THE DISTRIBUTION OF CIRCULAR PIT-HOUSES
IN THE SOUTHWEST

by

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The Distribution of Circular Pit-Houses

In The Southwest

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2. Ackmen-Lowry #2
3. Adukegi Canyon
4. Alkali Ridge
5. Allantown
6. Animas Valley
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68. Sky House
69. Starkweather
70. Step House Cave
71. SU Site
72. Sulphur Creek
73. Tierra Blanca Ruin
74. Three Circle Ranch
75. Turkey Cave
76. Valley Village
77. Vandal Cave
78. Water Fall Ruin
79. Wheatley Ridge
80. Willard
The Southwest has long occupied an important place in American archaeological studies. Early Spanish conquistadors recorded and described some of the more prominent ruins that they came upon such as Casa Grande. For example, Padre Jacabo Sedelmayr in 1744, while on a trip along the Gila, makes the following observation:  

"One of the Casas Grandes is a large building the principal room in the center being four stories high, and its adjacent rooms on the four sides three. Its walls are 2 varas thick of fine mortar and clay and so very smooth on the inside that it seems to have been planed or polished, so that it shines like Pueblo pottery. The corners of the windows, which were made with a mold or form, are very straight, and there are no hinges or crossbars of wood. The doors are similar and very small and narrow. From this we know that the building is the work of Indians. The structure, 37 paces long and 22 wide, is of good architecture."

In the middle of the nineteenth century these ruins came into serious attention. The early survey and military parties included in their reports many descriptions and drawings of ruins that they encountered. These reports stirred up much interest. In 1887-8 the Hemenway Expedition explored in the Salt River Valley. The staff included Cushing, Ten Kate, Hodge, and Bandelier, all of whom returned.

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1Ives, R. L., 1939, pp. 104-5.
to make further studies. Since that time hundreds of reports have been written about Southwestern archaeology. Some of them were good, and others were not so good. As time went on the picture of the prehistory of the Southwest was gradually unfolded, and chronologies worked out. Many of the older reports have been out-moded by the more recent developments. They are not worthless because of this but contain much in the way of descriptive material concerning ruins long ago destroyed. One of the great needs in Southwestern anthropology is to rework and consolidate the material found in these reports and to revaluate their findings in the light of our present knowledge. This is true of ethnological descriptions as well as archaeological. This need applies not only to reports of the early explorations, but each new major development sheds new light on work completed the year, or even the day, before.

The problems of Southwestern archaeology lie in two categories. The first is the problem of solving local problems. The earliest works grouped all the Southwestern cultures into a single set of evolutionary stages such as those set forth by Cummings:¹

1540 — Present  Historic Pueblo
900 — 1540 A.D.  Late Pueblo — surface structures, small house groups, unit, compact, and compound pueblos.
500 — 900 A.D.  Early Pueblo — pit-houses; circular, transitional, and rectangular.

They soon found that there were differences between the northern and southern developments. At first they attempted to explain them as environmental differences. This did not solve the problem and it was found that the Southwest was not homogeneous but was made up of more than the Basketmaker-Pueblo Cultural Root. First the Hohokam Root was established. Within the last few years the Mogollon Root has been generally accepted and now a fourth basic culture, Patayan, is projected.

Grasping these tools in hand, more detailed studies were made. It was found that although these basic cultures could be broken down into general levels, individual localities deviated from this scheme. This led to the realization that differences existed from region to region and valley to valley within the cultural province. It was also seen that there were not clear border lines and that one merged into the other, and that there was a great deal of transferring of traits from one area to another. Intensive studies are being carried out in various local areas to determine their developments. More and more exact methods of work and description are being worked out and it is now no longer enough to talk in terms of vague generalities. For example, pottery
analysis and description has reached such a fine degree of
development that every "dig" produces a new series of
pottery types. Out of this a maze of cultural stems,
branches, and phases have come.

The unveiling of these local and regional problems
is one of the important aims of archaeology. However, these
cultural blocks must be fitted together so that the whole
picture can be seen. Many workers become so engrossed in
their own individual problems that "they cannot see the
forest because of the trees." The fitting of the multitude
of individual developments into the complex whole is the
second type of archaeological problem that must be under­taken. When the blocks are fitted together conspicuous
blanks appear and comparisons aid in the interpretation of
individual phases as well as whole branches and roots.
There is a necessity for detailed studies of various com­plexes, tracing them in their development phase by phase
for each branch and root. As archaeological work is
constantly curtailed by lack of funds, problems must be
studied carefully so that each site excavated may serve as
an important link in one or more of the numerous major
problems. This paper is a study of the second type. It
involves the extensive study of one complex through its
entire distribution in time and space.

The earliest known houses in the Southwest are all pit­
houses. For years it had been thought that the first houses
were circular pit structures developing into rectangular and then surface dwellings. As early as 1886 Cushing said, "The earliest houses are circular structures of lava blocks. Rectangular forms followed through crowding." The early chronologies were based on this theory. When the Hohokam Root was explored it was found that the earliest houses were square with the later houses becoming more and more oval. The Mogollon Root followed the traditional Anasazi evolution. Turning to the Plains it was found that there the development was from square to round. In each of these cultures the transition took place at a different time level. Speculations have also been made as to the origin of the pit-house as an aid to the problem. From the mass of seemingly contradictory evidence many problems have been created. Some of the problems brought to light for consideration are:

1. Were the earliest pit-houses in the Southwest circular?

2. What are the variations in circular pit-houses from area to area and phase to phase?

3. What are the space and time relationships of these variations?

4. What connection, if any, exists between the circular pit-houses of the Southwest and those of neighboring areas?

5. Was there a basic culture, which had as one of its basic traits pit-houses, that spread from Central Asia through Siberia and into America?

6. What is the relationship between this basic culture and the Southwest?

Cushing, F. H., 1886, p. 474.
7. What light does this detailed examination of one trait throw upon the whole picture of Southwestern archaeology?

It is upon these problems that this paper is based.

In order to make an attempt at their solution the following plan of procedure will be followed. The next chapter is a short summary of Southwestern archaeology. This is to orientate in one's mind the various major cultural developments in the Southwest that are mentioned from time to time. This is particularly important because of the wide distribution of time and space covered in the discussions.

In Chapter III there is a site survey. The circular pit-house sites, upon which this study is based, are reviewed, giving their location, date, architectural development, and the published reports dealing with each. This is followed by the breakdown of the circular pit-house complex into its component traits. These traits are taken up one by one and their distribution in time and space is studied. Chapter V groups these traits into complexes. The development of the circular pit-house is taken up phase by phase. From this study of traits and complexes certain circular pit-house types are defined. The next section is planned to orient the problem in the field of North American archaeology. Circular pit-houses outside the Southwest are discussed. The possible relationship of American pit-houses to those of the Old World is considered. The theoretical problem
of the possibility of a basic culture originally populating America is studied and its possible relationship to the Southwest is mentioned. It is concluded by a hypothesis concerning the development of the circular pit-house in America. The last chapter, which concludes the study, states the problems set forth in this introduction and discusses them in the light of the information brought out in the preceding chapters.
II. SUMMARY OF SOUTHWESTERN ARCHAEOLOGY.

The dates of man's coming to America are becoming more and more certain. Rapid strides have been made in determining the beginnings of culture in America. Not many years ago it was heresy to talk of Pleistocene man in America but now it is an established fact. Ice barriers existed across Canada from 65,000 to 20,000 years ago. About 40,000 years ago there was a gap in the northwest. Around 20,000 years ago the Cordillera and Laurentide ice centers separated, opening a path through the Mackenzie Valley and down the east side of the Rockies and onto the Plains. Not until 10,000 years ago did the coast open up. At the time of the beginning of the glacial recession the ocean was about 100-150 feet lower than today. This would make the trip across the Bering Strait very easy. The absence of fossil forms of man on this continent indicates that man came after the last glaciation. The earliest authentic finds of man's existence in America have been found on the High Plains, indicating that they may have come down through the first gap.

The Folsom Complex was first noticed near the town of Colorado, Texas where points were found in association with extinct bison. Two years later authenticated finds were made at the site in Dead Horse Gulch near Folsom, New Mexico.
and the complex received its name from this station. The most extensive work has been carried on at the Lindenmeier site located twenty eight miles north of Fort Collins, Colorado. Here the Folsom Complex has been defined. The Folsom point is about two inches long, thin, more or less leaf-shaped with a concave base, usually marked by ear-like projections. It is characterized by the removal of a longitudinal flake on either side forming a channel on both faces and the grinding of the edges near the base. Other associated implements are snubnosed scrapers, side scrapers, some with concave cutting edges, end scrapers, and turtle-back scrapers. Folsom points or Folsom-like points have been found over the whole of the United States from the Pacific to the Atlantic and from Canada to the Gulf of Mexico with the concentration in the Missouri, Mississippi and Ohio River drainages. The Lindenmeier site has been dated as 10,000–15,000 years ago and possibly as much as 25,000 years.1

In southeastern Arizona and southwestern New Mexico there is another early man cultural complex, the Cochise Culture. The first find was made in 1926 by Professor Byron Cummings at Double Adobe School House, twelve miles northwest of Douglas, Arizona. Extensive investigations have been carried on by the Gila Pueblo in Globe, Arizona.

1Wormington, H. M., 1938.
The Cochise Complex has been divided into three stages - Sulphur Springs, Chiricahua, and San Pedro. The Sulphur Springs Stage, dating about 10,000 years ago, is characterized by the complete lack of projectile points and by the abundance of shallow unshaped basin grinding stones with single faced oval manos. The few flaked tools were all percussion made. In the Chiricahua Stage, 7,000-4,000 B.C., the metates are larger and deeper. Short and wide projectile points with a notched concave base appear. Other tools are pestles, plano-convex scrapers, and single flaked scrapers with a ground edge, probably used in scraping meal from metates. The third or San Pedro Stage, 2,000 B.C., is characterized by a great increase in pressure flaking and long projectile points with side notches and a straight base. There are under cut storage pits. All stages have an abundance of hearth stones. The Cochise is a food gathering culture as shown by the grinding tools in contrast with the hunting Folsom Complex. Other important early man finds have been made at Gypsum Cave, Lake Mohave, Pinto Basin, Abilene, and elsewhere.

There has been no direct tie made between these early man cultures and the general Southwestern pattern. There still remains a gap of unknown extent, but recent work in southern Arizona may clear up some of this unknown space.

1 Sayles, E. B. and Antevs, E., 1941.
The general Southwestern area is divided into four sub-areas, each dominated by a different group. The Anasazi or Basket-maker-Pueblo Province occupied northern Arizona to the Mogollon Rim, Utah, eastern Nevada, southwestern Colorado, New Mexico, and into Texas and Chihuahua. The Hohokam Province occupies the southwestern Arizona desert from Safford and the San Pedro Valley westward to the Colorado River and from Flagstaff to northern Sonora. The Mogollon Province occupies southeastern Arizona, and southwestern New Mexico to the Mogollon Rim. The Patayan Province lies between the Colorado River and the Big Sandy from Flagstaff west to beyond the Colorado River. (Map 2.)

ANASAZI

The Anasazi Root was the first to be extensively investigated in the Southwest. In 1924 Kidder, in his Survey of Southwestern Archaeology, classified the southwestern cultures in the following sequence:

5. Modern Pueblo
3. Pre-Pueblo Dwellings - rectangular pit-houses.
2. Post-Basketmaker - slab walled pit-houses.
1. Basketmaker - cists.

In August, 1927 a conference was called at Pecos, New Mexico. Here the stages of cultural development were considered and a set of names designating several phases was agreed upon. This is known as the Pecos Classification.

1Roberts, F. H. H., Jr., 1935, 1939.
Southwestern Cultural Provinces

Anasazi
Hohokam
Mogollon
Patayan
Since then it has been slightly modified.

<table>
<thead>
<tr>
<th>Pecos Classification</th>
<th>Revised Nomenclature</th>
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<tbody>
<tr>
<td>1700-Present Pueblo V</td>
<td>Historic Pueblo</td>
</tr>
<tr>
<td>1500-1700 A.D. Pueblo IV</td>
<td>Renaissance Pueblo</td>
</tr>
<tr>
<td>1100-1300 A.D. Pueblo III</td>
<td>(Regressive Pueblo)</td>
</tr>
<tr>
<td>900-1100 A.D. Pueblo II</td>
<td>(Great Pueblo)</td>
</tr>
<tr>
<td>700-900 A.D. Pueblo I</td>
<td>Developmental Pueblo</td>
</tr>
<tr>
<td>?-500 A.D. Basketmaker III</td>
<td>Modified Basketmaker</td>
</tr>
<tr>
<td>Basketmaker II</td>
<td>Basketmaker</td>
</tr>
<tr>
<td>Basketmaker I</td>
<td>(Omitted)</td>
</tr>
</tbody>
</table>

**Basketmaker I.** This was a postulated stage to take care of a stage earlier than that known at the time of the conference. It has since been dropped. The early man complexes now occupy this position.

**Basketmaker II.** The Classic Basketmaker gained its fullest development in the Four Corners area, but analogous cultures have been located from Coahuila and Chihuahua, Mexico to southeastern Oregon, and from the Ozark Plateau to eastern Nevada. These sites are characteristically in caves from where most of their information has been obtained, although a few open sites have been found. No dwellings have been reported upon to date. They constructed slab lined cists in caves which they sometimes covered with flat or dome-like superstructures of poles, brush, bark, and mud. Some of these cists were bark and grass lined and may have been used for sleeping. Basketry was a loose weave, and a coiled rod and bundle type. The sandals were square toed

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1 See Animas Valley Sites in Chapter III.
with fringes. Twined-woven bags of apocynum with colored designs are diagnostic. The atlatl and grooved clubs were used for weapons. Robes were made of rabbit fur. They raised a single variety of yellow flint corn, and squash.

**Basketmaker III.** Modified Basketmaker sites are found in southern Utah, northern Arizona, southeastern Nevada, northern New Mexico, and southern Colorado, with developments in some of the adjacent areas mentioned above. The dwellings were circular, oval, or rectangular pit-houses lined with slabs or adobe and roofed with a conical or truncated roof of poles, brush, and earth. There was a central smoke hole, sometimes used as an entrance, a side entrance passage, or an antechamber. A number of houses and granaries were grouped to form a village. Sandals were woven of fine string with a scalloped toe. Basketry was the same as before with occasional splitting of stitches. The twined bags had no design. At the end of the Basketmaker horizon the bow was introduced. Fired pottery first began during this period. Occasional pieces of unfired pottery were made by the Basketmaker II people. Lino Gray was plain, decorated with a simple black design, or washed with fugitive red. In the Ackman-Lowry region there was an orange ware decorated in red and black. They raised several varieties of corn and possibly beans.

**Pueblo I.** This period is characterized by the great variety of structures. In the eastern San Juan the pit-house
was giving way to shallow structures or surface rooms which were often contiguous. Jacal walls were used first but later replaced by masonry. In the west the pit-house became deeper. The entrance was reduced to a ventilator and a roof entrance was used. In surface villages the pit-house was retained for a ceremonial structure. Sandals were round toed. Coiled rod and bundle basketry had elaborate designs and twilled basketry started. Cotton cloth was introduced. The bow and arrow became universal. During this period there was a racial change. The undeformed long head was being replaced by a deformed broad head. Pottery types were Kana-a Black-on-White, Kana-a Gray, Deadmans Black-on-Gray, Deadmans Black-on-Red, Kiatuthlanna Black-on-White, and Piedra Black-on-White.

**Pueblo II.** The unit type dwelling became almost universal. Some of them were two stories in an "L" or "U" plan. In the peripheral areas irregularly arranged rooms of adobe-boulder masonry were constructed. In the area from Flagstaff north toward the San Juan the pit-house still prevailed. The basketry turned to the two rod and bundle type. During Pueblo I and II the turkey was domesticated and feather robes replaced the Basketmaker fur. Important pottery types were Deadmans Black-on-White, Rio de Flag Brown, Deadmans Gray, Tusayan Red, and the corrugated wares began. Pueblo I and II are now usually grouped into one period, Developmental Pueblo, to signify the transition from pit-house to pueblo architecture.
The old breakdown is kept in this paper because this change is of special importance and the time differences are significant.

**Pueblo III.** During this period great terraced communal houses of many rooms were erected in the open and in caves. Circular and square pit structures were still used for ceremonial purposes. Some of them were built into the main dwelling. Notched toe sandals were woven of fine string and yucca. Square toed types of twilled yucca were also made. Elaborate loom weaves began to be used. The trough metate was replaced by a slab metate placed in a bin. Polychrome and black-on-yellow pottery was added. Diagnostic pottery types are Chaco, Mesa Verde, and Kayenta Black-on-White, and Tusayan and Kayenta Polychrome. The classic centers of development in the Great Pueblo Period were in the Mesa Verde, Chaco Canyon and Kayenta areas. Near the end of this Period, a series of droughts and possible internal disorganization together with the encroachment of nomadic tribes caused a population shift from the north to south. This period of breakdown is called the Regressive Pueblo Period.

**Pueblo IV.** The concentration of population had shifted from the San Juan to the Little Colorado and Rio Grande, and there was a Renaissance of Pueblo Culture. Large communal structures, scattered dwellings, and cave lodges were the architectural types. Textiles and pottery reached their height. Important pottery types were the Little

**Pueblo V.** Although the Pueblos were contacted by the Spanish as early as 1540, it was not until the Pueblo Revolt of 1680 and the reconquest in 1700 that the Spanish influence was felt. The Historic Period begins at this point. The remaining remnants of the Pueblo culture are found in the Hopi, Zuni, and Rio Grande towns.

**HOHOKAM**

As early as 1896 Cosmos Mindeleff commented on the difference between the Desert and the Plateau cultures and suggested that it was too marked to be attributed wholly to environment. Kidder called the southern desert area the Lower Gila. Gladwin started an extensive study of the problem in 1927 and at Santa Fe in 1931 submitted a classification for the area.1 The Gila Pueblo of Globe, Arizona began excavation of Snaketown in 1934, and in 1938 a report was published defining ten phases grouped into four periods.2

<table>
<thead>
<tr>
<th>Date</th>
<th>Period</th>
<th>Phase</th>
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<tbody>
<tr>
<td>1300-1400 A.D.</td>
<td>Classic</td>
<td>Civano</td>
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<tr>
<td>1100-1300 A.D.</td>
<td></td>
<td>Soho</td>
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<tr>
<td>1000-1100 A.D.</td>
<td>Sedentary</td>
<td>Santan</td>
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<tr>
<td>900-1100 A.D.</td>
<td></td>
<td>Sacaton</td>
</tr>
<tr>
<td>700-900 A.D.</td>
<td>Colonial</td>
<td>Santa Cruz</td>
</tr>
<tr>
<td>500-700 A.D.</td>
<td></td>
<td>Gila Butte</td>
</tr>
<tr>
<td>300-500 A.D.</td>
<td>Pioneer</td>
<td>Snaketown</td>
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<tr>
<td>100-300 A.D.</td>
<td></td>
<td>Sweetwater</td>
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<tr>
<td>100 B.C.-100 A.D.</td>
<td></td>
<td>Estrella</td>
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<tr>
<td>x-100 B.C.</td>
<td></td>
<td>Vahki</td>
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</table>

Pioneer. Vahki houses were large square pit-houses. The pottery was a thin plain ware and a polished red ware. Burials were cremations in pits. Clay figurines had flatish heads, concave back, and pinched up features. Rubbish was placed in pits. Estrella houses were smaller than Vahki. Olivella beads were introduced. Estrella Red-on-Gray pottery, decorated in broad lines, was the first decorated ware. The exterior of local pottery was scored. Sweetwater Red-on-Gray improved greatly in design with finer lines and neater scoring. The houses were smaller. Other new traits were turquoise mosaics, incised bone, and incised designs on stone bowls. Rubbish was placed in pits or scattered in sheets. The Snaketown house was rectangular with two center supports, and an entrance passage on a long side. The fire pit was located in front of the door. Red-on-buff pottery had bold free designs with hatching, negative painting, and zigzags. Palettes had a raised and incised border. The figurines had faces modeled in detail. The three-quarter grooved ax came into use.

Colonial. Gila Butte pottery added life forms and repeated elements to the geometric designs and scoring declined to random scratching. Houses were elongated. The slate palettes had elaborate incising on the borders. Clay figurines had realistic heads in full round. Pit cremations had pottery offerings. Rubbish was piled in low mounds. Ball courts appear for the first time. They were large ovals.
with round entrances. Santa Cruz houses were rectangular changing to a long oval. The pottery had small repeated elements, ticked lines, and flaring rims. Exterior scoring had disappeared. Palettes and mosaic plaques reached their highest development. Irrigation canals were fully developed. Rubbish was thrown onto large mounds.

**Sedentary.** Sacaton houses were shallow, elliptical-shaped with a bulbous entrance, and carefully plastered. Stone palettes and bowls declined in importance. The pottery increased in size with well spaced and planned designs. Figurines were of heads only and had extremely realistic features. Shell work was elaborately carved and etched. Copper bells were cast. The ball courts were smaller. Cremations were placed in urns. The Santan phase is sometimes missing, and Sacaton continues until 1100 A.D. It is characterized by contiguous houses, compound walls, and Santan Red pottery with a smudged interior.

**Classic.** The Hohokam Culture had passed its peak and there was a decline and extinction in fine arts such as palettes, bowls, plaques, and figurines. In the Soho Phase Sacaton type houses continue along with contiguous rooms and compound walls. The pottery was Gila Red and Casa Grande Red-on-Buff which showed a decline in excellence. During the Civano Phase the invasion of the Salado people from the north took place. Some Civano Phase sites may be contemporary with Soho sites representing invaded and non-
invaded sites. The Salado people built the large communal houses such as Casa Grande surrounded by large compound walls. They introduced the polychrome wares and inhumation. After 1400 A.D., there is a period of decline. When the Spanish arrived in 1540 A.D., the territory was occupied by the Pima and Papago. What happened in the elapsed time is not known, but the Pima and Papago may be the survivals of the Hohokam.

MOGOLLON

The mountain area below the Mogollon Rim in southeastern Arizona and southwestern New Mexico makes up a third cultural province. This area was considered a district of the Anasazi. The presence of Mogollon was first found during the Gila Pueblo survey of 1931. In 1936 they published a report first defining a distinct cultural Root and assigned the name Mogollon. The Mogollon Root is now divided into six phases covering a time period from about the time of Christ until 1200 A.D.

<table>
<thead>
<tr>
<th>Time</th>
<th>Phases</th>
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<tbody>
<tr>
<td>1100 - 1200 A.D.</td>
<td>Mimbres</td>
</tr>
<tr>
<td>900 - 1100 A.D.</td>
<td>Three Circle</td>
</tr>
<tr>
<td>700 - 900 A.D.</td>
<td>San Francisco</td>
</tr>
<tr>
<td>500 - 700 A.D.</td>
<td>San Lorenzo</td>
</tr>
<tr>
<td>200 - 500 A.D.</td>
<td>Georgetown</td>
</tr>
<tr>
<td>x - 200 A.D.</td>
<td>Cave Creek</td>
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Cave Creek. This is a non-painted pottery phase with oval pit-houses with side entrances. The report on the

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1 Haury, E. W., 1936b.
phase is still in preparation.

**Georgetown.** Deep pit-houses are circular or "D" shaped with a long sloping entrance passage. There is a single central roof support with secondary posts around the periphery. The fire pit is near the entrance. Metates were basin-shaped. There were short broad stemmed projectile points and large stemmed blades. Characteristic pottery types are plain brown and polished red.

**San Lorenzo.** This phase is based upon the occurrence of San Lorenzo Red-on-Brown pottery. It is a coarse rock tempered ware with an unslipped interior and a thin slipped exterior. Bowls have an interior of polished brown and an exterior of polished red. The decoration is in broad dull red lines of the same material as the exterior slip.

**San Francisco.** Rectangular pit-houses have a gabled roof with a single ridge pole. The entrance is sometimes stepped. The circular house is retained as a ceremonial structure. The diagnostic pottery type is Mogollon Red-on-Brown. The dead were inhumated and cremations are rare. Trough metates have a closed end. There are three-quarter grooved mauls but no ax.

**Three Circle.** The houses are rectangular with a flat roof supported by four posts. There are rectangular ceremonial rooms. The houses have an inclined passage and some have stone linings. The diagnostic pottery type is Three Circle Red-on-White. There is a very strong Anasazi and
Hohokam influence in this period.

Mimbres. The dwellings are surface one-story masonry rooms. The ceremonial room was rectangular and semi-subterranean with an Anasazi ventilator shaft. Mimbres Black-on-White pottery has a very specialized design featuring extremely realistic animal designs on bowl interiors. The Mogollon Culture by this time is almost completely submerged by Anasazi and Hohokam influence, and had almost ceased to exist as a distinct cultural root. At this time there is a movement south into Chihuahua.

PATAYAN

The Patayan Root is a new Root being defined by the Museum of Northern Arizona. It was first announced in 1938 and defined further in 1939. This new Root occupies the region west of Flagstaff between the Colorado and Big Sandy Rivers. As yet it is not fully accepted and sites have not been dug in each of its three branches. Sites excavated in the Prescott and Cohonino branches range in date from 900-1300 A.D. The Prescott Branch is associated with Black-on-Gray pottery. The houses are oval pit-houses with a gabled roof in the Prescott Phase (1100-1200 A.D.) and small adobe-boulder masonry pueblos in the Chino Phase (1200-1300 A.D.). In the Cohonino Branch shallow irregular pit-houses with side

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2 Hargrave, L. L., 1938.

Colton, H. S., 1939.
entrances are found in the Coconino Phase (900-1100 A.D.) and rectangular contiguous rooms with stone and turtle-back masonry were built in the Medicine Valley Phase (1100-1200 A.D.). The diagnostic pottery is San Francisco Mt. Brown. No sites have been excavated in the Cerbat Branch, which is known only through the distribution of Cerbat Brown pottery. Further investigation must be undertaken before the Patayan Culture can be definitely established as a separate cultural root.

This was a somewhat schematic presentation of the cultural developments in the Southwest. The extensions into Chihuahua, Sonora, Rio Grande Valley, and into the northern, and eastern peripheries were not discussed. The dates given are only average dates. It has been found that there is a great deal of variation within the various localities in each province in both the dates and the details of cultural development. From this realization a more specific system is being developed. Each of the four cultural Roots are divided into large geographical areas called Stems. The Stems are broken into smaller areas called Branches. The various cultural levels within each Branch are called Phases and are given names which are usually derived from local place names. The Branches, Stems, and Roots are groupings based upon cultural similarities and dissimilarities.¹

¹Gladwin, W. and E. S., 1934.
In Chapter V the development of circular pit-house architecture is discussed according to this system.
III. SITE SURVEY

The bulk of this study is based upon the analysis of eighty circular pit-house sites in the Southwest. They make up the bulk of circular houses excavated. All the major excavations have been covered, but there are probably some that have not been found. Reports for several sites were not available. These reports have been listed in the bibliography. The bibliography also contains a fairly comprehensive coverage of all Southwestern architecture.

In going over the reports of pit-houses several things were found. Very often the early workers, and some later ones, paid little attention to architecture. They went into great detail in describing artifacts that might make good museum material, but skimmed over the houses located. For that reason many descriptions are too inadequate for detailed analysis. As a rule pit-houses are difficult to dig. Features may be hard to locate unless one looks for them. Early workers probably unknowingly missed many details that would be found today. Surveys are dangerous to rely on. First of all, details of construction cannot be told and, secondly, erosion of a house pit will leave a circular depression even if the pit was originally rectangular. In southeastern New Mexico, Hera excavated what
appeared to be house depressions and found them to be roasting pits and rings of camp refuse around a fire.\textsuperscript{1} Near Bisbee, Arizona, Trischka excavated hearth areas and mistook them for houses.\textsuperscript{2} For these reasons surveys were eliminated unless unquestionable details were given.

The sites in the following survey are listed alphabetically. Several sites that were only given numbers in reports are listed according to some geographical feature describing their location. However, in each case the site number is given. This was done to avoid the confusion of having several sites with the same number. The sites listed in the survey are given identification numbers. These numbers are used on charts and maps where complete labels are impractical. They are not used in the text. For each site the location, date, architecture, and reference is given. The architectural descriptions are only summaries and finer details have been omitted. These details can be gleaned from the extensive trait list in the appendix.

\textsuperscript{1}\textit{Kera, H. P.} 1933b.

\textsuperscript{2}\textit{Trischka, C.}, 1933.
1. Ackmen-Lowry #1

Location: Seven miles west of Ackmen and twenty six miles northwest of Cortez, Montezuma Co., Colorado, on the south rim of Cahone Canyon. (Sec. 20, NW 1/4, Tws. 39 N, Range 18 W, N.M.P.M.)

Date: Pueblo I (855-872 A.D.)

Architecture: Close to one hundred surface rooms were on three sides of a large plaza. In the plaza were fifteen pit-houses and two circular kivas. Three of the pit dwellings were oval or circular. The floors were cut down one meter to rock and plastered with adobe. The walls were also plastered. The centrally located fire pit had slab and sand linings and a rim. Houses B and C had antechambers which were remodeled and reduced to ventilators. They also had partitions of slabs and adobe. House A, which was probably later in date, had only a ventilator and no partition. The roof was constructed of an uncertain number of main posts with leaning posts from the periphery. Entrance was through the roof and by a passage. All had a deflector and floor cists.


Dates in parentheses have been determined by dendrochronology.
2. Ackmen-Lowry Site #2

Location: Cahone Canyon, Montezuma Co., Colorado.
(NW 1/2 of SW 1/4, Sec. 20, Tws. 39 N, Range 18 W, N.M.P.M.)

Date: Pueblo I (Circum 760 A.D.)

Architecture: The ruin consists of sixty-one superficial rooms in two contiguous rows with six pit-houses located in front. The front row of rooms was of pole and adobe construction while the rear rooms were of slabs and rubble. The absence of fireplaces suggests that they were for storage. Two of the pit structures were roundish. The walls were unplastered. The floor was plastered with adobe. A circular fire pit was centrally located. Both had antechambers. House B had no passage, but had ladder holes, while house C had a long entrance passage. The adobe partition walls contained the front main roof supports. They had no deflectors, benches, or niches as the square houses had. House C may have a sipapu. The roof had four main supports.


3. Adugegi Canyon

Location: Cave near the head of Adugegi Canyon, Arizona.

Date: Basketmaker III.

Architecture: ¹"Near the head of Adugegi Canyon is a large cave containing a number of extremely interesting Basketmaker III structures excavated by Professor Cummings

¹Guernsey, S. J., 1931, p. 28.
and party in 1917, and it is doubtful if anywhere in the region there will be found another site so typical of this period. A structure similar to some of the ones in this cave is figured by Judd, 1926, in his plan of Cave 5, Cottonwood Canyon."


4. Alkali Ridge

**Location:** Southwest of Blanding, San Juan Co., Utah.

**Date:** Basketmaker III-Pueblo I (770 A.D.).

**Architecture:** The earliest structures were shallow pit-houses suggestive of Shabikeshnee except that the antechambers were relatively large, almost as extensive as the main parts of the houses. The later houses were deep with small antechambers often reduced to ventilators, but the ground plan was the same. Some were rectangular and others circular. All had four post structure, but one had six corresponding in position to the pilasters in Mesa Verde kivas. In three of the four plazas were great kivas.


5. Allantown

**Location:** Three and one-half miles south of Allantown, Arizona, south of the Puerco River of the West and west of the Whitewater Creek, Apache Co., Arizona (SW 1/4, Sec. 34, Tws. 22 N, Range 30 E, Gila-Salt River Meridian.).

**Date:** Pueblo I-II (815-1015 A.D.).

**Architecture:** The ruins consist of twenty-one pit-houses and four surface structures. Twelve of the pit
structures were round or irregularly oval in form. The pits were one to two meters deep, plastered with adobe, and partially or completely reinforced with slabs. The central fire pit was adobe lined with a rim, or slab lined. It was accompanied by deflectors, ash pits, and ladder holes. All except House 13b had a ventilator and House 16 had a short passage from which exit was obtained by means of a ladder. The partitions were of slabs and adobe. They were both complete and vestigial. Frequently they incorporated the front main supports. Three houses had benches. Two groups of three houses each were roofed to form one structure. The roof was of four posts set away from the wall. There were several cases of slab reinforced posts. Houses with benches had secondary posts on the bench. There were also bins, sub-floor cists, wall niches, upright stones in the floor, plastered sub-floor vaults, secondary fire pits, and sipapus.


6. Animas Valley

Location: Slope overlooking the Animas Valley near Durango, Colorado.

Date: Basketmaker II.

Architecture: A series of structures was built on terraces constructed on the slope. The floors were saucer-shaped areas three to ten meters in diameter. They had a rude fire pit. Interior storage cists were slab lined with
a cone shaped superstructure of adobe. The walls were of wood and mud masonry with a flat roof supported by posts.

Reference: Reed, E. K., 1941.

7. Beacon Ridge (University of Utah, NM-2)

Location: Nine Mile Canyon, thirty eight miles north-east of Price, Utah.

Date: Pueblo I.

Architecture: There is a series of houses on the ridge with several excavated houses down the slope. They are circular, about two meters in diameter, and 30 cm. deep. The walls are of boulders set in clay. The fireplace is paved with a slab and rimmed with water-worn stones. The houses on the slope are up to ten meters in diameter and one and one-half meters deep.


Location: Forestdale Valley, ten miles south of Showlow, Apache Co., Arizona. (NW 1/4, Sec. 36, Tws. 9 N, Range 21 E, Gila-Salt River Meridian)

Date: Forestdale Phase (667±x A.D.).

Architecture: The site consisted of fifteen pit structures and two surface storage structures. Ten of the pit-houses were circular and oval. They were up to two meters in depth and seven meters in diameter. A long sloping entrance passage is characteristic. Several had ventilators and one had both passage and ventilator. Benches were of
variable heights and widths with posts along them. They had four major roof supports. The floor had a basin-shaped fire pit, deflectors, storage pits, ladder holes, and log foundations for main posts. The walls and floor were of native soil or plastered. Four houses had antechambers. Lack of uniformity is characteristic of the houses. There was one large circular ceremonial structure.

References: Haury, E. W., 1940a, 1940b, 1941.

9. Broken Flute Cave

Location: Red Rock Valley, northeast side of the Lukachukai Mountains, Arizona.

Date: Basketmaker III (354 +x -647).

Architecture: Single-room dwellings up to twenty-five feet in diameter, constructed after method previously described, (Obelisk Cave) rectangular with rounded corners, oval, or vaguely circular, the universal type. A low bench characteristic but not always present. Sometimes consists of pit bank slab faced, more frequently of earth tamped in after walls and adobe floor had been completed. Follows varying proportions of the arc but never across the south or away from cliff side. Radial floor ridges from south center fire pit to periphery usually present. Commonly interior slab bins occur where ridges join side walls. Where not destroyed by erosion there is evidence of narrow lateral entrance. Smoke hole also served as entrance. Reached from inside by ringed ladder identical to those known from Pueblo III. Storage cists, some of almost room size of slabs or mud and stones variously compounded between and behind dwellings not frequently contiguous."

References: Douglass, A. E., 1938.
Haury, E. W., 1938.
Morris, E. H., 1936.

\[1\text{Morris, E. H., 1936, p. 35.}\]
10. Cameron Creek Village

Location: Two miles northwest of Hurley and two miles south of Central, Grant Co., New Mexico on the east side of Cameron Creek Valley. (Sec. 33, Tws. 18 S, Range 13 W, N.M.P.M.)

Date: Georgetown to Mimbres Phases.

Architecture: The earliest houses were shallow floor areas cleared to cemented gravels preceding true pit-houses. The early pit-houses were shallow with entrances, rectangular with rounded corners and round. The later houses were deeper with entrances occasionally containing steps. There was a change from plaster to crude stone walls often plastered. The entrances which were later walled up, were in no general direction except for groups opening onto a common surface area. At the end of the pit period, shallow pits had stone surface walls and no entrances. These were followed by surface stone structures.

Reference: Bradfield, W., 1923, 1929.

11. Chaco Canyon - Pit House #1 (Judd)

Location: One hundred yards east of Casa Rinconada, Chaco Canyon, New Mexico.

Date: Basketmaker III.

Architecture: The circular structures were 0.914 m. deep and 5.18 m. across. The walls of puddled adobe were slightly flaring. The circular fireplace in the center was 0.25 m. deep and 0.91 m. in diameter. There were three bins built of slabs along the east side. Two niches were somewhat
below the floor in the wall along the southwest. The roof was constructed with four posts set against the wall or possibly a high bench.

Reference: Judd, N. M., 1922.

12. Chaco Canyon - Pit House #2 (Judd)

Location: One mile east of Pueblo Bonito in Chaco Canyon, New Mexico.

Date: Pueblo I (777 A.D.).

Architecture: The circular floor was dished 7.5 cm. and 3.88 m. in diameter. The bench was 0.88 m. high and 0.66 m. wide. On the east side it was raised 0.464 m. and widened to 0.914 m. probably to support a notched pole for roof entrance. The roof was supported by four posts set in niches in the bench, blocked with slabs, and plastered over. The bench had posts every 30 cm. and 50.28 cm. from the face.

Reference: Judd, N. M., 1922.

13. Chaco Canyon (University of New Mexico, Bo 50-51)

Location: Bo 50-51 trash mound, near Tseh So, Chaco Canyon, New Mexico.

Date: Basketmaker III.

Architecture: A single house was roughly circular about 0.80 m. deep and 9.50 m. in diameter with a circular fireplace in the center. On the southeast side is a small oval, slab paved entrance, while on the opposite side of
the fire pit are two ladder holes. There are seven slab bins along the wall. The roof was supported by four main posts.

Reference: Kluckhohn, C., 1939.

14. Cherry Creek (Morris, Site 19)

Location: Located on the triangle between Red Mesa, the mouth of Cherry Creek, and the east bluff of the La Plata River, Colorado.

Date: Basketmaker III.

Architecture: There are fifteen Basketmaker III structures. Protokiva 3 is oval in shape being 7 to 8 m. in diameter and 0.5 m. deep. The walls are plastered with adobe. The bench is on the north two-thirds and is 0.69-0.90 m. wide and 0.76-0.90 m. high. The bench is reinforced with slabs on the northwest corner to prevent caving. Slabs are found at several such points in the wall. The fireplace is a round bowl with a rectangular extension to the slabs in the partition. The adobe partition has a door to the west of the fire pit and has incorporated in it two of the four main posts. The ventilator is a rounded rectangular chamber 0.41 m. above the floor.


15. Church Rock

Location: Seven miles east of Kayenta, Arizona.

Date: Pueblo I.
Architecture: The ruin consists of a loosely related group of circular structures varying in size from one to two meters in diameter and up to a meter in depth. The walls are plastered and reinforced with timbers and slabs. The roof was probably conical in form like that of Fluteplayer House, in Hagee Canyon.


16. Colorado B:9:1 (Flora)

Location: Near Durango, Colorado.

Date: Basketmaker III (543-590 +x.).

Architecture: "Dwellings were chiefly of the pit-house class possessing features which in later times became associated with kivas. . . . . In other respects the culture shows no features not in keeping with current ideas of Basket Maker III."


17. Cottonwood Canyon, Cave #4 (Judd)

Location: Eleven miles from Kanab, Utah.

Date: Basketmaker III.

Architecture: The ruin consists of a masonry pueblo overlying Basketmaker circular slab structures. These structures had a wall of slabs and posts plastered with adobe and an adobe floor. There was a bench containing four post holes on the eastern half of the room and two on the western side. There was also a circle of posts set two feet outside the slab circle. There was a centrally located

round fire pit and no evidence of the manner of entrance.

Reference: Judd, N. M., 1926.

18. Cottonwood Canyon, Cave #5 (Judd)

Location: Two hundred yards north of Flower Cave, in the upper end of Cottonwood Canyon, eleven miles from Kanab, Utah.

Date: Basketmaker III.

Architecture: There was a single circular house with three slab lined bins nearby. The outer wall was of post and mud with a slab lined bench 0.76 m. wide and 0.35 m. high. The floor was plastered with adobe. The fire pit was oval with depressions at the corners. Poles were laid on the floor and plastered with adobe to form lateral ridges 7.6 cm. high. One post was found in the bench. It was probably like the houses in Cave 4.

Reference: Judd, N. M., 1926.

19. Deadman's Mesa (Museum of Northern Arizona, NA 1768)

Location: Deadman's Mesa northeast of Flagstaff, Arizona.

Date: Pueblo II.

Architecture: There were several pit-houses, one of which was roughly circular with one flat side. The walls were of irregular blocks of rhyolite set in heavy mud mortar and plastered. The absence of post holes indicates that poles were laid across the top of the walls. The entrance was through the roof. One had a ventilator. The fire pit was found in only two.
20. Fish Creek Cove (Morsa, Site 11)

Location: Seven miles from Torrey, Utah.

Date: Pueblo I.

Architecture: A large circular structure was sunk into a meter of rubbish. It had a fireplace in the center. The roof was of aspen poles and braided cover of willow and cedar bark.

Reference: Morsa, N., 1931.

21. Fluteplayer House

Location: Ruin 5 in a cave on the west branch of Hagoee Canyon, Arizona.

Date: Basketmaker III.

Architecture: Several Pueblo I structures and one Basketmaker III structure occupied the cave. It was circular, 3.90 m. in diameter, and was subterranean except on the outer edge, where, because of the slope of the cave floor, it protruded slightly. The walls were plastered and on the south side slabs were used to reinforce the side. There was a set back of 20 cm. in the wall 1.07 m. above the floor. In this set back poles were set at such an angle that they would meet 1.35 m. above the floor to form a conical roof. It probably had a roof entrance. There was no evidence of fire pit or sipapu.

References: Guernsey, S. J., 1931.
22. Forestdale (Arizona State Museum, Arizona: P:16:2)

Location: Forestdale Valley, ten miles south of Showlow, Arizona.

Date: Corduroy Phase 800-900 A.D.

Architecture: The excavated houses were oval pit structures. They were one meter deep and four to six meters in diameter. The walls and floor were of native soil. Both had benches. One house had a three-quarter bench on the north, west, and south sides, while the other one had a slab covered bench on the surface level. They had central fire pits and one had a secondary fire pit. Both had entrance passages, and one also had a ventilator.

Reference: Haury, E. W., 1940 (field notes).

23. Galaz Ruin

Location: West bank of the Mimbres River thirty miles from Silver City and a fourth of a mile northwest of San Lorenzo, New Mexico.

Date: Georgetown to Mimbres Phases.

Architecture: Beneath the surface structure four pit-houses were excavated. They were circular with entrance passages. The walls and floor were plastered with adobe. The floors are 4.50 meters below the present surface.

24. Goordge Mound

Location: Beaver, Utah.

Date: Pueblo I.

Architecture: One circular slightly subsurface (?) structure was excavated. It was 5.2 m. in diameter. In the center was a rimless fire pit. Four main support posts were 1.37 m. from the center. The roof was of grass, willows, split timbers, and mud. It is like the structures at Willard, Utah.

Reference: Judd, N. M., 1926.

25. Grand Falls

Location: On the Little Colorado River southeast of Wupatki National Monument, Arizona.

Date: Basketmaker III.

Architecture: The site had circular and oval slab edged pit-houses with no ventilators.

Reference: Colton, H. S., 1939.

26. Grand Gulch

Location: Grand Gulch, southeast, Utah.

Date: Basketmaker III.

Architecture: "Some of the skulls in this collection were obtained from underground rooms that had been excavated in the clay bottom of the caves. The largest of these rooms are as much as 22 feet in diameter. They have been filled with ashes and other refuse and the stone cliff houses were constructed over them."

\[^1\] Pepper, G. H., 1902, p. 7.
27. Harris Site (Gila Pueblo, NM:Q:1:14)

**Location:** East bank of Mimbres River, a quarter of a mile east of Mimbres Post Office, New Mexico.

**Date:** Georgetown, San Francisco, and Three Circle Phases.

**Architecture:** Georgetown Phase had roughly circular houses with a flattened side from which extended the inclined entrance passage. The roof was supported by a single center post with secondary supports along the periphery. There were five houses of this type. The circular houses were continued as ceremonial structures in the later phases.

**Reference:** Haury, E. W., 1936.

28. Heiser Spring (Museum of Northern Arizona, NA 1754)

**Location:** Three miles east of Wupatki and one-half mile northwest of Heiser Spring.

**Date:** Pueblo II.

**Architecture:** There were at least three masonry pit-houses with a rectangular surface storage structure. The walls were of coursed masonry. It was circled by a bench with a shallow alcove on the ventilator side. The ventilator passed under the bench and had a masonry shaft incorporated in the wall. There was a deflector. A rectangular slab lined pit was in the center. A stone box in back of the fire pit may be a sipapu. There were niches in the south and west.
walls. Four posts were placed against the bench.

Hargrave, L. L., 1933.

29. Ignacio 12:1 (Flora)

Location: On North Durango Mesa, Durango, Colorado, overlooking the Animas River Valley.

Date: Basketmaker III (571-616 A.D.).

Architecture: Ignacio is one of several Basketmaker III ruins on the Mesa. Only one pit structure was described. It is oval in form with diameters of 5.4 and 7.0 m. and 1.90 m. deep. The walls and floor were plastered. The oval fire pit was a little east of the center. On the north was a sipapu with a raised adobe rim. Nearby was a slab cover. The ventilator was on the south. It was an oval shaft 40 x 50 cm. and raised 30 cm. above the floor. The opening was flared to receive a cover. The bench was 1.0 m. high and 0.75 m. wide. In the northwest corner the bench was a slab step presumably part of a stepped side entrance. The truncated roof was supported by four main posts with secondary posts in the bench. There was an adobe deflector 30 cm. square. On the west were the remnants of a partition of adobe 33 cm. high and 40 cm. wide.

Reference: Daniels, H. S., 1938.

30. Jeddito - Site 4 (Peabody Museum)

Location: Antelope Mesa rim west of the Jeddito trading post, Arizona.
Date: Basketmaker III-Pueblo II.

Architecture: Four Basketmaker pit-houses were beneath a surface pueblo. The subterranean houses were like Jeddito Site 264. Pit House 24 had three alcoves.


31. Jeddito - Site 4A (Peabody Museum)

Location: On rim of Antelope Mesa, west of Jeddito Trading Post, Arizona.

Date: Basketmaker III-Pueblo II.

Architecture: The pit-house was circular and slab lined. The low bench had secondary posts in it. There were four plaster ridges running from the centrally located rimmed fire pit through the main supports. There were storage pits in the floor.


32. Jeddito - Site 265 (Peabody Museum)

Location: Below the main Jeddito rim near Skunk Spring, Arizona.

Date: Pueblo I-II.

Architecture: Most of the structures were eroded away, but there remained a type transitional between a pit-house and a kiva.

33. Jeddito - Site 264 (Peabody Museum)

Location: On a point projecting out into the Jeddito Valley below Kawai-a.

Date: Basketmaker III-Pueblo II.

Architecture: The main occupation was Basketmaker III and Pueblo I pit-houses with a single Pueblo II surface structure. It consisted of seven pit-houses, nineteen isolated slab lined storage chambers, seven contiguous storage chambers, one rectangular room, and six outdoor fire pits. The pit structures were circular with a slab-lined bench. There were circular fire pits with deflector and partitions. Entrance was through a long inclined passage. The roof had four main supports and secondary posts in the bench and floor.

Reference: Brew, J. 0., 1941.

34. Juniper Cove

Location: Six miles southwest of Kayenta, Arizona at the foot of Black Mesa.

Date: Basketmaker III.

Architecture: There are 133 pit-houses accompanied by storage bins in two groups. The pit-houses were 4-6 m. in diameter and 0.50-1.0 m. deep. Most of the rooms were slab lined. Entrance was by means of one or two steps at the side. The village was accompanied by a large ceremonial room 11 m. in diameter with a bench and stepped entrance. All structures had four main roof supports.

35. Kiatuthlanna


Date: Pueblo I and Pueblo III.

Architecture: The site included eighteen pit-houses, three jacal structures, and a small Pueblo III structure. The pit-houses were circular to rectangular in groups of three to six. One group of three pit rooms was contiguous and was probably roofed as one structure. They had central fire pits, ladder pits, sipapu, sub-floor pits, wall niches, ventilator, deflector, ventilator slabs, partitions, four main posts, and secondary posts on the bench. The earlier houses were small and had no bench.


36. Kiko (Museum of Northern Arizona, NA 1712)

Location: On the Moenkopi Wash, Arizona.

Date: Pueblo II.

Architecture: The typical house is a "D" shaped masonry pit-house with small surface masonry granaries.

Reference: Colton, H. S., 1939.

37. Kokopki

Location: Black Mesa, Arizona.

Date: Pueblo II (1074-8 A.D.).

Architecture: Circular pit-houses of coursed masonry
38. Ladder House

Location: Black Mesa, Arizona.

Date: Pueblo II (1064-7 A.D.).

Architecture: Circular pit-house of coursed masonry and rectangular surface granary.


39. Laguna Creek Rock Bench

Location: Eight miles below Kayenta, Arizona.

Date: Pueblo I.

Architecture: The ruins consisted of thirty round or oval slab lined houses two to three meters in diameter. The floors were of adobe. There was no evidence of side entrances. They may have been built up with turtle backs as at Fluteplayer House.


40. Laguna Creek Sand Hill

Location: Eight miles north of Kayenta, Arizona.

Date: Pueblo I and Pueblo II.

Architecture: Many slab lined circular rooms were undermined by blowing of the sand. On the crest of the hill was a row of rectangular surface rooms.

41. Large

**Location:** Head waters of the Chama River, New Mexico.

**Date:** Pueblo II (1106 A.D.).

**Architecture:** The pit-house measured 7.75 m. in diameter and the floor was 2.25 m. below the present ground level. It had a bench on all but the south side (ventilator side). There was a rimmed circular fire pit in the center. The partition extended straight across with additional walls running to the ventilator hole forming two bins on either side of a passage. It had four main posts, two against the bench and two in the partition.

**Reference:** Mera, H. F., 1938.

42. Lost City

**Location:** Near St. Thomas, Nevada, on the east side of the Muddy River six miles north from its junction with the Virgin.

**Date:** Basketmaker III and Pueblo II.

**Architecture:** There was a sequence of architecture running early to late - pit, pit with encircling wall, contiguous pit, rectangular contiguous pit, and surface structures with up to four stories. The circular pit-houses were three meters in diameter, and one meter in depth. Both the floors and the walls were plastered with adobe. They had a circular bowl-shaped fireplace a little to one side of the center. The more advanced type had an encircling
wall of adobe or stone in adobe. The entrance was originally through the roof, but in the later types there were small doorways in the adobe wall.


45. Luna

Location: Luna, New Mexico, one and one-half miles north of the San Francisco River on the third terrace.

Date: Georgetown Phase (?)

Architecture: There were over 100 circular rooms averaging 4.0 m. in diameter and 1.5 m. deep. They had a single central main support with secondary posts along the wall. The fireplace was along the wall opposite where an entrance probably was, although Hough says they had a roof entrance. One had a bench along half of the wall. There were slab bins along the walls.


44. Mancos Springs (Morris - Site 10)

Location: On ridge limiting the north drainage of Johnson Canyon, southwestern Colorado.

Date: Pueblo I.

Architecture: There were several circular pit-houses probably like those found elsewhere along the La Plata.

45. Maverick Gulch (Morris, Site 18)

**Location:** On mesa top between Red Horse Gulch on the north and Maverick Gulch on the south, both being western tributaries of Pond's arroyo, southwestern Colorado.

**Date:** Pueblo I.

**Architecture:** The site consisted of two crescent-shaped rows of houses each with a subterranean chamber in front of them which were still domiciliary. They were oval in shape, but pinched in at the partition. They had ventilators, central rimmed fire pit, deflectors, ventilator slabs, partition, sipapu, ladder pits, and four main posts. One had bins in the partition and the other had a bench on two sides.

**Reference:** Morris, E. H., 1939.

46. Mesa House

**Location:** Lower Moapa Valley of the Virgin River near Overton, Nevada.

**Date:** Basketmaker III and Pueblo II.

**Architecture:** There were twenty two Basketmaker circular pit-houses and Pueblo contiguous masonry rooms in semicircular rows. The pit-houses were up to 1.25 m. deep and 3.5 m. across. The floors were of adobe. Posts were set at an angle so that they would meet above the center. There was a center fire pit. These houses were accompanied by subterranean storage pits.

**Reference:** Hayden, I., 1930.
47. Mesa Verde - Earth Lodge A

**Location:** Fifty yards east of Square Tower House Road on Chapin Mesa, Mesa Verde National Park, Colorado.

**Date:** Basketmaker III (612 A.D.).

**Architecture:** The structure was 0.75 m. deep and 5.5 m. in diameter. There was a bench 15 cm. wide. Two slab bins are on either side of the deflector behind the partition. There was an additional slab bin against the wall in the northeast quarter. The floor and slab walls were plastered with adobe. The central fire pit was circular. Four main posts were placed 0.60 m. from the wall.

**Reference:** Anonymous, 1932.

48. Mogollon Village (Gila Pueblo, Mogollon 1:15)

**Location:** East bank of the San Francisco River, ten miles north of Glenwood, Catron County, New Mexico.

**Date:** Georgetown and San Francisco Phases.

**Architecture:** Eleven pit-houses were excavated. They all had a graded entrance, a hearth in front of the entrance, single central main support, and peripheral secondary supports. House 10, dating from the Georgetown Phase, was the only circular domestic structure.

**Reference:** Haury, E. W., 1936b.

49. NA - 1293 (Museum of Northern Arizona)

**Location:** East and north of Little Colorado River, Arizona.
Date: Pueblo I.
Architecture: There were circular slab lined pit-houses with no ventilator.
Reference: Colton, H. S., 1939.

50. NA - 1923 (Museum of Northern Arizona)
Location: Bonito Park, fifteen miles northwest of Flagstaff, Arizona.
Date: Basketmaker III.
Architecture: Eleven circular slab structures were built on a dune of wind blown volcanic cinders. Two of these were large enough for dwellings. The rest were cists. The latest structure was divided into two parts by a low wall 10 cm. high.

51. NA - 2542 (Museum of Northern Arizona)
Location: Black Mesa, Arizona.
Date: Pueblo II (1018 A.D.).
Architecture: Circular pit-house of coursed masonry and rectangular surface granary.
References: Colton, H. S., 1939.
Hargrave, L. L., 1933.

52. Obelisk Cave (Gila Pueblo, Canyon de Chelley 8:4)
Location: Along Black Horse Creek, Red Rock Valley, Arizona.
Date: Basketmaker III (473-489 A.D.).
Architecture: 1 "House type, oval to vaguely circular, dug down somewhat into cave floor. Flat roof supported by four posts forming a rectangle set in from periphery. Sides of spaced slanting poles, their butts set back from edge of excavation to leave bench most of the way around. Poles covered with reeds or juniper bark laid horizontally, lashed in place, and covered with thick outer shell of vegetable reinforced mud. Slab storage cists, some very large, nearly but not contiguous."

References: Douglass, A. E., 1938.
            Morris, E. H., 1936.

53. Panhandle Ruin #56

Location: Thirty-eight miles north of Amarillo, Texas.

Date: Basketmaker III - Pueblo I (?).

Architecture: There are several isolated slab houses adjacent to the main communal house. These circular houses are slightly subterranean and lined with slabs. The floor was plastered. The superstructure was probably of conically placed brush. They may be contemporary with the rectangular houses or slightly earlier.


54. Powell Ranch (Morris, Site 25).

Location: West of the La Plata three-quarters of a mile below the mouth of Long Hollow on Powell's Ranch, southwestern Colorado.

Date: Basketmaker III and Pueblo I.

Architecture: There are seventeen houses extending in a crescent with three protokivas in the center. They are

1 Morris, E. H., 1936, p. 35.
rectangular to round. The round pit-house is six meters in diameter and one meter deep. It has no bench and the walls are reinforced with slabs. There is a ventilator on the south. The fire pit in the center is rimmed and has a ladder hole in front of it and a sipapu behind. The partition includes the front two of the four main posts. The other two protokivas, which are more rectangular and have benches, are later in date.


55. Pine River

Location: On Pine River near Durango, Colorado.

Date: Basketmaker III (654-655 A.D.).

Architecture: Circular, or oval, slab edged pit-houses with no ventilators.

References: Colton, H. S., 1939.

56. Red Rock Valley - Cave 1 (Morris)

Location: Red Rock Valley, Arizona.

Date: Basketmaker III (654-655 A.D.).

Architecture: See Broken Flute Cave.

References: Douglass, A. E., 1938.
Morris, E. H., 1936.

57. Red Rock Valley - Cave 2 (Morris)

Location: Red Rock Valley, Arizona.

Date: Basketmaker III (642-759 A.D.).

Architecture: See Broken Flute Cave.
58. Red Rock Valley - Cave 6 (Morris)

Location: Red Rock Valley, Arizona.
Date: Basketmaker III (553-674 A.D.).
Architecture: See Broken Flute Cave.
References: Douglass, A. E., 1938.
Morris, E. H., 1936.

59. Red Rock Valley - Cave 7 (Morris)

Location: Red Rock Valley, Arizona.
Date: Basketmaker III (666-674 A.D.).
Architecture: See Broken Flute Cave.
References: Douglass, A. E., 1938.
Morris, E. H., 1936.

60. Red Rock Valley Cave 8 (Morris)

Location: Red Rock Valley, Arizona.
Date: Basketmaker III (637-666 A.D.).
Architecture: See Broken Flute Cave.
References: Douglass, A. E., 1938.
Morris, E. H., 1936.

61. Say-a-kin

Location: North side of Tyende Creek ten miles north-east of Kayenta, Arizona.
Date: Pueblo I.
Architecture: A series of slab lined structures extend over a sandy knoll. They are similar to the houses at Church
Rock. A retaining wall was built to form a terrace along the front of some of the houses.


62. Segi - Cave 1 (Guernsey)

Location: Fourteen miles from the mouth of the Segi near the head of the first branch entering from the west above Betatakin Canyon, northwest of Kayenta, Arizona.

Date: Basketmaker III - Pueblo II.

Architecture: Near the kiva a circular slab lined room was excavated. It was 4.50 m. in diameter. The slabs were capped by two or three courses of loaf-shaped adobe bricks interspersed with small stones and finished in a rounded rim. There was a central fire pit and in the rear of the room was a slab lined pit.


63. Segi - Cave 2 (Guernsey)

Location: Near the mouth of the branch canyon west of Cave 1, Betatakin Canyon, southwest of Kayenta, Arizona.

Date: Basketmaker III and Pueblo III.

Architecture: In the same cave with the Pueblo III structure were three Basketmaker III rooms. They were slab lined and capped with loaf-shaped adobes interspersed with stones and the whole wall plastered.

64. Segi Sand Hill

Location: Against the base of the southwest wall of Segi Canyon, Arizona, one and one-half miles above its mouth.

Date: Basketmaker III.

Architecture: The slab lined houses were up to 2.0 m. across and 0.65 m. deep. Along the top and outside of the slabs, posts projected at a 45 degree angle so that they would form a conical structure 1.75 m. high. The entrance was to the south. They were similar to the Segi Cave houses except that they contained no adobe bricks.


65. Segihotsosi - High Cave

Location: Three-fourths of a mile from the mouth of Segihotsosi Canyon, Arizona.

Date: Basketmaker III.

Architecture: In the cave several Basketmaker houses were excavated by Cummings but not described by either Cummings or Guernsey. They were probably like the houses in the open site below the cave.


66. Segihotsosi - Open Site

Location: Three-fourths of a mile from the mouth of Segihotsosi Canyon, Arizona.

Date: Basketmaker III.

Architecture: On a knoll below High Cave the remains
of several houses were found. Only one was in observable condition. It was five meters in diameter and slab lined. The floor was plastered. A deflector indicated a fire pit in the center but none was found. There may have been a side opening. Refuse indicated a conical roof. Three meters away was a slab lined cist.


67. Shabikeshchee Village

Location: On top of the south rim of Chaco Canyon, New Mexico, nine miles east of Pueblo Bonito and Chetro Kettle.

Date: Basketmaker III (750 A.D.).

Architecture: The village consisted of eighteen houses, a small court, a large ceremonial structure or kiva, and forty eight storage bins. The houses were circular, oval, or rectangular. They were three to five meters in diameter and one meter deep. The walls were frequently slab lined and almost always plastered. Many of the houses had side entrances which were sometimes enlarged to form antechambers. In later houses there were ventilators. The fire pits were clay or slab lined. There were ladder pits, sipapus, and deflectors. The partition was made of adobe and slabs extending either from the fire pit or in front. Storage pits were rimmed with clay. Some of the later houses had benches. There were four main posts and secondary posts on the bench.

68. Sky House (University of Utah - NM 13)

Location: Nine Mile Canyon, thirty-eight miles north-east of Price, Utah.

Date: Pueblo I.

Architecture: A single structure has an oval plan. The walls are of adobe bricks and incorporate a large boulder on the northeast side. There is a secondary wall on the southeast. The fire pit is in the center and is paved with stones and rimmed with two circles of adobe. The roof was supported by four poles. The entrance was probably in the northeast quadrant.


69. Starkweather Ruin

Location: Wm. S. Hudson ranch, three and one-half miles west of Reserve, Catron County, New Mexico (Sec. 3, Range 19 W, Tws. 7 S. N.M.P.M.).

Date: Georgetown, San Francisco, Three Circle and Classic Upper Gila. San Francisco house date of 927 A.D.

Architecture: The site consisted of twelve surface rooms and twenty pit-houses. The pit-houses were circular and rectangular. The Georgetown houses were up to five meters in diameter and one meter deep. The walls bowed outward and were not plastered. The floor was plastered. There were cache pits and grooves for deflectors in the floor. The roof was supported by four posts. The entrance was by way of a short entry. One house had a bench. During the early
San Francisco Phase, they had roof entrances only. These were followed by rectangular houses.

References: Haury, E. W., 1938.
Hesbitt, P. H., 1938.

70. Step House Cave

Location: Step House, Mesa Verde National Park, Colorado.

Date: Basketmaker III. (625 A.D.).

Architecture: There were three circular rooms 1.10 m. deep and 4.61-5.25 m. in diameter. They were slab-lined with a clay bench on top of the slabs. They had fire pits in the center. One had posts along the side at an angle which would cause them to intersect two meters above the floor. The others had four main supports.


71. SU Site

Location: Seven miles west of Reserve, Catron County, New Mexico. (Tws. 7 S, Range 20 W, N.M.P.M.).

Date: Pre-Georgetown (500 A.D. and earlier) and possibly reoccupied as late as Three Circle Phase.

Architecture: The eight pit-houses were irregular ovals in shape, up to ten meters in diameter and one meter deep. Each house had a side entrance on the east. The floors were of gravel and adobe. There were storage pits in the floor and one had a pit for a foundation for the posts. There were fire pits in the center which were stone or adobe lined.
There were no deflectors and the roof type was undetermined.

Reference: Martin, P. S., Rinaldo, J., 1940.

72. Sulphur Creek

Location: On a high promontory on Sulphur Creek near Torrey, Utah.

Date: Pueblo I.

Architecture: The structure, 4.61 m. in diameter consisted of a circle of slabs. These slabs were propped up by rocks on the outside. It may be a shrine.


73. Tierra Blanca Ruin

Location: Eight miles east of Hereford, Texas on Tierra Blanca Creek.

Date: Basketmaker III - Pueblo I.

Architecture: There were about a dozen circular and slab lined houses. The diameter varied from two to nine meters and their depth was about 50 cm. They were of the Panhandle Type found along the Canadian River.


74. Three Circle Ranch

Location: Three Circle Ranch in Grant Co., New Mexico.

Date: Georgetown Phase.

Architecture: Cosgrove says that Wesley Bradfield found circular pit-houses, but no description was given.

75. Turkey Cave

Location: North fork of Tyende Creek above Keet Seel, Arizona.

Date: Basketmaker III and Pueblo I.

Architecture: The house was 3.10 m. in diameter and 0.60 m. deep. The adobe floor curved up to meet the slab lined wall. There was a ventilator on the south side. The posts were in the wall. Only two of them were found.


76. Valley Village (University of Utah, NM 17)

Location: Nine Mile Canyon, thirty-eight miles northeast of Price, Utah.

Date: Pueblo I.

Architecture: Three circular houses were 3.0 to 6.0 m. in diameter and 0.60 m. deep. The walls were lined with slabs and capped with an adobe-stone wall 0.75 m. high. The center fire pit was rimmed and paved with flat stones. There was a ladder hole. Only two posts were found, but their position indicates a quadrilateral arrangement. In the southwest quadrant there was a clay rimmed cist against the wall. There was another structure built of water-worn stones in clay. It had no evidence of either roof supports or a fire pit.

77. Vandal Cave

Location: Twin Butte Canyon on the western slope of the Lukachukai Mountains, Arizona.

Date: Basketmaker - Pueblo I. (608-85 A.D.).

Architecture: In the cave were four pit-houses and a six-room pueblo. The pit-houses were up to three meters in diameter and one meter deep. The walls were plastered and reinforced in places with slabs. Around the edge near the surface were narrow benches containing post holes. They may have formed a conical roof. The one fire pit was off center. Entrance was through the side.


78. Water Fall Ruin

Location: In a cave near Hakaito on Lower Chinlee fifty miles east of Kayenta, Arizona.

Date: Basketmaker III.

Architecture: There were at least three pit-houses. One of these was 4.60 m. in diameter and 0.60 m. deep. It was slab lined with a rim of adobe.


79. Wheatley Ridge

Location: Near Luna, New Mexico.

Date: Georgetown to Mimbres Phases.

Architecture: The pit-houses were rectangular with rounded corners or circular. They were up to a meter deep.
The entrance was through a long inclined passage. The walls and floors were frequently plastered. The roof was usually supported by four posts although center and peripheral posts were found. The fire pit was located near the entry. Deflectors were rare, as were ash pits.

Reference: Nesbitt, P. H., 1940.

80. Willard

Location: On the Bonneville terrace of Salt Lake near Willard, Utah.

Date: Pueblo I.

Architecture: The houses were circular up to four meters in diameter. There were four main supports. The circular fire pit in the center was rimmed.

Reference: Judd, N. M., 1926.
Definition. "Pit-house", "subterranean house", "semi-subterranean house", and "earth lodge" are all terms used rather loosely in archaeological literature. There seems to be very little regularity in their usage. "Pit-house" seems to be most popular in the Southwest while "earth lodge" is used most frequently in the Plains area. All four terms refer to a structure of poles covered with a layer of brush, bark, grass, etc. and water-proofed with a coating of earth often applied in the form of mud or plaster. This structure roofs an excavated area. The excavation may be limited to clearing off the surface soil or may be enlarged to more than two meters in depth. The essential features are a superstructure of poles and earth and a floor excavated beneath the surface of ground. A true pit-house is constructed with a pit while an earth lodge may be thought of as having only a shallow excavation. The most evident feature in this case is the earth covered superstructure. The difference between the two terms is obviously extremely vague and primarily a difference in concept. One focuses its attention on the excavation and the other on the roof. This leads to much over-lapping. For example, at the SU Site the term "pit-house" is used to designate structures varying in depth
from 0.25 m. to over 1.0 m. Also, Pueblo II rectangular pit structures in the Flagstaff area are called "earth lodges" while they may be up to two meters in depth. "Subterranean" and "semi-subterranean" are a little clearer cut in meaning. "Subterranean" houses are those whose roofs are at about ground level while houses whose roofs are well above the ground level may be called "semi-subterranean". Pit-houses may be constructed along two general plans. The usual method is to utilize the sides of the pit as functional walls. In contrast to this some houses were built in the pit. The structure was a functional unit in itself, set into the pit.

In this discussion any structure whose floor is below the ground level and whose superstructure is constructed with earth covered poles is called a pit-house. This loose definition covers a great deal of ground and allows considerable variation in structural details. This variation is very real. It takes only a glance at a series of pit-house plans to see the range of possibilities that were utilized. It is difficult to express these differences in absolute terms. To approach some degree of exactness a rather extensive trait list has been drawn up. (Appendix I) The variations have been broken down into 144 traits. This extended list has been condensed down to 51 traits. (Fig. 1) This condensed list includes all the essential characteristics omitting the finer details of Appendix I. However, even 144 traits were not entirely adequate to describe and
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differentiate all of the minute differences that were noted. For practical reasons the following discussion will take up the various traits as shown in the condensed list pointing out the further variations as indicated in the longer trait list. Accompanying the discussion of each group is to be found a map locating the sites, which, according to the available literature, have the trait being described. In addition the relative ages of the sites are indicated.

Shape. Pit-houses were constructed in forms varying from square or rectangular to circular. As we are interested primarily in the problem of the circular pit-house, the square and rectangular houses are not considered at this time. The exact border line that sets off a house as being circular is often very shaky. "Circular" is for the most part a general term. Because few houses, if any, are geometrical circles, a house whose outline is curved or rounded and without corners is to be considered circular or round house. Circular houses have been grouped into four general shapes, those whose outlines are more or less true circles, those which are elongated along one axis to form an oval, those which are flattened along one side so as to be "D" shaped, and those which are irregular in outline yet have a vague circular pattern. In many sites there is considerable variation in shape. In fact, twenty out of the eighty sites considered have rectangular houses contemporaneous with the circular houses and sixteen have oval or irregular houses
along with the circular.

**Dates and Distribution.** The circular houses covered a large rectangular distribution with corners at Willard on the northeastern shore of Salt Lake, Mesa House at the junction of the Virgin and Muddy Rivers in the southeastern point of Nevada, the Galas Ruin on the Mimbres in southwestern New Mexico, and at the Panhandle Ruin #55 near Amarillo, Texas. The span in years would be from sometime before 500 A.D., possibly as early as 200 A.D., until 1106 A.D. in the Largo Phase. Their appearance is first seen at two points. The first is in the Mogollon area of the Mimbres and San Francisco Rivers in western New Mexico and in Basketmaker II sites of the Animas Valley in the vicinity of Durango, Colorado. These sites date in a period from 200-500 A.D. (Map 5) In the next 200 years circular houses had spread from the eastern San Juan to the Virgin River in the tip of Nevada, extending southward to the Little Colorado. It is noted that the Mogollon area has permanently passed out of the picture. (Map 4) By 900 A.D. there is an extension northward to the Salt Lake region of Utah. At the same time there is another extension into the Panhandle of Texas. It may have started earlier. (Map 5) In the next 200 years the circular pit was replaced by surface dwellings and rectangular pit-houses, except for a few survivals. There is a series of sites in the region from the junction of the Colorado and Little Colorado up towards the Utah line. To the east on the headwaters of the Chama there still remain
6. Animas Valley
10. Cameron Creek Village
23. Galaz Ruin
27. Harris Site
48. Mogollon Village
69. Starkweather
71. SU Site
74. Three Circle Ranch
79. Wheatley Ridge
3. Adugegi Canyon
4. Alkali Ridge
8. Bear Ruin
9. Broken Flute Cave
11. Chaco Canyon Pit House #1
12. Chaco Canyon Pit House #2
14. Cherry Creek
16. Colo.B:9:1
17. Cottonwood Canyon Cave #4
18. Cottonwood Canyon Cave #5
21. Fluteplayer House
25. Grand Falls
26. Grand Gulch
29. Ignacio 12:1
30. Jeddito, Site 4
31. Jeddito, Site 4A
32. Jeddito, Site 264
49. NA-1293
50. NA-1923
52. Obelisk Cave
54. Powell Ranch
55. Pine River
56. Red Rock Valley Cave #1
57. Red Rock Valley Cave #2
58. Red Rock Valley Cave 6
59. Red Rock Valley Cave 7
60. Red Rock Valley Cave 8
62. Segi Cave #1
63. Segi Cave #2
64. Segi Sand Hill
65. Segihotsosi - High Cave
66. Segihotsosi - Open Site
67. Shabikeshee
70. Step House Cave
75. Turkey Cave
77. Vandal Cave
78. Water Fall Ruin
1. Ackmen-Lowry #1
2. Ackmen-Lowry #2
4. Alkali Ridge
5. Allentown
7. Beacon Ridge
8. Bear Ruin
12. Chaco Canyon Pit House 2
15. Church Rock
20. Fish Creek Cove
22. Forestdale Ariz. P:16:2
24. Geordge Mound
30. Jeddito, Site 4
35. Kiatuthlanna

39. Laguna Creek Rock Bench
40. Laguna Creek Sand Hill
42. Lost City
44. Mancos Spring
45. Maverick Gulch
53. Panhandle Ruin
61. Say-a-kin
62. Segi Cave #1
68. Sky House
72. Sulphur Creek
73. Tierra Blanca Ruin
75. Turkey Cave
76. Valley Village
80. Willard
circular pit-houses. (Map 6) Oval houses are common in the Basketmaker III period when we have fourteen examples. However, all but four sites they occur with circular types. The case is the same for four out of five examples in the following period. (Maps 7 & 8) "D" shaped houses occur in two widely separated places, at the Harris site before 500 A.D. and then again on Deadmans Mesa and Black Mesa in Pueblo II times (900-1100 A.D.). (Map 9) Irregular shaped houses have only scattered occurrences in both time and space. At the SU Site irregularity is characteristic. Then at the Bear Ruin, where we find considerable mixture of influence from both the north and the south, there are several irregular examples. (Map 10)

Now that we have the distribution of the circular pit-house outlined, what are the conditions under which they are found? Eighteen or nearly one-quarter of them occur in cave sites. The outstanding point is that all but one are Basketmaker III structures, making up almost half of the sites for that period. The odd one is early Pueblo I. They are almost exclusively in the "Four Corners" area. (Map 11) This is the home of the famed "cliff" dwellings. In Pueblo I they are replaced by surface dwellings. The rest are all open sites. (Map 12) The houses occur in various associations. The open sites occur in the valleys and on the mesas and ridges. The determining factor is usually the combination of nearness to water, agricultural land, and

15. Church Rock
19. Deadmans Mesa
28. Heiser Spring
36. Kioko
37. Kokopki
38. Ladder House
41. Largo
51. NA-2542
1. Ackmen-Lowry #1
4. Alkali Ridge
5. Allantown
8. Bear Ruin
9. Broken Flute Cave
10. Cameron Creek Village
13. Chaco Canyon Bc 50-51
14. Cherry Creek
25. Grand Falls
29. Ignacio 12:1
35. Kitatuthlanna
45. Maverick Gulch
52. Obelisk Cave
56. Red Rock Valley Cave #1
57. Red Rock Valley Cave 2
58. Red Rock Valley Cave 6
59. Red Rock Valley Cave 7
60. Red Rock Valley Cave 8
67. Shabikeshchee
68. Skyhouse
71. SU Site
19. Deadmans Mesa
27. Harris Site
36. Kioko
2. Ackmen-Lowry #2
8. Bear Ruin
10. Cameron Creek Village
22. Forestdale Ariz.P:16:2
67. Shabikeshchee
71. SU Site
3. Adugegi Canyon
9. Broken Flute Cave
17. Cottonwood Canyon Cave #4
18. Cottonwood Canyon Cave #5
26. Grand Gulch
52. Obelisk Cave
56. Red Rock Valley Cave 1
57. Red Rock Valley Cave 2
58. Red Rock Valley Cave 6
59. Red Rock Valley Cave 7
60. Red Rock Valley Cave 8
62. Segi Cave #1
63. Segi Cave #2
65. Segihotsosi High Cave
70. Step House Cave
75. Turkey Cave
77. Vandal Cave
78. Water Fall Ruin
79.
often with special attention to the ease with which the location can be defended. Basketmaker houses, such as we find at Shabikeshchee Village, Broken Flute Cave, Obelisk Cave, Red Rock Valley Caves, Segihotsosi, and others, are accompanied by slab lined storage cists. These cists are also found with the slab lined Panhandle Ruins of Texas. At the Bear Ruin and Ackmen-Lowry #2 there are storage pit structures. They are equal in size to houses but lack fire pits. Earlier, at Juniper Cave, there are numerous pit storage houses which are smaller in size than the dwellings. The association with surface structures is very important from a developmental standpoint. At the Ackmen-Lowry Site #2 there are sixty-one surface storage structures in two rows. The front is of jacal construction and the back row is of slabs and rubble. At Kiatuthlanna three jacal structures were found. In the late pit-houses of the Flagstaff and Black Mesa area, slab and masonry granaries are common. It is from the enlargement of the surface storage rooms that the surface dwelling seems to originate in many places. In the La Plata region Morris found both surface and pit dwellings being used at the same time. His Site 18 on Maverick Gulch is a typical example. The site consists of two crescent-shaped rows of houses each with a subterranean chamber in front of them. These pit structures were still domiciliary and may have served a dual purpose since they have
Five sites have large circular ceremonial structures up to ten meters in diameter. They are Alkali Ridge, Bear Ruin, Juniper Cove, Ackmen-Lowry #1, and Shabikashehe Village.

Depth. Pit-houses were constructed both shallow and deep. In general the trend is from shallow to deep. For example, at Alkali Ridge, Utah, the earliest structures were shallow with large antechambers, while the later houses were deep with small antechambers or ventilators. At the Cameron Creek Village there is an excellent sequence. The earliest houses were shallow floor areas cleared to the cemented gravels, followed by shallow pit-houses. The later houses were deep with the entrance ramp becoming stepped. The factors controlling the depth of the houses are somewhat involved. It may be assumed that in the earliest houses they did not have the means for deep excavation. However, even in later times they had only crude tools to excavate the pits. The depth to which they dug is to be marveled at. At the Bear Ruin they went down two meters. The soil was of clay which is extremely difficult to remove with modern tools. The labor needed to excavate the ceremonial structure ten meters in diameter and 1.75 meters deep

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3 Bradfield, W., 1929.
must have been tremendous. It amounts to about 68.79 cubic meters of earth. The slab lined houses could not be over a meter deep because of the difficulty in handling the slabs or even procuring them. It is noticed that the early houses at Cameron Creek Village were merely cleared down to the cemented gravels. A similar natural floor was utilized at Ackmen-Lowry #1 where the floors were cut down one meter to bed rock. It is noticed that almost all of cave pit-houses were shallow. Their depth is often limited by the shallowness of the debris in the cave. On the other hand the cave debris was often so loose in character that they could not dig a pit without using slabs to hold back the earth. This same factor may have limited the depth of the sites on loose sand dune soil such as that of Segi Sand Hill. In the region covered by the ash fall from Sunset Crater methods were found to build deep houses in the loose, wind-blown soil. In their earth lodges they used pole cribbing and in places where timber was scarce they turned to rough stone masonry. The earliest houses in almost every area seem to be shallow. (Map 13) At Harris Site in the Mogollon region and the Basketmaker II sites in the Animas Valley houses were shallow. When pit-houses spread to the peripheral areas of Utah and the Panhandle they were shallow also. The last survivals, the pit-houses in the Largo and Black Mesa Phases dating 900-1100 A.D., were deep. (Map 14)

Wall Treatment. In the previous paragraph it was mentioned that often it was necessary to treat the walls in
1. Ackmen-Lowry #1
2. Ackmen-Lowry #2
4. Alkali Ridge
5. Allantown
6. Animas Valley
7. Beacon Ridge
8. Bear Ruin
10. Cameron Creek Village
11. Chaco Canyon Pit House #1
12. Chaco Canyon Pit House #2
13. Chaco Canyon Bc 50-51
14. Cherry Creek
15. Church Rock
19. Deadmans Mesa
22. Forestdale Ariz. P:16:2
24. George Mound
34. Juniper Cove
39. Laguna Creek Rock Bench
46. Mesa House
47. Mesa Verde Earth Lodge A
53. Panhandle Ruin
64. Segi Sand Hill
65. Segihotsosi High Cave
69. Starkweather
73. Tierra Blanca Ruin
75. Turkey Cave
77. Vandal Cave
78. Water Fall Ruin
79. Wheatley Ridge
80. Willard
2. Ackmen-Lowry #2
4. Alkali Ridge
5. Allentown
7. Beacon Ridge
8. Bear Ruin
10. Cameron Creek Village
19. Deadmans Mesa
21. Fluteplayer House
23. Galaz
29. Ignacio 12:1

34. Juniper Cove
35. Kiatuthlanna
41. Largo
42. Lost City
43. Luna
45. Maverick Gulch
54. Powell Ranch
69. Starkweather
71. SU Site
some manner. In only eight cases do authors make a direct statement to the effect that the walls were of native soil only. In every case they refer to just certain houses in the site, and at least one house has some type of wall treatment. The simplest form of wall treatment is that of plastering with adobe. Twenty five were so treated. Often, as at the Bear Ruin, the soil is of such consistency that a plastered surface can be had by wetting and smoothing. At Cottonwood Canyon Cave #4 and Mesa Verde Earth Lodge A, slab walls were plastered over. Slabs were used in at least twenty-eight sites. (Map 15) The use of slabs can be divided into two groups. The first group is the slab house or house completely lined with slabs. (Figure 7) Out of the twenty-three sites of this type seventeen are Basketmaker III in period. Their distribution is from Cottonwood Canyon near Kanab, Utah, to Mesa Verde, and south to Flagstaff and Chaco Canyon, with the concentration in the Tyonde region in northeastern Arizona. In Pueblo I times there remained only a few survivals in the Tyonde. However we find them in two peripheral fringes. In central Utah from the Fremont River to Nine Mile Canyon, near Price, slab lined structures are found. They are probably extensions from the San Juan region by way of the Colorado and Green Rivers through eastern Utah. The eastern extension of the slab lined structures is in the Cimarron River region of the Texas Panhandle. Slabs were also used to reinforce the walls at various points in several houses from Allentown on the Puerco to Cherry Creek and
5. Allantown
13. Chaco Canyon Bc 50-51
14. Cherry Creek
15. Church Rock
17. Cottonwood Canyon Cave #4
18. Cottonwood Canyon Cave #5
25. Grand Falls
34. Juniper Cove
39. Laguna Creek Rock Bench
40. Laguna Creek Sand Hill
47. Mesa Verde Earth Lodge A
49. NA-1293
50. NA-1923
53. Panhandle Ruin
54. Powell Ranch
61. Say-a-kin
62. Segi Cave 1
63. Segi Cave 2
66. Segihotsosi-Open Site
67. Shabikeshchee
70. Step House Cave
72. Sulphur Creek
73. Tierra Blanca Ruin
75. Turkey Cave
76. Valley Village
77. Vandal Cave
78. Waterfall Ruin
Powell Ranch on the La Plata.

Masonry lined pit-houses are limited in occurrence. They are found in only eight places. (Map 16) At Cameron Creek and Wheatley Ridge there was a gradual change from adobe lining to occasional crude plastered masonry walls. The evolution in the Mogollon area can be carried further. The stone walls are extended above the surface and they become more shallow until they are surface structures. However, none of the circular houses have these stone walls as there is an early change to rectangular pit-houses coming before 700 A.D. There is early suggestion of masonry at Allantown. House 2 has a rough slab lining which is chinked with smaller stones. Both posts in the rear have slab reinforcing. This is suggested by Roberts as the beginnings of masonry. He also found this in some of the later Chaco Canyon slab lined houses. In this respect any use of slabs to line or reinforce the walls is a step in the direction of masonry. This also is true for masonry lined ventilator shafts which will be discussed later. The first true masonry lined circular pit structures occur in the Black Mesa and Kioko Phases. (Figure 10) These phases are characterized by circular pit-houses of coursed masonry with rectangular surface granaries. Colton lists five sites of this character, Heiser Spring, Ladder House, Kokopki, NA...

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1 Roberts, F. H. H., Jr., 1939, p. 35.
5. Allantown
10. Cameron Creek Village
19. Deadmans Mesa
28. Heiser Spring
36. Kikko
37. Kokopki
38. Ladder House
79. Wheatley Ridge
2542 dating in the tenth and eleventh Centuries A.D. Their range is from the Little Colorado near its junction with the Colorado, northward across Black Mesa almost to the Chinlee. Surface survey indicates that they cover the period from 900-1100 A.D. The only structure fully described is that at Heiser Spring. The structure was built in an ash dune. Some type of support was needed to hold back the sides. In the Flagstaff area the deep rectangular pit-houses of this period had sides cribbed with timber. In the area extending north from the Little Colorado River there is a scarcity of timber so it was necessary to use some other material. 

 Few, if any, circular pit-houses were sunk deep enough into the ground so that poles laid across the pit would be high enough to permit standing room. For this reason the superstructure had to be built so that it extended above the ground level. The space between the raised roof and the ground level was usually spanned by slanting poles leaning against the main roof stringers. Occasionally walls were built around the edges of the pit to provide this extra head room. (Map 17) Basketmaker II houses in Animas Valley had shallow basin-shaped floors. Walls were built of adobe

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1Colton, H. S., 1939, p. 55.
6. Animas Valley
17. Cottonwood Canyon, Cave 4
39. Laguna Creek Rock Bench
42. Lost City
62. Segi Cave #1
63. Segi Cave #2
68. Sky House
76. Valley Village
bricks reinforced with poles.¹ There are at least four examples of this type of construction in Basketmaker III structures. Laguna Creek Rock Bench and the Segi Caves 1 and 2 had slab-lined houses with cappings of about three courses of turtle back adobes with occasional interspersed stones.² Farther west, in Cottonwood Canyon Cave, four slab lined houses had walls built of adobe reinforced with poles.³ Pueblo I structures at Lost City, Nevada, about one meter deep or less had adobe or adobe reinforced with stone enclosures. These enclosures had door openings in them.⁴ In Nine Mile Canyon in northeastern Utah, Sky House, and Valley Village had adobe-stone walls. At the latter, a slab lined pit 0.50 m. deep had a surface wall of adobes and rocks 0.75 m. high. (Figure 4) All of the structures having surface walls were shallow in depth.⁵ There is a westward shift in its occurrence. It is first found in Basketmaker II near Durango, Colorado. The Basketmaker III structures run from the Segi to Virgin River north of the Colorado River. The structures at Lost City at the junction of the Muddy and Virgin Rivers are later in date. This

¹Reed, E. K., 1941, p. 262.
²Guernsey, S. J., 1931.
³Judd, N. M., 1926, pp. 103-112.
⁵Gillin, J., 1938, pp. 8-12.
gives a shift in almost a straight line from southwestern Colorado to the southern tip of Nevada. In Pueblo I times there is a northern extension up the Colorado-Green River drainage to Nine Mile Canyon.

Floor Treatment. Floor treatment is often a very hard trait to determine. House pits exposed to weather and rodents are cut up so badly that in many cases it is difficult to establish the exact floor level. Usually the floor is untreated except for the packing it receives from use. It may be dug down to a hard layer in the soil. At Cameron Creek the early houses were dug down to the hard gravel layer. Later when houses were dug deeper they were plastered. In Ackerman-Lowry #1 houses the floors were cut down to bed rock. At the Bear Ruin the houses were dug through the clay down to a stratum of sand. In Red Rock Valley Caves the floors were sometimes dug down to bed rock. In other words, the native soil itself may furnish an excellent floor. Gravel, sand, rock, or clay would make good floors. Plastered floors are reported at a total of thirty-six sites. This amounts to about half of the sites covered. Evidence of plastered floors has probably been destroyed at many of the others. Only one other type of floor treatment has been reported. At Tseh So in Chaco Canyon the early pit-house had a large vestibule which was paved with slabs.¹

¹Kluckhohn, C., 1939.
Although the floor seems to have received very little treatment it contains many distinctive features. Important features found on and in the floor are fire pits, ash pits, ladder pits, ladder holes, deflectors, partitions, storage pits, storage bins, pot rests, sipapus, etc. These will be taken up individually.

**Partition.** The daily activities of most of the so-called primitive peoples are carried on in one room. The pit-house dwellers from time to time seemed to feel the need of dividing the room into portions. Thus we find that about twenty-six sites have houses containing partitions. (Map 18) These structures are found in San Juan and Little Colorado drainages. Basketmaker III houses of this type cover an area including Durango, Colorado, Chinle drainage, Jeddito portion of Black Mesa, Cottonwood Canyon, and one example near Flagstaff. Pueblo I structures of this type are at the forks of the Little Colorado in the south and another group in the La Plata, Mesa Verde, Ackmen-Lowry region. A lone survivor is reported for the Largo Phase structures of the upper Chama drainage. These partitions take on a variety of structural techniques. They may be constructed of adobe or slabs, be curved or straight, and be extended from the fireplace or be in front of it. They may be in one piece or divided into two sections located at either side of the fire pit, and be associated with or without a deflector. They consist of a wall or just a low
Houses with Partitions

1. Ackmen-Lowry #1
2. Ackmen-Lowry #2
5. Allantown
9. Broken Flute Cave
14. Cherry Creek
18. Cottonwood Canyon Cave #5
29. Ignacio 12:1
30. Jeddito, Site 4
31. Jeddito, Site 4A
33. Jeddito, Site 264
35. Kiatuthlanna

41. Largo
45. Maverick Gulch
47. Mesa Verde Earth Lodge A
49. NA-1923
54. Powell Ranch
56. Red Rock Valley Cave #1
57. Red Rock Valley Cave #2
58. Red Rock Valley Cave #6
59. Red Rock Valley Cave #7
60. Red Rock Valley Cave #8
67. Shabikeshchee
78. Water Fall Ruin
ridge, and may contain posts and storage bins.

Most always the partition may be considered a wall but there are examples of places where they are very rudimentary. These sites are Broken Flute Cave, Cottonwood Canyon Cave 5, Jeddito 4a, NA 1923, Shabikeshchee, Klatuthlanna, and the Red Rock Valley Caves. (Figure 9) All, except Klatuthlanna, are good Basketmaker sites. In these sites there are only low ridges running across the floor. In every case they are extensions from the rim about the fire pit. In Cave 5, Cottonwood Canyon, a pole was laid on the floor and covered with adobe plaster to form a ridge 7.6 cm. high.\(^1\) At the other sites the partitions were higher being anywhere from 20 cm. to almost a meter. Usually they were of slab, slab and adobe, or adobe construction. Slabs were used at Ackmen-Lowry, Allentown, Klatuthlanna, Mesa Verde Earth Lodge A, and Shabikeshchee Village. Some structures at Ackmen-Lowry, Allentown, Klatuthlanna, and Shabikeshchee used both adobe and slabs, while others used just adobe. House B at Ackmen-Lowry #1 had a partition of masonry plastered with adobe.\(^2\) It is the only case of this kind reported. Structures containing adobe partitions were located at Ackmen-Lowry, Allentown, Broken Flute Cave, Cherry Creek, Jeddito, Klatuthlanna, Largo, Maverick Gulch, Powell Ranch, Red Rock Valley,

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\(^1\) Judd, N. M., 1926, p. 115.

\(^2\) Martin, P. S., 1939, p. 341.
Shabikesheche, Water Fall Ruin, and Ignacio 12:1. These partitions were always located on the ventilator side of the hearth. Usually they set off less than a third of the room. If they were built well in front of the fire pit and almost to the wall, they would often be straight across the room, like some of those found at Ackman-Lowry, Allantown, Kiututhlanna, Largo, Maverick Gulch, and Shabikesheche. If they were close to the fireplace or radiated from it, they curved toward the wall. When the structure had four main posts set off from the wall, the front two were usually incorporated in the partition. The function of these partitions is speculative. They set off a segment of the room near the ventilator. They may have helped cut off the floor drafts from spreading over the entire floor. The deflectors shielded the hearth. Another function, which may have been secondary, was that of creating a storage bin. In Mesa Verde Earth Lodge A, House X at Shabikesheche, and in the Largo Phase pit-house, there were secondary partitions running from the main partition to the wall at either side of the ventilator opening. This left a narrow passage from the hearth to the vent with a bin on either side. Protokiva I at Maverick Gulch had bins built in the partition. The area behind the partition would be the logical portion of the house to use for storage because it would be cold and drafty in the winter. House M at Shabikesheche Village had a second partition of slabs at the rear of the house. The
other partition was an adobe ridge running from the central fire pit. The area enclosed by the rear partition also contained a fire pit.¹ Pit-house 17 at Jeddito 4A was divided into four areas by ridges extending from the fire pit through the main supports to the wall.²

Fire Pit. Generally speaking a structure must have a fire pit to be called a dwelling. However, exceptions are made when the house is in such bad condition that any evidence of a fire pit has been destroyed. Almost universally the fire pit is located in or near the center. (Map 19) Sometimes it may be only vaguely near the center. Ignacio 12:1 is a good example. There the fire pit is located between the two main supports on the opposite side of the house from the entrance, to the east side of the house.³ The ventilator is on the south side. Anasazi pit-houses have centrally located fire pits from Basketmaker II as shown at Durango to Pueblo II in the Largo and Black Mesa Phases. Fire pits near the entrance are limited to Mogollon houses such as those found at Cameron Creek Village, Harris Site, Luna, Wheatley Ridge, and Mogollon Village. (Map 20) These are early, antedating most Anasazi structures.

¹Roberts, F. H. H., Jr., 1929, pp. 51-52.
²Brew, J. C., 1941, p. 37.
³Daniels, H. S., 1938, p. 22.
1. Ackmen-Lowry #1
2. Ackmen-Lowry #2
3. Allantown
4. Animas Valley
5. Beacon Ridge
6. Bear Ruin
7. Broken Flute Cave
8. Chaco Canyon Pit-house #1
9. Chaco Canyon Pit-House #2
10. Chaco Canyon BC 50-51
11. Cherry Creek
12. Cottonwood Canyon Cave #4
13. Cottonwood Canyon Cave #5
14. Deadman's Mesa
15. Forestdale, Ariz.
16. George Mound
17. Heiser Spring
18. Ignacio 12:1
19. Jeddito #4
20. Jeddito 4A
21. Kiatuthlanna
22. Laguna Creek Rock Bench
23. Largo
24. Lost City
25. Maverick Gulch
26. Mesa House
27. Mesa Verde Earth Lodge A
28. Obelisk Cave
29. Powel Ranch
30. Red Rock Valley Cave 1
31. Red Rock Valley Cave 2
32. Red Rock Valley Cave 3
33. Red Rock Valley Cave 4
34. Segi Cave 1
35. Segihotsosi-Open Site
36. Shabikeshchee
37. Sky House
38. Starkweather
39. SU Site
40. Valley Village
41. Vandal Cave
42. Wheatley Ridge
43. Willard
10. Cameron Creek Village
27. Harris Site
43. Luna
48. Mogollon Village
79. Wheatley Ridge
Usually the hearths were circular in form. Cottonwood Canyon Cave 5, Water Fall Ruin, and Ignacio 12:1, all Basketmaker III houses, have oval fireplaces. The oval pit in Cave 5 has depressions at each of the four corners. Oval fire pits are also found at Forestdale, Kiatuthlanna, Shabikeshchee Village, and the SU Site, but they are accompanied at each place by the circular form. Rectangular fire pits are recorded at Wheatley Ridge and Heiser Springs.

The most frequent fireplace form was a round plastered basin with a rim. This type is found at fifteen sites, running in date from Basketmaker to early Pueblo II, scattered over the whole distribution of Anasazi circular houses. Fire pits lined with slabs were found at Ackmen-Lowry, Allantown, Beacon Ridge, Chaco Canyon Pit-House #1, Heiser Springs, Shabikeshchee Village, SU Site, and Wheatley Ridge. That gives a gradual northward shift. Wheatley Ridge and SU antedate Basketmaker III sites in Chaco Canyon. From Chaco Canyon it goes on to the Pueblo I sites of Ackmen-Lowry in southwestern Colorado and Beacon Ridge in northeastern Utah. The masonry structure at Heiser Springs utilizes it in Pueblo II times. Secondary fire pits occur in rare cases. House M at Shabikeshchee Village has a secondary fire pit behind the rear partition. Several houses at Bear Ruin in the Forestdale Valley have piles of burnt rock off to one

1 Judd, N. M., 1926, p. 113.
side which may have been used for secondary fires for cooking. Structure 3 at Allentown has a secondary fire pit near the main post in the southern quadrant. The post is protected by slabs. Roberts suggests that it may have been an ash pit.¹

Deflector. A smoke hole was probably located above the fire pit. Frequently at one side of the house was a ventilating shaft opening at or near the floor. The smoke and hot air from the fire would raise through the smoke hole. This would cause cold air to rush in through the ventilator opening. Roberts reports that at Kiatuthlanna this system worked so well that the current of air could be felt in the open pits that he excavated.² The rush of cold air would blow directly on the fire. To prevent this a slab was placed to deflect this current around the walls. Usually they were upright slabs set in the floor. Seventeen sites report this feature. (Map 21)

The earliest example of a deflector is found in House 146 at the Cameron Creek Village. A slab was set in the edge of the basin fire pit on the side toward the entrance. This was necessary because an entrance would have the same effect as a ventilator. Probably the force of air would be even greater.³ The same practice was found at Wheatley Ridge.

¹Roberts, F. H. H., Jr., 1939, p. 49.
³Bradfield, W. S., 1929, p. 17.
1. Ackmen-Lowry #1
2. Ackmen-Lowry #2
5. Allentown
8. Bear Ruin
10. Cameron Creek Village
14. Cherry Creek
27. Heiser Spring
29. Ignacio 12:1
30. Jeddito Site 4
33. Jeddito Site 264
35. Kiatuthlanna
41. Largo
45. Maverick Gulch
47. Mesa Verde Earth Lodge A
54. Powell Ranch
65. Segihotsosi-High Cave
66. Segihotsosi-Open Site
67. Shabikeshchee
79. Wheatley Ridge
In these structures the fireplaces were near the entry ways. This was not limited to Mogollon houses. At Ackmen-Lowry #1, Bear Ruin, and Allentown, deflectors were used in houses with side entrances. Basketmaker III houses with deflectors are found at the Jeddito Sites, Shabikeshebee Village, Ignacio 12:1, Cherry Creek, Powell Ranch, Mesa Verde Earth Lodge A, and the Segihotsosi Sites. It did not extend much into the periphery. Pueblo I examples are Ackmen-Lowry, Maverick Gulch, Allentown, Kiatuthlanna, and Bear Ruin. Reiser Springs and Largo are the late survivors. Structures at Allentown, Cherry Creek, and Powell Ranch had partition walls extending across in front of the vent acting as deflectors. Usually the partition had a gap in front of the ventilator and a deflector was used. If the partition was just a ridge running from the hearth, a deflector was either placed in the ridge or closer to the vent. House F at Shabikeshebee Village had a pole and mud deflector.\(^1\) Sometimes the draft of air would become so great that it would have to be cut off completely. Then stone slabs would be placed in the ventilator opening. Such slabs were found at the Bear Ruin, Kiatuthlanna, Maverick Gulch, Allentown, and Shabikeshebee Village.

**Storage Features.** The pit-house wife, like the modern housewife, was probably faced with the problem of where to

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\(^1\) Roberts, F. H. H., Jr., 1929, p. 29.
put the great variety of objects that seem necessary in any household. A variety of structural features were incorporated to provide for this need. (Map 22) Wall niches were found at Allantown, Chaco Canyon Pit-House #1, Heiser Springs, Shabikeshohee Village, Vandal Cave, and Ignacio 19:1. The simplest form was a pit dug in the floor. These were found at Ackmen-Lowry, Allantown, Broken Flute Cave, Chaco Canyon #1, Chaco Canyon Be 50-51, Bear Ruin, Jeddito, Luna, Powell Ranch, Segi Cave 1, Shabikeshohee Village, Starkweather Ruin, Mogollon Village, and SU Site. Fifteen sites had storage bins of one type or another. Slab bins were constructed in houses at Ackmen-Lowry #1, Allantown, Broken Flute Cave, Chaco Canyon Pit-House #1, Chaco Canyon Be 50-51, Church Rock, Cottonwood Canyon Cave 5, Luna, Red Rock Valley Caves, Mesa Verde Pit-House A, and Shabikeshohee Village. Cherry Creek, Cottonwood Canyon Cave 5, Bear Ruin, and Shabikeshohee Village bins were sometimes made of adobe or earth. These bins were frequently built around pits. House 8 in the Bear Ruin of Forestdale Valley had a unique row of bins along the north side. A row of pits were rimmed with native soil. Some of them were circled with small post holes. They must have had a wattle and daub superstructure. Near one was a slab which may have been used to close the opening.¹ In the Basketmaker II structures in the Animas Valley, slab lined

¹Haury, E. W., 1941.
1. Ackmen-Lowry #1
2. Ackmen-Lowry #2
5. Allantown
6. Animas Valley
8. Bear Ruin
9. Broken Flute Cave
11. Chaco Canyon Pit House #1
12. Chaco Canyon Pit House #2
13. Chaco Canyon Bc 50-51
14. Cherry Creek
15. Church Rock
13. Cottonwood Canyon Cave #5
22. Forestdale, Ariz. P: 16: 2
27. Heiser Spring
30. Jeddito Site 4
31. Jeddito Site 4A
33. Jeddito Site 264
35. Kiatuthlanna
41. Largo
43. Luna
47. Mesa Verde Earth Lodge A
54. Powell Ranch
56. Red Rock Valley Cave #1
57. Red Rock Valley Cave 2
58. Red Rock Valley Cave 6
59. Red Rock Valley Cave 7
60. Red Rock Valley Cave 8
62. Segi Cave #1
67. Shabikeshchee
69. Starkweather
80. Willard
bins were covered with a cone-shaped cap of adobe. These bins are very much like those found in Basketmaker caves. Kidder and Guernsey illustrate similar storage bins in Segihotsosi Cave 14. The large entrance antechambers found at Shabikeshchehee Village, Alkali Ridge, and Ackman-Lowry #1, probably were used as storage places too. The Bear Ruin has one house like this, House 3. At the same ruin Houses 9, 10, and 14 have storage annexes. One bin in House 10 is separated from the main structure by a low wall. In addition to the internal storage features, independent storage structures were built outside the houses. They included slab cists, storage pits, masonry surface bins, and jacal structures. These structures have been discussed previously.

Ceremonial Features. Seven sites have a small circular depression or hole behind the fire pit. (Map 23) The function of these holes is a matter of assumption. Since the modern kiva has many features that are similar to those found in earlier pit dwellings, such a pit located behind a fire pit is now called a sipapu and its function is explained by mythology.

In the kivas or ceremonial chambers the feature is called the sipapu, because modern Pueblos use that name or a close variation of it

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2 Haury, E. W., 1941.
2. Ackmen-Lowry #2
5. Allantown
8. Bear Ruin
27. Heiser Spring
29. Ignacio 12:1
35. Kiatuthlanna
45. Maverick Gulch
54. Powell Ranch
67. Shabikeshchee
to designate the hole. According to them it symbolizes the mythical place of emergence through which their ancestors are supposed to have passed in their journey from the inner portions of the earth, where they were created, to the surface of the world upon which they now live. Whether a similar interpretation was made in the past or not is a matter of conjecture. The belief is so firmly implanted in Pueblo mythology, however, that it may with considerable justification be assumed that the prehistoric people regarded the feature in the same light. A further support for this theory is derived from the clear evidence that the later kivas represent definite survivals of the old subterranean houses."

Sipapus were located at Ackmen-Lowry #2, Allentown, Heiser Springs, Kiatuthlanna, Maverick Guleh, Powell Ranch, Shabikeshebee, and Ignacio 12:1. In the Kiva the sipapu, when not in use, is covered with a stone slab. At Ignacio 12:1 a carefully shaped stone slab was found on the floor beside the sipapu. Similar slabs were found at Kiatuthlanna, Allentown, and Shabikeshebee Village. Sometimes the sipapu was filled with clean sand which functioned the same as a cover. This was found in House B in Group 1 at Kiatuthlanna. One house at the Bear Ruin had a similar sand filled hole. The sipapu in House C of Group 2 at Kiatuthlanna was also filled with sand, but it contained a round stone cylinder. The Zuni workmen called it a kiva stone. House 1 at the Bear Ruin had a slab in a pit located in the position of a sipapu. The pit was plastered over. At Allentown, Houses 12a, 12b, and 13b had slabs buried flush with the

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1 Daniels, H. S., 1938, p. 18.
floor. The purpose of these slabs is possibly twofold. Some kivas in modern Pueblos have such stones. During ceremonies a drum or a basket used as a drum is placed on it. On the other hand metates may have been placed on them to prevent wear and tear on the floor. The slabs in 12a and 12b are off to one side in a position where metates are sometimes found. In one house a metate was found resting on a slab but the slab was not buried in the floor. The slabs in 13b are located behind the fireplace in the spot where one would expect to find the sipapu.¹

The presence of a sipapu or similar features usually associated with ceremonial rooms brings up the problem of whether or not the structure was used for ceremonial purposes. The fact that most of the houses at Shabikoshchee Village, Allentown, and Kiatuthlanna have sipapus demonstrates that they did occur in domestic structures. La Plata sites, such as we have illustrated at Maverick Gulch and Powell Ranch, consist of a crescent of surface dwellings with a subterranean structure in the center. These pit-houses have sipapus. Morris calls them protokivas and, because they contained metates, feels that they served a dual purpose.² The oval masonry-pit-house at Heiser Spring is remarkably like a kiva. However, such kivas were not built

¹Roberts, F. H. H., Jr., 1931, pp. 52, 128.
in that region at this time and there are no pueblos nearby. Also, there was nothing about its construction that would not apply to a dwelling so there is no reason to believe that it was anything but a dwelling. Since individuals may carry charms on their person or have religious symbols in their homes it is probable that individual houses might have their own sipapu and that it must not necessarily be restricted to a ceremonial structure. Often the archaeologist assumes that the kiva indicates some social grouping such as clans, etc. Prudden brings forth this concept. On the other hand, Elsie Clews Parsons makes an interesting comment on this idea.

"Archaeologically all that is known about a kiva is that it developed from an early type of dwelling and because ceremonial objects are found in kivas inferably kivas were used for ceremonies. For interpretation the early Southwestern Archaeologists turned to ethnology and picked up two ideas: the concept of the sipapu or orifice into the underground pre-Emergence world and the concept of matrilineal clanship. These ideas were then worked into a fixed association, a kiva should have a sipapu, any pit in a kiva being a sipapu, and a kiva belonged to and was used by clan groups, Kiva meant clan, and clan meant kivas. The rigidity of these associated ideas has more or less persisted in spite of ethnographic evidence (1) that small pits may have ritual functions other than communication with underworld spirits and that the sipapu may be outdoors without kiva connection (2) that kivas are used by whatever social groups there are, by societies, or by moieties as well as by clans.

1 Hargrave, L. L., 1935, p. 67.
2 Prudden, T. M., 1897.
3 1940, p. 218.
and the kivas occur without clanship.

Bench. Pit-house walls do not always extend in an unbroken line to the surface of the ground. Frequently there is a step back forming a bench or banquette around the room. Such benches were found in thirty of the sites surveyed.

(Map 24) At Luna, New Mexico, House 2 has a bench extending half way around the room. This bench is possibly the earliest in date. Basketmaker houses having this feature include Ignacio 12:1, Cherry Creek, Mesa Verde Earth Lodge A, Step House Cave, Chaco Canyon Pit-House #1, Shabikeshochee Village, Obelisk Cave, Broken Flute Cave, Red Rock Valley Caves, Fluteplayer House, Juniper Cove, Segi Sand Hill, and Cottonwood Canyon Caves 4 and 5. Pueblo I benches are found at Maverick Gulch and Ackmen-Lowry in the upper San Juan and Allantown, Kiatuthlanna, and Bear Ruin in the south. After 900 A.D. the domestic structures having it are Heiser Springs and Largo.

The bench was usually extended completely around on the side of the house. Ackmen-Lowry #1, Cherry Creek, Luna, and Maverick Gulch have houses with benches only half way around. They are on the rear portion of the room. Pit-house 1 at Arizona P:16:2 and the Largo Phase house have benches on the rear and both sides but none on the entrance or ventilator side. Usually the bench was constructed by digging a step back in the native soil. In the caves of

1Hough, W., 1920, p. 412.
1. Ackmen-Lowry #1
5. Allantown
8. Bear Ruin
9. Broken Flute Cave
11. Chaco Canyon Pit House 1
14. Cherry Creek
17. Cottonwood Canyon Cave #4
18. Cottonwood Canyon Cave #5
21. Fluteplayer House
22. Forestdale Ariz.P:16:2
27. Heiser Spring
29. Ignacio 12:1
30. Jeddito Site 4
31. Jeddito Site 4A
33. Jeddito Site 264

34. Juniper Cove
35. Kiatuthlanna
41. Largo
43. Luna
45. Maverick Gulch
47. Mesa Verde Earth Lodge A
52. Obelisk Cave
56. Red Rock Valley Cave 1
57. Red Rock Valley Cave 2
58. Red Rock Valley Cave 6
59. Red Rock Valley Cave 7
60. Red Rock Valley Cave 8
64. Segi Sand Hill
67. Shabikeshee
70. Step House Cave
Red Rock Valley some of the houses had shallow basin-like floors. At the base of the walls adobe was laid up to form a bench up to 30 cm. high and 60 cm. wide. Shabikeshoe Village, Step House Cave in Mesa Verde National Park, Jeddito Sites 4A and 264, some of the Red Rock Valley Caves, and Cottonwood Canyon Caves 4 and 5 structures have slab lined benches. The slab lining of one of the houses in Step House Cave did not extend all the way up the wall to the surface. Adobe is plastered at the top of the slabs to form a narrow bench. At Ackmen-Lowry #1, Allentown, and Cherry Creek occasional slabs reinforce the benches.

The bench has its origin not in a place to sit but as a feature in roof construction. Practically every house has its roof above the level of the ground. From the edge of the roof to the ground poles were placed. These poles were usually at an angle. For their base a niche was dug to hold them more firmly. Thus, the bench was the foundation for secondary roof poles. (Figure 9) This is shown by the fact that twenty-one out of the thirty sites which have benches have these secondary posts in the bench. This is illustrated very well at Fluteplayer House. There a meter above the floor is a bench 20 cm. wide. In it posts were placed at an angle. Chaco Canyon Pit-House #1, Cottonwood

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1 Anonymous, 1932, pp. 51-2.
Canyon Caves 4 and 5, Obelisk Cave, and House X at Shabikeshchee Village have their secondary posts set back from the top of the wall to form a bench on the surface of the ground. It is possible that many of the houses in which no bench is found had one of this type but it is usually difficult to find traces of them in the soil. Several houses in Shabikeshchee Village and one in Cottonwood Canyon Cave 4 have their main posts in the bench. This is characteristic of later kivas. Mogollon houses were constructed in the pits. That is, the secondary posts were placed in the floor against the wall. This is probably the reason they never developed a bench. The development of the bench was from a narrow ledge at the top of the pit to a real bench which became large enough to sit on. In the kiva it was used for a seat. The benches in the Pueblo I houses at Ackmen-Lowry #1, Kiatuthlanna, and Allantown were usually almost a meter wide and not more than a meter high. This last point is important because the later houses were deeper than the earlier ones with the high benches. Houses with benches became more numerous in later periods. A true bench is found in only two of the twenty houses in Shabikeshchee Village while at Kiatuthlanna seven of sixteen houses had it.

Ventilator. The fire pit was probably located beneath a smoke hole. Fresh air and a draft to clear the room of smoke was obtained by means of a ventilating shaft. (Figure 9)
The hot air would rise upwards through the smoke hole and cold air would rush in the vent. This phenomenon has already been taken up in the discussion of deflectors. Ventilators are reported for twenty sites. (Map 25) None of the structures antedating 500 A.D. have ventilators. Basketmaker houses containing them are at Powell Ranch, Ignacio 12:1, and Cherry Creek in the upper San Juan, Broken Flute Cave, and Caves 1, 2, 6, 7, and 8 in the Red Rock Valley, Turkey Cave on the Segi, and the Bear Ruin in Forestdale Valley below the Little Colorado. Most of the houses in this series represent late well developed Basketmaker III structures. Both sites in Forestdale Valley, and Kiatuthlanna in the Little Colorado area and Maverick Gulch, Ackmen-Lowry Sites 1 and 2, and Alkali Ridge have ventilators. These sites represent most of the typical Pueblo I sites in the Anasazi area except several in the Segi and those in the peripheral areas. Heiser Springs and the Largo Phase houses are the only circular pit-houses dating after 900 A.D. for which there are good descriptions. Both of these have ventilators. Ventilators are a characteristic feature of most of the later kivas. Thus it is possible to see that the ventilator increases in occurrence from early to late. This is almost in an inverse proportion to the occurrence of the side entrance. An entrance passage would serve the same purpose as a ventilator. The relationship of the side entrance and ventilators will be discussed later.
1. Ackmen-Lowry #1
4. Alkali Ridge
5. Allentown
8. Bear Ruin
9. Broken Flute Cave
14. Cherry Creek
22. Forestdale Ariz.P:16:2
27. Heiser Spring
29. Ignacio 12:1
35. Klatuthlanna

41. Largo
45. Maverick Gulch
54. Powell Ranch
56. Red Rock Valley Cave #1
57. Red Rock Valley Cave 2
58. Red Rock Valley Cave 6
59. Red Rock Valley Cave 7
60. Red Rock Valley Cave 8
67. Shabikeshchee
75. Turkey Cave
The ventilator is usually a narrow shaft opening through the wall at or near the floor and comes to the surface a short way from the house. The opening was usually small, less than half a meter across. The passage was one-half to two meters in length. Most often the passage was a tunnel, but in some places such as the Bear Ruin it was a narrow trench. This trench was probably covered. Typically they had some type of lining. At Allantown, Kiatuthlanna, Maverick Gulch, and Shabikeshechee some were lined with plaster. Slabs were found at Allantown and Turkey Cave. The latter shows excellently how they must have been constructed. A trench was dug to the desired depth. Sticks were laid across at the height they wanted for the passage and then it was covered over with earth. At Turkey Cave slabs were laid on the sticks.¹ At Ackmen-Lowry #2, Allantown, and Heiser Springs ventilator shafts were constructed out of masonry. This may be part of the beginnings of masonry buildings. The openings of these passages frequently opened just above the floor. This was found at Cherry Creek, Bear Ruin, Kiatuthlanna, Powell Ranch, Shabikeshechee, and Ackmen-Lowry #1. House A at the latter had an interesting ventilator construction. The opening was lined and roofed with slabs. This projected out into the room and was held up by posts. The shaft sloped up and was lined

¹Guernsey, S. J., 1951, p. 57.
with unworked rocks and covered with sticks. House 1 at the Bear Ruin and House C at Heiser Spring had oval flues just outside the house without any tunnel. The Heiser Spring house did have a short tunnel extending under the bench.

**Entrance.** Entrance to the pit-houses was obtained by two means, a side passage, or by a ladder through a roof opening. There is almost an equal number of both types. Thirty sites had roof entrances while twenty-two had side entrances. (Maps 26-28) When an entrance passage is not found, a roof entrance is usually assumed as the only alternative. It is important, however, to note that of the thirty sites, which are reported to have roof entrances, only nine have direct evidence of the use of ladders. Ladder pits or ladder holes were found at Ackmen-Lowry #2, Allentown, Chaco Canyon Be 50-51, Cherry Creek, Kiatuthlanna, Maverick Gulch, Powell Ranch, Shabikeshchee Village, and Valley Village. (Figure 9) It is interesting to note that out of the large number of Basketmaker III sites three, two in the Chaco, and one in the La Plata River, had evidences of the ladder. At Shabikeshchee Village and Powell Ranch there was a shallow basin-shaped depression in front of the fire pit. This depression probably held the bottom end of a notched log ladder. The lone house in the Be 50-51 trash

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1. Ackmen-Lowry #1
2. Ackmen-Lowry #2
4. Alkali Ridge
5. Allantown
8. Bear Ruin
9. Broken Flute Cave
11. Chaco Canyon Pit House #1
12. Chaco Canyon Pit House #2
13. Chaco Canyon Bc 50-51
14. Cherry Creek
17. Cottonwood Canyon Cave #4
18. Cottonwood Canyon Cave #5
19. Deadmans Mesa
27. Heiser Spring
35. Kiatuthlanna
39. Laguna Creek Rock Bench
41. Largo
42. Lost City
45. Maverick Gulch
46. Mesa Verde Earth Lodge A
54. Powell Ranch
56. Red Rock Valley Cave 1
57. Red Rock Valley Cave 2
58. Red Rock Valley Cave 6
59. Red Rock Valley Cave 7
60. Red Rock Valley Cave 8
67. Shabikeshchee
69. Starkweather
70. Step House Cave
76. Valley Village
2. Ackmen-Lowry #2
5. Allantown
13. Chaco Canyon Bc 50-51
35. Kiatuthlanna
45. Maverick Gulch
54. Powell Ranch
67. Shabikeshchee
76. Valley Village
1. Ackmen-Lowry #1
2. Ackmen-Lowry #2
3. Alkali Ridge
4. Allantown
5. Bear Ruin
6. Broken Flute Cave
7. Cameron Creek Village
8. Chaco Canyon Bc 50-51
10. Harris Site
11. Ignacio 12:1
12. Jeddito Site 264
13. Juniper Cove
42. Lost City
56. Red Rock Valley Cave 1
57. Red Rock Valley Cave 2
58. Red Rock Valley Cave 6
59. Red Rock Valley Cave 7
60. Red Rock Valley Cave 8
64. Segi Sand Hill
66. Segihotsosi-Open Site
67. Shabikeshchee
68. Sky House
69. Starkweather
71. SU Site
79. Wheatley Ridge
mound near Tseh So had two holes, probably for the ends of a runged ladder, behind the fireplace. Ladder pits have wide distribution by 700-900 A.D. They are found at Valley Village in Nine Mile Canyon, Utah, at Ackmen-Lowry #2 and Maverick Gulch on the upper San Juan, and Allentown and Kiatuthlanna at the forking of the Little Colorado. At Valley Village a depression is found in the floor. The most complete information about ladders in pithouses has been found at Allentown and Kiatuthlanna. House C, Group 1, at Kiatuthlanna had a ladder pit in which the ends of the ladder were placed and then filled with adobe to hold it tight. The ends of the ladder were found in place. They were at a 30° angle so that they would project up over the fire pit and through a hole directly above it.¹ At Allentown there is evidence of the evolution of the ladder pit. In House 3 the fire pit and ladder pit were surrounded by a rim of adobe. Rocks were used to reinforce the sides. A rough spot marked the place where the end of the ladder rested. Then, in House 15, a stone lined box filled with ashes marked the spot usually occupied by the ladder. The ladder end rested on a slab placed just inside the partition. This same situation was found in House 1, where the ends of the ladder were found embedded in the plastered floor. The suggested evolution is that at first a pit was

¹Roberts, P. H. H., Jr., 1951, p. 37.
worn by use. Then they constructed a pit for the ladder and lined it with stones. This box being next to the fire, formed a handy place to put the ashes. Because of danger of fire, the ladder was moved back to a new location and finally embedded in the floor.¹ Ash pits have been found elsewhere, at Kiatuthlanna, Bear Ruin, and Wheatley Ridge. (Figure 13)

Early sites in the Mogollon area of the Mimbres and Upper Gila have entrance passageways. All of the houses at the SU Site, which may pre-date the Georgetown Phase, have large entrance ways. (Figure 11) Those of Houses D-2 and E are long, while the others are rather broad and short.² Later, entrances at Starkweather were rather short and steeply inclined. The typical Georgetown entrance is a long incline such as is found at the Harris Site and Mogollon Village. From 500-700 A.D. entrance passages are found in the Chaco Canyon area and probably at Alkali Ridge. These consist of large slab lined antechambers. They were sometimes stepped. The antechamber was above the floor level. At Juniper Cove entrance was obtained by means of two or three steps at one side. This may have been the method at Segi Sand Hill and the Open Site in Segihotsosi Canyon.

From 700-900 A.D. entrances have a scattered distribution.

¹Roberts, F. H. H., Jr., 1939, pp. 21, 50-51, 86, 130, 255.
²Martin, P. S., and Rinaldo J., 1940.
The typical long sloping entrance passage is found in both Forestdale sites. These are interesting because they characteristically enter at an angle so that they come into one side of the center, often outside one of the main posts. This long entrance way was found as far north as Jeddito. The one entrance at Allentown is rather short and broad. It has no slope and probably had a ladder at the end.\(^1\) House 2 at the Bear Ruin in Forestdale Valley is similar in shape but much longer. Ackmen-Lowry #1 entrances are of the long type. At Site 2 there were antechambers. House C has a long passage with a bulge in it forming an antechamber.\(^2\) The type of side entrance at Sky House, Nine Mile Canyon, Utah, is not indicated.

After 900 A.D. no side entrance passages are found. They seem to have passed out. It is also to be pointed out that in the typical Pueblo I pit-house sites only one with an entrance passage is found. Because Ackmen-Lowry and Bear Ruin may have a mixture of influences they are not typical of this period. At Allentown the one house with a passage is probably earlier in the sequence. At Ackmen-Lowry #1 there is definite evidence, in at least two houses, of remodeling. In each the entrance passage was reduced to a ventilator.\(^3\) All evidence seems to indicate that the

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\(^1\) Roberts, F. H. H., Jr., 1939, p. 153.

\(^2\) Martin, P. S., 1939, p. 372.

\(^3\) Martin, P. S., 1939.
ventilator is derived from the entrance passage.

Roberts feels that the houses at Shabikeshohee had both a roof and a vestibule entrance. (Figure 7) He compares the structure to those of the Koryak in Siberia. The Koryak used the vestibule in summer and the smoke hole in the winter. The change was accompanied by great ceremony. Evidence for this can be supported by the presence of both a ladder pit and a passage in House G.¹ The lone pit-house found at Chaco Canyon Site 51-51 has an antechamber and ladder holes.² These two houses illustrate the possibility of the dual system of entrance. House 4 at the Bear Ruin in the Forestdale Valley had both a ventilator and an entrance passage. There was no indication of remodeling. If there was a seasonal change in entrances, as Roberts suggests, they might have blocked the entrance and used the ventilator at such times. Some of the houses, which have no evidence of entrance passages or ladder pits, may have had entrances other than through the smoke hole. The house at Ignacio 12:1 has a slab on the bench in the northwest corner which may have been a step. In this case the entrance would be through a hole in the slanting side of the roof. There is a ventilator and deflector on the

¹Roberts, F. H. H., Jr., 1929.
²Kluckhohn, C., 1939.
opposite side of the room. Lost City, Nevada has entrances of this type. Later circular houses at this site have surface walls of adobe. These walls have doorways in them. From these examples we can see that side entrance is possible without the use of a passage. It is highly possible that shallow pit-houses could be entered from the side without any sign of a passage. House 6 at the Bear Ruin illustrates this. It was shallow and no entrance passage could be found. However, the surface of the ground was hard packed at the point where a passage would have been, indicating that they did go out there. The step from the floor to the surface was no greater than that from the floor into the passages of several houses. Such entrances could be roofed the same as passages and be essentially the same in function and character.

Every ventilator or entrance, so far recorded, is oriented either to the east or south. The entrance at Ignacio 12:1 is in the northwest quadrant but there is a ventilator on the south side. There is a functional reason for this. Most of the heavy winds and storms come from the west and north. By orienting the ventilator and entrance passages to the south or east, the wind would rarely blow directly into them. With the entrance to the east or south

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1Daniels, H. S., 1938, p. 22.
2Haury, E. W., 1941, p. 32.
the morning sun would shine in. This would warm it up on
cold winter mornings. Conversely, the entrance would be
shaded from the hot afternoon sun.

Roof Construction. Pit-house roofs were both flat and
conical. The roofs were constructed of poles, covered with
brush, grass or bark, and sealed with mud or adobe. This
construction was the same used later in the pueblos. Al­
though minor differences occur they are fundamentally the
same. The differences in roof construction are therefore
primarily in the form of the supporting frame work. The
earliest roof form was conical. (Map 29) Georgetown Phase
Mogollon houses had a single main support post in the
center. (Map 30) Around the edge of the house, in the floor
against the wall, secondary posts were placed at frequent
intervals. From the center post to these posts stringers
were laid. This formed a conical roof. Short poles were
laid at an angle from the edge of the roof to the surface
ground just outside of the house. This formed a small
bench around the house at ground level. However they never
seemed to have purposely constructed a bench to hold the
ends of the slanting poles as the Anasazi did. Therefore,
they can be said to have never developed a true bench. The
passage way was roofed by setting poles along the inside of
the passage upon which to place the stringers. (Figure 3)
The conical roof with a single main support post in the
center was found at the Harris Site, Cameron Creek Village,
Houses with a Conical Roof

10. Cameron Creek Village
15. Church Rock
20. Fish Creek Cove
21. Fluteplayer House
27. Harris Site
43. Luna
46. Mesa House
48. Mogollon Village
53. Panhandle Ruin
61. Say-a-kin
64. Segi Sand Hill
66. Segihotsosi-Open Site
77. Vandal Cave
79. Wheatley Ridge
10. Cameron Creek Village
27. Harris Site
43. Luna
48. Mogollon Village
79. Wheatley Ridge
Mogollon Village, Luna, and Wheatley Ridge. The secondary posts along the wall were described at the Harris Site and Mogollon Village.

A second type of conical roofed pit-houses has no central supports. (Map 31) Poles are placed at an angle from the edge of the pit so that they met in the center to form a cone. The circular structure in Fluteplayer House Cave was constructed in this manner. One meter from the floor a narrow bench was cut back. In it poles were sunk at such an angle that they would meet in the center about two meters from the floor. Since the bench was half a meter below the ground surface, the roof was a flat cone extending only about 30 cm. above the ground level. (Figure 5) Posts set at an angle along the wall to form such a roof were found at Step House Cave, Mesa House, and Segi Sand Hill. At Step House Cave and Segi Sand Hill the angle at which the posts were placed would make the roof nearly two meters high. Each of these houses is early Basketmaker III in age. These structures have a prototype in the Basketmaker II cists. Slab lined cists up to 1.75 m. in diameter and roof in this manner, were found in Kimboko and Segi-hotsosi Canyons. This type of roof construction limits the size of the area that can be roofed. The houses all are less than five meters in diameter. In Vandal Cave, House 1,

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15. Church Rock
19. Deadmans Mesa
20. Fish Creek Cove
21. Fluteplayer House
42. Mesa House
53. Panhandle Ruin
61. Say-a-kin
64. Segi Sand Hill
66. Segihotsosi-Open Site
70. Step House Cave
77. Vandal Cave
six holes were found on the periphery. One pole was found that was badly bent. It was suggested that the poles were drawn together at the roof to form a somewhat arched conical roof.\(^1\) Such houses seem to have been located primarily in the Segi. One was recorded a short distance away in Mesa Verde. A western type was found in the tip of Nevada. Pueblo I houses at Fish Creek Cove on the Fremont River, Utah, and at the Panhandle Ruin #56 in Texas had a conical brush superstructure. Details of these were not given.

The most common type of a roof was flat. Four or more main support posts held a flat roof. Slanting poles were laid from the edge of the pit to the roof. This gave it a truncated cone shape. Thirty eight sites have this type of roof described. (Map 32) Before 500 A.D. this type was found in the northern Mogollon area at Wheatley Ridge and Starkweather Ruin. Probably antedating these are the houses at the SU Site in the same vicinity. From 500-700 A.D. the distribution covers the core of the circular pit-house area from the Animas to the Upper Virgin and from Ackman-Lowry to Chaco Canyon and Jeddito. From 700-800 A.D. it has a scattered distribution: Forestdale Valley and the Upper Little Colorado in the south, La Plata River in the center, and northern Utah in the north. By 900 A.D. it remains in the two lone surviving areas of the circular pit-house. All

\(^1\) Haury, E. W., 1928, p. 23.
1. Ackmen-Lowry #1
2. Ackmen-Lowry #2
4. Alkali Ridge
5. Allantown
8. Bear Ruin
9. Broken Flute Cave
11. Chaco Canyon Pit House #1
12. Chaco Canyon Pit House #2
13. Chaco Canyon Ec 50-51
14. Cherry Creek
17. Cottonwood Canyon Cave #4
18. Cottonwood Canyon Cave #5
22. Forestdale Ariz.P:16:2
24. Geordge Mound
28. Heiser Spring
29. Ignacio 12:1
30. Jeddito Site 4
31. Jeddito Site 4A
33. Jeddito Site 264
34. Juniper Cove
35. Kiatuthlanna
41. Largo
45. Maverick Gulch
47. Mesa Verde Earth Lodge A
54. Powell Ranch
56. Red Rock Valley Cave 1
57. Red Rock Valley Cave 2
58. Red Rock Valley Cave 6
59. Red Rock Valley Cave 7
60. Red Rock Valley Cave 8
68. Sky House
69. Starkweather
70. Step House Cave
71. SU Site
72. Sulphur Creek
76. Valley Village
79. Wheatley Ridge
80. Willard
of the structures have four main roof supports except for structures in eight locations. (Maps 33, 54) Houses at the SU Site had posts, at least one in each quadrant, set out from the wall. Usually there were more than four posts. The arrangement seems to be hit or miss and the details of construction are undetermined. From the brief statement obtainable, the Basketmaker II structures in the Animas Valley had more than four posts supporting the roof. One house on Alkali Ridge, the Cottonwood Canyon Cave houses, a house in Turkey Cave, and House 16 at Jeddito Site 264 had six posts. At Askmen-Lowry the post arrangement is not clear. Some of them have four posts. In others it seems as though there may have been a row of posts in the front and back.

In a typical house the four main posts were set in the room away from the walls. In many small houses these posts were set against the wall or bench. The late houses on the Black Mesa and in the Largo region had their posts against the wall. This is interesting because at this same time many kivas in other areas had no posts but instead utilized masonry pilasters on the bench. House P at Shabikeshchee had the posts in the bench. This may be accounted for by the fact that it was very small, being less than three meters in diameter. Structure 2 at Allentown shows the evolution

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1Additional work in 1941 has shown that a number of these houses had a large central support. Personal conversation with P. S. Martin, November, 1941.

2Roberts, F. H. H., Jr., 1929, p. 57.
1. Ackmen-Lowry #1
2. Ackmen-Lowry #2
4. Alkali Ridge
5. Allantown
8. Bear Ruin
9. Broken Flute Cave
11. Chaco Canyon Pit House #1
12. Chaco Canyon Pit House #2
13. Chaco Canyon Bc 50-51
14. Cherry Creek
17. Cottonwood Canyon Cave #4
18. Cottonwood Canyon Cave #5
22. Forestdale Ariz.P:16:2
24. George Mound
28. Heiser Spring
29. Ignacio 12:1
30. Jeddito Site 4
31. Jeddito Site 4A
33. Jeddito Site 264
34. Juniper Cove
35. Kiatuthlanna
41. Largo
45. Maverick Gulch
47. Mesa Verde Earth Lodge A
52. Obelisk Cave
54. Powell Ranch
56. Red Rock Valley Cave 1
57. Red Rock Valley Cave 2
58. Red Rock Valley Cave 6
59. Red Rock Valley Cave 7
60. Red Rock Valley Cave 8
67. Shabikeshchee
68. Sky House
69. Starkweather
70. Step House Cave
71. SU Site
76. Valley Village
79. Wheatley Ridge
80. Willard
1. Ackman-Lowry #1
4. Alkali Ridge
6. Animas Valley
17. Cottonwood Canyon Cave #4
18. Cottonwood Canyon Cave #5
33. Jeddito Site 264
71. SU Site
75. Turkey Cave
1. Ackmen-Lowry #1
2. Ackmen-Lowry #2
5. Allantown
8. Bear Ruin
9. Broken Flute Cave
10. Cameron Creek Village
11. Chaco Canyon Pit-House #1
12. Chaco Canyon Pit-House #2
15. Church Rock
17. Cottonwood Canyon Cave #4
18. Cottonwood Canyon Cave #5
21. Fluteplayer House
27. Harris Site
29. Ignacio 12:1
30. Jeddito Site 4
31. Jeddito Site 4A
33. Jeddito Site 264
35. Kiatuthlanna
41. Largo
43. Luna
46. Mesa House
47. Mesa Verde Earth Lodge A
48. Mogollon Village
52. Obelisk Cave
56. Red Rock Valley Cave 1
57. Red Rock Valley Cave 2
58. Red Rock Valley Cave 6
59. Red Rock Valley Cave 7
60. Red Rock Valley Cave 8
64. Segi Sand Hill
66. Segihotsosi-Open Site
67. Shabikeshchee
69. Starkweather
71. SU Site
77. Vandal Cave
79. Wheatley Ridge
to the pilaster in the kiva clearly. It is a large structure and the posts are placed near the wall. Three of the four posts are braced on the outside by slabs. This may be necessary because the weight of the roof would tend to push them outward. The post on the south side of the ventilator had an adobe and rock pillar between it and the wall. House 3 had four main supports of which two were braced. In the northeast section an auxiliary support was constructed of masonry. It would be a short step to build such pilasters on the bench to support the roof. This would have the advantage of creating more unbroken floor space. Another type of post bracing was found at the SU Site. House 1 did not have post holes. Along the wall were long trough-like holes where posts might have been. At the Bear Ruin a log was found in a similar trough. Since this log was in the position where a post should be, it is probable that it was used there as a foundation to prevent the post from sinking into the soft sand.

As mentioned above, auxiliary supports were sometimes needed. Poles were laid from the ground sloping up to the roof. In about twenty-one sites posts are found at regular intervals around the bench. Roberts, in a reconstruction of House 12 at Allentown, shows how these bench posts may have

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1Roberts, F. H. H., Jr., 1939, pp. 35, 47.
been used. Secondary stringers were laid around the pit on these posts. The poles running from the ground to the roof were supported in the middle of them. This was the custom in the large Plains houses. (Figure 15) If there were a great many posts on the bench such as found in Chaco Canyon Pit-House #2 or some of the Bear Ruin houses, the slanting poles came down to the bench. If they were widely spaced they may have been used as secondary supports. (Figure 9) Secondary posts were placed in the entrance passages or as a brace for any weak spot in the roof.

Entrances were roofed by placing uprights along the sides either in the passage or on the edge. The vestibule in House B at Askmen-Lowry #2 had four posts, indicating that it was roofed the same as the main structure with a covered passage between. Roberts postulates a conical roof for the antechambers at Shabikeahchee. Both Allantown and Klatuthlanna had several groups of contiguous rooms. These rooms were each roofed in the same manner that individual rooms would be. House B and C in Group I at Klatuthlanna had benches all the way around. There was a common bench between them and the sloping side poles went to the bench. There was a small opening like a ventilator between them.

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1 Roberts, F. H. H., Jr., 1939, p. 108.
2 Martin, P. S., 1939, p. 370.
3 1929, p. 18.
4 Roberts, F. H. H., Jr., 1931, p. 28.
The superstructure over Houses 9, 10, and 11 in Allantown was slightly different. There was no wall between the rooms. Each room was roofed independently. On the adjoining sides the slanting poles were left out and poles were run from the main stringers in one room to the stringers in the next room.1

Structure 3 in Allantown had four posts and a pilaster supporting the roof. They were placed next to the wall. The roof was cribbed. That is, logs were laid from one support to the one adjacent instead of across the room. The second row was laid across the angles formed by the first and so on. After the sloping sides were built up in this manner to the desired distance, the poles were laid straight across forming a flat top. This type of roof construction has been found in kivas. This house was late in the sequence, possibly dating about 900 A.D. It may be an early kiva or a late house type. NA 1768 on Deadmans Mesa had a different type of roof. It was a very deep masonry structure. There were no signs of posts in it so Hargrave postulates that the roof poles were laid across from wall to wall forming a flat roof.2

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2Hargrave, L. L., 1933, p. 67-8.
V. HOUSE TYPES

The discussion of traits and their distribution shows the span in space and time that each of the various traits enjoyed. The discussion on any one trait frequently made reference to its association with some other trait. It was practically impossible to tell about one trait with complete disregard for any of the others. No single house is made up of one trait alone. It is composed of many features. One structure may be completely described with a half dozen traits but another may contain fifteen or twenty structural features. Since we find that a house is composed of many features, tracing the distribution of traits one by one is not enough. The importance of any one trait is in its association with other traits.

If one thumbs rapidly through the maps of trait distributions in the previous chapter, certain groupings will strike one’s eye. Before 500 A.D. there is a smattering of traits in west central New Mexico. In the Period of 500-700 A.D. there is a great concentration in the Four Corners area with extensions eastward to Chaco Canyon, and Mesa Verde, westward to Cottonwood Canyon and the Moapa Valley, and south to Forestdale. In the next 200 years the trait concentrations are north of the upper San Juan and south of the Little Colorado. There are also occasional.
concentrations in the Texas Panhandle, southern Nevada, and northward through Utah. The traits in the Four Corners are scattered. In the Period of 900-1100 A.D. sites are limited to Black Mesa region and the upper Chama.

Statistical Analysis. The complexity of the various sites, as shown by the frequency that they are indicated on successive maps, varies considerably. This is to be seen by turning to the large trait list in the Appendix. Casual inspection will show that there are tremendous variations. For example, the houses at the George Hound are described in nine traits while it takes a total of eighty three to cover the houses at Shabikeshohee Village. A statistical comparison of each site with every other site might be made. The manner in which this analysis could be made is a matter of great consideration. The simplest manner in which to do this is to compare the sites on the basis of traits common to both, and traits found in one but not the other. This raises several distinct and important problems. First, can one rely on presence and absence alone? For example let us compare Heiser Spring with Allantown. Both sites have four main support posts, benches, ventilator, central fire pit, deflector, and masonry construction. The fact that both have four posts and a central fire pit is a trait shared by at least half the sites being studied. Only one house at Heiser Spring is described and it has a bench, but at Allantown, where twenty houses were excavated, three had benches.
The Heiser Spring House has masonry walls. Masonry is also found at Allentown but is limited to the bracing of posts in two structures, one of which has a masonry pilaster, while a third house has a masonry lined ventilator flue. Now let us re-examine these traits and touch on their importance.

The fact that both sites share a four post roof construction and central fire pits with each other is minimized in importance by the fact that forty sites have similar roof patterns and only five places report fire pits not in the center. Since only one house in six at Allentown has a bench, one can hardly call it typical of the site, yet the fact that it does occur there links it with other sites that have benches. The Heiser Spring House is a masonry structure while at Allentown masonry is used occasionally for parts of the construction. The relation may be important because it may be a developmental series. Another factor which must be considered is the fact that twenty structures are being compared with only one structure. If an equal number of houses had been excavated at Heiser Spring there may be as great a range in construction as at Allentown.

If one compares the Geordge Mound houses with houses at Shabikeshbee startling results are obtained. The Geordge Mound house has a shallow pit, four posts, center fire pit, and probably a roof entry. This description would almost fit that of House 0 at Shabikeshbee Village exactly. However almost all the other houses there have these features
and, in addition, usually have many other developments too. In other words, all the traits that are found in George Mound houses are found at Shabikeshee Village but Shabikeshee has an additional seventy-four traits not seen at George Mound.

Thus we see that if one relies on the presence or absence of traits to compare sites you must take into account several points. Traits must be weighed according to their importance. Diagnostic traits must be given more value than traits that have great distribution in time and space. The frequency of occurrence of any trait within each of the sites under consideration cannot be ignored. Within a village you can usually find variations from house to house that may be due to the personal desires of the owner besides those due to a lapse of time. This is particularly true of towns with a rather complex type of architecture. For this reason can you always safely compare an isolated structure with a whole village? The difference between sites of rather simple architecture and those with a multitude of minor variations may become greatly distorted even though both styles may be basically the same. Then again, can the variations of a trait be taken into account? That is, what importance can you put on the fact that one house has a plastered bench while another has a slab lined bench? Is the important trait the bench or the treatment? When one attempts to make up a trait list he is always struck with the feeling
that there is much that could have been found or was found that was not reported. A trait list will probably be incomplete. With these facts in mind it is hard to see how any statistical analysis can give a true picture. If some system of weighting the various traits so as to give them relative value can be found a mathematical analysis may be possible. It will probably take a skilled statistician to work out a formula that would be satisfactory. It would probably involve higher mathematics and the archaeologist will have to take his word for it. If he does use the formula the results may not be of any great value unless he is able to comprehend the function of the formula. For this reason the original attempt to make a statistical comparison of each site with every other was abandoned.

The safest method with which one can compare one site with another is by inspection. This has the great danger of the human factor. However each culture and variation has a "feel" about it which becomes a great guide. This "feel" is an unconscious weighting of the traits and formulating their relative importance. Sometimes the "feel" may be in error as it is influenced by the trends in theory current at the time of the work.

**Trait Complexes.** In the survey of the various traits and their variations certain complexes become visible. It is the constellation of traits and complexes that will make the comparison of one site to another possible. Some of
these complexes can be classed as cultural flourishes while others are functional necessities.

One complex pointed out previously was that of the four post, center fire pit. This is part of a larger complex. A roof with four supporting posts is constructed by laying stringers on these posts and secondary poles are laid on the stringers to form a flat roof. Between the flat roof and the ground, slanting poles are placed. In order to keep these poles from slipping, a bench was frequently dug in the edge of the pit to receive their ends. This made a truncated superstructure. The bench in many of the early houses was created by sinking the ends of the poles in the ground outside the house, but later a bench was dug into the wall and increased in size. An opening in the roof was placed in the center. Possibly this was the easiest place. Then too, a fire pit there would be centrally located to the whole house. Thus four posts, flat roof, and central fire pit go together.

The Mogollon circular pit structure was built with a single central main support post. From it poles were laid outward. Because of the large span from the center to the walls in many of the houses, secondary posts were placed around the edge of the wall to support the radii. This made a low conical roof. From the edge of the roof to the ground, slanting poles were placed. In order to take up less space, the secondary poles were placed next to the wall. Thus the poles to the surface of the ground would come
down farther from the wall and a bench would not be necessary. Because of the center pole the fire pit had to be placed elsewhere. The best place would be near the entry.

Interior storage places in west central New Mexico were limited to storage pits, many of which were flared at the bottom. On the other hand, the houses in the Four Corners region and its neighborhood had a rather complex series of interior storage places. They had bins, pits, niches, and wattle and daub containers. These have an early beginning. In the earlier caves the Basketmaker II people constructed similar slab lined cists, bins, beehive bins, etc. These were transferred to the house. The concept of a wall niche may be derived from tucking objects into cracks and under overhangs in the back of the cave. On the other hand the Mogollon people built inverted bell-shaped exterior storage pits. Pits the same shape were used for exterior cooking purposes. These storage pits may have their origin in the pits of the same character found in San Pedro Stage sites of the Cochise culture. Returning to the Basketmaker houses again, it is easy to see that it is a logical step from large slab storage cists to slab lined houses.

The ventilator, entry way, deflectors, and partitions are linked together. The entry way is of southern origin and is found earliest in Mogollon and Hohokam houses. They also appear occasionally in early Basketmaker houses such as at Juniper Cove. At Shabikeshooche Village large antechambers
were built. The draft coming through the entry way was delected from blowing directly across the fire pit by a deflector. There are only a few deflectors recorded in Mogollon houses. They were found at Cameron Creek Village. They may not have been a necessity because the fire was nearer the door. The partition is only a lateral extension of the deflector. The vestibule entry was abandoned early. The Shabikeshchee houses seemed to have had both the entry and ladder for exits, so the removal of the entry was a simplification. It might be logical to abandon the entry because the smoke hole was a necessity and could easily serve two functions. Ventilation was still needed so a ventilator was constructed. It was much easier to build than an entry, especially in deep houses. The deflector and partition were still retained. Another factor favoring a ventilator over an entry is that the draft can be controlled better and even cut off with a small slab. In the winter time this would be an important factor. This is illustrated by the Palaeo-Asiatics who shut off their entries in the winter. The Eskimo use an entry even in the winter, but it is constructed so that the floor of the house is higher than the tunnel, which cuts down the cold air that might rush in.

The complexes that make up most of the features of a circular pit-house have been enumerated. In Chapter IV there was a detailed listing and discussion of individual
traits. Now that we have both in mind it is possible to proceed to the structure as a whole. What are the structural types that have developed in the Southwest and what are their relationships to each other? As the Southwest is not entirely homogeneous in character and there are variations from one region to the next, the best manner in which to proceed is to take up one area at a time, giving its own particular development. Figure 2 gives a schematic chart showing the phases in which circular pit-houses occur. This chart covers two of the main Southwestern Roots, the Mogollon and the Anasazi.

Circular Pit-House Phases. The Peloncillo Branch of the Playas Stem of the Mogollon Root is centered in the Mimbres River region of southwestern New Mexico. The Harris Site is the type site. The Georgetown Phase dates from about 500-550 A.D. The houses are "D" shaped. A long inclined entrance passage extended from the flattened side. The roof was supported by a single center post with secondary supports along the periphery. The fire pit is located near the entrance. The San Lorenzo Phase extends from 550-700 A.D. The architecture has not been defined for this phase yet, but by the end of this phase the house form was rectangular and the circular house continued as a ceremonial structure.

1Haury, E. W., 1936.
In the Upper Gila region the early phases show a strong Mogollon influence with the Anasazi. Near Reserve the SU Site probably predates the Georgetown Phase. The houses are irregular ovals or circular in shape. The post arrangement was not worked out completely. There is one house with six posts. Most of the houses had a post in each quadrant with numerous secondary supports. There was an entry way which tended to be rather broad and short. The floors were of gravel and adobe. There were storage pits in the floor and the central fire pits were stone or adobe-lined.\(^1\) Georgetown Phase houses were circular with a single center post and side entry with the fire pit located near the entrance. These houses were found at Wheatley Ridge and at Luna. Late Georgetown houses at Starkweather are five meters in diameter and one meter deep. They had a center fire pit and deflector. Entrance was through a short entry. The early San Francisco Phase houses were circular with roof entrances only, but this may correspond to the San Lorenzo Phase of the southern Mogollon. Probably this type is the result of strong Anasazi influence. The full San Francisco houses were rectangular.\(^2\) The Georgetown Phase of the Upper Gila may last until 700 A.D. A San Francisco Phase date of 927 A.D. was obtained. The influences in this region are

\(^1\) Martin, P. S., 1940.

\(^2\) Nesbitt, P. H., 1958.
mixed.

The oldest houses in the Anasazi Area are in the Durango Branch of the San Juan. Basketmaker II structures have been found near Durango, Colorado. Only a brief announcement has been published about them. They were shallow basins in the hillside. The walls were extended by crude adobe masonry. There were beehive-like storage bins in the houses. The flat roof was supported by posts, probably more than four in number. These houses date prior to 500 A.D.

The La Plata Phase of 500-700 A.D. house is typical Basketmaker III. It is illustrated at Ignacio 12:1 and Cherry Creek. The houses are round with a plastered bench sometimes reinforced with slabs. The central fire pit is adobe lined and both have sipapus. Ignacio 12:1 is probably earlier than Cherry Creek, which is located on the La Plata. It has both a ventilator and a stepped entrance. The partition is broken with a deflector in the gap. The Cherry Creek house bench does not extend across the ventilator side. The partition is in a solid section. There is a ladder pit in front of the fire pit. Pueblo I houses vary. The branch in the Piedra develops a rectangular house and surface structures. In the La Plata the typical site has a crescent

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1Reed, E. K., 1941.
2Daniels, H. S., 1938.
3Roberts, F. H. H., Jr., 1930b.
of surface dwellings with a protokiva in the center. This protokiva is both dwelling and ceremonial in function. It is oval to rectangular in shape. Frequently the sides pinch in at the partition. They have well developed ventilators, often elaborately constructed, and the bench is absent or vestigial. The pit-house gradually loses its secular function and becomes ceremonial only. 1

The Mesa Verde region shows a mixed influence. The structures in Basketmaker III La Plata Phase are slab lined with four post construction. One structure in Step House Cave has a conical roof like those found in the Kayenta region. The Abajo Phase 700-900 A.D. is best represented northward in the Ackmen-Lowry Sites. Ackmen-Lowry Site #2 dates about 760 A.D. It shows a great deal of Piedra influence. There are surface rooms of the Piedra jacal type and only two of the pit rooms are circular. They have an enlarged entry forming a vestibule which is much like those of Shabikeshchee Village except they only use occasional slabs in the wall. Ackmen-Lowry Site #1, which dates in the late Pueblo I or about 855-872 A.D., swings back to the La Plata influence. There are more circular houses and there is evidence that the entry ways were reduced to ventilators. Both sites have partitions. One house with an antechamber in the earlier site has both vestibule and ladder holes showing two types of entrance. The remodeled Site #2 made use of the

1Morris, E. H., 1939.
roof entrance exclusively. Ackmen-Lowry Pueblo II structures are masonry pueblos developing from the jacal and rubble surface storage structures.¹

The Chaco Canyon Branch is closely related to the eastern San Juan but, in addition, has many ties with the Little Colorado. Shabikeshchee Village is a typical La Plata Phase or Basketmaker III site. The houses are circular, slab lined with a large antechamber. There are four main supports which were occasionally set against the wall. The adobe lined fire pit had lateral ridges running to the walls accompanied by a deflector. There were typical sipapus. Many slab storage bins were located in and outside of the houses. The later houses tend to be more rectangular, the antechamber is reduced in size to a passage or even a ventilator, and benches occur.²

The circular pit-house extends slightly into the Pueblo I period. In the White Mound Phase (?), 700-800 A.D., one structure has been excavated in Chaco Canyon. Pit-house #2 near Pueblo Bonito is dated at 777 A.D. It was circular with a bench. The roof was supported by four main posts set in notches in the face of the bench with secondary posts in the bench at regular intervals. Early Tséh So in the Red Mesa Phase or late Pueblo I at about 850 A.D. had rectangular

¹Martin, P. S., 1938, 1939.
²Roberts, F. H. H., Jr., 1929.
contiguous rooms with rounded corners, that were slightly excavated and had low rubble walls encased with slabs.¹

The Kayenta Branch of the San Juan Stem occupies the area in northeastern Arizona centering in the Chinlee drainage and the Lukachukai Mountains. There is a strong Basketmaker II complex, White Dog Phase, with highly developed cists of slab and wattle construction. These storage structures probably were the fore-runner of the Basketmaker III or Lino Phase houses in the area or, if not, either influenced their style or resembled unidentified structures in the open. All but three of the cave sites reported are in this area. The sites are both in the open and in caves.² In the Lukachukai Mountains the houses are circular to rectangular, the rectangular being more frequent in later sites. They are slab lined with a bench. In shallow caves these benches may be artificially built. From the central fireplace ridges radiate to the wall. Where they join the wall slab bins commonly occur. Both entrances and ventilator are found. Entrance was frequently made through the smoke hole in the truncated roof supported by four poles. Cave sites of this type range in date from 473-759 A.D.³

¹Judd, N. M., 1924.
²Golton, H. S., 1939.
³Morris, E. H., 1939.
In the Chinlee drainage the slab lined house just described is found. Juniper Cove houses have stepped entrances. Many others do not have entrances. Colton describes the typical house as being slab lined without ventilators.\(^1\) Houses in Segi Caves 1 and 2 and at the Water Fall Ruin are slab lined without side entrances. Along the top of the slabs are several courses of turtle-back adobes or, as at the Water Fall Ruin, it was an adobe rim. This surface wall rimming a pit is very similar to the Basketmaker II houses in the Animas Valley near Durango. The trait may well have come from there. A distinct type in the Kayenta region is the conical roofed structure without interior supports. House 7 in Fluteplayer House Cave was constructed in this manner. One meter from the floor, a narrow bench was cut back. In it poles were sunk at such an angle that they would meet in the center about two meters from the floor. Similar structures were found in Vandal Cave and at Segi Sand Hill. At the former, bent poles were found suggesting that they may have been pulled into the center forming more of a dome than a cone. This style of architecture has its prototype in storage cists found in the vicinity.\(^2\)

The Marsh Pass Phase, 700-900 A.D., is architecturally transitional. The slab lined circular pit rooms continue

\(^1\)Colton, H. S., 1939.

Into this period at Church Rock and Say-a-kin. These houses may have had conical roofs like those found at Fluteplayer House in the Lino Phase. The Pueblo I houses in Fluteplayer House Cave illustrate the transition from pit-house to masonry pueblo which was taking place during this period. Near the front of the cave are three adjacent rectangular rooms with rounded corners. They are cut into the slope with slab lining in the rear while the front is at ground level. They are walled on the front with turtle-back adobes packed in place while still wet. In the rear of the cave are three contiguous pit-rooms with slab lining and turtle-back surface walls. This shows one trend toward surface rooms. Extending southwest from the Chinlee to the Little Colorado was the Black Mesa Phase. The houses were typically circular pit-houses of coursed masonry accompanied by rectangular surface storage structures. They had a four post roof, deflector, bench, central fire pit, and ventilator. These granaries were probably the origin of the masonry pueblo in this region. Thus we see surface structures developing from two sides. In the Chinlee caves, the small surface rooms evolved from the use of adobe walls around rectangular pit rooms. In the open sites on Black Mesa and in the Flagstaff area the late pit-houses were deep. The surface pueblo resulted from the enlargement of surface storage rooms. This

1Colton, H. S., 1939.
is the same as happened in the La Plata region of southwestern Colorado.

The portion of Black Mesa on the Hopi washes is set off as the Tusayan Branch. The Lino and Marsh Pass Phases differ slightly in architecture from the house of the same phases in the Kayenta region. The circular pit-houses had slab lined benches. There were circular fire pits with deflector and partitions. The partition was usually ridge-like and one house had a ridge radiating in four directions from the fire pit. The roof had four main supports and secondary posts in the bench and floor. The same style persisted in Basketmaker III and Pueblo I. Some of the later houses showed a distinct southern influence in the form of a long narrow entrance passage. In the Kioke Phase, 900-1100 A.D., the transition to surface dwellings takes place. The slab and masonry surface storage structures become enlarged. They are usually contiguous rectangular rooms in rows with floors somewhat below the surface. At the same time a few "D" shaped masonry pit-houses persist. Kioke or NA 1712 is given by Colton as the typical site for the period. Near Jeddito, Brew found rectangular masonry structures.

The Little Colorado Stem includes the region of the Puerco and the White Mountains. This whole area has a

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1Brew, J. O., 1937, 1939b, 1941.

2Colton, H. S., 1939.
decided influence from the Upper Gila Mogollon Branches, particularly in the White Mountains. Much of the Anasazi influence may come from the direction of Chaco Canyon. The Forestdale Phase covers the period from 600-800 A.D. At the Bear Ruin the houses show a great mixture. As a result the whole village is characterized by its lack of uniformity in architecture. One rectangular house, possibly similar to the San Francisco Phase houses, was found beneath a circular house. The houses were circular with long entrance passages. Some had long ventilators and one had both a ventilator and a passage. Several houses had annexes, probably for storage. The Anasazi influence is found in deep round house type; the ventilators, the bench, four posts, and in the wattle and daub storage bins, as found in House 9. The Mogollon influence is shown particularly in the long entrance passage.\(^1\)

The Corduroy Phase, 800-900 A.D., as shown at Arizona P:16:2 in Forestdale Valley, covers what would be late Pueblo I in the north. Here there is a step toward the masonry structure. The bench in one house was covered with slabs. The houses were also shallower. The bench in one did not extend across the entrance side. This is similar to the reduction of the bench in the Durango region at about the same time or a bit earlier. A hundred years later they were building surface masonry structures. In the interval

\(^1\)Haury, E. W., 1940.
is an un-named phase which may have been a transitional step from the pit-house to the pueblo, possibly a pit-house with masonry walls.\textsuperscript{1}

The Kiatuthlananna Phase, 800-900 A.D., has its type site at Kiatuthlananna. Two periods of pit-houses are represented here. The earlier houses were roughly circular, rarely rectangular. The later houses were larger, with an encircling bench and were sometimes contiguous. Both types had central fire and ladder pits, deflectors, ventilators, ridge partitions, and sipapus. The houses at Allantown, although dating at the same period, were more like slightly earlier houses in Chaco Canyon in that they made more use of slab lining, used slabs in the partition, and rarely had a bench.\textsuperscript{2}

Circular houses in Utah and Nevada probably have their origin in the San Juan, possibly from the Kayenta region. The houses in Cottonwood Canyon, Caves are slab lined with benches and a vestigial partition. They are Basketmaker III in period. Those described by Judd may have four or six posts. At Nine Mile Canyon early Pueblo I houses are circular slab lined four post structures without benches, followed by circular shallow houses with adobe surface walls and four post superstructure. This sequence is illustrated.

\textsuperscript{1}This summer Dr. E. W. Haury did find such a structure. He also found a circular pit-house phase prior to the Forestdale Phase.

\textsuperscript{2}Roberts, F. H. H., Jr., 1931, 1939.
by the Valley Village and Sky House sites respectively.\textsuperscript{1} Steward, in a report which came out too late to be used in this study, reports this sequence in Johnson Canyon east of Cottonwood Canyon and up the Colorado as far as the Fremont.\textsuperscript{2}

The houses in the Moapa Valley of southern Nevada follow much the same sequence. At Mesa House small Basketmaker III houses were found. They had peripheral posts which were set at an angle so as to meet above the floor. At Lost City they may have had four post supports. True Pueblo I did not seem to reach this region. In the period corresponding to late Pueblo I, at Mesa House, circular pits had adobe and rock surface walls with entrances cut through them. This was followed by contiguous rectangular pits and finally in late Pueblo II and early Pueblo III, or about 1200 A.D., surface structures up to four stories were built.\textsuperscript{3} The conical roof is like that found in Fluteplayer House Cave and Vandal Cave. The adobe surface walls on circular pits are found also in the Kayenta. They are reported first in the Animas Valley Basketmaker II houses and then in the Kayenta. Both here and in Chaco Canyon these surface walled structures pass from the contiguous rectangular rooms to the surface Pueblo.

\begin{itemize}
    \item \textsuperscript{1} Gillin, J., 1938.
    \item \textsuperscript{2} Steward, J. H., 1941.
    \item \textsuperscript{3} Hayden, I., 1950.
\end{itemize}
In western Utah from Willard to George Mound a shallow four-post structure with a central fire pit is found. At Paragonah rectangular houses are found with the circular remaining for ceremonial purposes. These were followed by adobe surface pueblos.  

The situation on the eastern boundary is still in a state of development. Much of the work in the Panhandle region has been done by men unfamiliar with the Southwest and the relationships, as reported, are confusing. In the Canadian and Cimarron Valleys an early circular slab lined house type is found. This is followed by masonry pueblos. These slab lined houses may date as early as Pueblo I. The Pueblos last until Pueblo III and IV. No circular structures are reported from the Panhandle until the Chama River west of the Rio Grande, is reached. In the Largo Phase, dating around 1100 A.D., circular pit-houses are described. These deep houses have four posts, three-quarters bench, central fire pit with deflector, partitions, and ventilator. They are followed by an exact counterpart built of stone masonry above the surface. The latter are dated at 1250 A.D., which would be in the Arénal Phase. I found no reference as to what precedes these phases in the La Mujada Phase.

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1 Judd, N. M., 1926.
2 Studer, F. V., 1934.
   Holden, W. C., 1931, 1933.
3 Mera, H. P., 1938a.
Circular Pit-House Types. This study shows that each local area has its own particular style of architecture. The developments are much in the same direction but with local flourishes. Although the circular pit-houses make use of few principles of architecture the resulting combinations and variations are very multitudinous. One of these numerous local types certain general types can be formulated. However there is a tremendous amount of mixing and variation, so that almost every local phase has its own sub-type.

Type 1. Early Mogollon houses of the Georgetown Phase are either circular or "D" shaped with a long entrance. A conical roof is supported by a single center support and secondary posts in the floor around the periphery. The fire pit is near the entrance. Other features are usually limited to a few storage pits. (Figure 5)

Type 2a. The earliest Anasazi house is a shallow structure with a flat roof supported by posts. The wall was of wood and adobe masonry. Interior slab storage bins were covered with a conical adobe superstructure.

Type 2b. In the Segi, slab houses had a capping of adobe turtle-backs. From this one type of surface adobe-stone masonry house developed. This type is found westward to Nevada and north into northern Utah. (Figure 4)

Type 3. The early Fluteplayer House type had a conical roof of poles set in a high bench at an angle. This structure has a limited occurrence being reported in the
Kayenta region, at Step House Cave, and at Kesa House, Nevada. This type, as mentioned before, developed out of one type of Basketmaker storage bin. (Figure 5)

**Type 4a.** The Basketmaker slab storage bins are the fore-runner of a second type, the slab house. In its simplest form it is without ventilator or entrance. Such houses are found in the Kayenta, eastern Utah, and Panhandle. The flat roof was probably supported by four posts. (Figure 6)

**Type 4b.** Shabikeshcheko Village has an elaborate slab house type. There is a large antechamber. The floor has a central fire pit often adobe lined and accompanied by a partition of slabs or adobe, deflector, and sipapu. Entrance was by the antechamber and the roof. The roof was supported by four posts. The antechamber probably had a conical roof. (Figure 7)

**Type 4c.** In this slab lined house the antechamber was reduced to an entrance passage and later further reduced to a ventilator. The superstructure is like Type 4a. (Figure 8)

**Type 4d.** This sub-type of the slab house developed a bench upon which to rest the secondary posts. It usually has a ventilator. The last two types described may limit the use of slabs to reinforce weak joints in the wall. They are found from the San Juan to the Colorado, and Little Colorado Rivers. Type 4c probably has the most variations of any of the types. It may be adopted, as at Klatuthlanna, to contiguous rooms. (Figure 9)
Type 4e. In the region between the Chinlee and the Little Colorado, masonry lined structures were built at a late date. They have their origin in an attempt to build a deep house in a loose soil. In the timbered areas near Flagstaff rectangular pits were cribbed. On the relatively treeless Black Mesa masonry was used. The house has a bench, central fire pit, deflector, and ventilator. It may be circular, oval, or "D" shaped. (Figure 10)

Type 5a. At Su an irregular circular structure was found. It had a broad short entrance and central fire pit. The post arrangement was irregular with numerous posts but usually with one or more in each quadrant. (Figure 11)

Type 5b. From this type developed a four post house with or without entrance passage. This type is illustrated at Starkweather. (Figure 12)

Type 5c. Another development of Type 5 was a bench similar to that of Type 4c. It usually has a long entrance passage showing its southern component. The roof is four posts with secondary posts in the bench. The fire pit is in the center. It is not accompanied by the partition complex which is another feature setting off the Type 5 series from the Type 4. These structures are represented at the Bear Ruin. The superstructure is the same as for Type 4c. (Figure 13)

Type 6. In the northwestern margin of the Southwestern province a simple type is found. It is a four post truncated
Figure 3.

Circular Pit House Type 1

a. Main roof support
b. Secondary roof support
c. Outer poles
d. Fire pit
e. Entrance passage
f. Storage pit
Circular Pit House Type 2b.

- a. Main roof support
- d. Fire pit
- i. Wall slab
- y. Adobe wall
Circular Pit House Type 3.

- g. Bench
- h. Conical roof support
- i. Wallslab
Circular Pit House Type 4a.

- a. Main roof support
- d. Fire Pit
- i. Walls slab
Circular Pit House Type 4b.

- a. Main roof support
- c. Outer poles
- d. Fire pit
- e. Entrance passage
- i. Wall slab
- j. Sipaju
- k. Deflector
- l. Partition
- m. Adobe plaster
- n. Smoke hole
- o. Doorway
- p. Antechamber
- q. Earth coverino
Circular Pit House Type 4c.

- a. Main roof support
- c. Outer poles
- d. Fire pit
- f. Storage pit
- i. Wall Slab
- j. Sipapu
- k. Deflector
- l. Slab partition
- q. Earth covering
- r. Ventilator
- s. Adobe partition
- t. Ladder box
Circular Pit House Type 4d

A. Roofed with secondary posts on bench supporting outer poles
B. Roofed with outer poles placed on bench
a. Main roof support  k. Deflector
b. Secondary roof support  q. Earth covering
c. Outer poles  r. Ventilator
d. Fire pit  s. Adobe partition
g. Bench  t. Ladder box
i. Sipapu  u. Ladder

after Roberts
Circular Pit House Type 4b

- a. Main roof support
- b. Fire pit
- c. Storage pit
- d. Bench
- j. Sipatu
- k. Deflector
- l. Ventilator
- m. Ladder box
- v. Masonry wall

After Harpers 1508
Circular Pit House Type 5a.

a. Main roof support
b. Fire pit
c. Entrance passage
d. Storage pit
Circular Pit House Type 5b.

a. Main roof support
d. Fire pit
e. Entrance passage
f. Storage pit
w. Secondary fire pit (?)
Circular Pit House Type 5c.

a. Main roof supports
d. Fire pit
f. Storage pit
g. Bench
j. Ventilator
x. Ash pit
Circular Pit House Type 6.

a. Main roof support

b. Fire pit
structure built over a shallow pit or cleared area. There are no floor features outside of a central fire pit and an occasional storage pit. (Figure 14)

All the circular pit-houses in the Southwest may be constructed by variations or combinations of one or more of these six main types and seven sub-types. It will probably be found that many of these construction types could be applied to rectangular houses. Rectangular houses offer much the same structural problems and are often evolved from circular houses by change of shape only. Rectangular houses often accompany circular houses and in some later sites may replace them. This classification considers the few houses that have more than four posts as being the same as the four post variety. Also, the cribbed roof and the pilaster supported roof are not included because they were limited to later ceremonial structures. The kiva was a survival of the circular and rectangular pit-house with some changes. However, this does not come within the scope of this paper. Oval and rectangular Hohokam houses do not come under this classification either since they utilize a different series of structural principles. This classification seems to take care of most of the circular pit-house types in the Southwest that have been reported on to date. Further investigations may add new types or add new information that will show a necessity for a new classification.
VI. THE DISTRIBUTION OF NORTH AMERICAN CIRCULAR PIT-HOUSES

The distribution of circular pit-houses is not limited to the Southwest. Pit-houses are found over a large portion of North America in both historic and prehistoric sites. In the north, in the Eskimo area, they are scattered along the coastal regions stretching from the Aleutian Islands, north and eastward along the Arctic Ocean to Baffin Bay and across to Greenland. From Alaska they are found in the Northwest Coast Area as far south as northern California. Inland from the Northwest Coast a parallel belt extends from British Columbia to central California. In southern California a group extends from the Coast to the Colorado Desert. The region from the Colorado River to the Texas Panhandle, and south from Salt Lake to the Mexican Border, or the Southwestern area, is the region being studied in this paper. The Southwest borders on the Plains region east of the Rio Grande. Pit-houses are found on the Plains from North Dakota to Mexico and from the High Plains at the foot of the Rockies eastward to the Mississippi. East of the Mississippi few true pit-houses have been reported but there are earth covered lodges that are structurally related to the pit-house superstructure. A complete analysis and comparison of each of these areas would be too lengthy to undertake at
this time. However, since there may be relationships be­
tween the Southwest and other pit-house areas, a brief sum­
mary of each will be made. A complete examination of the
literature concerning pit-house structures outside of the
Southwest was not undertaken. The summary of these various
regions is primarily to point out examples and possibilities.

Eskimo. In recent years Collins, Rainey, Jenness, and
others have made wonderful strides in working out Eskimo
prehistory. In the Bering Strait region the Eskimo chronolo-
gy has been pushed back to about the time of Christ. From
the original Eskimo stock the Old Bering Sea and Dorset
Cultures developed. Out of the former the Punuk, Birnirk,
and Thule Cultures followed, ending in the modern Eskimo.
Archaeological sites in Alaska reveal that the architecture
was composed of a series of rectangular pit-house develop­
ments. However, in the Modern horizon circular houses have
been found. In Alaska modern houses are usually rectangular.
This is also true of the Aleutian Islands. However, on the
tip of the Aleutian Peninsula, early explorers reported
round earth-covered pit-houses that were entered through the
roof. Near the mouth of the Mackenzie River circular earth-
covered structures were found. The typical houses of the
Eastern and Greenland Eskimos are circular houses of sod,
earth, rock, and bone. The walls may be of stone roofed
with slate and the whole covered with earth. Sometimes the
structures may be constructed from sod. The supply of wood
is limited to drift wood, so bone, especially whale bone, is substituted. The houses are usually circular with an entrance tunnel. The three sides away from the entrance have a broad bench. On this bench the people sleep and carry on most of their work. The floor of the house is excavated slightly. The tunnel is built lower than the floor. Its roof is low, usually so that it is about even with the top of the bench. The reason for this is because the warm air rises to the top of the house and the only opening is below the sleeping bench, thus locking the warm air in the house. These pit-houses, as well as the Alaska houses, are used primarily in the winter. They may have been derived from the circular Dorset houses which are possibly as old as those of the Old Bering in Alaska. In the summer they use several types of skin-covered tents. The snow house, which is built out of blocks of snow, is constructed in a form similar to the houses just described. They are built by the Eastern Eskimo for temporary dwellings on hunting trips, etc. From Baffin Land to the mouth of the Mackenzie River the people often live out on the ice in snow houses during winter months. The house is lined with skins and the entrance is enlarged for a storage vestibule. Snow houses are not found west of Point Barrow, Alaska.

The Eskimo probably represent the last cycle in the migration from Siberia to America. It is doubtful that any other cultural groups have migrated to America since the
Eskimos blocked the passage 2,000 or 3,000 years ago. So far archaeological investigation has been carried out in Alaska only. There only the rectangular pit-houses have been found. On St. Lawrence Island the Okvik Culture, which is earlier than Old Bering, has circular pit-houses with central fire pits. The circular house is also found in the East in historic and prehistoric sites. They may represent a cultural trait pushed into this area at a very early date.

**Northwest Coast.** The rectangular pit-house extends southward along the Northwest Coast to northern California. The typical Northwest Coast house is a large communal rectangular house constructed from planks. They are the best dwellings built in North America except for the Southwest. Culturally the Northwest Coast creates a problem. They are not too well connected with their neighbors and seem to be a recent arrival in America which pushed down the West Coast. They have a highly developed art, as do the early Eskimo cultures, and may have come just prior to the Eskimo migration.

**Columbia-Fraser Plateau.** Inland from northern British Columbia to San Francisco Bay both rectangular and circular pit-houses are found. The northern portion of this area has rectangular houses like those of the coast. In the Fraser River area pit-houses are used in the winter. They are both rectangular and circular. The Thompson Indians dig circular pits about 1.5 m. deep. They are roofed in a peculiar manner. Along the edge, posts are set at an angle. They are
held up by upright posts set in the floor. The top is left open to form a rectangular smoke hole. As many as twelve poles may be erected in this manner but the usual number is four. Horizontal poles are laid across the sloping posts and the whole is covered with dirt. A fire pit is built beneath the smoke hole. A notched log ladder extends from behind the fire pit through the smoke hole. This type of structure is built also by the Tsilkotin, Shushwap, Okanagan, and the Lillooet.¹ The Nez Perce on the Columbia River Plateau dug circular pit menstrual lodges. The opening was at the edge and reached by a ladder. Limited archaeological work has shown that the circular pit-house precedes the plank house but fails to establish any great antiquity for either.

Central California. In central California the typical house type was a large semi-subterranean earth lodge up to six meters across, usually with a low conical roof. The entrance was either through the smoke hole or by a long inclined entrance passage. The fire pit was in the center. In the highland areas a similar structure was built on the surface. The Klamath and Modoc built deep circular winter houses with the entrance through the smoke hole. The Northwestern and Northeastern Maidu circular houses were one meter deep and up to twelve meters in diameter. There were two or

¹Teit, J., 1900, p. 195.
three center posts with horizontal wall poles and the entrance was through the smoke hole by means of a runged ladder. The Maidu house had four support posts and the wall poles were run toward the center. An earth covered circular house was used by the Yuki for an assembly hall. There is evidence that they formerly used similar pit-houses for dwellings. A similar structure built by the Pomo had five center posts, and was two meters deep and twenty meters across. The Yokaiia used a side entrance.¹ Near Tulare Lake in the San Joaquin Valley, prehistoric circular pit-houses were found that are like houses made by historic Yokuts. The circular pit-house was typical of the Hokan and Penutian tribes which represent the oldest and most typical of the Central California Indians.

Southern California. Subterranean and earth covered houses are typical of southern California. The Luiseno build a circular earth-covered pit-house with a side entrance. The Western and Mountain Diegueno houses are circular and rectangular thatched houses with four center posts, a side entrance, and a central fire pit. The Mountain Diegueno house is on the surface but the Western Diegueno houses have pits .91 m. deep. The Desert Diegueno build similar structures that are earth-covered. Yuma houses are circular, with a flat roof supported by four posts and

¹Waterman, T. T., 1921.
slanting side walls supported by peripheral posts. This community house had its fire pit near the side entrance. The whole was covered with earth. The Chemehuevi built a similar structure. The Kiliwa lived in rectangular houses and built a circular semi-subterranean ceremonial structure.  

Plains. Historic Plains Indians may be divided into two groups, the nomadic and the sedentary village tribes. The sedentary groups usually lived in more or less permanent houses. They cultivated corn and went on periodic hunting trips during which time they used the tipi. These sedentary tribes were distributed through the eastern Plains in the prairie grass region and up the Missouri River into Dakota. Historic records list the Gros Ventres, Hidatsa, Mandan, Arikara, and Cheyenne in North Dakota; the Eastern Dakotas in eastern Dakota and western Minnesota, the Ponca, Oto, Omaha, and, Pawnee in Nebraska; the Kansa, Iowa, Missouri, and Osage in Missouri; the Wichita in Oklahoma; and according to one report the Kiowa in the Texas Panhandle and Eastern New Mexico. Of these the Osage lived in a dome-shaped house covered with mats and bark, the Eastern Dakota in rectangular cabins of bark and poles and the Wichita in a grass covered lodge. The others lived in earth lodges. These lodges were circular up to thirty meters in diameter and two

1Kroeber, A. L., 1926.
2Wissler, C., 1934.
meters deep. They were supported by four to twelve center poles placed in a circle near the center of the house. Around the periphery secondary posts were placed at regular intervals. This formed a slightly conical roof with a smoke hole in the center. The sides were of slanting poles. Usually there was a covered entrance passage. Along the sides was a bench. Sometimes there was a raised altar in the rear. The whole structure was covered with earth.¹ (Figure 15)

The Plains earth lodge has prehistoric origin. Protohistoric Pawnee houses were circular with four central supports. Preceding the Proto-historic Pawnee is the Upper Republican Phase. During this phase the typical house is rectangular with four main supports and a covered entrance passage. There is a transition from rectangular to rectangular with rounded corners to circular like the Pawnee. Other early phases characteristically have rectangular houses. This is a reverse of the development seen in the Anasazi and Mogollon Areas of the Southwest but parallels the trend in Hohokam architecture.

The origin of the Plains pit-house is a matter of great speculation. Attempts have been made to connect it with the Northeastern Woodlands, the Southeast, and the Southwest. Of the various possibilities of its origin Wedel says:²

¹Wedel, W. R., 1936.
²1940, p. 322-3
Pawnee Earth Lodge

a. Earth covering
b. Outer poles
c. Altar
d. Secondary supports
e. Cache
f. Central support
g. Firepit
h. Entrance passage
i. Smoke hole
"So far as general resemblances are any indication, the relationship of the Plains earth lodge at the moment appears about as close with the Southwest as with the Southeast but this may be due in part to our much more complete knowledge of the former area. The possibility of a northern or northeastern origin cannot be entirely ruled out. One could with reason postulate a dual beginning, where in the basic idea of the earth lodge was introduced at a very early date from one direction with subsequent alterations in form and detail by later influences or actual importations, perhaps from other sources. It seems likely that helpful clues will come to light when systematic research is extended to the eastern, southern and other margins of the area. Too, there is a very considerable body of recently acquired archaeological data on the Plains earth lodge which still waits critical analysis and comparison. Meanwhile it seems permissible to regard this trait complex in so far as its constituent elements are at all unique to the Plains, as a local development or modification from a basic idea which was introduced from elsewhere."

The possibility of a Southwestern origin for the earth lodge is limited. A few Puebloan influences have been found as far east as Kansas where they built stone walled structures and dug irrigation ditches. Artifacts in such sites in Kansas have relationship to Dismal River Culture in southwestern Nebraska. Similar pueblos have been found in the Texas Panhandle. They seem to be late in origin since in them Rio Grande Glazes are found. Even the earlier slab houses are under fire as to their dating. Some feel that they are Plains in origin. At any rate, to date, the links that may extend from the Southwest to the Plains have not been discovered, except for a few scattered ruins, most of which date just before the coming of the Spanish.

Southeast. Next we can turn to the Southeast. Lodges
similar to the Plains have been reported for the Muskhogean, Cherokee, Creek, and Eno. They may also be found in Alabama, Tennessee, Kentucky, southern Illinois, Minnesota, and Wisconsin.\(^1\) In a Historical Cherokee town on the Little Tennessee in Macon Co., North Carolina, a circular earth covered ceremonial house was built on an artificial mound 6.50 m. high. The roof was supported by three circles of poles with a nine meter high single center pole. The structure was covered with bark and earth. A bench ran around the wall.\(^2\) At Macon, Georgia an interesting ceremonial structure has been excavated. The earth lodge was 12.92 m. in diameter with a central fire basin and an entrance eight meters long. The roof was supported by four central posts. Around the walls was a clay bench with seats. Opposite the entrance was an altar. This is almost identical in plan to Protohistoric Pawnee structures.\(^3\) This was preceded in time by round, oval, long oval, or beehive type pit-houses.\(^4\) Other circular houses are found in late prehistoric East Texas Caddoan sites and along the Conchos River. The domestic structures in the Southeast appear to be rectangular. The circular ceremonial structures may be survivals of an earlier house type.

\(^1\)Linton, R., 1924.
\(^2\)Bushnell, D. I., 1919, p. 60.
\(^3\)Stirling, M. W., 1935, p. 390-1.
\(^4\)Fairbanks, C. H., 1940, p. 106.
\(^4\)Kelly, A. R., 1938, p. 63.
The Southeastern house is rectangular while the northern Woodland structures were oval or round, and bark or skin covered. Archaeological work on the Plains has brought out that a Woodland and Hopewellian pattern precedes a generalized Plains-Mississippian pattern. The rectangular earth lodge is characteristic in the Mississippian Pattern Sites. This points to a southern origin for the Plains earth lodge, possibly the same point as those found in Georgia. According to Bushnell some important tribal migrations took place just before white man arrived. The Siouan stock was located in Ohio and Indiana. The Caddoan, Iroquoian, and Muskogean were located west of the Mississippi. The Iroquois moved in a northeasterly direction into New York and vicinity. This split the Siouan people, pushing part of them into Illinois and Wisconsin. The Muskogean moved eastward at the same time, spreading from Mississippi to Georgia pushing the Proto-Muskogean people into Florida. While this was going on the Caddoan remained on the Plains in much their original location.¹ This movement has an interesting possibility. Suppose the Caddoan and Muskogean peoples had received the pit-house from the south. The Muskogean might have easily received it first as a circular house. This circular form survives in the ceremonial house found in historic and pre-historic villages. The Caddoan may have received it fully.

¹Bushnell, D. I., 1934.
developed as a square house, since it appears fully developed. There began a pressure from the northeast where surface structures were often dome-shaped. This influence altered the shape of the pit-house to circular. The later earth lodges did break down in style, as the four post plan gave way to five to twelve center posts. The Iowa, Omaha, Kansa, and others, who in historic times were sedentary Plains people, had a tradition of living east of the Mississippi. This is a highly speculative hypothesis but it is certain that the early Plains culture was of southern origin and that there was a new influence in late prehistoric times probably from the north. The Plains culture underwent another change in Proto-historic and early Historic times. With the horse many people turned to hunting the great herds of buffalo. At the same time there was a great southward movement. The Cheyenne moved as far south as northeastern New Mexico. This is paralleled in the Southwest with the movements of the Athabascans.

Old World Pit-Houses. Because the Eskimo and the people just across the Bering Strait build pit-houses, Asia is turned to as a possible source for the pit-house. In the Old World pit-houses seem to have a general distribution. As early as the Tardainoiusian Culture of west central Europe dating in the Mesolithic, or about 7500-6500 B.C., circular pit-houses were constructed. They have been found at Lower Green Sand Hassocks, Sussex, England where they were two
meters in diameter and 0.71 m. deep. Similar finds have been made in Epping Forest, Sougne in Ambleve Valley and near Wagnez in the Vesdre Valley in Belgium, and at Ansbach in Franconia and Federsee Moor, Württemberg, Germany. Neolithic houses in some areas were circular, oval or rectangular pit-houses. Such houses were found in the Early Danubian Neolithic periods. During the Bronze Age, pit-houses were dug in southern and central Europe. In Italy they survived until the Hallstatt Period which dates at 500-100 B.C. Turning eastward we find that Xenophon, about 400 B.C., referred to people on the headwaters of the Euphrates as having pit-houses with roof entrances.

In northeastern Asia pit-houses are still being used. They are found among the Koryak, Gilyak, Kamchadal, Kazaks, Yakut, Yukaghir, Sakhalin Ainu, Chukchee, Martime Chukchee, Samoyed, Yesenio Samoyed, Ostyak, and others. All of these people except the Samoyed, Ostyak, and Yakuts are Palae-Asiatics, or the ancient inhabitants of northeastern Asia. The three just named are recent migrants into the area and have adopted some of the Palae-Siberian traits. The Kazaks have migrated southward to the Caspian and Aral Seas, still retaining their old culture. It is interesting

1Clark, J. C. D., 1936.
3Zolotarev, A., 1938.
to note that the Koryak who live in the houses the year
around use a covered entry in the summer and in the winter
enter through the smoke hole. The Gilyak use the roof en-
trance only for ceremonies and the Kamchadal, who use the
pit-house only in the winter, use the roof entrance and
have a ventilator. The Koryak entrance is very much like
that found at Shabikeshoche Village.¹ The Chuckchee, Ainu,
and Samoyed also use the smoke hole entrance.

The Palae-Asiaties and neighboring Eskimos built rec-
tangular houses but these houses were probably evolved from
circular forms. On the Yamal Peninsula on the western Arcti-
c coast of Siberia such houses have been found. The
houses were circular pits 10 meters in diameter. There was
a side entrance and a central fire pit. The roof was sup-
ported by poles. The accompanying artifacts showed the
people to be settled fishermen and sea mammal hunters of a
late Neolithic Period. They represent an important stage
in the development of all northern tribes of Asia and
possibly America.² There were a great many groups of people
aggregated in Siberia because of continual pressure from
the great population concentrations to the south. This
pressure constantly forced migrations to the northeast from
ancient to modern times. The only outlet from this rather

²Zolotarev, A., 1938.
un hospitable territory was across the Bering Strait. This gave them a vast continent where there was no pressure of population except the movement of more people behind them. Some of them probably made swift movements southward. The great variety in American Indian languages and physical types is not such a problem when it is seen that the Palae-Asiatics have this same diversity. One of the traits they all seem to hold in common is the use of a subterranean earth lodge. This type of architecture is found spreading over into North America in the Eskimo area. The latest comers to America possess a rectangular house but the early Palae-Asiatic house type was circular.

**Basic North American Pit-House Culture.** Could it be possible that there migrated to America a basic cultural type that had as one of its traits the circular pit-house? Pit-houses in the New World are not limited to North America. Pit-houses have been reported in Peru, and the Gran Chaco. On Navarino Island in Tierra del Fuego prehistoric houses that were circular, four to six meters in diameter and one meter deep. These were preceded by a still earlier culture of shell tools and percussion flaked choppers. A basic Archaic American culture has been postulated by several investigators. Of such a culture Means says:

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1 Lopatin, I. A., 1940.
The Archaic cultural phase succeeding to the primitive hunters-and-fisher phase of culture brought into America by the original migrants from Asia, was very widely distributed throughout the Western Hemisphere, and in various regions it lasted into Modern times, in others it was superseded by more advanced types of cultures. Because of its catholic character we are constantly finding representatives of its industries in widely separated regions. An artifact of Archaic type from one region will often closely resemble one analogous find from far away; but a resemblance of that sort does not denote contact between folks of the two regions; on the contrary, it merely shows that, at one time or another, the folk of both regions passed through the Archaic phase. Moreover, they may have done so at about the same period, or, with equal likelihood, they may have done so at widely separated periods."

Nordenskiöld thinks that the first migrants from North America to South America had coiled basketry, skin clothing, water craft, pit oven, and no pottery. They probably represented an early Neolithic people. North America has received elements from Asia since the migration into South America. None has entered America since the beginning of the Christian Era besides the Eskimo. The Athabaskans and the Northwest Coast Indians may represent some of the latest arrivals.

Is there any evidence of a basic cultural level here in the Southwest? The answer to such a question depends upon how you look at it. In southern Arizona the oldest known cultural horizon is the Cochise Culture, going back perhaps 10,000 years. Its distribution is somewhat limited. The

1Nordenskiöld, E., 1933.
Folsom Culture enjoys a much wider range. Typical sites are found on the High Plains in Colorado, New Mexico, Nebraska, and Texas. However, Folsom type points have been found from the eastern United States to the Pacific Coast. Stone tool cultures of great antiquity have been defined in Texas, California, and as far north as Alaska. There seems to have been a pre-agricultural horizon of hunting and gathering people that spread throughout the continent soon after the close of the last glacial period, possibly beginning as early as 20,000 years ago. Upon this base an agricultural-pottery making stage began.

Robert Zingg postulates that in the general southwestern area, before the Christian era, there was a Uto-Aztecan base. He points to such a base as evidenced by the tremendous spread of the Basketmaker-like cultures.\(^1\) They are found from northern Mexico to southeastern Oregon and eastward to the Ozark Plateau or possibly Kentucky. Typical Basketmaker is centered in southern Utah and Colorado, and northern Arizona and New Mexico. Three variations are found in the Hueco, Big Bend, and Pecos regions of Texas. They have coiled basketry, twined bags, corn, and cave storage cists. The caves in Coahuila are the southern extension of the Texas cultures.\(^2\) In Nevada the Basketmaker was represented

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\(^1\)Zingg, R. M., 1939, p. 252.

\(^2\)Smith, V. J., 1932.
Distribution of Basketmaker Cultures
to some extent in Gypsum Cave in the south and more extensively in Lovelock Cave in the north. In this area there is evidence that out of them the Paiute developed. At Catlow Cave in eastern Oregon a Basketmaker-like culture existed up to recent times merging with the Northern Paiute. At Catlow Cave in eastern Oregon a Basketmaker-like culture existed up to recent times merging with the Northern Paiute. The Shoshoni and Ute may be other survivors of the early Basketmaker Culture by way of Lovelock Cave. A series of caves on Promontory Point in Salt Lake revealed a Basketmaker-like culture of rather recent origin. It is probably not Basketmaker but represents a parallel development moving in after the appearance of Pueblo II in northern Utah. One theory is that it represents an Athabascan group. The Athabascans may have moved into the Southwest along two routes. One came via the High Plains and the other came through the Inter-montane Area. Turning eastward, we find that Basketmaker caves have been reported along the Cimarron River in northeastern New Mexico and the Oklahoma Panhandle. Such traits as grinding slabs, rabbit fur cordage, coiled basketry, yucca sandals, and square shouldered pictographs link it with the southwest. Further east in southwestern Missouri

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1 Harrington, M. R., 1933.
Loud, L. L. and Harrington, H. R., 1929.
3 Steward, J. H., 1940.
4 Steward, J. H., 1957.
5 Renaud, E. B., 1930.
and northwestern Arkansas caves and rock shelters of the Ozark Plateau a more Basketmaker-like culture is found. There are such traits as mano and metate, burials in graves lined with grass or robes, soil without foundation and twined bags, coiled basketry, fur and feather robes, corn, beans, squash, etc., which link it with the Southwest.¹

The Rio Fuerte Basketmaker caves of southern Chihuahua are related to the northern Basketmaker. The modern Tarahumara may have developed out of this culture. They formerly built circular pit-houses walled with stone and mud in the caves.²

It is interesting to note that coiled basketry is considered one of the basic traits of the Archaic South American Culture.

Pit-houses are not limited in distribution to the Southwest but are found along the Arctic Coast, down the Pacific Coast on either side of the Coastal Ranges from Alaska to Lower California, through the Southwest, in the Plains from North Dakota to Texas, and in the Southeast. Pit-houses are also an early trait in the Old World beginning as early as the Neolithic circular houses. The houses of Siberia have a great similarity to structures in northwestern North America. Modern Palaeo-Asiatics houses are rectangular but there is evidence that they were preceded by a circular form. Circular houses are the earliest form in the Anasazi

¹Harrington, M. R., 1924.
²Zingg, R. M., 1940.
and Mogollon Roots in the Southwest and probably in the East. This would seem to indicate that the circular pit-house may be ancestral to the rectangular types in both the New and the Old Worlds. The pit-house is one of the basic traits brought to this continent. The earlier immigrants probably brought the circular house and the Northwest Coast Indians and the Eskimo received at a late date the rectangular house. The rectangular house is a development out of the circular house through refinement and later influence. Just what the basic culture which brought the pit-house to America was like cannot be said. It was probably somewhat heterogeneous from the beginning and further divergence has taken place since then. There is an early stone tool cultural level throughout North America and probably South America. Over a large portion of North America Basketmaker-like cultures are found. They cover a long time period running from at least the beginning of the Christian Era to the present time. From this evidence it may be said that the earliest pit-houses were probably circular and that the rectangular house developed from it. The pit-house was brought to different areas at different times as one of the traits introduced from Asia. A few regions may have received it after the transition to the rectangular type. The Basket-makers are responsible for at least a portion of the houses in the Southwest. The Mogollons received their house type from a still earlier stratum and the Hobokams houses had
already undergone the transitions by the time of the earliest known phases. From time to time new influxes of the primitive pattern reintroduced the circular form. The Plains earth lodge probably changed shape due to northern influence. Possibly the shift in Hohokam architecture was due to an increasing pressure from the north which was climaxed later in the Salado invasion. The Navajo illustrates such a reintroduction from the north. Their houses were circular and were, in older forms, excavated several feet into the ground. This is just a hypothesis and will bear further and more complete study to substantiate it.
VII. SUMMARY

The circular pit-house has been discussed from several angles. The circular pit-house complex was broken down into its individual traits. Each of these traits was discussed giving its variation and distribution in time and space. The traits were gathered into complexes. The development of circular pit-houses was taken up phase by phase in the various branches of the two major cultural roots in which they occur. From this discussion, taking into consideration the material on traits and complexes, thirteen circular pit-house types and subtypes were defined. Turning from the Southwest, the distribution of circular pit-houses in the rest of America and in the Old World was considered briefly. The possibility of a basic culture bringing the pit-house to America was pointed out, together with its relationship to the Southwest.

In the introduction several problems were set forth. They were:

1. Were the earliest pit-houses in the Southwest circular?

2. What are the variations in circular pit-houses from area to area, and phase to phase?

3. What are the space and time relationships of these variations?

4. What connection, if any, exists between the circular pit-houses of the Southwest and those of neighboring areas?
5. Was there a basic culture, which had as one of its basic traits pit-houses, that spread from central Asia through Siberia and into America?

6. What is the relationship between this basic culture and the Southwest?

7. What light does this detailed examination of one trait throw upon the whole picture of Southwestern Archaeology?

Were the earliest pit-houses in the Southwest circular? The answer to this question is still to be definitely solved although important steps have been made. The oldest Anasazi pit-houses are being excavated by Earl Morris in the Animas Valley near Durango, Colorado. They were shallow circular houses. These structures probably date sometime before 400 A.D. The work has not been completely published so details are lacking. Since he found timber, dates will probably be established. In the Basketmaker caves slab lined storage cists are found. They may be the origin for the slab lined house. It hardly seems possible that they did not build a house of some sort while they were making these cists. The houses were probably in the open. Since pottery was not made by the Anasazi until after 500 A.D., these early sites will be hard to find. The earliest Mogollon houses reported upon are in the Georgetown Phase dating prior to 550 A.D. They were circular or circular with one side, from which the entrance extends, sometimes flattened. Hohokam houses in the earliest phases which antedate either the Mogollon or Anasazi structures, were rectangular. The early
Patayan houses are not known. In 900 A.D. they were building oval pit-houses. Their relation to the rest of the Southwest is not fully established. From published data, rectangular houses seem to be earlier. However, within the last few months excavations have revealed some important information. From newspaper reports we hear that Haury, at Forestdale, found some circular houses which may be earlier than any Mogollon houses yet reported. Sayles excavated a similar site in southeastern Arizona. Martin thinks that his SU Site is representative of this same period. He suggests a phase, Pine Lawn, which may link the San Pedro Stage of Cochise with the Georgetown Phase of Mogollon. No Cochise Culture houses have been reported upon, but Gila Pueblo may have found some houses this past winter. The answer to this question must be withheld until work done within the past year is reported upon.

What are the variations in circular pit-houses from area to area, and phase to phase? The circular pit-house in the Southwest was a somewhat elaborate type of architecture. The details of construction were many. The complex was divided into over 140 traits. Even this number was not sufficient to indicate some of the minute variations. Some houses could be described in less than a dozen traits while

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1 Cosulich, B., 1941.
2 Personal conversation, November, 1941.
those at Shabikeshchee Village are described with eighty-three. There was considerable variation from area to area and phase to phase. The houses in the central Anasazi area were much more elaborate than those on the periphery or in the Mogollon area. They had benches, partitions, elaborate types of ventilators, and entrances. There was considerable difference between houses in a single time phase in one site. These variations can be summarized in thirteen types. Briefly they are:

Type 1. Circular or "D" shaped with a single center post and a side entrance.

Type 2a. Shallow basin with adobe wall extensions.

Type 2b. Deeper than 2a and usually slab lined.

Type 3. Conical roof without center supports.

Type 4a. Slab lined pit.

Type 4b. Slab lined pit with antechamber, partition, deflector, and sipapu.

Type 4c. Antechamber reduced to a passage or ventilator.

Type 4d. Benches added.

Type 4e. Masonry lined but like 4d.

Type 5a. Irregular circles with short broad entrance.

Type 5b. More regular with four posts and with or without entrance or ventilator.

Type 5c. Same as 5b plus a bench.

Type 6. Simple four post truncated structure over a cleared area.

What are the space and time relationships of these variations? Although, as it has been pointed before, each
locality has its own sequence of development, certain generalities can be pointed out. Type 1 is found in western New Mexico in the Mimbres and San Francisco Valleys before 500 or possibly 600 A.D. Type 2a has only been found in the Animas Valley in a period prior to 500 A.D. or possibly contemporaneous with Type 1. Type 2b is found in the Kayenta area in Basketmaker III and early Pueblo I where it develops into the masonry surface dwelling. It is also found in southern Nevada and eastern Utah in late Pueblo I or close to 900 A.D. Type 3 is an early Basketmaker III type occurring in the Kayenta region, Mesa Verde, and the Moapa Valley. Type 4a starts in the western San Juan in Basketmaker III and is found in eastern Utah into Pueblo I. Eastward it is found in the Panhandle region and may last there until 900-1000 A.D. Type 4b is limited to Chaco Canyon and north to Alkali Ridge. Type 4c is found near the Lukachukai Mountains about 500 A.D. In Chaco Canyon it probably starts closer to 700 A.D. and lasts in the Little Colorado until after 800 A.D. Type 4d is found early in the San Juan before 600 A.D. In Chaco Canyon it is later, at about 700 A.D., in the Little Colorado it is not found until after 800 A.D., and in the Rio Grande survives until 1100 A.D. Type 4e developed out of type 4d in the region between Flagstaff and Kayenta in the period of 900-1100 A.D. Type 5a is found at an early undetermined date on the San Francisco River. Type 5b is found in the San Francisco Valley prior to 500 A.D.,
possibly up until 700 A.D., and in the Forestdale Valley from 600-800 A.D. Type 5c is found in the Forestdale Valley from 600-900 A.D. This last type was probably influenced by 4d. Type 6 is found in western Utah about 700-800 A.D. and may be due to northern or western intrusion.

What connection, if any, exists between the circular pit-houses of the Southwest and those of the neighboring areas? There is little evidence of direct association between the California area or the Plains and the Southwest. The houses at Willard, Utah may indicate influence from the direction of California. Any Southwestern influence on to the Plains is disputed until 1000 A.D. and then it was not strong. In time the Plains pit-houses go back to a time contemporaneous with Southwestern pit-houses but they seem to be linked more closely with the Southeast.

Was there a basic culture which has as one of its basic traits pit-houses, that spread from central Asia through Siberia and into America? Pit-houses were found in Europe dating as early as the Mesolithic. It is shown conclusively that since the beginning of the Christian Era the Eskimos have been bringing the pit-house with them from Siberia. It is then probable that some of the earlier peoples who spread throughout America brought the pit-house architecture with them also. This is borne out by the distribution throughout North America and even to the southern tip of South America.
What is the relationship between this basic culture and the Southwest? The determination of a basic archaic culture in the Southwest has not been shown. In the northeastern portion the Folsom complex is found. This seems to have had a general distribution over much of North America. The southern part of the area is underlaid by the Cochise or other gathering complexes. Zingg attempts to show a Basket-maker base from Oregon to Chihuahua and Nevada to the Ozarks, which also may be correlated with the distribution of the Uto-Aztecan linguistic stock. Whether or not the basic Southwestern cultures were derived from stocks coming from Asia with the pit-house is not known.

What light does this detailed examination of one trait throw upon the whole picture of Southwestern archaeology? Two things are brought out in this study. Traits and their distributions are discussed in Chapter IV and in Chapter V there is a phase by phase discussion of circular pit-houses. This aids in bringing out phase differences and relationships as well as several circular pit-house types. Secondly, pit-houses may furnish a clue to the position that the Southwest plays in American prehistory. The pit-house seems to be a basic trait which was carried to this continent from Asia. The steps from Asia have yet to be worked out. The thesis that the circular pit-house precedes the rectangular pit-house is just a hypothesis based upon rather incomplete information. These speculations should not overshadow the
discussion of the circular pit-houses in the Southwest.
Caution must be used when one tries to base relationships
and comparisons on the study of one trait alone. The
findings of such a study cannot be taken as absolute proof.
They are indicators of probabilities and must be substantiat-
ed by similar studies of other traits. However some traits
may be better indicators than others.
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Will, George F.

Wissler, Clark

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Woodward, Arthur


Wormington, H. M.

Zingg, Robert Mowry


Zolotarev, A.
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### Appendix I: Cont'd.

- **124. Four main posts**
  - In floor
  - Against wall
  - Away from wall
  - In bench
  - Secondary posts

- **125. Over four**

- **126. Against wall**

- **127. In bench**

- **128. Secondary posts**
  - In floor
  - In bench
  - Outside house
  - Post in entrance
  - Post reinforced
  - Masonry

- **129. Post brace**

- **130. Log foundation**

- **131. Slab foundation**

- **132. Conical roof**

- **133. Truncated roof**

- **134. Cribbed roof**

- **135. Flat roof**

- **136. Date - period**
  - 655-742
  - 780
  - 121
  - 600-900
  - 500-700
  - 1074-9
  - 1064-7
  - 1041

- **137. Date - tree ring**
  - 516
  - 800-900
  - 571-616
  - 1041
  - 500-700
  - 634
  - 653-685
  - 516
  - 653-685
  - 516
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