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# El Palacio

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PAUL A. F. WALTER, *Editor*

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## THE CHACO CANYON IN 1934

*By* REGINALD G. FISHER

A MOST successful season in the Chaco Canyon work has just come to a close. The new program inaugurated this summer has proven satisfactory beyond expectations. The Chaco project has become not only a session for scientific research but also a school for training professional anthropologists. In seasons past, qualified upper and lower division students have been admitted to the Chaco group, to serve as student assistants to members of the School of American Research staff. Under the new program, credit toward higher degrees is given, and undergraduate students are not eligible. Appointments are made mainly from graduate anthropologists. All appointees are members of the Chaco Canyon staff and have professional status. Each member takes charge of a special project which is carried on through the season, with a complete report at the end. The whole is supervised by the director.

Another new feature in the Chaco work is that projects are adjusted so that they can be brought to completion at the close of the season. Each project is a unit in the program of investigation, and the season reports serve as chapters in the final record. In order to be of most value, project reports must be kept up to date with the progress of the main program of research.

During the season just finished nine projects were prosecuted. Three of these represent units of the work of Chetro Ketl. Two were on the general archaeology of the

Chaco Province. One was confined to the Archaeological Survey; two others to geographical studies in the Chaco, and the last was the opening up of a new major excavation

On the west side of the plaza at Chetro Ketl, the existence of a large kiva thought to be of the "great kiva" type has been known for some time. As a part of the work this season, this structure was completely excavated. It proved to be of exceptional interest. Two stages in its development are apparent. During the first period of its occupation it seems to have been used as a kiva of the ordinary type. Later it was remodeled so that it had the features of a "great kiva."

Certain standard features seem always to be present in the "great kivas." Two large rectangular pits lie on the east and west sides respectively, their length running north and south. Four large vertical support members (either masonry piers or wooden pillars) should stand about one-half to two-thirds of the way out from the circumference toward the center of the kiva, at the corners of a square. The east and west sides of this square should bisect approximately the two large pits. Lying between the pits and to the south of the center of the kiva should be a square altar of masonry. A bench or a series of benches runs completely around the interior circumference. There is a series of niches above the bench. An antechamber should lie to the north of the kiva and communicate into it by a doorway and steps. Plate VIII gives an idea of the situation of these features.

During the later period in the use of the "West Plaza Kiva" all these features were present. In diameter, however, it was little more than one-half that of the "Great Sanctuary" of Chetro Ketl. A view across the kiva showing the arrangement of the features is given in Plate I.

The "East Tower Kiva" of Chetro Ketl, first opened in 1929, has continually presented new problems. It was no

simple structure of a single cultural or architectural period. A series of stages in remodeling has left superimposed floors and pits, overhanging benches and walls, and kivas built upon kivas. In a former season it was discovered that the whole section of the "East Tower" had been

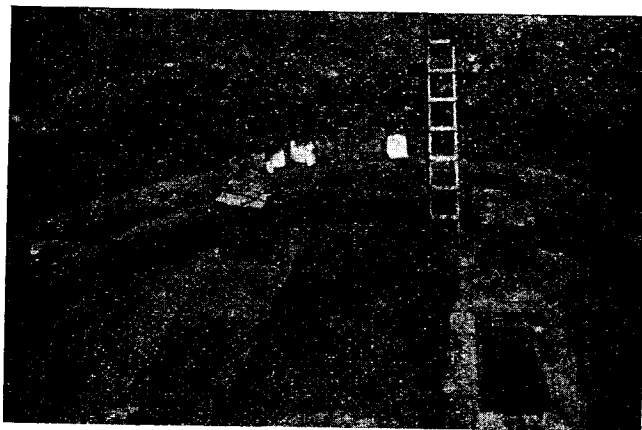


Plate I—West Plaza Kiva of Chetro Ketl—  
A Part of the Season's Excavation

built upon the filled and leveled ruins of an older Chetro Ketl. Tests showed that the upper walls did not coincide with the walls of the lower town. The inner circumference of a large kiva with a floor some 20 feet below the surface was found to intersect by several feet the inner circumference of the tower kiva. The difficulties encountered here multiplied many fold the magnitude of the job proposed in the excavation of the "East Tower" section. It was necessary to support the walls and overhangs of the upper structures by beams and piers before the lower buildings could be cleared. Plate II illustrates the method used.

This work began in 1931. It was a slow, tedious, dangerous, and expensive process. By the close of the 1933 season the support work had been carried far enough to



Plate II—Support Work of "East Tower" Section  
in Progress

make it possible to begin the final work of excavation and preservation. During the season just closed, this was completed.

In 1933, excavation was begun on one of the small house units behind Chetro Ketl. In earlier reports it has been named "Talus Unit No. 1." While continuing the work here this year, the most spectacular find of the season was made. A well-preserved burial was encountered, with nine complete ceramic vessels accompanying it. The plate on the cover shows the burial with its mortuary deposit in situ. "Talus Unit No. 1" is making up for the deficiencies of Chetro Ketl. Several good pieces of wood were found

and are now being studied for dating. At the close of the season, excavation had uncovered about one-half the site. It probably will prove to have twenty-five or thirty rooms. In some parts of the site, especially those excavated last year, the construction of the walls is rather crude, yet some walls show a masonry comparable in quality and workmanship to the better sections of Chetro Ketl. For a view of "Talus Unit No. 1" see Plate V.

Since the facts for dating are still meagre it is not safe to offer conclusions as to the meaning of the small house units. From the data available they seem to have been occupied contemporaneously with the great houses.<sup>1</sup> They may prove to be only a result of an overflow of population from the great houses. It is a significant fact that around many of the great houses several house units are closely grouped. At Pueblo Pintada there are no less than fifteen within a radius of half a mile, while Chetro Ketl has six in addition to the one now being excavated. It also should be noted that there are numerous sites of this kind scattered throughout the canyon, the majority of which are widely separated from any of the great houses.

As part of a project for the study of burial customs in the Chaco, two small house units not within the precincts of any of the great houses were partially excavated this year. They lie on the south side of the canyon, one to the east and one to the west of the "Gap" which is shown in the picture on the inside of the back cover. Both were of masonry similar to that of "Talus Unit No. 1." Two kivas were excavated in one of the sites. These small houses show much greater promise of cultural and skeletal material than do the great houses. Half a dozen skeletons

1. The known dates for the construction of the small house units all fall within the first half of the eleventh century A. D. For published material, see Bulletin No. 246 of the University of New Mexico and the School of American Research, "The Significance of the Dated Prehistory of Chetro Ketl," by Florence M. Hawley.

and some complete pottery vessels were recovered from them. After this material has been worked up, more data will be available for determining the relationship of the small house units to the great houses.

At Yellow House about half a mile below camp a new major excavation was inaugurated. Yellow House is considerably smaller than Chetro Ketl. It is rectangular in shape and measures about 150 feet east and west, by 75 feet north and south. It seems to have stood from one to four stories in height. At least three of the masonry types of Chetro Ketl are represented here. A peculiar fact in connection with the great houses is their deficiency of cultural and skeletal material. The Yellow House is running true to type in this respect.

A tier of rooms at the back and a section on the east end of the Yellow House were cleared during the season, also two upper-story kivas were excavated. One of these which was in the east section was built in the second story and showed typical features of the smaller kivas of the Chaco. In the main these are as follows: a bench with an alcove at the south; a series of pilaster bases on the bench; a circular fire pit just south of the center; a tunnel and shaft leading out under the wall on the south; a large rectangular pit in the floor on the west side. Entrance was through a hatchway in the roof. The uppermost kiva of the "East Tower" at Chetro Ketl is a good example. The other kiva excavated at Yellow House which was in the west section, stood in the third and fourth stories. It showed none of the standard features described above. There was no bench, no tunnel and shaft, no rectangular pit, and no fire pit. A large T-shaped door entered from the east. This west kiva of Yellow House shows a striking resemblance to the "West Tower" of Chetro Ketl. The foundations for the walls rest upon a huge boulder which is as high as three stories of the pueblo. The whole west section of Yellow House was built over this boulder. Its top came to

within four inches of the floor of the kiva. Plate III shows the west kiva and a general view looking east across Yellow House.

It has become apparent that something must be done to prevent the destruction of Yellow House. Erosion in the Chaco has been going on at such a rate that not only Yellow House but several other important sites are in danger. A bend in the arroyo of the Chaco had turned the full force of erosion in a direct line toward Yellow House. Floods each year were cutting at the base of the 30-foot vertical wall of the arroyo, a few yards in front of the ruin. Within a few more years the rush of water during the summer rains would have cut away Yellow House itself. Upon the opening of the season it was decided that protection work at the site could no longer be put off. It had become an emergency measure. The problem was thoroughly studied by the engineers of the staff and a plan drawn up based upon two simple principles in hydraulic engineering. First, a vertical bank is many times more susceptible to erosion than a sloping bank. Second, it is extremely difficult to confine or force a flooding arroyo by dyking or damming, but by use of permeable obstructions properly placed in the current, water can be made to do the work. The plan for protection of Yellow House then called for sloping the banks and protecting the foot of the slope by the permeable obstruction method. The excavation 50 feet away offered a source of debris for sloping the banks, while about one hundred and fifty dollars worth of hog wire, fence posts and steel cable formed the basis for the obstructions. As a result, for around seven hundred dollars, including both labor and materials, the permanent protection of Yellow House was accomplished. So well did it function, that two feet of silt was deposited in front of the ruin with the first flood, where originally tons of the bank were eaten away by each torrent. As can be seen in Plate IV, the channel was shifted far out into

the middle of the arroyo, leaving the ruin and the road in safety.

That erosion has had an important relation to the archaeology of the Chaco Province is certain.<sup>2</sup> Evidence has been found showing that there was an ancient arroyo in the Chaco similar to the existing one, which refilled itself before the present arroyo began to cut. By affecting



Plate III—View Across the Yellow House, Showing Excavation Work in West Kiva

the water supply, the climatic and physiographic factors must have had a direct influence upon the population of the Chaco. Some students of erosion believe it to be dependent mainly upon the vegetation cover of the drainage basin of an eroding water-way. Anything that destroys the vegetation cover, whether climatic change, over-grazing, soil change, or what not, may produce arroyo cutting. Therefore climatic and erosion studies have become vital

2. For an analysis of erosion and climate and their relation to the archaeology of the Chaco, see Bulletin No. 244 of the University of New Mexico, "Some Geographic Factors That Influenced the Ancient Populations of the Chaco Canyon, New Mexico," by Reginald G. Fisher.

in the program of Chaco Research. For several years, in co-operation with the United States Weather Bureau, a weather station has been maintained at the Chaco Camp. This season, long-period rain gauges were established at all points strategic for rainfall data.<sup>3</sup>

This year an investigation was made with the purpose



Plate IV—Erosion Control to Prevent the Destruction of Yellow House—A New Phase in Chaco Work

of establishing a field laboratory in the Chaco basin for the study of grazing and its effect on erosion. Any project for the study of over-grazing must include the whole drainage basin of some eroding water-way. If only a part of the basin were fenced from grazing and the remainder left open, the value of the results obtained would be in proportion to the percentage of the basin under fence.

3. For a description of long-period rain gauging, see a report from the Desert Laboratory of Tucson, Arizona, "Rainfall Investigations in Arizona and Sonora by Means of Long-Period Rain Gauges," by Godfrey Sykes in the *Geographic Review*, 1931, pp. 229-233.



Plate V—Talus Unit No. 1 as Seen from Chetro Keti



Plate VI—Chetro Keti as it Now Looks from the East Cliff

Since it would be impossible to restrict grazing from the whole Chaco basin, it is proposed that a small tributary basin within the Chaco be fenced and set aside for observation and study. The basin of Hungo Pavi Canyon, which includes about ten square miles, has been chosen

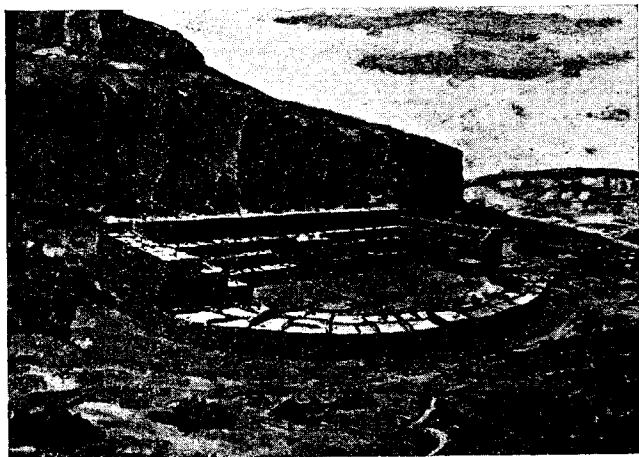


Plate VII—Hungo Pavi—from the New Reconstruction Series

for the study. The surveys were made this summer so that the fencing can proceed as soon as funds are available

It was possible during the season to complete the archaeological survey of the culture center of the Chaco Province. Surveys were made and ground plans drawn for all major sites where these were lacking. Around one hundred new small house units were located and mapped; half a dozen new pit villages were discovered and about a dozen cave lodges that seem to belong to an early culture stage were plotted. Several small mounds were found which seem to

be the remains of early "jacal sites." In the neighborhood of two hundred sites will be covered by the survey report which will be published at an early date.

A series of reconstructions of the major ruins in the Chaco Province was worked up in oil paintings. They are not merely artists' conceptions. They were drawn in true perspective from ground plans and elevations taken in the archaeological survey. Plate VII shows the reconstruction of Hungo Pavi.

The foregoing pages cover briefly the activities in Chaco Canyon for the 1934 season. The work was, as usual, a joint undertaking of the School of American Research, University of New Mexico, and the Museum of New Mexico. Considerable financial aid was had through the Federal Emergency Relief Administration of San Juan County.

#### *The Chaco Canyon Staff of 1934.*

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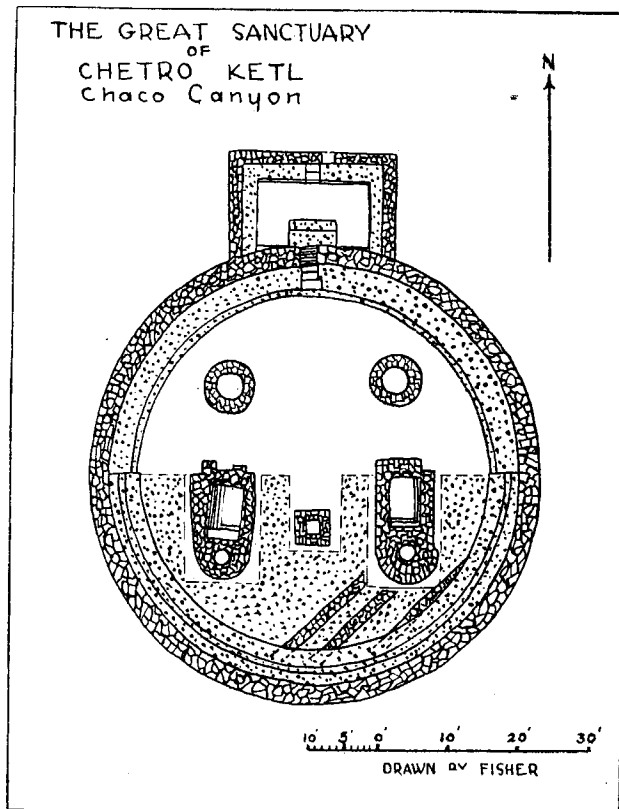


Plate VIII

*Summary of Projects, 1934.*

1. The Excavation of Yellow House  
Edwin N. Ferdon
2. The Excavation and Preservation of the "East Tower"  
Section of Chetro Kettle  
J. Marshall Miller
3. The Excavation of the "West Plaza Kiva" of Chetro  
Kettle  
W. W. Postlethwaite  
Janet Woods
4. The Excavation of "Talus Unit No. 1" of Chetro Kettle  
Margaret Woods
5. Erosion and Its Relation to the Archaeology of the  
Chaco Canyon  
William Chauvenet
6. Investigation of Burials and Burial Customs in Chaco  
Canyon
  - a. Excavation of Small House Unit No. 8  
Charles E. Hutchinson
  - b. Excavation of Small House Unit No. 26  
Bertha P. Dutton
  - c. Excavation of Mound No. 21  
Marion Hollenbach
7. Reconstruction in Oil Paintings of the Major Ruins of  
Chaco Canyon  
Robert M. Coffin
8. The Archaeological Survey of the Chaco Province.  
The Assistant Director and Staff
9. Climatic Investigations  
The Assistant Director and Staff