		
	ladle:		305	
	handle: hollow round	118		
	solid round	31		
	solid flat	12		
	clay fillets	3		
	mugs		107	
	pitcher		1	
	kiva jar		4	
	canteen-spherical		22	
	duckbowl		2	
			8425	33.83
McElmo B/W	bowl:		710	
	rims ticked	54		
	rims plain	180		
	flared rims	3		
	corrugated outside	4		
	jar:		614	
	neck plain or decorated	44		
	neck corrugated	1		

	ladle:		148	
	handle: hollow round	27		
	solid round	36		
	solid flat	32		
	clay fillets	3		
	dammed	3		
	mug		28	
	pitcher		4	
	kiva jar		7	
	canteen-spherical		12	
	duckbowl		1	
			1524	6.12
Mancos B/W	bowl:		618	
	corrugated outside	17		
	basket imprint outside	4		
	jar:		610	
	flat bottom	5		
	indented bottom	12		
	ladle:		125	
	handle: hollow round	4		
	solid round	17		
	solid flat	17		
	clay fillets	5		
	half gourd	7		
	dammed	4		
	pitcher		13	
	kiva jar		3	
	canteen—spherical		2	
	duckbowl		2	
			1373	5.51
Chaco wares			119	0.48
Bonito or Hosta Butte B/W				
	bowl	15		
	jar	3		
	pitcher	3		
Gallup or Red Mesa B/W	bowl	48		
	jar	41		
	pitcher	5		
	canteen	2		
White Mound B/W	bowl	2		
Kayenta (northern Tusayan) wares			20	.08
Black Mesa or Deadman's B/W	bowl	10		
	side handle	4		
Tusayan B/R	bowl	3		

	kiva jar	2		
	pitcher	1		
Little Colorado Red wares			72	.29
Houck Polychrome	bowl	6		
St. Johns Polychrome	bowl	12		
Wingate B/R	bowl	54		
Bluff B/R			21	.08
	bowl	16		
	kiva jar	2		
(La Plata B/R?)	bowl	3		
Governador wares			135	.54
Piedra B/W	bowl	37		
Largo-Gallina B/W(?)	bowl	35		
La Plata B/W	bowl	63		
Lino B/G	bowl		4	.02
Abajo R/O	bowl		3	.01
Lino Gray (Rims)	jar		4	.02
Kana-a Gray (Rims)	jar and pitcher		2	.01
Lino Gray and Kana-a Gray (mixed)				
	jar		103	.41
Plain	jar		236	.95
Coiled			158	.63
	jar	156		
	bowl	2		
Corrugated		12670		50.87
	jar:			
	wide mouth	271		
	narrow mouth	788		
Basket Imprint	bowl		9	.04
Incised			5	.02
	jar (neck)	2		
	ladle (handle)	2		
	pitcher	1		
Punctate	ladle (handle)		1	.00
Smudged Interior	bowl		10	.04
Fugative Red			7	.03
	bowl	5		
	pitcher	2		
Red wash	jar		5	.02

APPENDIX C

MODERN FAUNA AND IDENTIFICATION OF PREHISTORIC FAUNAL REMAINS

THE following list of mammals and birds is limited to species, now native or recently exterminated, which may have been used by the ancient peoples, for food, clothing, implements, and ornaments. I am indebted to Mr. Don Watson, Park Naturalist, Mesa Verde National Park, Colorado, for the records of modern fauna; to Miss Barbara Lawrence, Associate and Acting Curator of Mammals, Museum of Comparative Zoology at Harvard College, Cambridge, Massachusetts, for the identifications of mammal bones found in the excavations; and to Dr. Hildegarde Howard, Curator of Avian Paleontology, Los Angeles County Museum, Los Angeles, California, for the bird bone identifications.

The occurrences of identified bone material from archaeological sites are listed on the right side of the page.

MAMMALS

NEW MEXICO BLACK BEAR *Euarctos americanus amblycep*	
RING-TAILED CAT *Bassariscus astutus flavus* Rhoads	
MOUNTAIN WEASEL *Mustela frenata nevadensis*	
NORTHERN PLAINS SKUNK *Mephitis hudsonica*	Site 34
GREAT BASIN SPOTTED SKUNK *Spilogale gracilis saxatilis*	
COLORADO or PHIPP'S BADGER *Taxidea taxus phippsi*	Site 34
ARIZONA GRAY FOX *Urocyon cinereoargenteus scotti*	Site 102 pueblo, Site 34
GREAT BASIN COYOTE *Canis latrans lestes*	Site 34
ROCKY MOUNTAIN COUGAR *Felis oregonensis hippolestes*	
MOUNTAIN BOBCAT *Lynx uinta* Merriam *Lynx Baileyi* Merriam	Site 1 pueblo, Site 34
WARREN MARMOT *Marmota flaviventris luteola*—Howell	
UTAH ROCK SQUIRREL *Otospermophilus grammurus grammurus*	Site 34, Sites 102 and 1 villages
SAY'S GOLDEN MANTLED GROUND SQUIRREL *Callospermophilus lateralis lateralis*	
ZUNI PRAIRIE DOG	

Cynomys gunnisoni zuniensis Hollister	
Lesser Colorado Chipmunk	
Eutamias minimus operarius	
Hopi Chipmunk	
Eutamias quadrivittatus hopiensis	
Abert Squirrel	
Sciurus aberti mimus—Merriam	
Fremont Chickaree	
Sciurus fremonti fremonti	
Jicarilla Pocket Gopher	
Thomomys bottae apache	
Colorado Beaver	Site 34
Castor canadensis consisor—Warren & Hall	
Tawny White-footed Mouse (or Tawny Deer Mouse)	
Peromyscus maniculatus rufinus	
Buff-breasted Canyon Mouse	
Peromyscus crinitus auripectus	
Boyle White-footed Mouse (or Rowley's Deer Mouse)	
Peromyscus boyleii rowleyi	
Round-tailed Wood Rat	
Neotoma mexicana inopinata	
Colorado Bushy-tailed Wood Rat	
Neotoma cinerea orolestes—Warren	
Rocky Mountain Muskrat	
Ondatra zibethica osoyoosensis	
Yellow-haired Porcupine	Site 34
Erethizon epixanthum epixanthum Brandt	
Texas Jack Rabbit	Sites 102 and 1 villages and
Lepus californicus texianus	pueblos, Site 34
Colorado Cottontail	Site 34, Site 102 pueblo, Sites 102
Sylvilagus auduboni warreni Nelson	and 1 villages
Rocky Mountain Mule Deer	Sites 102 and 1 villages and
Odocoileus hemionus hemionus	pueblos, Site 34, Site 145
Mountain Sheep	Site 34
Ovis canadensis canadensis	

Other animals known to the ancient inhabitants include:

Pronghorn	Site 34
Antilocapra americana	
Bison	Site 34
Bison bison sp.	
Domestic Dog	Sites 102 and 1 villages and
Canis familiaris	pueblos

Birds

Sharp-shinned Hawk	
Accipiter velox velox (Wilson)	
Cooper's Hawk	

Accipiter cooperi (Bonaparte)	
WESTERN RED-TAILED HAWK	Site 34
Buteo borealis calurus—Cassin	
GOLDEN EAGLE	
Aquila chrysaëtos canadensis (Linnaeus)	
DUSKY GROUSE	Site 34
Dendragapus obscurus obscurus (Say)	
MERRIAM'S TURKEY	Sites 102 and 1 villages and
Meleagris gallopavo merriami—Nelson	pueblos, Site 34
BAND-TAILED PIGEON	
Columba fasciata fasciata	
WESTERN MOURNING DOVE	
Zenaidura macroura marginella (Woodhouse)	
LONG-CRESTED JAY	
Cyanocitta stelleri diademata (Bonaparte)	
WOODHOUSE'S JAY	
Aphelocoma californica woodhousei (Baird)	
AMERICAN MAGPIE	
Pica pica hudsonia (Sabine)	
AMERICAN RAVEN	
Corvus corax sinuatus Wagler	
WESTERN CROW	Site 102 village
Corvus brachyrhynchos hesperis Ridgway	
PINON JAY	
Cyanocephalus cyanocephalus	

APPENDIX D

SELECTED LIST OF MODERN FLORA

THE following list of plants is limited to species of known or possible economic value to the ancient peoples, and other species which are ecological indicators characteristic of the Four Corners area.

PINYON
Pinus cembroides edulis—Engelm.
WESTERN YELLOW PINE
Pinus ponderosa-scopulorum—Engelm.
DOUGLAS FIR
DOUGLAS SPRUCE
FALSE HEMLOCK
Pseudotsuga taxifolia—(la Marck.) Britt.
ONE-SEED JUNIPER
Juniperus monosperma—(Engelm.) Sarg.
UTAH JUNIPER
Juniperus utahensis—(Engelm.) Lemmon

ROCKY MT. RED JUNIPER
Juniperus scopulorum—Sarg.
EPHEDRA
MORMON TEA
Ephedra antisyphilitica—Meyer
Ephedra viridis
INDIAN RICE GRASS
Oryzopsis hymenoides—(Roem. & Schult.) Ricker
WILD TIMOTHY
Phleum pratense—L.
RED TOP
Agrostis alba—L.
BLUE GRAMMA
Bouteloua gracilis (H.B.K.) Lag.
KENTUCKY BLUE GRASS
Poa pratensis—L.
BLUESTEM
Agropyron smithii—Rydb.
WHEATGRASS
Agropyron pseudorepens—Scribn. & Smith
SLENDER WHEATGRASS
Agropyron pauciflorum (Schwein)
LITTLE BARLEY
Hordeum pusillum—Nutt.
FOXTAIL BARLEY
Hordeum jubatum—L.
WIRE or BALTIC RUSH
Juncus balticus—Willd.
WILD ONION
Allium acuminatum—Hook.
MARIPOSA LILY
Calochortus nuttallii—T. & G.
MARIPOSA LILY
Calochortus gunnisonii—Wats.
NARROW LEAFED YUCCA
Yucca glauca—Nutt.
BROAD LEAFED YUCCA
Yucca baccata—Torr.
QUAKING ASPEN
Populus tremuloides—Michx.
COLORADO OAK
Quercus leptophylla—Rydb.
CAMPBELL'S SCRUB OAK
Quercus gambellii—Nutt.
GUNNISON OAK
Quercus gunnisonii—(Torr.) Rydb.

WILD BUCKWHEAT
Eriogonum racemosum—Nutt.
ROCKY MT. BEE PLANT
Cleome serrulata—Pursh
WILD GOOSEBERRY
Ribes leptanthum—(A. Gray) Cov. & Brit.
GOLDEN CURRANT
Ribes longiflorum—Nutt.
MOUNTAIN MAHOGANY
Cercocarpus parvifolius—Nutt.
WILD ROSE
Rosa woodsii—Lindl.
SERVICEBERRY
Amelanchier bakeri—Greene
SERVICEBERRY
Amelanchier utahensis—Koehne
WILD CRABAPPLE
Peraphyllum ramosissimum—Nutt.
CHOKE CHERRY
Prunus melanocarpa—(A. Nels.) Rydb.
MOUNTAIN LOVER
Pachystima myrsinites—Raf.
BOX ELDER
Acer negundo—L.
ARIZONA PINCUSHION, SOUR CACTUS
Mamillaria arizonica—(Engelm.) B. & R.
BROWN SPINED PRICKLY PEAR
Opuntia phaeacantha—Engelm.
SPINED PRICKLY PEAR
Opuntia polyacantha—Haworth
WILD PARSLEY
Pteryxia foentculaceae—Nutt.
INDIAN PARSNIP
Aulospermum betheli—Osterh.
SAGE
Salvia lanceolata—Willd.
PALE MATRIMONY
Lycium pallidum—Miers
YELLOW NIGHTSHADE
Solanum triflorum—Nutt.
NUTTALL'S SUNFLOWER
Helianthus nuttallii—T. & G.
SAGEBRUSH
Artemisia scopulorum—A. Gray
SAGEBRUSH
Artemisia natronensis—A. Nels.

SCRUBBY SAGE
Artemisia arbuscula—Nutt.
CHICORY
Troximon aurantiacum—Huck

APPENDIX E

FEWKES UNIT PUEBLO, SITE NUMBER 149

IN 1919 Dr. Ralph Linton excavated a small surface pueblo on Mesa Verde; he acted as assistant to Dr. J. W. Fewkes. Dr. Linton prepared a manuscript describing the site (and Earth Lodge A, a neighboring excavation), which was never published. He has kindly permitted the inclusion of quotations from that manuscript in this publication.

In 1947 I added the Fewkes Unit Pueblo to the Gila Pueblo survey. The sherd collection contained a very high percentage of McElmo Black-on-white. Trenching furnished several datable sections of charcoal and seven fragmentary skeletons from a mass burial.

PART 1. EXCAVATION BY SMITHSONIAN INSTITUTION

The following description is a quotation from "The Small Open Ruins of the Mesa Verde," by Ralph Linton; a manuscript in the archives of the Bureau of American Ethnology, Washington, D. C.:

Unit House

This ruin was so named because the presence of a single kiva seems to indicate that it was inhabited by only one social unit or clan. Buildings of this type are well known, but none within the limits of the park had hitherto been excavated. It is located on Chapin Mesa, about fifty yards from the end of the road leading to Square Tower House. At this point the ground slopes south, and, as a result, the floors of the northern tier of rooms are at a level higher than that of the western room. Several outcrops of good and easily worked rock within a radius of a hundred yards provided an abundance of building material, but, in spite of this, the construction is decidedly poor. There are no foundations extending below the floor level, and the masonry is very irregular, with a tendency to use large stones and fill in about them with small pieces. The southwest corner of the building is formed by a single large slab set on edge, and the southern part of the east wall and southeast corner consist of a curved row of similar slabs. At the present time the horizontal masonry is nowhere more than four tiers high, and in most places only one or two tiers. Many loose stones were found in the kiva, but they were noticeably lacking in the rest of the ruin, and there was certainly not enough rock present to have carried the walls up to a habitable height. In the horizontal masonry, the

stones used increased in size from the bottom upward, making a most unstable foundation, and the vertical slabs were not adapted to the support of a masonry superstructure. In view of these facts, it appears probable that the walls were never much higher than at present, the upper part of the house being of wattle and daub construction. No traces of such a superstructure were found, and its existence is purely conjectural.

The kiva presents several interesting features. It is of six pilaster type, with niches of uniform width, and an extreme diameter of 12.8 feet. Ventilator and fire pit are normal in their form and alignment, but there are no traces of a fire screen, although the floor is well marked, and would certainly show the outline of the base of this structure had one ever existed. That part of the floor which normally contains the sipapu was not cleared, so this may or may not be present. No masonry was employed below the banquet, except at the ventilator opening, where there is a V-shaped facing of stone, doubtless built to retain the earth filled in after the construction of the ventilator shaft. The banquet itself, and the backs of three of the niches are also of undisturbed earth. The rear wall of the southeastern niche is lined with poor and irregular masonry of small stones, and the back of the southern niche was probably of similar construction. The pilasters rest directly upon the banquet, and are constructed of sandstone slabs of fairly uniform thickness, cut to the necessary width and laid up one above another. They are poorly attached to the earth wall behind, and all the stone work seems to show complete ignorance of the most elementary principles of good construction.

Unit House was partially remodeled in ancient times. Originally it seems to have consisted of a kiva, with a large roughly triangular room on the west, and two rooms on the north. There may have been other rooms on the south and east, but, owing to the slope of the ground, these would have been quickly obliterated. The northern rooms differed in floor level. . . . A new room had been built in the space between the old north room and the kiva, its southern wall encroaching upon the latter. In order to support this new construction, one pilaster of the kiva was torn out, and a wall of heavy irregular masonry carried down to the level of the old banquet. A new floor was built in the kiva, probably by leveling off accumulated debris, and on this, 18 inches above the old level, was constructed a slab box, 5 ft., 6 in. in length by 2 ft., 6 in. in width. Transverse slabs divide this into three compartments, the end ones of equal size, and the middle one slightly larger. The presence of metates in position show it to have been a mealing bin. Between the western end of the mealing bin and the wall, there is a shallow fire pit, 1 ft., 5 in. in diameter, and floored with a single slab. Abandoned kivas were frequently used as rubbish dumps, or filled in and built over, but cases where they have been remodeled and put to a secular use are very rare.

Some time after the abandonment of the site, when the kiva had become almost filled with debris, it was used as a burial place. Remains of four skeletons were found, the deepest being about three feet below the present surface. All were badly shattered by overlying stones, and, in the case of three, the position could not be determined. The fourth and best preserved interment was an entire skeleton, bunched together in a small space, and no two bones lay in their proper relation. Large fragments of black and white pottery had been placed over the skulls of all four burials, and a number of other larger sherds were found among the bones, but there were no complete pieces present.

Artifacts

The rooms yielded only a few scattered sherds and spalls, and a single small perfect olla of sugar bowl type. The kiva yielded manos, metates, a number of excellent bone piercers, and many sherds, among them two restorable ollas. The ollas and most of the bone implements were found on the level of the upper floor. The bone and stone artifacts were all of types common in the cliff dwellings and later surface ruins. The pottery also was like that of the cliff dwellings, in that it consisted of black indented ware and black and white painted ware of later type. The designs differ slightly from those ordinarily found on cliff house pottery, but there is nothing distinctive enough to justify putting this material in a separate class. A superficial examination of sherds from the different levels of occupation failed to reveal any differences.

Part 2. Research by Gila Pueblo

Sherd count:

Type	Classificatory Count	Total Count
Mesa Verde Black-on-white		3
bowls, decorated inside	3	
McElmo Black-on-white		67
bowls	51	
jars	14	
ladles	1	
mugs	1	
Mancos Black-on-white		5
bowls	1	
jars	3	
ladles	1	
Corrugated, narrow mouth		39

Tree-ring dates:

Twenty-two pieces of charcoal were recovered from earth turned during the initial excavation, eight additional fragments were found in undisturbed soil.

Two of four pieces studied furnished reliable dates. Dates marked with an asterisk are included in Appendix A.

Species	Dates Inside — Outside	Remarks	Rating
Douglas Fir	⊙1113 — 1190*		Excellent
Pinyon	⊙1048 — 1181+*		Good

Mass burial:

The altar alcove of the kiva, the section of banquette over the horizontal tunnel of the ventilator, had not been cleared during the initial excavation. It was an obvious place to search for datable wood, as adjoining sections of masonry walls contained sandstone blocks flaked and reddened by fire.

A thick layer of scattered human bones was found in the fill resting on and above the banquette level, the floor of the altar alcove. The skeletal remains are of seven individuals: two adult males, three adult females, one adolescent, and an adult of indeterminate sex. All skulls showed lambdoidal deformation. All skulls and most long bones had been broken intentionally, the individual fragments of bone were markedly well preserved. One skull, belonging to an adult male, had been scorched and partly charred. No offerings, nor charcoal suitable for dating, were found with the skeletal material.

The four skeletons mentioned by Linton were found in the same area, in the kiva fill. Possibly the total count should be less than eleven, as parts of the original four may have been mixed with the seven uncovered in 1947. The "large fragments of black on white pottery . . . placed over the skulls of all four burials" suggest a considerate interment by the relatives of the deceased. The disturbed positions of the skeletal remains suggest a secondary burial made when at least some of the bones were articulated. The broken and burned condition of the bones suggests violence.

Conclusions:

The Fewkes unit pueblo, dating about 1190, is a rather late example of an unfortified one clan surface structure, since multiple kiva compounds were customary after approximately 1050.

The three different occupations or uses of the site took place in a comparatively short time, during the hey-day of McElmo Black-on-white, judging by the high incidence of that pottery type. If McElmo Black-on-white was still in vogue at 1190, it suggests a rather late appearance for developed Mesa Verde Black-on-white ware.

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