

ARCHITECTURE of the ANASAZI PUEBLO CULTURE

Charles L. Hall, AIA

Every story must have a beginning. This one begins many centuries ago during the last stages of the Pleistocene age. Although the North American continent was generally glaciated during this period many open areas occurred. Among these open areas were the lowlands bordering the Bering Sea and the Arctic coast, the great central plain in Alaska, and parts of the main North American continent. These unglaciated avenues made possible the migration of men across Siberia, over the Bering Strait, and onto the North American continent. Moving south along the Rocky Mountains and dispersing eastward and westward in the mountain valleys to establish population centers over the continent, a steady influx of Asiatic people expanded continuously southward in search of new lands. Man's inborn inquisitiveness must have spurred on this drive to untouched frontiers. Ultimately the prehistoric people reached the region of the present southwestern United States, and evidences of these early people have been unearthed at several locations.

The most well known of these prehistoric sites is the Folsom Culture found near Folsom, New Mexico. Discovered in 1926, the Folsom complex has produced artifacts indicating man lived in that area between 10,000 and 25,000 years ago. Other notable sites producing supporting evidence of such early cultural development are found near Clovis, New Mexico, Yuma County, Colorado, Gypsum Cave, Nevada, and Ventana Cave, Arizona. Nevertheless artifacts of this era are extremely limited in number and provide a comparatively small knowledge of the people.

Evolving from these sketchy beginnings are three main cultural regions within the Southwest. One group known as the Anasazi dwelt in the northern plateau region. The name Anasazi means "old people." The second group, the Hohokam, meaning "those who have gone", occupied the region of the central mountains. The final cultural group called the Mogollon, resided in the southern desert and environs.

The architecture of these groups covers a broad range of adaptation as related to both time and technology, but many similarities exist in their methods of providing shelter for themselves. Though each culture represents distinctive concern for the regional ecology, there are many parallels in the development of their buildings.

To do justice to the subject this paper will be limited to the culture group known as the Anasazi who occupied the region we now call the Four Corners Area of Arizona, New Mexico, Colorado, and Utah.

Much work has been done in past decades to learn about these people through diggings, but it was not until 1927, when a group of archaeologists met at Pecos, New Mexico, that a uniform method of classifying the development of the cultures of the southwest was agreed upon. The original classification underwent changes and modifications as it was applied by various archaeologists with many sub-classifications used by individuals in their own work. To solidify the concept and to insert some uniformity into archaeological work, Roberts in 1935 suggested some revisions to the original classifications. His revisions have subsequently been accepted by many archaeologists and they provide the parameter for this study.

Basketmaker	BC-450 AD	replaced Basketmaker I
Modified Basketmaker	450-700	replaced Basketmaker III
Developmental Pueblo	700-1100	replaced Pueblo I and II
Great Pueblo	1100-1300	replaced Pueblo III
Regressive Pueblo	1300-1700	replaced Pueblo IV
Historic Pueblo	1700-present	replaced Pueblo V

The people involved in the Basketmaker period were originally nomadic who developed a semi-agricultural economy consisting mainly of corn and squash. Hunting and gathering added to their diet the meat of mammals locally obtained. For use in their hunting excursions and for defense the spear and *atlatl* were developed. The *atlatl* is a spear device developed to give additional leverage in throwing a spear. The name Basketmaker applied to this cultural group stems from their ability in basketmaking and weaving. Superb examples of these crafts have been uncovered at many sites through the Southwest.

The Basketmaker people lived primarily in caves, though it should be pointed out that the locations they occupied were not our usual concept of a cave. Generally they were shallow shelters carved in the cliff face by the action of the sun, wind, and water. Although the cave house was the most common form of Basketmaker residence, some evidence has been uncovered of their knowledge of construction. Cists were built in the caves for the storage of corn and often served as burial places. These cists were oval or circular pits dug in the floor and sometimes lined with stone slabs or adobe mud. Covers for the pits varied according to the size. Smaller pits were simply covered with a stone slab while larger ones were enclosed with a roof construction built of wood and adobe. Sizes as large as four feet deep and eight across are not uncommon for these storage cists.

Further evidence of their construction was uncovered near Durango, Colorado when excavations revealed a group of well developed Basketmaker houses. Tentatively dated in the early part of the fourth century, these houses were generally saucer

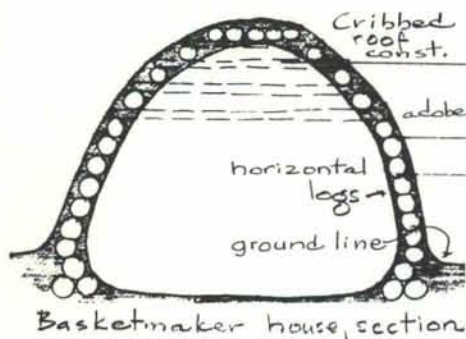


FIGURE 1

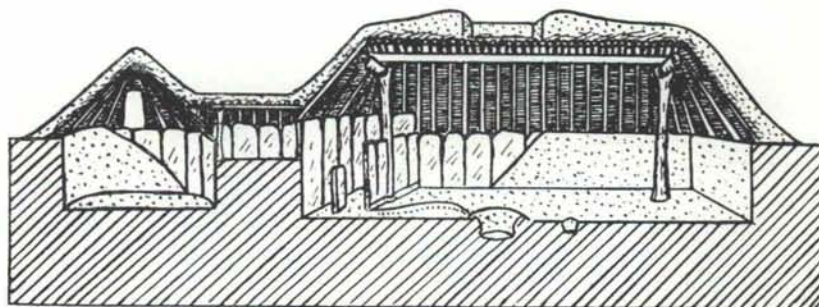


FIGURE 2

shaped pits lined with adobe (Fig. 1). Walls were constructed by laying logs horizontally around the circular form of the house, layer on layer; cracks between the logs were filled with adobe mud producing a strong sturdy wall. The roof was a cribbed construction using logs, this also covered with adobe. No interior vertical supports were used, and entrance locations could not be determined since the perishable materials used in construction have long since disappeared. A small heating pit was located in the center of the room and storage cists frequently occurred in the floors.

The Modified Basketmaker period, 450-700 AD, is marked by the transition to a sedentary farming life and the establishment of regular permanent communities. Villages consisted of irregularly grouped houses with granary structures clustered around them. Although sometimes built close together, the dwellings were not contiguous. Houses were of the pit type and generally circular, but eventually they evolved into a rectangular form.

These early houses were entered through a horizontal passage leading down to the main floor level which was sometimes five feet below the ground. Occasionally an ante room was located at the outside end of the passage. The pits were lined with adobe or, more often, with slabs of stone. Enclosing superstructures were built over these pits. This superstructure was supported by four posts set in holes in the floor which carried a platform-like structure of horizontal timbers. Other poles were set into the ground around the rim of the pit and leaned in against the platform. Then a layer of brush and mats was added over the entire exterior surface and topped off with an earth covering. A smoke hole was provided in the center of the horizontal roof structure directly over the fire pit. Later developments in the house form saw the narrowing of the horizontal entrance to a simple ventilator shaft. Entrance to the house was then gained through the roof smoke hole (Fig. 2).

The floor covering was generally hardened clay though a covering of stone slabs was occasionally used. An upright stone slab or adobe baffle was placed just inside the ventilator shaft to serve as a deflector for the cold air being drawn in. The fire pit in the center of the room was ringed by a rim of adobe or stone.

Another hole, known as the *sipapu*, appears in the floor to the side of the fire pit. Usually quite small, being only a few inches across and a few inches deep, this represents the mythical place of emergence of the first people who came to the earth from the underworld. Shabik' Eshchee village in the Chaco Canyon area of New Mexico is a good example of Basketmaker building.

As might be expected, some surface houses appear near the end of this period indicating the beginning of the transition to a later house form. This was particularly true in southwestern Colorado.

Although not conclusive, it has been suggested that a new group of people arrived in the Basketmaker country about 700 A.D. Cultural absorption took place, and emerging from this contact is the Developmental Pueblo culture, 700-1100. People continued to be sedentary farmers whose main crops were corn and squash. Hunting and gathering supplemented this diet. The transition between Basketmaker and Pueblo culture is particularly important in the realms of architecture. The surface type house form, mentioned in conjunction with the Modified Basketmaker period, becomes the major architectural statement although there is considerable variety in house construction.

Three basic types of structures served the Pueblos as residences during this period. The first was the pit house with sloping walls similar to a Modified Basketmaker residence. Construction was generally a pole, brush, and adobe superstructure over a pit; main supports in the form of four vertical posts inside the perimeter of the room was prevalent.

The second type embodied variations of the earlier pit House. Floors were less depressed; some in fact were built as surface houses or with only slightly dished floors. The superstructure was of *jacal* construction with the enclosing vertical walls. Simply described, *jacal* construction consists of closely spaced vertical poles plastered over with adobe mud. With the onset of vertical enclosing walls the interior supporting poles disappeared from the room and were incorporated as an internal part of the wall construction.

Excavations in the Piedra district of southwestern Colorado have revealed house structures of both types. Small masonry storage rooms independent of the main house also make their appearance in the Piedra district. Generally four-sided in shape, these structures were lined on the floor and wainscoting with stone slabs or adobe.

Jacal construction is replaced by stone masonry walls in the third Developmental Pueblo house type. Some structures were of conventional coursed masonry work while others were adobe with stones imbedded in the mud. Interior poles were no longer used since massive stone walls served as the primary roof support. The pit form of house gave way to a single room masonry unit built above ground, but these in turn yielded to houses with a small number of contiguous rooms. These ultimately evolved into the multi-room, multi-story structures called the unit house or sometimes the clan house. Examples of the cultural period are found at the Ackmen-Lowry region of southwestern Colorado, Kiatuthlana in Arizona, and Alkali Ridge in southeastern Utah.

During this period a new cultural form known as the Kiva appears. Apparently derived from the earlier pit houses, the Kiva is a specialized religious structure. In fact the word Kiva mean "old house." Circular in plan with the pit walls lined with masonry, the Kiva was excavated so that a bench was formed around the perimeter. Pilasters were incorporated around the sides, generally six in number. Roof structures were normally cribbed and, as in the pit house, the entrance was through the smoke hole in the roof. Prominent features of the Kiva include the ventilation shaft, the deflector, the fire pit, the *sipapu*, the bench and pilasters. Considering these similarities and recalling that the earlier pit house had its own worship center, it is possible to speculate that the Kiva derives from this house form. The significant difference is that the Kiva is generally entirely subterranean.

The Great Pueblo period, 1100-1300, was the golden age for the Pueblo culture. It was the period of the Cliff Dwellers at Mesa Verde and the great communal complexes at Pueblo Bonito. Again a significant change is made in the architecture of the times. Although unit houses continued to be built, startlingly large communal complexes containing hundreds of rooms and ranging up to five stories in height were constructed. There was a general trend toward a coalescence of the population. The great houses were generally situated for easy defense as exemplified in the Cliff Dwellings and the walled communities in Chaco Canyon. As there was no significant change in the type of building, the major advance came in the joining together of large numbers of rooms.

FIGURE 3. PUEBLO BONITO



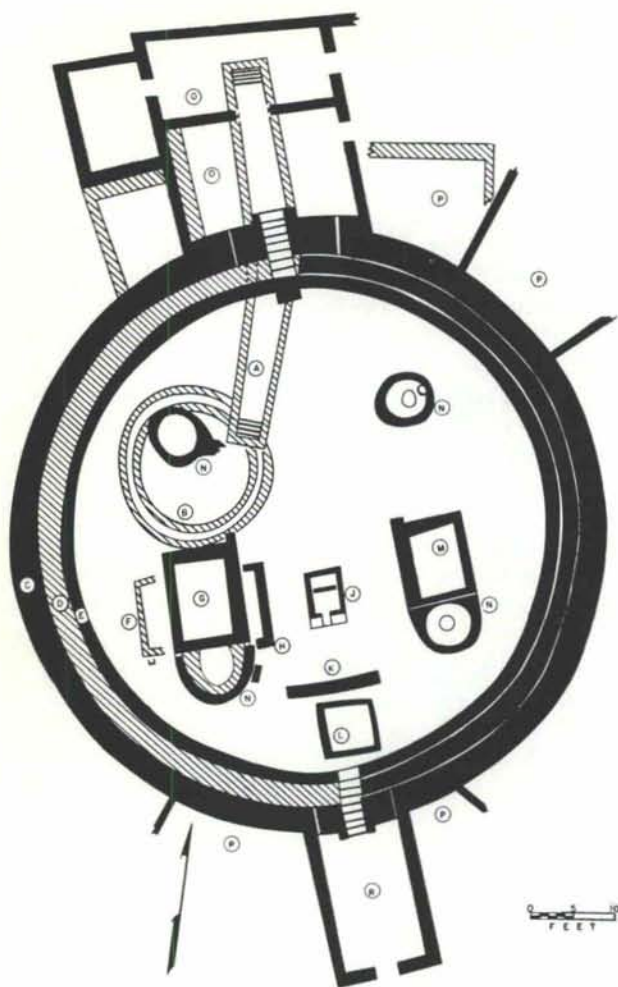
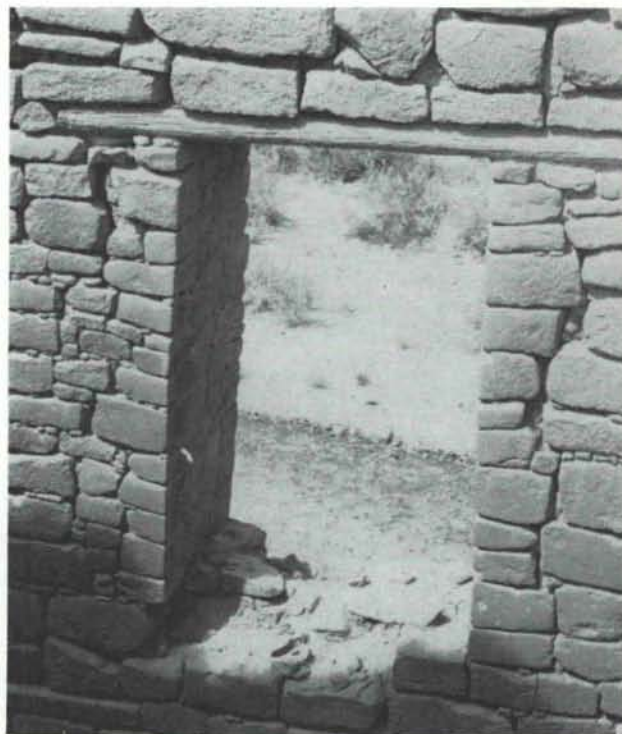
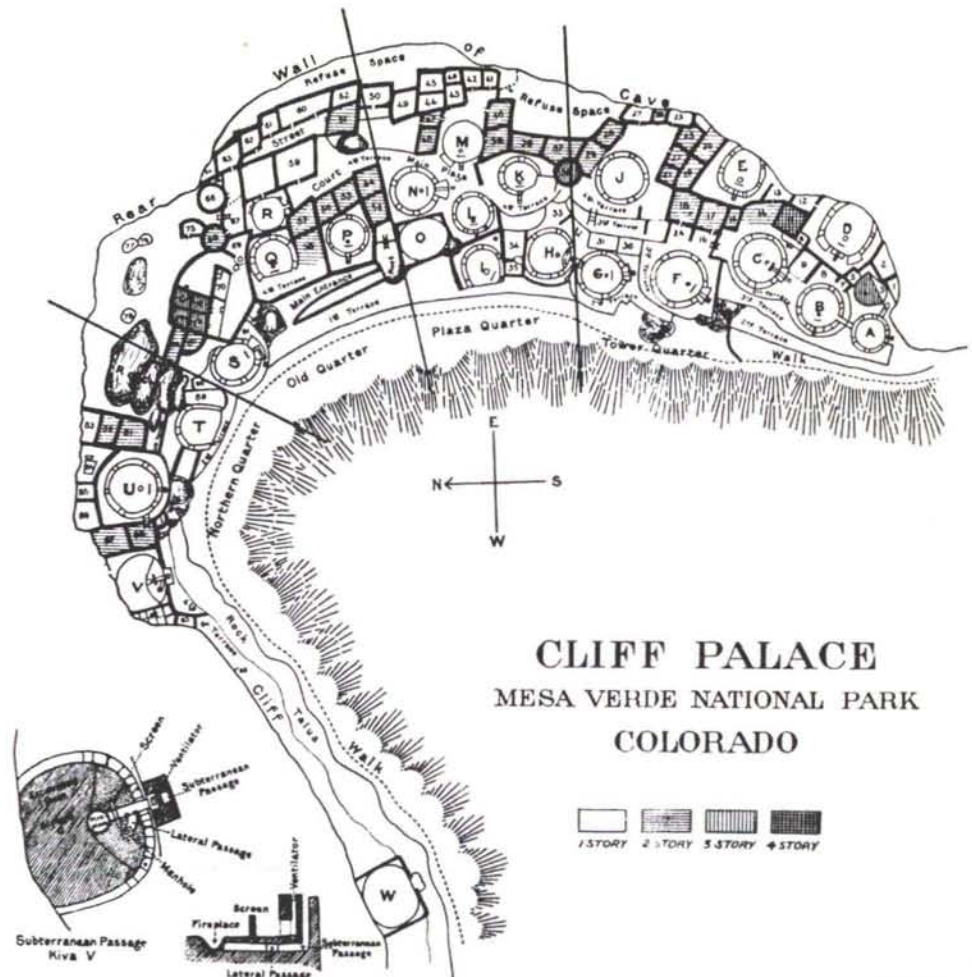


FIGURE 4, RINCONADA

One of the oldest and most amazing of these conglomerate structures is Pueblo Bonito in the Chaco Canyon of New Mexico (Fig. 3). A free standing complex built in the shape of a large "D," Pueblo Bonito covered approximately three acres and contained at least eight hundred rooms. It is estimated that it housed 1200 people and was the world's largest apartment building until 1882 when, at the outset of the skyscraper boom, it was surpassed by a building in New York. Pueblo Bonito appears to have been a carefully planned structure with rows of rooms grouped around a center court. With each succeeding row of rooms away from the central court the height increased one story. Kivas were located in the center court as well as incorporated into the building mass (cover). In addition to numerous small Kivas large circular Kivas ranging to sixty feet in diameter and ringed with a concentric row of rooms have been found in Pueblo Bonito as well as other Chaco communities. Known as great Kivas, they are believed to have served as ceremonial chambers for the entire community whereas the small Kivas were exclusively used by the clans and societies (Fig. 4)

FIGURE 5, PUEBLO BONITO





CLIFF PALACE
MESA VERDE NATIONAL PARK
COLORADO

FIGURE 6

Great solidity of construction appears in the massive stone walls of the village. Wall thickness decreased in successive stories for the Bonitians recognized a reduction in stress placed on upper walls. Various types of masonry construction appear in Chaco Canyon, but the most characteristic manner consisted of a core of stone and adobe faced on two sides by a veneer of horizontally laid thin stones (Fig. 5). These were so carefully fitted that only a minute crack is visible between stones. On top of these stone walls great log beams were placed to cover the rooms. These beams were carefully stripped of their outer bark and remarkably well dressed. Small poles which were similarly finished were laid at right angles across these beams. Over these lay carefully fashioned mats of peeled willow, a layer of cedar splint, and finally a thick coat of earth. This formed a roof for the room below as well as the floor for the succeeding story. Interior walls of the rooms were frequently plastered with adobe mud and decorated.

A second location of spectacular pueblo architecture of this period is the Mesa Verde of southwestern Colorado. In contrast to the Chaco Canyon concept, cliff dwellings are exemplified here. Mesa Verde is a large plateau in the drainage of the Mancos

River. In great caves protected by overhanging cliffs were built communal residential complexes. While similar in many ways to Pueblo Bonito and other free standing pueblos, these structures seem to have grown by accretion rather than by fixed plan. A dictating factor in the shape of the cliff dwelling naturally is the cliff cave itself.

The largest pueblo in the Mesa Verde is famous Cliff Palace. This structure is a terraced building reaching four stories in height containing over one hundred secular rooms and twenty-three Kivas (Fig. 6). There are four plaza levels in the complex with portions of the structure on each. Cliff Palace was divided into four quarters: the Tower Quarter at the south end, the Plaza Quarter next moving north, the Old Quarter, and finally the Northern Quarter. The Plaza and Old Quarters appear to be the oldest portions of the pueblo.

Walls are constructed of stone masonry, but generally they are not as massive as those found in the free standing pueblos. This can be attributed to the limitations placed on the sizes of the structure by the cliff cave. Although the general appearance of the mass as a whole was not massive the individual stones were quite large. Huge blocks were shaped

and stones were carefully fitted together with little use of mortar. Walls were solid rock with no center rubble fill. Roof structures consisted of large log beams covered with poles, brush and adobe. Interior walls of the rooms were plastered and often decorated with well-painted designs. Entrance to the rooms varied from roof top openings to regular doorways.

The Kivas were small structures with masonry walls. Six pilasters of stone supported a cribbed roof, and one finds the usual encircling bench as well as the ventilator shaft, the fire pit, and the *sipapu*.

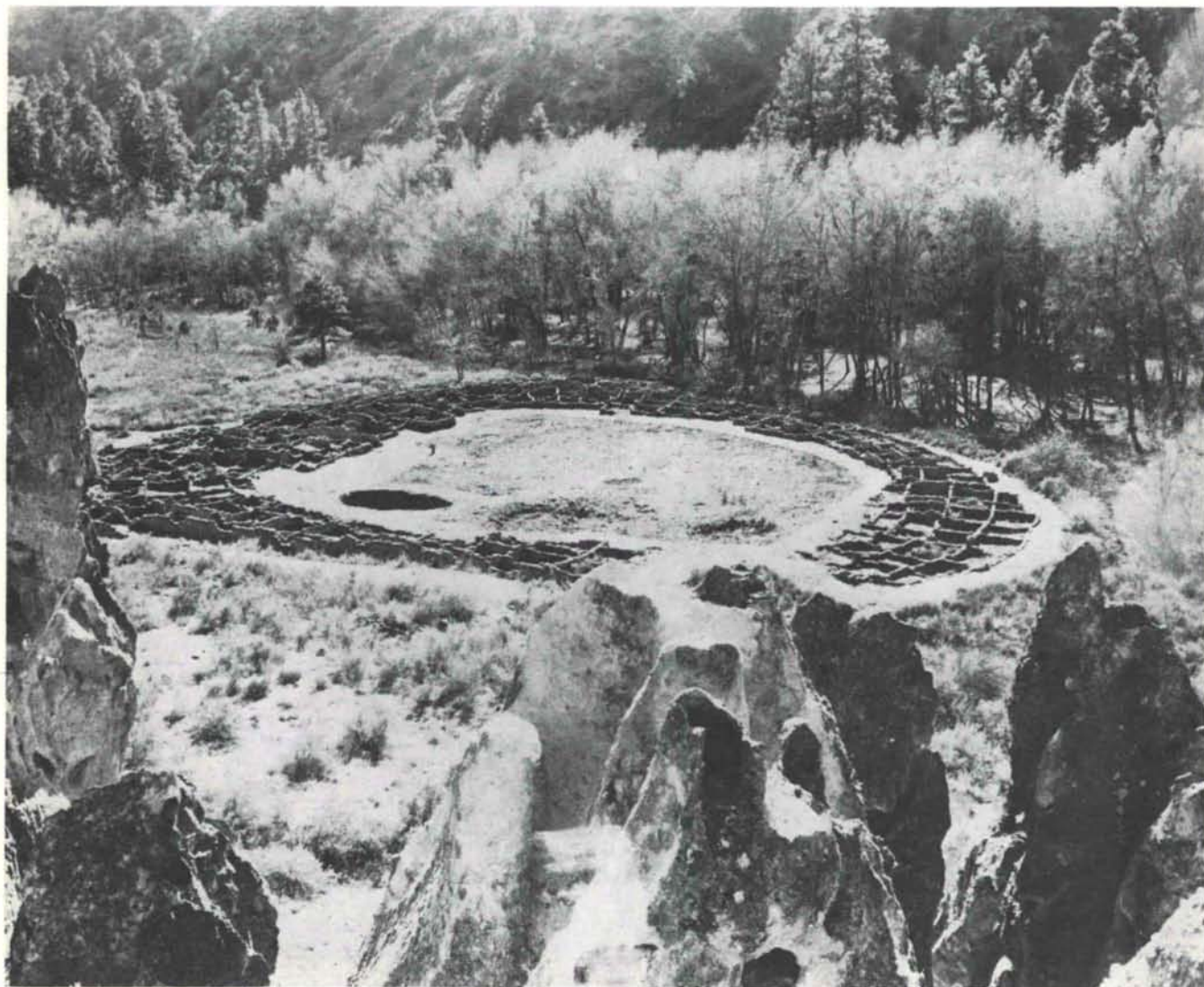
Between 1276 and 1299 a mass exodus from the plateau region took place leaving magnificent cities such as Pueblo Bonito, Cliff Palace, Spruce Tree House and Aztec completely abandoned. Many reasons are cited for this exodus, none of which have been conclusively proven. Most popular among the hypotheses advanced is an unfavorable development in the climate and a loss of life-sustaining rain. Other speculations include the arrival of nomadic enemy tribes who besiege the pueblo villages and drive them

away, or the desertion of the people by their gods, thus leaving the region unfit for occupation. An interesting proposal was made by Frederick L. Hoffman that the dust which accompanied their every day life caused lung infections, and the people sought a more healthful environment. In any event these great cities were deserted in what appears to be a sudden withdrawal.

The Regressive Pueblo period, 1300-1700, follows the exodus from the plateaus and is characterized by a general decline from the previous cultural peak. The center of population shifted with the great migration, and important new communities developed along the Little Colorado and the Rio Grande River.

The new trend was toward much larger houses and in some cases they covered as much as ten acres of ground. Walls contained extremely fine masonry, and pueblos generally were built with the rooms in long rows facing a central plaza. As before, roof construction was of wood beams covered with poles and adobe. The pueblo of Tyuonyi in El Rito de Los

FIGURE 7. FRIJoles CANYON RUINS



Frijoles is a fine example of the architectural work of the people of this period (Fig. 7). These people were basically sedentary farmers whose main crop were corn, beans and squash.

Contact with the European civilization occurred in 1540 with the coming of the Spanish under Francisco Vasquez De Coronado. There was a resultant clash between the two cultures. The Spanish looked on the Indians as subjects and proceeded to exploit them. Minor skirmishes occurred but it was not until 1680 that a successful revolt took place. Under the leadership of Popé, the Pueblos ejected the Spanish from the territory. In 1692 the Spanish retook the area in a bloodless conquest and the Pueblo people remained under Spanish influence until 1821 when Mexico gained independence from Spain. Finally the New Mexico Territory of the United States was established in 1848.

Fine examples of Pueblo architecture are still to be seen in areas of the southwest. A high degree of authenticity regarding historic and prehistoric pueblo architecture can be realized since these buildings are currently occupied by Pueblo descendants. Since Spanish domination following the conquest of 1692 the Pueblos have appointed a governor who serves in name only. In reality the pueblo government is theocratic in practice and is run by the societies within the social structure. This governmental arrangement has permitted the Pueblos to resist significant acculturation, and even today visitors to Taos, San Ildefonso, Acoma and many other settlements can experience Pueblo architecture and culture much as it was centuries ago (Fig. 8).

Charles L. Hall, AIA

FIGURE 8. TAOS PUEBLO



Figures 1 and 5, author; Figure 2 from *Prehistoric Indians of the Southwest* by Wormington (pl. 51); Figures 3, 7 and 8, courtesy New Mexico Department of Development; Figure 4 from *The Great Kivas of Chaco Canyon* by Vivian and Reiter (pl. 10); Figure 6 from *Bulletin 51, Bureau of American Ethnology* by J. W. Fewkes (pl. 6).

AIR CONDITIONING ELECTRIC VS GAS?

HERE ARE THE FACTS!

Cost to buy and install
gas air conditioner\$1,806.00

Cost to buy and install
electric air conditioner\$1,095.00

Customer Savings\$ 711.00

Cost to operate gas air
conditioner for one year\$ 63.00

Cost to operate electric air
conditioner for one year\$ 46.50

**Customer Savings,
Per Year\$ 16.50**

**To Keep Your Customers "Cool"
Specify Electric Air Conditioning**

**For additional information, write
Home Comfort Department
Public Service Company of New Mexico
P.O. Box 2267, Albuquerque, N. M.**

*All operating figures are based on estimates prepared by the Public Service Company of New Mexico and Southern Union Gas Company at the request of Air Engineering Company. These figures were combined with Air Engineering Company's estimates for the original equipment and installation cost to determine the most efficient and economical way to cool a particular home using comparable systems with identical cold air output. Details are available upon request.