



# CHACO CANYON

National Monument • New Mexico



*In the right foreground may be seen the remains of Threatening Rock after its fall, lying across a portion of Pueblo Bonito.*

### THE COVER

Threatening Rock, at Chaco Canyon, overhanging the site of Pueblo Bonito in the left foreground. For nearly 1,000 years the impending fall of this huge rock aroused the fears of prehistoric men and modern engineers alike. The Rock fell on January 22, 1941, destroying some of the highest walls of Pueblo Bonito and hurling rock debris more than a hundred yards into the arroyo in the middle of the Canyon.

## Contents

	<i>Page</i>
The Ruins . . . . .	4
Pueblos on the Canyon Floor . . . . .	4
Mesa-Top Pueblos . . . . .	8
Outlying Pueblos . . . . .	9
Great Kivas . . . . .	9
Smaller Sites . . . . .	10
Material Culture . . . . .	10
How to Reach the Monument . . . . .	14
Administration and Facilities . . . . .	14



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UNITED STATES DEPARTMENT OF THE INTERIOR

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# CHACO CANYON *National Monument*

THE AREA of Chaco Canyon National Monument comprises a remarkable concentration of prehistoric ruins, many of which have long been regarded in the annals of American archeology as the largest and most imposing examples of Pueblo Indian architecture in the American Southwest.

Chaco Canyon is one of the most prominent geographical features of the arid northwest portion of New Mexico. A deeply eroded valley set between high, vertical cliffs of brown sandstone, the mile-wide canyon winds westward to where the plateau breaks down to the drainage of the San Juan River. The neighboring country consists of picturesque, naturally carved plateaus, dissected into numerous canyons with many isolated mesas. Major mountain ranges border the area on four sides. Drainage comes from the San Juan River and its tributary, the usually dry Chaco Wash, and, east of the Continental Divide, the headwaters of the Rio Puerco, a tributary of the Rio Grande. The region is dry and desolate, remote and diffi-

cult, yet possessed of a native rugged charm so characteristic of much of the southwestern landscape.

Within a restricted area, about 10 miles of the middle course of Chaco Canyon, there are 11 great prehistoric apartment-house ruins and many smaller sites. Two others several miles to the southwest are outlying portions of the monument; another huge pueblo constitutes a detached section 15 miles east, halfway to the Continental Divide; still another is similarly reserved as part of the national monument, 30 miles south near Crown Point, N. Mex., a Navajo subagency and school.

The great ruins of Chaco Canyon, compact unitary towns, are unequalled in the United States, save perhaps for a few similar sites of Chaco type and Chaco affinity to the north of the Chaco drainage, such as Aztec Ruins National Monument on the Animas River in the extreme northern part of New Mexico. Not only in gross size are the

*The entire ruin of Pueblo Bonito viewed from the cliff on the north side of Chaco Canyon.*



Chaco ruins outstanding, but the stone masonry is of superb quality, unique in the aboriginal Southwest, and the objects recovered from the sites by archeologists include many that are exceptional, many of high aesthetic quality. The Chaco Canyon villages represent a climax of prehistoric Pueblo civilization and a cultural center of wide influence important to later developments in the Southwest.

The chief archeological remains represent a late phase in the prehistoric occupation of the area—the eleventh and twelfth centuries. Although some of the smaller sites are of the same late horizon, many of them represent the preceding four centuries. The Chaco region was continuously occupied by the Pueblo Indians from the seventh century, or before, until the middle or late twelfth century, when the great towns were abandoned. The Chaco probably lay deserted for a time before the arrival of the Navajo Indians, who occupied it in recent times and are still to be seen there. The Navajo are quite different in origin and in type of life from the Pueblo Indians, who today live at Zuni, Acoma, Jemez, and Taos, and whose ancestors built and occupied the Chaco Canyon towns.

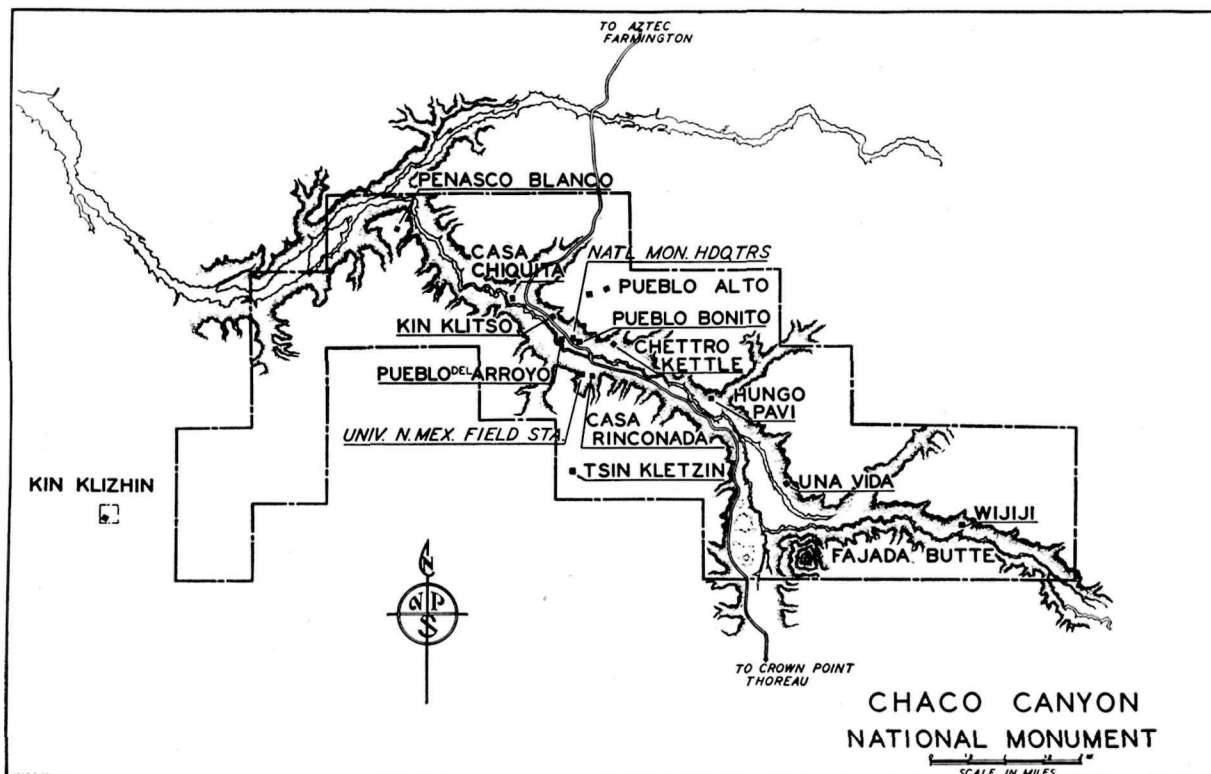
## The Ruins

### PUEBLOS ON THE CANYON FLOOR

*Pueblo Bonito*, near which are located the present monument headquarters and the University of New Mexico field station, is the largest, best known, and most extensively investigated Chaco ruin. It is one of the most famous and most important prehistoric sites in the United States. A five-storied D-shaped pueblo about 670 by 315 feet, Pueblo Bonito was the largest single residential structure in the world prior to 1887, when American apartment houses surpassed it. There are about 300 ground-floor rooms, which may well have housed more than a thousand Indians at one time.

Like many similar ruins in the Chaco and elsewhere, Pueblo Bonito consists primarily of many contiguous, small, rectangular masonry rooms with party walls, compactly and fairly regularly grouped in rows and tiers, upper stories being terraced like setbacks in skyscrapers.

Pueblo Bonito, like several other Chaco ruins, is semicircular or D-shaped. The main portion of the town is built in a great arc, the straight portion of the D being a single tier of rooms closing in the





front. The curving back wall is more than 800 feet long from one front corner to the other and still stands 40 feet high in places. A narrow block from the front tier of rooms to the main central section of the back separates the enclosed space into two large plazas.

There are 32 kivas in this major ruin, one of them extremely large. Kiva is a Hopi word, used generally in the Southwest for the ceremonial chambers found in modern pueblos and ruins of prehistoric ones. The prehistoric kivas are generally circular and subterranean, entered through the roof, with various characteristic architectural details. In large ruins like this, kivas often are actually above ground, incorporated in the structure. Usually a subterranean effect is obtained, however, and the roof entrance is general.

The ruins of Chaco Canyon exemplify several different styles of masonry, including some which are rather poor and clumsy or hasty. Most of it is beautiful masonry, consisting of a rubble core faced on each side with more or less evenly branded alternating rows of medium-sized slabs, roughly shaped to approximate rectangular form, and of small spalls. The material is the local brownish sandstone.

Pueblo Bonito has been partially excavated,

*Visitors examining the remains of the kivas, or underground ceremonial chambers, at Pueblo Bonito.*

more so than any other large Chaco site. George H. Pepper, of the American Museum of Natural History, New York, as field director of the Hyde Expedition, excavated about half the ruin in 1896-99, found many interesting objects, and refilled most of the rooms cleared. Neil M. Judd, now Curator of Archeology of the United States National Museum, excavated these ruins in 1922-26 for the National Geographic Society, after reexcavating the rooms backfilled by Pepper.

A considerable portion remains unexcavated, especially the deeper, and presumably early, portions, including the plazas. Evidently the surface of the canyon floor was several feet lower at one time.

Architectural details of interest, in addition to the masonry styles and the kivas, include mealing bins, remnants of original plaster, niches in the walls, and various types of doorways and small oblong openings. The T-shaped door so frequent in ruins farther north, as in Mesa Verde National Park, is rare.

Of particular interest are the several original ceilings which have survived and may be seen in different parts of the ruin. The ceilings, or floors

of upper rooms, are of the same general style still in use in modern Pueblo Indian villages and also in Spanish and Anglo-American buildings in New Mexico—vigas (transverse rafters) covered with vigas (poles), willows, reeds, and adobe.

Stabilization of Pueblo Bonito by repair and support of walls and by drainage and protection against weather has been carried on by the National Park Service. This stabilization has been strictly preservation, not restoration, with replacement or modification of authentic original walls held to an absolute minimum.

A gigantic slab of sandstone, Threatening Rock, 100 feet high, once leaned out from the cliff behind Pueblo Bonito. The ancient people saw its menace hundreds of years ago and endeavored to shore up the 30,000-ton cliff segment with timbers and masonry. On January 22, 1941, its base softened by an exceptionally wet winter, Threatening Rock fell with a noise like thunder, shattered into countless pieces, and catapulted its fragments into the back wall of the ruin. Debris damaged and covered 21 ground-floor rooms. Some of the old bracing masonry is still visible. Visitors now see in graphic manner the realization of the fear which beset aboriginal Bonitans.

*Chetro Kettle* is another great ruin a quarter of a mile east of Pueblo Bonito, generally similar to Pueblo Bonito and of comparable size. Like Pueblo Bonito, it is situated on the north side of the canyon close to the cliff, **D**-shaped in general outline like Pueblo Bonito, but with the **D** facing in instead of out, the back or north wall being straight, about 470 feet long. The main building forms approximately an **E**; the two outer arms of the **E** are connected by a curving front wall, consisting of a corridor and a row of rooms, 600 feet long. The site was partially excavated in 1919–21 and 1929–34 by the University of New Mexico.

The architecture of *Chetro Kettle* is like that of Pueblo Bonito. It is of the same general pueblo type, with the same styles of masonry; with similar details of architecture, doors, ceilings, niches, and bins; again with two plazas, a great kiva, and numerous smaller kivas. Of especial interest are the two "tower" kivas, each a circular ceremonial room high up within a square tower. A unique architectural feature is provided in the walled-up galleries facing the plaza in the central wing. Apparently these originally constituted a genuine

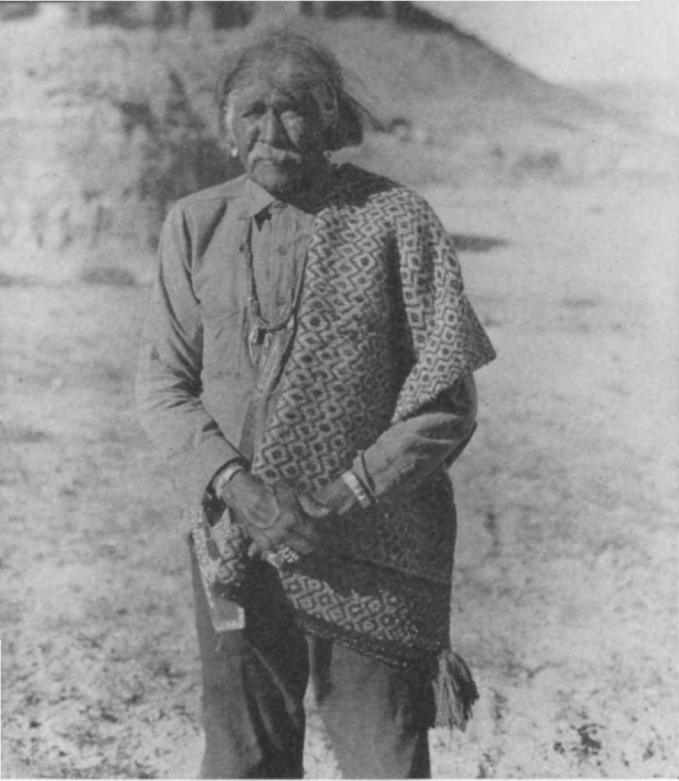


*Cross section view of a portion of Pueblo Bonito ruins showing types of masonry and exposed floor beams.*

roofed colonnade or portal, supported by square columns of masonry, the spaces between the columns later being filled in with a different style of masonry.

At *Chetro Kettle* also earlier remains underlie the five-story building of the final period. These deeper portions have been gone into and partially excavated. A trench along the back wall revealed stratified remains and structures 13 feet below the present surface. In several sections, removal of floors has revealed remnants of walls which had been leveled to make way for the later structure. In the main plaza there has been found below its level surface representing the final occupation a perfect labyrinth of rooms, kivas, shafts, cists, vaults, and pits. Much of the early construction is well preserved and of superior masonry.

Along the cliff behind *Chetro Kettle* there are several little settlements built against the foot of the cliff on top of, and partially covered by, talus accumulation. Some of these suburbs or talus vil-



*Tomacito, an old Navajo Indian, who has lived in Chaco Canyon over 60 years.*

lages would seem fair-sized ruins anywhere else than in Chaco Canyon. One of these, designated Talus Unit No. 1, against the cliff immediately northwest, was excavated by the University of New Mexico in 1933-37. It is a complete settlement in itself, with several small kivas, a small plaza, and a number of unusual and very interesting architectural features.

*Pueblo del Arroyo* is a few hundred feet west of Pueblo Bonito. The Chaco arroyo has cut in toward it. This ruin is much smaller than Pueblo Bonito or Chetro Kettle, but is still a fair-sized ruin. It is a typical Chaco pueblo with the plaza closed in by a curving front wall. It was partially excavated by the National Geographic Society in the 1920's, and has been partially stabilized by the Navajo Indian C. C. C. unit.

*Kin Klitso* or *Yellow House*, against the cliff a short distance below Pueblo del Arroyo and half a mile from Pueblo Bonito, and *Casa Chiquita*, half

*One of the communicating corner doorways in Pueblo Bonito ruins.*





*A portion of the interior of the large kiva, or underground ceremonial chamber, at Casa Riconada, showing the subterranean entrance.*

a mile farther down canyon, are smaller pueblos, each a single house-block without extensions, wings, or plazas. Casa Chiquita is unexcavated. The University of New Mexico has done some work in Kin Klitso.

*Hungo Pavi* is a great pueblo on the valley floor a mile and a half up-canyon from Chetro Kettle, unexcavated. A portion of the north wall stands 30 feet high. *Hungo Pavi* is built of darker brown sandstone, compactly laid with less banding and spalling. It has the normal curved wall across the front, closing in the plaza.

*Una Vida* is another large canyon-floor pueblo a mile and a half farther up, just north of Fajada Butte. It is unexcavated, not well preserved, with much poor masonry. It is an L-shaped building, with a curving wall joining the ends.

*Wiji* is farther to the east, about two and a half miles above *Una Vida*. It is a small pueblo, symmetrically planned and well built, in a rectangular U-shaped without a curved front wall closing in the plaza. It is unexcavated, but has been partially stabilized by the Navajo C. C. C. crew.

#### MESA-TOP PUEBLOS

*Penasco Blanco* is on a high point extending out from the south mesa. It is a great ruin on the order of Pueblo Bonito and Chetro Kettle, unexcavated, with an interesting range of masonry styles, and exceptional in being oval in ground plan instead of semicircular.

*Pueblo Alto* is a large unexcavated ruin group on the top rim just north of Pueblo Bonito. The main pueblo is very extensive, surrounding three sides of a great D-shaped, or U-shaped, plaza closed in by a curving front wall, but in poor condition. The building to the west, smaller, compact, and better built, is also better preserved, with most walls standing to a good height. There are still other minor ruins associated with Pueblo Alto.

*Tsin Kletzin* is the third mesa-top ruin; on the south mesa across from Pueblo Alto, well back and



high up. All the previously mentioned pueblos and the next three can be seen from it. Tsin Kletzin is a small pueblo, roughly D-shaped, with several kivas and a plaza. It is unexcavated and is seldom visited, as it can be reached only by a brisk walk.

#### OUTLYING PUEBLOS

*Pueblo Pintado* is the eastern outpost, constituting a detached section of the monument about 10 miles east of Wijiji. It is on a high location in the open rolling country of the Chaco headwaters; the Continental Divide is 12 miles farther east. Pueblo Pintado is a typical Chaco site, despite its distant location. It is a large pueblo, in fair condition, with some walls standing to the third or fourth story. It is unexcavated and rarely visited. The roads to it are poor and can be traveled only in good weather.

*Kin Yai* is a Chaco outpost 30 miles to the south, the detached section of the monument near Crown Point. Also unexcavated, it consists of a small pueblo with a tower kiva. It is visible from the Crown Point-Thoreau Road.

*Ruins of Pueblo del Arroyo, viewed from the north.*

*Kin Klizhin* is a less distant outlier, on a tributary wash about 6½ miles southwest of Pueblo Bonito. Like the preceding, it is a tower kiva with a small cluster of rooms. It has been repaired by the Navajo C. C. C. unit.

*Kin Biniola* is beyond Kin Klizhin; 10 miles "as the crow flies" southwest of Pueblo Bonito. It is a large and important pueblo, surrounded by small associated villages or suburbs. Kin Biniola is unexcavated and rarely visited.

#### GREAT KIVAS

The great kivas in Pueblo Bonito and Chetro Kettle have been mentioned: circular, more-or-less subterranean, ceremonial chambers of unusual size, 50 and 60 feet in diameter, respectively. Another supersanctuary is to be seen, excavated and restored, in the plaza of the main pueblo at Aztec Ruins National Monument, 65 miles to the north; it is 41 feet in diameter. Two similar great kivas are found, one 51 feet in diameter. The other, the largest known, 78 feet in diameter, is a site of Chaco type 75 miles to the southwest on the Zuni Indian Reservation south of Gallup, excavated by Dr. F. H. H. Roberts, of the Smithsonian Institution.



These great kivas are distinguished not only by their size but by a certain set of features, notably two large stone vaults in the floor of uncertain function, four great pillars to support the roof, little rooms surrounding the periphery, and an antechamber or altar room. Presumably these enormous chambers were for major rituals of the whole community, or at least of a large group.

*Casa Rinconada* is a great kiva standing alone, across the arroyo from Pueblo Bonito and close to the University of New Mexico field station. It is a typical supersanctuary, with the features mentioned above and 62 feet in diameter. It is not incorporated with a pueblo, like the great kivas previously mentioned, but is built apart over a quarter of a mile from the nearest urban settlement, Pueblo Bonito. *Casa Rinconada* was excavated and restored by Gordon Vivian for the University of New Mexico. It is the only major site on the south side of the canyon.

*Kin Nahasbas* is another great kiva, 51 feet in diameter, standing alone on a ledge about a thousand feet north of the Vida. It has been excavated by the University of New Mexico.

#### SMALLER SITES

In addition to the 15 large and medium-sized typical Chaco pueblos, the two separate great kivas, and the talus villages mentioned in connection with Chetro Kettle, there are a great many small sites in Chaco Canyon. Some of them are contemporary with the great towns; some are earlier. Several of the little pueblos have been excavated by the University of New Mexico, notably Levit Kin, Tseh So, and others on the south side of the canyon opposite Chetro Kettle and Pueblo Bonito.

Many of these smaller pueblos seem to have been occupied during the same general period as the great towns.

The earlier periods are represented especially by pithouses of the eighth and ninth centuries, a number of which have been excavated.

*Shabikeschee* is a pithouse village of probably the eighth century, or earlier, excavated in 1927 by Dr. F. H. H. Roberts, of the Smithsonian Institution. It is on a mesa point on the south side of the upper canyon about 10 miles east of Pueblo Bonito. It was found to consist of 18 pithouses, a court or plaza, a large kiva, and 48 storage bins. The pit-

houses were circular, or roughly rectangular, excavations in the ground, lined with adobe plaster or stone slabs and roofed over with superstructures of poles, brush, and mud supported by four posts, and usually with an entrance passage.

The kiva is a simple and primitive one, but with the essential features diagnostic of the specialized circular ceremonial chamber. It does not have the vaults or other special features of the later great kivas, although it is 40 feet in diameter.

The artifacts found at *Shabikeschee*, especially those of pottery, are primitive and correlate with the architectural stage, so that an early time may be safely assumed despite the lack of tree-ring dates.

### *Material Culture*

THE EXCAVATIONS by various archeologists in the ruins of Chaco Canyon have recovered a vast amount of artifacts, objects of material culture, and have revealed numerous facts about the life of the ancient Chaco people. Many problems remain to be solved; much of what has been found is not understood; and many technical points in the chronological development of the culture are debatable. A general picture, however, can be visualized of the culture and life of the occupants of the great pueblos of the Chaco in their highest and final period, the eleventh and twelfth centuries.

Like their descendants, the modern Pueblo Indians, the people who occupied the prehistoric pueblos were farmers, supporting themselves primarily by agriculture. They raised maize (Indian corn), pumpkins, and beans; also, in many places, cotton.

The only domesticated animals were the dog and the turkey. Whether turkeys were eaten or simply kept for their feathers, as parrots were, is not certain.

They also hunted deer, rabbits, antelope, prairie dogs, and other game animals with the bow and arrow, and gathered many wild plants for culinary, medicinal, and other uses.

Their tools were mainly of wood, stone, and bone. Few wooden implements have survived to be found, but we do know the Chaco people had wooden clubs, digging sticks (for planting corn), sandal lasts, loom battens, and ceremonial sticks (rods or wands of uncertain function). Elaborately painted boards may have been wooden altar

slabs. Animal and bird bones were utilized for awls, drills, punches, needles, scrapers, etc. Axes and hammers, arrow points, knives, scrapers, pipes, grinding stones (metates and manos), and numerous other implements were made by flaking or grinding from various kinds of stone.

Garments presumably were made both of skins and of cotton; only fragments of these materials have survived. Personal ornaments of shell, stone, and bone have been found in some quantity; turquoise and marine shell, the most frequent materials, were both acquired by trade from some distance. Sea shells originally from the Gulf of California, and fresh water mussels provided pendants, bracelets, etc. Tubular beads were made from bird bones; disk beads of shell, bone, and stone, including turquoise. Turquoise was extensively used in various ways for ornamental purposes, including inlays.

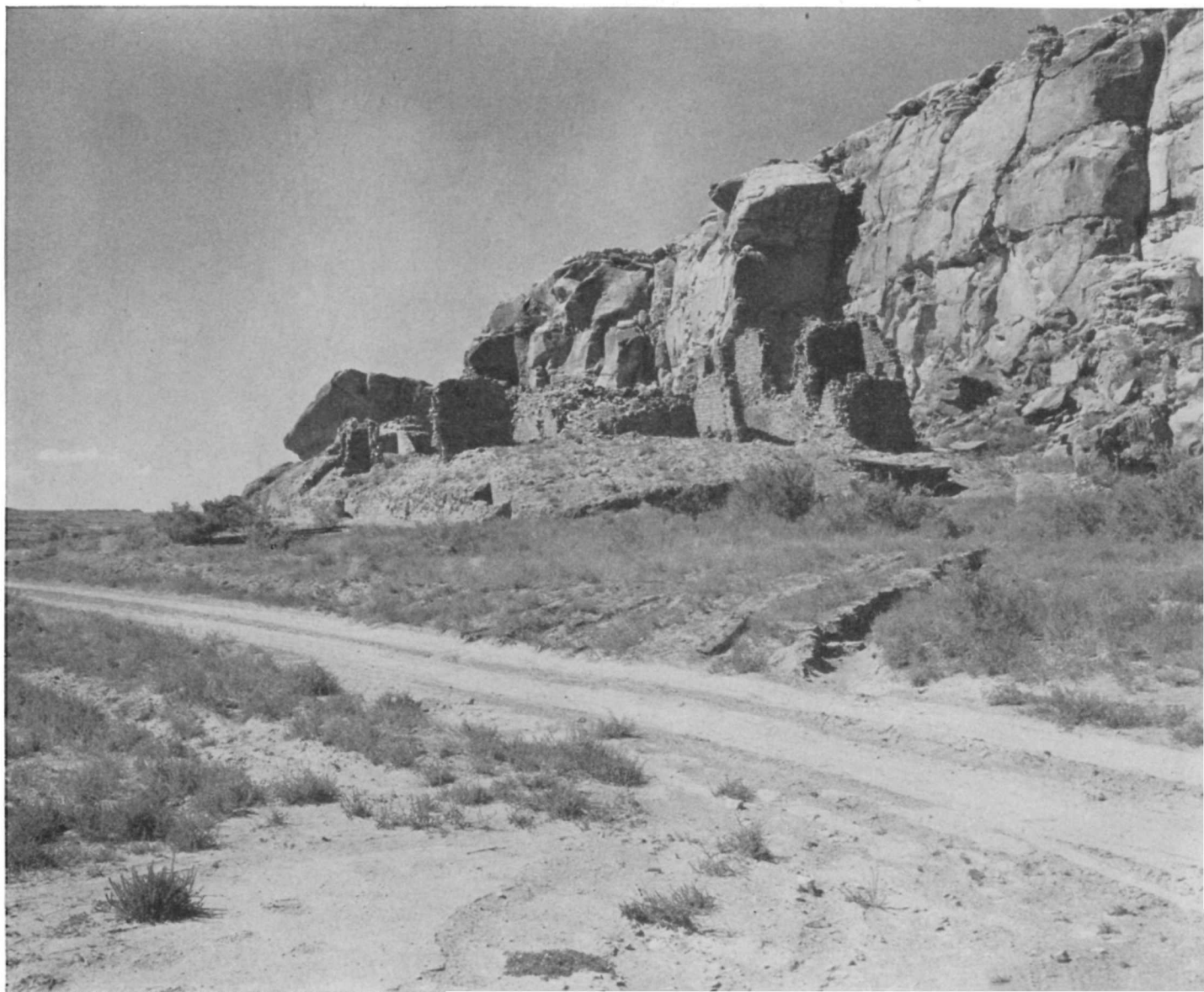
Household utensils and containers were of basketry and pottery. Only a small amount of the

former material has survived in the Chaco ruins, just enough to show that they had several types of baskets similar to those of modern Southwestern Indians, made of sumac, willow, and yucca. Mats were also made of rushes or reeds.

The pottery forms one of the most abundant and important categories of material remains in the Southwest generally, as well as at Chaco Canyon. Ceramic techniques, materials, and decorative styles of pottery are localized in both space and time far more than other types of remains, and consequently pottery receives the most study from archeologists.

Chaco Canyon painted pottery is almost entirely black-on-white (really brownish dark paint on a light gray background); the utility ware largely gray indented-corrugated. "Corrugated" pottery, characteristic of the northern Southwest from the eighth century to the thirteenth, was produced by indenting with the finger each coil of clay as it was

*The Yellow House Ruins, west of Pueblo del Arroyo.*



applied, instead of scraping the surface to remove traces of the coils. Actual fingerprint impressions a thousand years old can be seen on some of this pottery. The decorated, black-on-white pottery is of several varieties, the designs and quality of brushwork changing and improving during the centuries. The final type of black-on-white, classical Chaco pottery is well done and highly distinctive, the designs being carried out almost entirely in neat hachure.

Various sorts of pottery made in other areas reached the Chaco by trade, especially black-on-white from the Mesa Verde area, distinct in treatment from the local ware, and black-on-red pottery from the west and southwest.

Trade also is demonstrated by the sea shells already mentioned; by copper bells, probably from northern Mexico; and skeletons of macaws, also probably from Mexico. The parrots were more than likely kept for the sake of their feathers, even

as today the Pueblo Indians are anxious to have feathers of eagles, jays, and parrots for use in ceremonials.

The advanced and specialized culture of the Chaco Canyon pueblos apparently came to an end in the twelfth century. The latest tree-ring date yet known from a Chaco site is A. D. 1130, but there are indications that occupation did not cease for some time after that.

Why the Chaco area was abandoned is not known. It is possible that a cycle of erosion, perhaps accelerated by deforestation consequent on building the great pueblos, caused the channeling of an arroyo by the Chaco Wash that so lowered the water table that agriculture became impossible. The present deep, dry channel is less than a hundred years old; in 1849 there was a stream bordered by trees and rushes, and the Navajos had cornfields in the valley. Erosion and arroyo cut-

*Part of the unexcavated ruins of Hungo Pavi.*





*A general view of the ruins of Chetro Kettle, looking southeast.*

ting were accelerated in this case by overgrazing.

The ancient people seem to have abandoned the Chaco Canyon towns in the twelfth century, going partly southwest toward the Zuni country and partly east to the Rio Grande. Much of the twelfth and thirteenth century pottery of these areas, particularly the Rio Grande, is of Chaco affinity, similar to the general Chaco black-on-white ware, though not specifically to the final, classical type.

The population probably became considerably reduced during the last 50 or 100 years of occupation in the Chaco, with groups moving out one after another, so that final abandonment may have involved only a relatively small migration of people. This probably was the case also at Aztec, Mesa Verde, and other ruins and areas abandoned in the same period and later on in the thirteenth century.

Chaco Canyon is only one of many areas abandoned in prehistoric times by the Pueblo Indians. Before 1100 they occupied a great number of villages, towns, and cliff dwellings all over northwestern New Mexico, southwestern Colorado, southeastern Utah, and northern and central Arizona. By A. D. 1500 they had concentrated in the three areas still partially inhabited: the Hopi country, the Zuni country, and the Rio Grande.

Another theory to explain the exodus from the Chaco is a possible decrease of population owing to high infant mortality resulting from poor sanitation in crowded urban life. There is evidence to suggest that aboriginal population in the Southwest increased tremendously after the introduction, in the early centuries of the Christian era, of agriculture, and then began to fall off as the people clustered together more and more in larger and larger pueblos instead of little scattered hamlets.

This decrease would naturally be manifested first at Chaco Canyon, where the agglomeration into urban centers took place much earlier than anywhere else. It is probable that arroyo trenching or some other external agency was a factor in the final abandonment of the Chaco towns.

Another problem is that of the origin and development of Chaco culture. It is known that there were people in the Chaco in the seventh century or earlier, with pit houses, stone and bone tools, etc., and black-on-gray pottery, and it may be presumed that the later prehistoric people were their descendants, and their culture a development from the earlier ones. But why so advanced and specialized a culture should have developed in this relatively difficult and desolate area earlier than comparable cultural levels in other parts of the northern Southwest is not understood.

### *How To Reach the Monument*

CHACO CANYON NATIONAL MONUMENT is in San Juan and McKinley Counties, northwestern New Mexico. The area is reached by leaving U. S. Highway 66 at Thoreau and traveling 65 miles north, over a graded road, adequately marked

*The partially excavated ruins of Chetro Kettle, viewed from the east.*

with National Park Service signs. The monument is reached from the north by State road 55, south from the little town of Aztec and Aztec Ruins National Monument for a distance of 40 miles, then by State Road 35 for a distance of 24 miles to the monument headquarters. Tourist accommodations may be had at Gallup to the south, and Farmington on the north.

### *Administration and Facilities*

The Chaco Canyon was proclaimed a national monument March 11, 1907. It is administered by the National Park Service, of the Department of the Interior, Washington, D. C., through the office of the Superintendent of Southwestern National Monuments at Coolidge, Ariz. There is a resident custodian at Chaco Canyon all year, with seasonally employed rangers and ranger naturalists in the summer travel season. A new headquarters and museum are to be constructed by the C. C. C. camp now located at Chaco Canyon; the present custodian's residence and office are situated at Pueblo Bonito. There are no tourist accommodations at the monument at present, but the trading post sells lunch goods. There is a guide fee of 25 cents. The usual regulations against hunting, vandalism, etc., are enforced. Any inquiries should be addressed to the Custodian, Chaco Canyon National Monument, Chaco Canyon, N. Mex.





*Part of the interior of the large kiva, or underground ceremonial chamber, in Chetro Kettle, showing altars and fire vaults.*

*View of Threatening Rock, prior to its fall, showing masonry constructed at its base by the Indians in an attempt to prevent its collapse on Pueblo Bonito.*



