

*L. R. Caywood*

# Southwestern Monuments

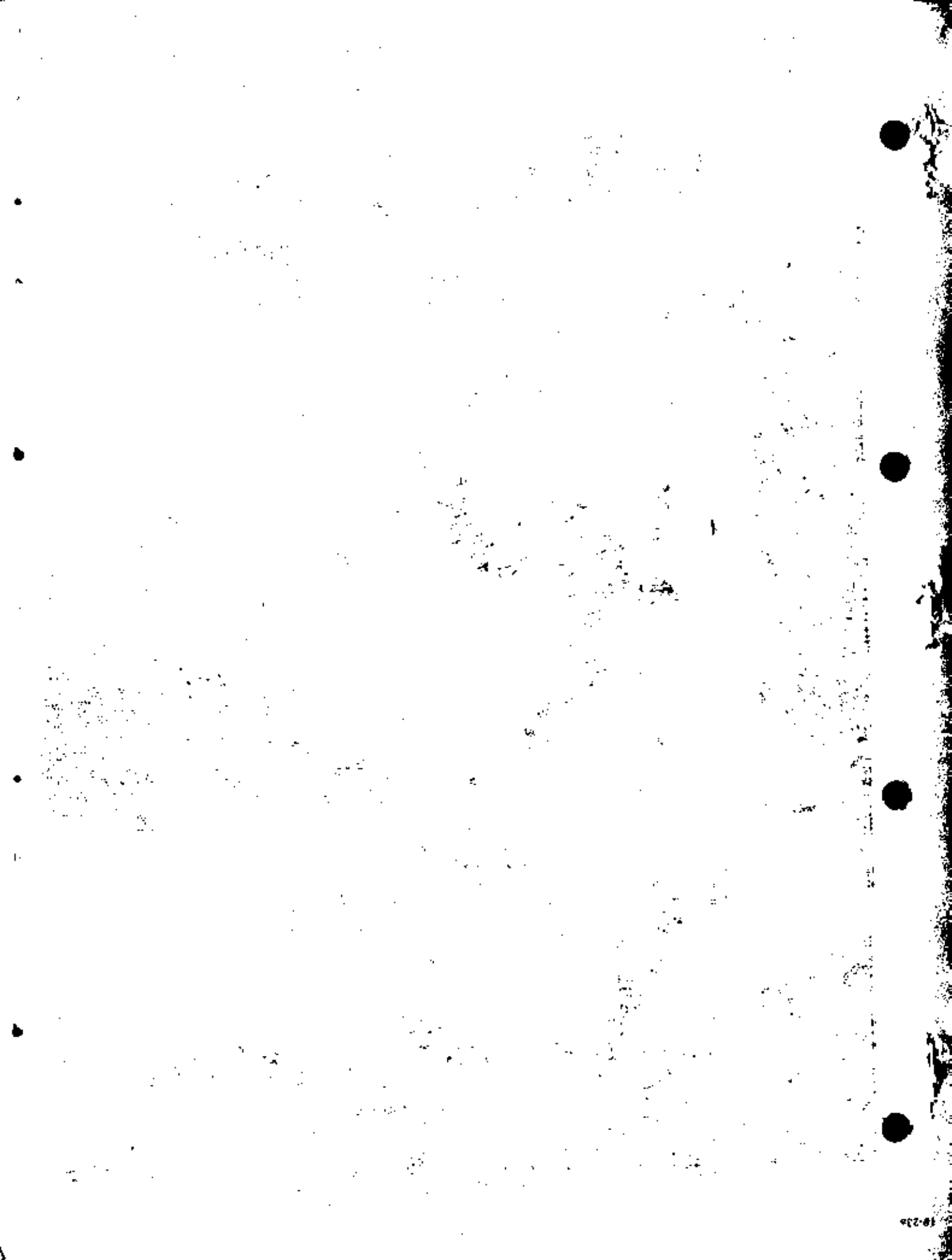
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POINT APRIL 36

DEPT. OF THE INTERIOR

N.P.S.



# SOUTHWESTERN MONUMENTS

## APRIL, 1936, REPORT

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## SOUTHWESTERN MONUMENTS PERSONNEL

As of May 1, 1936:

HEADQUARTERS, Southwestern Monuments, Coolidge, Arizona: Frank Pinkley, Superintendent; Hugh M. Miller, Acting Assistant Superintendent; John H. Diehl, Associate Engineer; Robert H. Rose, Assistant Park Naturalist; Dale S. King and Charlie R. Steen, Junior Park Naturalists. Luis Castellum, EOW Clerk.

GENERAL FIELD MEN: Charles A. Richey and Harry Langley, Resident Landscape Architects; J. E. Hamilton, Associate Engineer; J. H. Tovrea, Chief Engineering Aide. Andrew Clark, Topographer; Carl Schmidt, Rodman.

### FIELD STATIONS:

1. Arches---Moab, Utah. J. M. Turnbow, Custodian.
  2. Aztec Ruins---Aztec, New Mexico. John Will Faris, Custodian;  
Robert W. Hart, Ranger-Archeologist.
  3. Bandelier---Box 609, Santa Fe, New Mexico. Earl Jackson, Custodian.
  4. Canyon de Chelly---Chin Lee, Arizona. Robert R. Budlong, Custodian.
  5. Capulin Mountain---Capulin, New Mexico. Homer J. Farr, Custodian.
  6. Casa Grande Ruins---Coolidge, Arizona. W. J. Winter, Custodian;  
J. Donald Erskine, Park Ranger.
  7. Chaco Canyon---Crowspoint, New Mexico. Thomas C. Miller, Custodian.
  8. Chiricahua---Wilcox, Arizona.
  9. El Morro---Ramah, New Mexico. E. Z. Vogt, Custodian.
  10. Gila Cliff Dwellings---Cliff, New Mexico. No Custodian.
  11. Gran Quivira---Gran Quivira, New Mexico. George Boundey, Custodian.
  12. Hovenweep---Cortez, Colorado. No Custodian.
  13. Montezuma Castle---Camp Verde, Arizona. Martin L. Jackson, Custodian;  
Frank Fish, Ranger.
  14. Natural Bridges---Blanding, Utah. Zeke Johnson, Custodian.
  15. Navajo---Kayenta, Arizona. John Wetherill, Custodian; Milton  
Wetherill, Trail Foreman.
  16. Pipe Spring---Moccasin, Arizona. Leonard Heaton, Acting Custodian.
  17. Rainbow Bridge---Rainbow Lodge, Arizona. No Custodian.
  18. Saguaro---Tucson, Arizona.
  19. Sunset Crater---Flagstaff, Arizona. J. W. Brewer, In Charge.
  20. Tonto---Roosevelt, Arizona. Woodrow Spires, In Charge.
  21. Tumacacori---Box 2225, Tucson, Arizona. Louis R. Caywood, Custodian;  
Martin G. Evenstad, Ranger.
  22. Walnut Canyon---Flagstaff, Arizona. Paul Beaubien, Ranger in Charge.
  23. White Sands---Alamogordo, New Mexico. Tom Charles, Custodian;  
Darryl Michun, Utility Man.
  24. Wupatki---Flagstaff, Arizona. J. W. Brewer, In Charge.
  25. Yucca House---Cortez, Colorado. No Custodian.
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# CONDENSED REPORT

Coolidge, Arizona  
May 1, 1936

The Director,  
National Park Service,  
Washington, D. C.

Dear Mr. Director:

The Condensed Report for Southwestern Monuments for April, 1936:

<u>TRAVEL</u>	<u>April, 1936</u>	<u>April, 1935</u>	<u>April, 1934</u>
Aztec Ruins	701	554	579
Bandelier	742	643	440
Capulin Mountain	600	500	500
Casa Grande	3,436	3,763	2,747
Chaco Canyon	791	472	217
Canyon de Chelly	22	101	---
Chiricahua	550	---	---
El Morro	42	---	---
Gran Quivira	239	373	207
Montezuma Castle	1,054	1,350	1,335
Natural Bridges	---	---	---
Navajo	---	---	---
Pipe Spring	98	212	87
Saguaro	1,200	1,520	---
Sunset Crater	289	273	---
Tonto	876	812	---
Tumacacori	1,700	1,687	899
Walnut Canyon	647	314	---
White Sands	5,706	---	---
Wupatki	146	101	12
Yucca House	---	22	---
Actual Reported			
Registration	18,830	12,700	7,023

The 15 monuments which reported both in 1935 and 1936 showed a decrease from 12,678 to 12,529--149 visitors, or 1.1 percent.

The 10 monuments which reported both in 1934 and 1936 showed an increase from 7,023 to 9,495--2,472 visitors, or 35.1 percent.

However, the supposed decrease in 1936 probably is explained by more accurate counts now being taken; for all monuments at which accurate counts can be kept (except outlying ones such as Gran Quivira, Pipe Spring, and Canyon de Chelly) showed substantial increases. Our conclusion, therefore, is that the monuments received in April, 1936, about 35 percent more visitors than in 1934; about 20 percent more visitors than in 1935.

## CONDENSED REPORT (CONT.)

### 000 GENERAL

#### 010 MATTERS OF UNUSUAL IMPORTANCE

White Sands: Seventy-five carloads of people---some from as far away as 100 miles---traveled an estimated 25,000 "man miles" to attend Easter services at this monument. It was visited by a total of 1,558 visitors that day. See page 248.

Wupatki: See page 255 for progress in preparation for the Navajo exhibit June 6 and 7.

#### 020 WEATHER

Summer has almost arrived for our southern monuments, although Chiricahua received a little snow the first part of April and Gran Quivira was visited by a dust and a snow storm. Weather in the north has been variable, but has been conducive to travel save at Pipe Spring which was visited by a near-hurricane (see page 264) and Canyon de Chelly. The range appears somewhat dry, but there seems to be plenty of moisture in the regions around Tonto and El Morro.

### 100 ADMINISTRATIVE

#### 120 MONUMENT INSPECTIONS BY SUPERINTENDENT PINKLEY

Tumacacori: With Chief Engineering Aide Tovrea, Superintendent Pinkley visited this monument April 8, and discussed various architectural and historical problems with the local staff.

#### 122 INSPECTIONS BY SPECIAL FIELD REPRESENTATIVES

Junior Naturalist King: inspected Tonto April 5, Montezuma Castle April 6, Aztec Ruins April 7. Visited Tumacacori March 31, Walnut Canyon April 8, and Bandelier April 9 and 23.

Associate Engineer J. H. Diehl: Made inspections at Gran Quivira three times, White Sands three times, also Bandelier.

Artist Lawrence Moffett: Of Field Division of Education at Aztec and Wupatki.

Regional Wildlife Technician Borell: Walnut Canyon April 10; Bandelier April 13-19.

#### 123 MONUMENT INSPECTIONS BY NATIONAL PARK OFFICERS

Mr. Frank Kittredge visited White Sands.

Mr. W. H. Wirt visited Pipe Spring.

### 180 CIRCULARS, PUBLICITY

Headquarters: Prepared Southwestern Monuments Special Report No. 3,

## CONDENSED REPORT (CONT.)

### 180 CIRCULARS, PUBLICITY (CONT.)

"Sunset Crater Geological Report," by Vincent W. Vandiver. Prepared 300 informational leaflets for Pipe Spring.  
White Sands: "Denver Post" ran a picture of White Sands in the Easter Photogravure section. See page 250.  
"El Paso Times" gave publicity to Easter services at the "Crystall Bowl." See page 250.  
White Sands was mentioned in "Colliers," April 11. See page 250.

### 200 MAINTENANCE, IMPROVEMENTS, NEW CONSTRUCTION

#### 210 MAINTENANCE, UNUSUAL

Capulin Mountain: Road to crater in very bad shape. See page 263.  
Casa Grande: Leathers in water pump and armature in Kohler had to be replaced. Money spent this year on repairs to electric system would have paid electric light bills (using USIS power line) for years to come. Sewer system still a health menace, particularly as weather becomes warmer. See page 274.  
Chaco Canyon: Removal by University of New Mexico of their power line makes immediate replacement necessary. See page 268.  
Montezuma Castle: Picnic tables being painted.  
Pipe Spring: One-third of Upper House roof blown off by high wind. Repaired and new roof anchored by custodian. See page 264.  
Tumacacori: Pump Valves clogged. Repaired with relief labor. See page 261.  
Wupatki: Pipe line of Wupatki Spring clogged and was flushed. Is inadequate and needs replacement badly. See page 253.

#### 220 IMPROVEMENTS

Pipe Spring: Army is rehabilitating the meadow pond for a swimming pool. Is temporary in character. See page 274.  
Tonto: New latrines finished and painted. Old ocotillo fence taken down. See page 276.  
Walnut Canyon: Entrance signs of Highway 66 put up. Warning sign on ruins trail installed. Registration stand repainted dark green to lessen name scratching. See page 258.

#### 230 NEW CONSTRUCTION

##### Bandelier E.C.W.

1. Museum construction restarted. Vigas in place and portion of aspen ceiling in place.
2. Quarters No. 1 to be ready for occupancy May 18. Cabinet work progressing. All other finishing work completed, and paint crew busy.
3. Excavation, footings, fireplaces finished on Quarters No. 2,

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CONDENSED REPORT (CONT.)

230 NEW CONSTRUCTION (Cont.)

- and walls at three foot height.
4. Rock quarry worked all month.
  5. Sign crew in operation all month.
  6. Some planting around Administration and Utility buildings.
  7. Progress was slowed due to diminished crew of only 60 men available for work. Ranks are now refilled.

Chiricahua ECW. See page 262.

1. 600 additional feet constructed on Massai Point-Balanced Rock Trail, making total of 1600 feet.
2. Echo Trail now complete for 6,000 feet.
3. Poles set for  $2\frac{1}{4}$  miles on Massai Point-Portal telephone line.
4. During first two weeks of month 70 trees were planted on camp ground and adjacent area.
5. Excavation for buildings in utility area started April 23.
6. Seventy additional enrolles arrived April 25.

Gran Quivira: Satisfactory progress on pump. Water has cleared sufficiently so that it is being stored. See page 247.

300 ACTIVITIES OF OTHER AGENCIES IN MONUMENTS

320 COOPERATING GOVERNMENT AGENCIES

Yupatki: National Forest Service has delivered two sets of steel rail cattle guards for western boundary. Trail Foreman Brewer will furnish labor of installation. See page 253.

330 COOPERATING AGENCIES OTHER THAN GOVERNMENT

Chaco Canyon: University of New Mexico began construction of their headquarters building south of Chaco Wash April 13. See page 268. Soil Conservation Service have accomplished much work in Hundo Pavi Canyon. See page 268.

Yupatki: Museum of Northern Arizona very kindly loaned 26 bird skins to aid in field identification of species and banding. See page 254.

350 DONATIONS AND ACCESSIONS

Aztec Ruins: Three case exhibits delivered from Field Division of Education at Berkeley: (1) History of Aztec Ruins, (2) Prehistoric Peoples of the Southwest, (3) Tree Ring Exhibit. Custodian Faris reports he is very pleased with them. See page 271.

Pipe Spring: New donations are an old wood chisel and a photograph of Dudley Levett, one of the original group who gave the name to the Monument. See page 266.



## CONDENSED REPORT (CONT.)

### 400 FLORA

El Morro: Pinyons heavily loaded with small cones. Promise heavy crop of nuts next autumn. See page 277.

Wupatki: Common names of identified plant specimens being worked up for trailside label copy. See page 254.

### 430 ARCHEOLOGY

Bandelier: A hitherto unmentioned group of eight to ten cave rooms discovered half mile upstream from Ceremonial Cave. Best preserved front section thus far reported from Frijoles Canyon. See page 281.

Saguaro: Large Hohokam site on the monument needs more adequate protection. See page 260. Ranger reports interesting old lime kilns supposedly associated with Camp Lowell in 1873. See page 260.

Wupatki: Room 7 which contains restorable sherds and possibly other artifacts needs work by archeologist-trowelman to save material which is washing out. See page 254.

### 460 BIRDS

General: 108 new birds banded in monument banding stations during the month. Fine record turned in by new station at Pipe Spring.

Walnut Canyon: See page 258 for April bird notes. Wild Turkey seen on east entrance road.

Wupatki: See page 254 for April bird list.

Bandelier: See page 322 for April bird notes.

### 470 ANIMALS

Bandelier: Beaver have left recent workings, apparently. See page 280.

Gran Quivira: Unusual number of rattlesnakes. Custodian sees two to four a day near buildings and ruins. Is forced to control. See page 248.

Wupatki: Five antelope seen near Merriam Crater. See page 254.

## 500 USE OF MONUMENT FACILITIES BY PUBLIC

### 530 (NEWSWORTHY VISITORS

Aztec: Governor Tingley of New Mexico

Bandelier: Dr. Warren G. Hubert, College of the City of New York; Fred C. W. Parker, secretary of Rotary International; Mr. and Mrs. Raymond V. Ingersoll of Brooklyn, N.Y.; Dean H. E. Hawkes, Columbia University.

Casa Grande: James E. Van Zandt, national commander of Veterans of Foreign Wars; Col. Frank Van Vleck, one of founders of Sigma Xi, national scientific fraternity; W. B. Hare, U. S. Weather Bureau; Charles Amsden, author, and secretary of Southwest Museum; John McGregor, dendrochronologist of Museum of Northern Arizona.

CONDENSED REPORT (CONT.)

530 Newsworthy Visitors (cont.)

El Morro: Frank Vesely, New Mexico Commissioner of Public Lands.

Saguaro: Dorothy Disney MacKaye and Milton MacKaye, authors.

Tonto: Prince Shah Mir, Tiflis, Caucasus; Prince and Princess Czetwertynski, Warsaw, Poland; Elmer Rising, Harvard University.

Tumacacori: Frank Van Vleck of Navy Department; Dr. Homer L. Shantz, President of University of Arizona; Leo Borah of National Geographic Magazine; A. R. Grosherd, H. D. McVary, and A. A. Sundin of Mt. States Tel. & Tel. Co. Mr. and Mrs. H. F. Brett of U. S. Veterans Facility, Legion, Texas.

White Sands: Signal Corps commanded by Major McDonald practicing sending and receiving radio messages in unique conditions; Dr. Crosby, Dr. Cornell, Dr. Bishop, and Miss Wright of U. of Rochester, studying entomology; Prof. A. N. Seyre, USGS; Dr. Ross Calvin, author of "Sky Determines;" Dr. Fegtly, dean of U. of Arizona law school.

Wupatki: Viscount Leopold Leiboriski of Czecho-Slovakia; Prince and Princess S. Czetwertynski of Warsaw, Poland; Tony Richardson, western author; Carl Beck and Maxwell Yazzie of SCS; Mark Radcliffe and Tom Dodge of USIS.

600 PROTECTION

610 POLICE PROTECTION

Montezuma Castle: Name "Ruth" scratched on plaster afternoon of April 19 or 20. See page 270.

620 FIRE PROTECTION

Walnut Canyon: 500-acre fire burned to within two miles of boundary. See page 258.

900 MISCELLANEOUS

MAIL COUNT:

Incoming:		
Government	1,369	
Personal	<u>714</u>	
Total Incoming		2,083
Outgoing:		
Government only	1,834	1,834
Telegrams:		
Incoming	43	
Outgoing	<u>45</u>	
Total telegrams		<u>88</u>
TOTAL CORRESPONDENCE HANDLED		<u>4,005</u>

Cordially,

*Frank P. ...*

# REPORTS FROM MEN IN THE FIELD

## GRAN QUIVIRA

By George L. Boudney, Acting Custodian

Visitors for the month equal 229.

The last ten days of the month the weather has been fair but the fore part was windy with much dust. On the 5th we had quite a heavy snowstorm which left the roads in bad shape when it started to melt.

Engineer Diehl was up inspecting the new pump and pressure system three times during the month. He seemed to be well satisfied with the progress Mr. Gipe is making with the well, and the water is sufficiently clear to begin pumping into the tank today.

Have started a general cleanup of the mission and grounds. The rattlesnakes are very plentiful. With the stone wheeled away and the grounds thoroughly raked think I can keep the snakes at a distance from the buildings. The paths leading to the south plaza and those winding thru the pueblo ruins am making 6' wide so there will be little danger to those walking in the paths.

The snakes---probably owing to higher altitude---are smaller than the desert varieties being three and three and a half feet long, and occasionally a "side-winder."

Last Friday I took the high school students to Quarai, the old mission and pueblos 12 miles northwest of Mountainair. There were 16 of them and all seemed to enjoy the outing. Mr. and Mrs. Baker took us thru the ruins and gave a very interesting talk on the old mission. The work there has been done by CCC boys. The old church and monastery have been cleaned out, picnic grounds provided and, though smaller and less imposing, many visitors are coming there from all over the state. The Bakers leave next week to take charge of excavations at another project, but they think a local caretaker will be appointed.

A great many birds, many of them new to me, are visiting the locality; immense flocks of Evening Grosbeaks are especially noticeable.

A Parent. Teachers Association has been formed in the village and with my projector am going to put on a number of pictures of parks, monuments, wildlife, etc. I gave a talk on Tumacacori when I was up here the first time and they seem quite anxious to continue the lectures.

This monument is dependent on good roads---something they have never had up here during the major portion of the year. Once the road question is solved, there will be no end of visitors to this monument.

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# WHITE SANDS

By Tom Charles, Custodian

I was about to say that I hope you have had the flu, but it doesn't seem to be the proper "approach." If you have had it and the fever that hangs at 100 to 101 degrees for weeks, with a potential flare of another two degrees and a bulldog determination not to recede one point, not even under an ice pack, then it will be easy for me to make you understand why there are so many things I have not done the past two weeks. If you haven't had the flu, I can't make you understand anyway.

One of the things I missed was the opportunity to take Chief Engineer Kittredge and Jack Diehl over the dunes and down along the east side of the old lake bed, between the Sands and the lake, over the proposed "beach drive." It would have been an opportune time for the poppy fields were making a gorgeous background for Vincent Vandiver's selenite hills. There is some other flower over there, too. I do not want a "run in" with the botanist but there are thousands of acres of a red flower as brilliant as the painted-cup. The stems are 18 inches to two feet tall and they grow higher along the foothills than the poppies, beginning where the poppies leave off.

By the way, do poppy fields mark battle grounds? It was along this old Mexican ox cart trail to the west of the White Sands that two or three companies of Negro soldiers were attacked by the Apache Indians in the early sixties. The few remaining Negroes finally took refuge at Hospital Springs at the northwest corner of the monument and the poppies grow back along the trail for a dozen miles or more.

I missed the visit with Major McDonald and his Signal Corps of armored trucks, practicing the sending and taking of radio messages under the field conditions of the Great White Sands. I missed Dr. Crosby and wife of Cornell, and Dr. Bishop and Miss Wright of the University of Rochester in their search for new types and "new styles" in insect life which is so plentiful at the edge of the Sands.

Worst of all, Boss, I missed the Easter service. I see a smile spread over some of the office "mugs" as they read that line but it was an UNUSUAL service. Seventy-four carloads of people attended and drove over 25,000 man miles to attend. Many of them came distances of over 100 miles. The service was opened by assembly singing of the Doxology, then America, led by the Alamogordo Rotary Club. Reverend E. E. Baird, presiding, then said:

"Here we find ourselves in a vast expanse of God-made beauty. Its very whiteness and purity are suggestive of the purity of God's original creation. Whatever of contamination and corruption there is in the world came into it by the hand of man. But the purity of these white sands and the brightness and joy of this Easter morning reminds us of Him whose

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## WHITE SANDS (CONT.)

resurrection we are met to commemorate---Our Lord and Savior, Jesus Christ."

After the opening prayer there was singing, both solos and by the assembly and a short sermon by Dr. J. M. Perry, recently of Dallas, Texas. Even considering the early hour I was sorry to have had to miss it.

All day long the Easter-egg hunters were tearing up the sand hills out by the turn-around. One thousand and thirty nine people were counted at the end of the road in seven and a half hours. Adding the usual percentage which stops along the 20-mile front, we had 1558 visitors on Easter.

Barry counted cars 15 days this month: March 25, 26, 27, and 31, April 1, 2, 3, 7, 8, 9, 14, 15, and 16; a total of 93.5 hours or 7.2 hours per day. He counted 564 cars or an average of 6.33 cars per hour through the monument. Applying this on the basis of 14 hours per day we had 2,127 cars through the monument on the 24 week days. Former counts show that these cars carry an average of four people per car; therefore, we had 8,508 people through the monument in the 24 week days and 36% of them stopped and played in the Great White Sands, a total of 3,063 week day visitors. Our Sunday count shows as follows: March 22, 309; March 29, 160; April 5, 176; April 12, 1,558; and April 19, 443.

Week day visitors	3063
Sunday visitors	2646
Total	5709, from Mar. 21 to April 20, incl.

Our Sunday cars carry an average of 4.76 people per car.

From now on I guess I am going to have to arrange for a night count. If I add that to my present duties will you give me "overtime?" Last Saturday the boys turned in their count at 4 p.m. and after that a State College group came over from Las Cruces, staged a soft ball game and a wienie roast. There were about 50 in the party. The next morning there was evidence of several other good sized parties at the Sands the night before. My estimate is that over half of the attendance at the Sands for the next five months will be after 4 p.m.

Among the distinguished visitors this month were Chief Engineer Kittredge of San Francisco; Prof. A. N. Sayre, formerly of Kansas University and Pennsylvania State, now with the U.S.G.S; Major McDonald and his squad of 30 signal service men of the U. S. Army; Dr. Crosby and wife of Cornell; Dr. Bishop and Miss Wright of University of Rochester; Dr. Ross Calvin, author of "Sky Determines," and Dr. Featly, Dean of the Law School, University of Arizona.

## WHITE SANDS (CONT.)

On Easter morning the Denver Post carried a 6 x 8 photogravure picture of the White Sands with a picture of Old Faithful of the Yellowstone and Point Imperial of Grand Canyon, under the title: "Western Wonderlands." By the side of the Sands picture were the following lines: "Shadow seams in wind woven fabric. Intricate ripple patterns stand out in the rays of the setting sun at White Sands National Monument, Alamogordo, New Mexico."

The day before Editor Hunter said in his Personal Column of the El Paso Times: "Alamogordo will have an Easter service absolutely unique; there will be a sunrise song service in the "Crystal Bowl," in the very heart of the White Sands, reached by the new highway which penetrates far into this wierdly white fairyland..... No other crowd, anywhere in the world, will assemble in such a setting as the Crystal Bowl in the White Sands National Monument."

Jim Marshall, special writer for Colliers, in his "Untaming the West" April 11, was apologizing for his eastern friends not getting off the paving: "We fooled 'em one place," he quotes Joe Bursey of the Tourist League, "We built a highway right past the White Sands, one of the Natural Marvels of the state and they had to look at it."

Dr. Ross Calvin of Silver City who made such elaborate references to the White Sands in his book, "Sky Determines," last year was at the Sands again Tuesday gathering additional information and new inspiration for a new book which will be published soon.

Everything now points to a record crowd for the Annual Play Day, May the second. Thirty-two hundred Otero County children are on their toes, nearly a dozen towns are cooperating through their schools and divic organizations to make this a real get-together meeting for the entire southern part of the state. Let's hope for favorable weather and not too hot.

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## CANYON DE CHELLY

By Robert R. Budlong, Custodian

This custodian was mistaken last month when he thought that the month of April would mark the beginning of the visitor season at this national monument. Weather was fickle, and succeeded in discouraging visitors.

Total number of visitors during the month, 22. Of these, 17 persons viewed the canyon from the rim, 3 descended the White House Trail; 2 rode horseback within the canyons for a short distance. Total time, 615 minutes; total trips, 4; average time per group, 215 minutes. To break down these figures still further: Rim view trips, 4; total time, 615 minutes; average rim trip, 154 minutes. Horseback trip, 1; total time, 420 minutes (seven hours.). Trail trips, 2; total time, 480

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CANYON DE CHELLY (CONT.)

minutes; average trail trip, 240 minutes.

Now, Boss, you see why we need personnel. Each group averaged three persons. There were only seven groups. Total, 22 persons. Personnel stationed here, 1. (If the H.C.W.P. reads this, I'll alter that last figure to  $1\frac{1}{2}$  as a special concession). Last June, for example, we had 179 visitors. Let us suppose this meant 60 groups, average time 216 minutes, as was the case this month. Or total time of 216 hours. Figuring eight-hour days (which we don't) that gives us 27 days of time. But the records indicate that those 179 visitors were here on only 20 days. If we spent those 20 days, all day long with visitors (eight-hour day) we would have a total of only 160 hours, and the first figures showed 216 hours taken. It comes to around 11 hours each day, for 20 days. Now, let's figure a visitor increase of 100 per cent in the near future. If they averaged this month's time per group, and persons per group, and in June we get 350 visitors in 20 days, we get 120 groups, average time 216 minutes, total time taken in taking care of those visitors, 432 hours. That will mean that we'll be giving good service to visitors  $21\frac{1}{2}$  hours a day. Now, if someone will PLEASE refer this matter to Dale King, who speaks of a day a week off, to Johnwill Ferris, who says he doesn't know what a day a week off is (I'll bite, what is it?), to Headquarters, with gates opened at 8 a.m. and closed at 5 p.m., and then to the Washington Office and the Bureau of the Budget, I'll appreciate it.

Weather was not so good during the month. We had .10 inch of precipitation, over a period of three days. We had a trace of snow, several sandstorms, and a thunder shower. Maximum temperature during the month, 83 degrees, on the 14th; minimum, 15 degrees, on the 2nd, 6th, and 7th. Roads are now very rough, and were totally impassable for several days, due to rain and snow on the mountains between here and Gallup. Peach trees within the canyons have bloomed, and cottonwoods have good-sized leaves on them. The canyons have been discharging much water, and have been impassable the entire month.

Work on the water reservoir was completed during the month, and it is now completely patched, waterproofed, and ready for water. I have brought in some of the pumping machinery from Gallup, have ordered pipe, and as soon as it arrives, the work on the laying of the line from well to water reservoir will begin. The pipe should be out some time within the week.

Norman Jackson, of Montezuma Castle, paid us a fine visit during the month. We wish he might have stayed longer, and are going to expect him to visit us again when the canyons are passable. I'm sure we can readily convince him that here we have the "finest National Monument in the entire Park Service," if he is not already so convinced.

On the 8th we had the great pleasure of a visit by Mr. and Mrs.

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## CANYON DE CHELLY (CONT.)

D. O. Johnson, of West Portal, Colorado. Mr. Johnson is District Forest Ranger at West Portal, and we are hoping that they, too, may be able to return here when we can get them within the canyons by car or horse.

On April 22, Ranger Robert Hart of Aztec Ruins, and Mr. John A. Frost, of the U.S.G.S., paid us an all-too-brief visit. The H.C.W.P. took them up on the rim and down the trail. They are anxious to return when the canyons become passable, and we are anxious to have them do so. I understand that Johnwill sent Ranger Hart over here to see a REAL Monument. Mr. Hart was appalled at the size of this Monument, for which he could hardly be blamed, being so used to a Monument more in the nature of a sidewalk alongside a paved highway. C'map and see us sometime, Johnwill!!

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## WUPATKI

By James W. Brewer, In Charge

### 500 Use of Monument Facilities by the Public

71 guests registered at Wupatki Pueblo; 108 at the Citadel Group; 33 names are duplicated, leaving a total of 146 registered visitors to this Monument in April, 1926; 1935, 101; 1934, 12.

Of the 24 parties who visited Wupatki Pueblo I contacted only 13. This is largely due to my having to spend so much time away from the Pueblo itself repairing road failures of the P.I Chevrolet.

States were represented as follows: California, 21; Arizona, 15; Texas, 4; New York and Illinois, 3; Pennsylvania and New Mexico, 2; Oklahoma, Missouri, Maryland, Colorado, Rhode Island, Washington and the District of Columbia, each 1. Foreign countries: China, Australia, Poland, and Checho Slovakia.

### 530 Newsworthy Visitors

Prince and Princess S. Czetywinski of Warsaw, Poland, at the Citadel on the 5th.

Viscount Leopold Leiboriski of Checho Slovakia (his spelling), also on the 5th.

Mr. Oakley of Soil Conservation Service on the 22nd.

Mr. and Mrs. Tony Richardson on the 22nd; Tony Richardson was born and raised on the Reservation and has written historical articles and western stories.



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## WUPATKI (CONT.)

On the 24th Mr. Carl Beck and Maxwell Yazzie of S.C.S. brought Mr. Mark Radcliff and Mr. Tom Dodge of U.S.I.S. to the Pueblo to ascertain the location of the camp of Pashlacai Etsedi. Sallie guided them over the back roads to the hogan.

### 100 Administration

#### 123 VISITS BY N.P.S. OFFICIALS

On the 21st Artist Moffett of the Berkeley office took detail for the Wupatki model under construction.

We had a very pleasant luncheon with Project Superintendent Hub Chase and Mrs. Chase on the 23rd.

And a good but too short chat with Junior Park Naturalist Dale S. King on the 24th. Relying solely on my faulty memory, Dale is the first headquarters visitor we had had since January 11!

### 020 Weather

March 25 to April 1: high 68 degrees, on the 31st; low 26 degrees, on the 27th; precipitation, trace on the 31st. Four cloudy and two extremely windy days. April 1 to 24th: high 90 degrees, on the 24th; low 25 degrees, on the sixth; four overcast cloudy days; on the 13th and all succeeding days billowy cumulus clouds gather in the P.M.; two traces of precipitation, on the 4th and 18th.

### 210 Maintenance, Unusual

On the 17th the three-quarter mile pipe line from the spring to the stone tank became clogged. The fault being with the catchment basin, I tore the stone slab cover off and cleaned out the basin and flooded the pipe line with clean water.

The basin should be covered with concrete box and removable trap door. If the pipe were to clog permanently it would entail considerable expense as well as inconvenience. The line is old and the joints are rusted together so that cleaning would be impossible. I think some provision for improvement of the "water system" should be included in the budget.

### 300 Activities of Other Agencies in Monument

#### 320 COOPERATING GOVERNMENT AGENCIES

The National Forest Service (Coconino Forest) has delivered to the fence line gate two sections of steel rail cattle guard. As per my agreement, upon arrival of the understructure I will offer

## WUPATKI (CONT.)

labor (personal).

### COOPERATING AGENCIES OTHER THAN GOVERNMENT

The Museum of Northern Arizona has very kindly loaned us 26 bird skins to aid in field identification and banding. The majority are sparrows.

### 400 Flora, Fauna, and Natural History

#### FLORA

A list of common names for our identified plant collection has been forwarded by Ranger Charlie Steen. We hope to get some labels for the trail-side specimens.

#### 430 ARCHEOLOGY, HISTORY

Room 7 is badly in need of a trowelist. Please send us a ranger qualified to remove the many restorable sherds.

#### 460 BIRDS

The Western Robin seems to have departed; none has been observed since the 7th. Other birds observed during the month are as follows: Townsend Solitaire (banded 29); White-rumped Shrike; Pinyon Jay (increasing); Red Shifted Flicker (not observed since the 6th); Brewer Sparrow; Western Redtail Hawk; Golden Eagle; Say Phoebe; Gambel Sparrow (escaped from gathering cage); Brewer Blackbird; House Finch; Rock Wren; desert Black Throated Sparrow; Meadow Lark (Western?).

#### 470 ANIMALS

Sallie reported five head of antelope near Merriam Crater on the first.

Tony Richardson saw seven head between Wupatki and Sunset Crater.

On the 16th our road was obstructed by a porcupine who refused to move; I got out to take his picture, which of course proved he would move if I wanted him still.

### 900 General

After many hours of coaxing milcage, after much uncertainty about ever getting back, the pickup has finally gotten beyond my control. One by one the plugs quit, until none could produce a spark of encouragement. I pulled the timing system apart and put most of it

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## WUPATKI (CONF.)

back where it belongs, but must have misplaced something because when I turned the motor over it burst into flame and I had to use a fire extinguisher to save it. I think now I should have saved the fire extinguisher. But then maybe we can get some replacement parts from the National Museum.

With this thought in mind Sallie, her brother Jack, and I proceeded to tow the remains to Flagstaff with Sallie's car. Three miles from the Pueblo the strain began to show on the roadster; around the next corner the fuel pump went the way of the tow-ees sparks and we were afoot. We worked over it until noon but, because of the bad company it was in, it too refused to function. We finally walked back to the Pueblo and lunched; then Jack, who had to return to Tucson and school that day, walked to Highway 89 (14 miles). He got a ride and located Don and Marie Erskine who helped us to tow and rehabilitation of Sallie's car.

## NAVAJO EXHIBIT

The area selected for the Navajo Exhibit lies directly south of the quarter corner marker on the north side of Section 30, T 25 N, R 10 E. Fingers of Moencopi sandstone hide this site from the Monument itself; it is in a natural basin with an inconspicuous opening into Deadman's Wash on the northeast. Here is little vegetation (typical Navajo country). The floor of the basin is a mixture of cinder and sand. In the west central part of the floor the hogan will be constructed. This will then naturally face the display area to the east. The pine posts are now on the ground and as soon as a couple of forked pines are hauled in and peeled the hogan will be built. Some juniper posts have already been hauled to the site and are ready to use in constructing brush shelters. I am trying to get some pine siding with which to build portable rest rooms that can also be used as Monument property during the balance of the year.

I have reclaimed the three road signs furnished by the MCA to indicate the Monument boundaries and lay down the law; I intend to repaint them and place them at the highway on the days of the exhibit.

Here I'm going to turn things over to Sallie who will tell you something about the exhibits and prospects.

I've been very cautious, even in my private expectations, about the quantity and quality of the exhibits in this first attempt; we probably won't know two weeks before the date set whether we'll have 15 or 50 rugs. But we do know by now that our friends of Wupatki Basin completely understand our wish for a simple exhibit of the best craftsmanship of the Navajos; there was some natural confusion at first with the more usual "see-the-strange-Indian-and-his-odd rugs"

type of affair, to which the Indian is brought by promise of payment, food, gambling, etc. We want to play on their interest and pride of workmanship, and offer them examples of good work, old half-forgotten crafts, etc., and a probable market for their products. Working from that angle, we won't have as many Navajos the first time as would come if there were horse-racing, etc., but we are sure that in the long run our purpose will be served much better.

Of course this is a busy time of year for them--lambling just over, and shearing to come--but the winter is a favorite time for weaving, and next year we hope they will have most of their exhibits ready before the flocks take most of their time.

The children have been the most active contributors so far; nearly every one of them seems to have some aptitude at leather work, carving, drawing.

The local medicine man has promised to bring some "old things"; we are anxious to have good examples of pots, baskets, old type blankets, as well as newly revived vegetal dyes to show the Navajos; it is fun to see their interest in the things most of them have forgotten how to make. Van Valkenberg loaned an old dress which we haven't been able to keep as a surprise---by now I think everyone has been up to see it. Dr. Colton has offered to loan a few old blankets from the Museum; we would be very glad to get any such material. And we're hoping that any of you who can will come and see our "show."

P.S. The exhibition hogan will be a "5 and  $\frac{1}{2}$  axe hogan." The hogan usually built for nite dance or mountain chant is a "six axe hogan." The unit of measure being the length of an axe handle!

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## SUNSET CRATER

By James Brewer, In Charge

289 visitors registered at Sunset Crater National Monument this month; 1935, 273; 1934, no record.

States were represented as follows: California, 76; Arizona, 33; New York, 5; Illinois; Kansas, 4; Ohio, Texas, 3; Oklahoma, Washington, New Mexico, 2; Vermont, Idaho, Indiana, Oregon, Rhode Island, Georgia, 1 each. Foreign countries: Poland and Belgium.

On the 15th Sallie, Jack and I drove to this monument to give it a spring cleanup. All cans, rags, bottles and litter were loaded into the roadster and hauled to Wupatki's dump pile.

We climbed to the Crater and while Jack walked around it I descended into the crater. When we met at the saddle on the west ridge each of us

## SUNSET CRATER (CONT.)

had a collection of volcanic specimens and Sallie a collection of plants.

Jack took a fragment of each numbered specimen to Tucson where he will have them analyzed for our identification. After a cleanup at the minor squeezing-up we hauled our load to the Pueblo.

I hope to soon get into a huddle with Geologist Vandiver and order directional and informational signs for Sunset visitors enlightenment.

The cinders are very dry and roads are loose and bad.

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## WALNUT CANYON

By J. Donald Erskine, Park Ranger

The travel figures for Walnut Canyon for the month of April reached 647, nearly double the total for March. Education contacts were made with 360 of these, and contacts other than educational were made with 45 more.

The travel was mostly from Arizona and California with California showing 183 visitors to Arizona's 228. The rest of the travel was spread out among 23 other states and several foreign countries. The foreign countries represented were: Philippine Islands, the West Indies, Holland, Argentina, South Africa, and Poland which contributed a Prince and Princess S. Czetwertynsk.

We were honored by visits from quite a number of Park Service people. First to arrive were Dale King and his mother on April 6. On April 10 Wildlife Technician Russell Grater, Ranger Natt Dodge, Ranger and Mrs. Worley, all from Grand Canyon, visited the Monument. On April 13 Ranger Duane Jacobs and family from Yosemite were here. Then on April 16 Chief Ranger Brooks and Mrs. Brooks from Grand Canyon stopped to see the ruins. On April 17 Ranger-Naturalist Paul Nesbitt stopped en route to Yosemite. On April 23 BCW Project Superintendent Chase and wife from Bandelier National Monument were here while I was taking a day off to see the Grand Canyon. And then I suppose I should include the two visits by Sallie and Jimmie Brewer from Wupatki on April 9 and 19. On the 19th I towed Jimmie's Chevie in from Wupatki with my own Chevie. Jimmie, I'm sure, joins me in wishing that sometime the Park Service will feel inclined to buy some good cars.

The weather on the whole has been good during the month. Since the first week of April the days have been warm and sunny and apparently typical summer weather without the thunderstorms. The first two weeks of April were very windy with snow two days during the first week. The past week has seen cloudy but warm weather. During the bad weather I have had to pull two cars out of the mud on the East Entrance Road.

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## WALNUT CANYON (CONT.)

During the month I put up the official Park Service Entrance signs at both the East and West Entrance Roads, where they meet U. S. 66, and I think they will help travel considerably as they are much more readable than the old signs. Also the official Park Service warning sign was placed at the parking area where all must see it before going to the Lookout Point of the Ruins. The stand in the Lookout where the registration book is kept was painted green in the hopes that a darker color would discourage those who feel the urge to write or carve their names in improper places.

Since the weather has been nice many picnic parties have used the Monument facilities. Only one camping party stopped during the month when three girls from California spent the night in the camp ground April 7. Also a picnic party appeared one night at nine o'clock and stayed until after eleven. On April 9 in the afternoon I was at the Lookout when I heard the strains of a beautiful chorale coming from the direction of the Ranger Station. Upon investigating I found the A Cappella Choir from Arizona State Teachers College practicing in the little canyon in front of the Ranger Station. They were rehearsing the numbers they were to use at the Easter Sunrise Service at the Grand Canyon. It was a real treat to be able to hear them, and to meet the Director, Eldon Ardrey, I wish they would come every week, as both Marie and I are very fond of choral music.

On April 16 a request from the Stafford Grade School at Stafford, Kansas, was answered with a letter describing Walnut Canyon and the National Park Service.

Unless we have more rain or snow within the next month, I'm afraid that Paul will have to haul all his water from town. On April 2 I went down into the cistern to investigate the water depth, and found it only two feet deep, and now it is only one foot deep. While down at the bottom I removed a mouse that had fallen in. Incidentally we are not using cistern water for drinking purposes.

Also while on the subject of water I might mention that the ground cover now is very, very dry. Yesterday, April 24, I noticed smoke rising in the west about one o'clock. It looked very distant, so at first I paid no attention to it, but as it grew steadily worse I decided to investigate. My phone being out of order it was necessary to go to town to find out from the Forest Service where it was, and by that time it had swelled to large proportions and seemed to be up Walnut Canyon several miles from the Monument. After ascertaining its location, I hunted on many side roads until I found the head of the fire. The Forest Service had had men on the fire since eleven in the morning, but they hadn't sent enough men at first, and it got out of control when the wind came up in the afternoon. About the time I arrived two loads of CCC boys arrived. By seven o'clock last evening the fire was entirely circled and fairly well under control, so I left it to the Forest Service men to finish.

## WALNUT CANYON (CONT.)

The fire burned over at least 500 acres and burned to within a short distance of Walnut Canyon about two miles above the monument. With the high wind I was somewhat worried that it might reach the Monument, but about six in the evening the wind died down and the fire with it. The cause of the fire was a burning truck belonging to a wood-cutter, who was badly burned himself in attempting to extinguish the truck.

Bird banding this month shows very meager results with 1 Shufelt Junco, 4 Red backed Juncos, and 1 Pigmy Nuthatch being banded. As yet the birds are not entirely dependent on us for water, so I haven't thought it wise to set up the water trap. However, more are coming for water each day, so it will soon be profitable to set it up.

The Sparrow trap is worthless now, as a pesky chipmunk chases the birds from it each time I bait it, and then promptly gets caught himself. At present most of the water I put in the bird bath is consumed by hundreds of bees.

The nature notes I have put down are as follows: March 27 a coyote seen on the East Entrance Road; March 28 Chestnut backed Bluebirds first seen; April 8 several Rock Wrens were seen in the canyon; April 9 saw many Violet Green Swallows and White-Throated Swifts flying in the canyon; also April 9 a Coshawk flew low through the trees in front of the Ranger Station; also April 9 I noted many lizards and several horned toads, with the numbers increasing daily since; April 11 an unidentified hawk sat in the bird bath for a half hour; April 15 saw several Slender-billed Nuthatches, a pair of Mearns's Woodpeckers, and a pair of Ruby-crowned Kinglets drinking at the bird bath; the same day a state highway patrolman reported seeing a Wild Turkey on the East Entrance Road; it occurred to me that the Robins must be mating now as they sing until quite late; April 16 two Lewis Woodpeckers drank at bird bath; April 17 several Western Chipping Sparrows were seen foraging in the back yard of the Ranger Station; April 13 I went to the bottom of the canyon and saw a pair of Spurred Towhees (have never seen them on the rim). The canyon wildflower display is just coming in and another week should see many more flowers out.

In closing I feel a deep regret that this will be the last report I will be privileged to make for Walnut Canyon. Marie and I have grown to love it here, and will be sorry to leave when we are relieved next week by Paul Beaubien.

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## SAGUARO

By Paul Beaubien, Ranger

Haven't much to report this month, and I've been interrupted a lot trying to do that. Two of this morning's visitors, Mrs. Dorothy Disney MacKaye and Mr. Milton MacKaye, are authors, and were here to learn more about cacti and rangers. Mrs. MacKaye has a serial beginning soon in the Woman's Home Companion, while Mr. MacKaye's stories

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## SAGUARO (CONT.)

have appeared in Saturday Evening Post, Redbook, etc. In a story nearing completion, Mr. MacKaye has a ranger arrest the villain for mutilating a saguaro. I suggested it would be better to have his villain arrested for shooting a deer. They departed promising to talk with you at Casa Grande, to find how "tough" a ranger should be.

Heard sometime ago that Dr. Shantz had been asked to prepare an article on the Cactus Forest for the National Geographic Magazine.

In regard to travel statistics, 681 visitors reached the ranger station, and 468 are listed as educational contacts. Probably, 1200 visited the monument. Since warmer weather, the steady "repeats" are finding a cooler place to picnic. It's unfortunate that the winter visitors did not see the desert in bloom. Some of the more showy plants are now at their best, but most easterners have departed. Have had only a car or two a day recently, but today, with some clouds and cooler weather, I've had six parties.

A few days ago, I visited a large Hohokam site, commonly believed to be on land included in the National Monument. Some one has excavated a few rooms, but there are still acres to protect or dig. I had been told there were lots of pictographs nearby but I only found a few in the short time I spent there.

Of interest also are some old lime kilns about a fourth mile southeast of the ranger station. Local informants say they were operated by soldiers when Camp Lowell was moved to a new site in 1873. (Camp Lowell became Ft. Lowell, 1879). The kilns present the same appearance as the lime kiln at Tumacacori National Monument.

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## TUMACACORI

By Louis R. Caywood, Acting Custodian

During the past month visitor travel was heavy, with a total of 1,700 to the Monument. Of this total, 1,542 received guide service while 158 used only the facilities of the Monument. Forty-two states were represented, also five foreign countries; namely, France, Italy, Mexico, Canada and Scotland.

As Tumacacori lies on the International Highway, U.S. 89, the direct route to Guaymas, Sonora, a winter playground for American tourists, it is here noted that a great many of our visitors had been to Mexico or were contemplating visiting our southern neighbor. Also a great number of Mexican visitors from the states of Nayarit, Sonora, and Sinaloa visited the Monument on their way to or from their homes in Mexico.

During the month two important events were held at Nogales which attracted many visitors to that border town and incidentally to



## TUMACACORI (CONT.)

Tumacacori Mission. One event was Frontier Nights, a bang-up celebration of the days of '49. All Nogales, both Arizona and Sonora, male citizens let their whiskers grow long and fancy and packed around young cannons while the female citizens wore the voluminous skirts and pantaloons and petite hats of the old days. This affair last from April 15 through the 19th. The other event was the 45th Annual Convention of the Arizona State Medical Association. Two hundred and fifty-eight attended this convention, which is said to be the largest number of delegates in the history of the state association. Governor B. B. Moeur addressed the convention on April 25 and on that day 75 physicians departed by special train for Guaymas, Sonora, to continue the convention on the Gulf of California.

On April 8 we enjoyed a very pleasant visit from the Boss and Chief Engineering Aide Tovrea of Headquarters. Both were a big help in showing us some of the fine points of architecture in the Mission and our only regret is that they couldn't have stayed longer. I know the Boss will say that we're never satisfied.

Other important visitors of the month were as follows: Paul Beaubien of Saguaro National Monument and his parents. Paul is our nearest Park Service neighbor and we wish we were able to see more of him. He brought some exotic cactus from Saguaro which I planted in the Cactus garden here at the Mission. Dale King of the Headquarters staff brought his mother down to see the border town and the Monument. We enjoyed their visit very much.

Mr. Frank Van Vleck of the Navy Department, Washington, D. C., was an interested visitor on April 2. Dr. Homer L. Shantz, President of the University of Arizona, and Mr. Leo Borah, a member of the editorial staff of the National Geographic Magazine, spent a short time seeing the Monument on April 6. Three officials of the Mountain States Telephone and Telegraph Company, Mr. A. R. Grosheider, Secretary and Treasurer, Denver, Colorado, Mr. H. D. McVay, Arizona Manager, and Mr. A. A. Sundin, District Manager, Tucson, were also Mission visitors. Mr. and Mrs. H. F. Brett of the U. S. Veterans' Facility, Legion Texas, Winnie's mother and dad, were our guests from April 11 to the 17th.

On Sunday morning, April 19, the windmill failed to pump anything but air. Examination of the well proved that the cribbing had fallen in and loose pieces of rotten wood had gotten into the pump valves. Lumber to make new cribbing was bought in Nogales on April 20 by Ranger Evanstad and arrangements were made through the courtesy of Mr. O. Smith, Chairman, Santa Cruz County Board of Public Welfare, for four men to report April 21 to clean the old cribbing and loose dirt out of the well and replace this with new cribbing. Four days were spent on this project and a very good job has been done under the able supervision of Ranger Evanstad.

## TUMACACORI (CONT.)

Again the deathless germs begin their lives anew: A letter recently received from Dr. Ire B. Bartle of San Luis Obispo, California, thanks us for allowing him to take samples of adobe to see if they contained spores. Following is an excerpt from his letter:

"A vigorous growth developed from the sample under the belfrey, in 24 hours with 94 colonies and 131 colonies in 43 hours. The samples from the Mortuary were much slower growth and of a greater variety of bacteria."

Now for our bird banding activities. Twenty-six new bands were used this past month in banding the following:

Arizona Cardinal .....	8
Canyon Towhee .....	3
Greentailed Towhee .....	1
Bendire Thrasher .....	2
Sny Phoebe .....	4
Western Mourning Dove .....	1
Gambel Quail .....	1
Gambel Sparrow .....	1
Western Lark Sparrow .....	4
Cactus Woodpecker .....	1

With the coming of nesting season banding activities will be discontinued for the present.

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## CHIRICAHUA

By Wm. Stevenson, Project Sup't.

Following is the monthly travel report for April.

During the month 550 visitors arrived in 150 cars. Twenty-two states and Canada were represented.

Travel was very slow during the first half of the month due to light snows and cold weather. However, since Easter, many tourists have been taking advantage of the camp grounds for overnight stops.

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## CHIRICAHUA ECW

By Wm. Stevenson, Project Sup't.

I herewith submit the following report for the month of April:

Work was discontinued on the Massai Point-Balanced Rock trail April 10 due to shortage of men; however, 600' were completed this month, making a total of 1600'. Echo Trail is now completed for 6000'.

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## CHIRICAHUA ECW (CONT.)

Poles and wire are on the ground for the Massai Point-Portal telephone line. Two and a quarter miles of poles have been set this month.

Planting in the camp ground and adjacent areas was continued for first half of the month. Seventy trees have been planted to date.

Excavation for buildings in utility area was started April 23.

Seventy one enrollees are due in today and will be available for work projects shortly after May 1.

Hub and Mrs. Chase of Camp NM-1-N, Bandelier National Monument, New Mexico, were here April 17-19 for a most welcome visit.

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## CAPULIN MOUNTAIN

By Homer J. Farr, Custodian

In reporting the activities of Capulin Mountain National Monument, for April, I submit the following:

### Visitors:

Approximately 600 visited the Monument. I have noticed several from St. Louis, Tulsa, Oklahoma City, and some from Chicago. For some reason or other Capulin Mountain appears to be going in for "big town" visitors. In spite of the road being in poor condition, all visitors go on to the top this spring and mostly take the trail and go around the rim. This is largely due, I suppose, to the fact that the weather all this month has been just like summer.

### Weather:

We have had exceedingly warm and dry weather all thru the month with only about three windy days. I believe the average temperature for the month to be fifteen degrees warmer than the average April. Although nothing is getting green, this is due solely to the extreme dryness.

### Roads and Trails:

The road is in poor condition caused by the constant falling or sloughing of rock and cinders and ash. The trails are in splendid condition, and the camp sites and camp stoves are also in excellent shape. It might be mentioned that the trails are all directly on top of the rim and they keep in good shape. The camp sites have been used a great deal this spring.

The Custodian promises at least two or three days with team giving the road a much needed dressing this next week. Although funds are not available for this work, it must be done and I am just the boy to do it.

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## CAPULIN MOUNTAIN (CONT.)

In the early days during the gold rush in Colorado, miners would work in the gold mines at half price and sometimes apparently for nothing, carrying out their pay in their shoes in gold dust. I have done the same thing on Capulin Mountain, except mine so far has mostly been cinders in my shoes, but I have enjoyed it just the same.

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## PIPE SPRING

By Leonard Heaton, Acting Custodian

Time for a report to be on its way to your office to let you know the ups and downs we have been having here at Pipe Spring. Since the last report our weather has been very changeable. The first week we had snow, sleet and rain, and a lot of wind; then we had some very warm days which lasted a week or so; then again cold days and some stormy weather, but not much storm.

On the 31st of March we had one of the hardest wind storms that I have ever experienced at this place. Commencing about 7:00 a.m., the wind began to come up and by 9:30 a.m. it was so hard and so much dirt being moved that one could not very well get around outside. The ponds that evening were as red with dirt that it looked as if it was nothing more than flood water.

I believe the height of the storm was about 1:00 p.m., when a section of the roof of the upper house was blown off. It was not just the taking of the shingles or a few of the sheeting boards, but one third or more of the whole roof in one piece, carrying it up over the tower, breaking off the flag pole and then on over the east chimney knocking off a dozen or so brick and then landing it almost down to the east rock cabin. There it was pretty well broken up. After this happened I got busy and with heavy wire, nails, boards, and hammer I went to work and tied the rest of the roof down to the ceiling and rock walls, as at times the rest of the roof would raise an inch or so from the building. I believe I have the roof tied down now so that the wind will have to take part of the rock to get the roof again.

I have everything back except the flag pole. Intend to stain the new shingles to take the newness off.

I have not had any CCC boys working on the Monument since March 24, when they finished up the Diversion Ditch, Boundary Fence, grading the Parking Area, and what they could do on the walks. It seems that Mr. Draper has the idea that the ten men were for the sixth period only and not for the duration of the camp, but I believe we will be able to get the men back again now that we have had a talk with him, and especially if we can get the money to buy the material needed for the different projects.

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PIPE SPRING (CONT.)

I will get another letter off to you regarding the visit of Mr. Wirt and Mr. Keeling and the ECW work.

I have enjoyed the bird banding work up here very much and have a page of the nature notes for the month to add to this report.

We have had several very interesting visitors this month. Among the ones that I conducted through the fort were: Mr. and Mrs. W. H. Wirt, ECW inspector; Major and Mrs. Swift, CCC Regional Commander; Captain Shrivey, new camp commander here at Pipe; Mr. Hendrix, State Superintendent of Public Instruction of Arizona. A party of the Coconino County officials were very interested in the Powell monument and Indian ruins here and said that they would do what they could to get them put into the Monument area.

Total contacts for April, 96. Local travel I estimate at 530 (have not kept a close count on the local travel). The road is in very fine condition now and it will be so that one can get through in most any kind of weather.

On March 29 about 100 of the CCC boys were shipped home, as their six months were up. This left in camp some 70-odd boys who signed for another six months. On April 18, a new bunch of boys came in, making the camp now 156. Also a new captain was sent in, Captain Packer being transferred to a Nevada camp. Captain Shrivey seems to be a very agreeable man, and I believe there will be little or no trouble between the camp and monument, as he has already expressed him self to the effect that he will cooperate in any way to meet the wishes of the monument to preserve the vegetation and even wants to plant grass, flowers and cactus, if we can give him the water. I told him that I did not think there would be enough to do any great amount of planting, but I would do what I could to get some water for part of the ground.

The Army is now working like beavers to get the meadow pond in shape for a swimming pool. It is being lined with flagstone rock and cement in the cracks, so it ought to be almost water tight. There is only one thing that I don't approve of and that is the placing of the rock upon the banks as the lieutenant is planning, but I can see his point of having something for the boys to stand on so that they will not track so much dirt back into the pond. What I have asked him to do is place the rock not higher than the water level and let the grass and weeds grow up to cover the rock edges.

Yesterday, April 23, the Utah ECW Division of Grazing sent in a bunch of trucks and truckdrivers, and they hauled out everything that belonged to the ECW even to the office supplies that had not been used, and all broken tools; in fact, they have not a thing in which they can work with, and it is not certain when new or old equipment will get in here so that boys can go back to work. The headquarters for this ECW

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## PIPE SPRING (CONT.)

camp is now in Albuquerque, New Mexico.

The trees in the camp ground are beginning to show signs of life and I do believe that I am going to get a large number of grow. It is a little early as yet to say how many are growing, and how many I will have to replant next year.

I have added to the museum collection an old wood chisel, and have the promise of the photo of Duddly Lovett who with Amon Tenny and Bill Hamblin gave the name of Pipe Spring to this place in 1856. I have also gotten the cooperation of the President of the Daughters of the Pioneers of Kanab Camp to put in a good word for the Pipe Spring Museum and have convinced her that this place is the most likely place for the old pioneer furniture and relics. I have at every opportunity asked and mentioned the museum at Pipe to old-timers and about different pieces of relics, so maybe we can get it furnished as we want it.

### Bird Notes:

I commenced trapping for birds March 31, with two Government sparrow, one woodpecker, and a warbler trap. I have also made one three-leaf-clover trap and started a four-compartment trap.

These traps I have had set in the meadow and by the old Fort. To date only the sparrow traps have caught anything of the birds trapped. I have banded 43 Gambel Sparrow, 1 Nevada Savannah Sparrow. There were several birds, mostly sparrows, that I could not determine their names so I let them go.

I have had seven repeats of the Gambel Sparrows so far. Most of them have drifted further north, and other birds are coming in. The only feed that I have been using is some of the table crumbs from the CCC Camp.

The Flycatcher is back and is making a nest in the Old Fort, this time in the east room downstairs of the lower house on some braces of the ceiling joist. Also another nest is being made on the lower porch.

Did one good turn yesterday for the birds: made a killing of seven cats. Found a nest with one old cat with six little ones so finished there on the spot. Most of the dogs have been disposed of; one hound still stays around, however. It has been taken off several times but keeps coming back, and I haven't a gun to keep it away.

Would like some cards, about two dozen, date file and 100 band number file cards.

Lizards are coming out and have tried to identify some of them, but there are so many descriptive words for each lizard that I have about decided to leave the lizards to some one else to name. When it is the

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## PIPE SPRING (CONT.)

classification I can get that, but the genera and names given to them-- well I just can't get it yet. If you don't need the lizard book for a few weeks, I may get so that I can read the description of the lizards and name some of them.

A few snakes have been found by the CCC boys and killed for the skins, which they send home or put on their belts.

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## CHACO CANYON

By Thomas C. Miller, Custodian

### General:

The approach road to the south has been passable all the month with some maintenance and construction by the Indian Service. The approach road on the north has been impassable part of the month because of the blow sand north of Escavada Wash.

The Custodian attended a meeting, by invitation, held at Farmington by the Chamber of Commerce on the 21st. Governor Tingley and members of the State Highway Commission were present. I believe much good will be done to our road. The State now has machinery and men working on the road. The Indian Service agreed to put four dump trucks on the sand bed, hauling shale and building up over the sand dunes. At this time the road to the north is in better shape than I have ever seen it. This will increase our travel 50% from the north.

### Weather:

The last five days in March and the first few days in April, we had our part of the wind storms. The Monument has more sand beds, caused by blow sand, than any time in history. After the wind storms the weather has been excellent.

Weather Statistics: Maximum temperature 76, on the 15th; minimum 11, on the 2nd; precipitation 21 inch of rain and melted snow was recorded for the month.

### Travel:

791 people arrived in 98 automobiles, trucks and school busses. Coming from the following states: Arizona, California, Colorado, Conn., Kansas, Maryland, Minnesota, New Mexico, New York, Pennsylvania, Okla., Texas, Tennessee, Utah, West Virginia and Washington, D. C. Museum and guide service were rendered to 210 people in 25 parties during the month.

### Meeting with Indian Service Officials:

A meeting was held in the Monument at Mocking Bird Canyon with Indian Service officials on the 10th. The purpose of the meeting

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## CHACO CANYON (CONT.)

developed from a request made by Mr. Ed Sargent to the Indian Service that the Indians would have to be removed from his driveway on Section 22, the land belonging to the National Park Service, on which Mr. Sargent has a driveway for his sheep. It seems that the Indians were making Mr. Sargent pay from \$30 to \$50 every time he crossed this driveway with his sheep. It was learned at the meeting that the Indians were not charging Mr. Sargent to cross the Monument land, but were charging him to cross Section 14, just outside the Monument boundary. It seems that these Indians at one time owned this section of land, then in 1932 their allotment was cancelled in an exchange of lands with the Railroad Company. Mr. Sargent has the land leased from the Railroad Company. The Indians have lived there all their lives, have their homes and farms there, so they thought they owned the land. Officials present at the meeting were: Mr. M. Ratcliff, in charge of lands on the reservation; Mr. John Tyler, stockman; Mr. Marvin Long, senior clerk, Indian Service; and the Custodian of this Monument. It was strictly an Indian Service problem, and other than being present I took no part.

### Special Visitors:

Dr. R. G. Fisher and Professor Stanley J. Milford, University of New Mexico, arrived on the 11th, and departed on the 12th. Mr. Hugh. C. Lewis, Department of Grazing, with headquarters in Salt Lake City, Utah, was a monument visitor on the 11th. Mr. A. E. Stover, Eastern Navajo Agency, and party were here on the 11th. Mr. Ed. Sargent, rancher, and also member of the State Highway Commission, was here on the 16th. H. M. Land, post office permit inspector, was here on the 17th.

### Visiting Park Service Officer:

Custodian Jackson and family, Bandelier National Monument, was a visitor on the 21st.

### Activities of other Agencies in the Monument:

The University of New Mexico began construction on their headquarters building south of the Chaco Wash on the 13th. Formerly our water system at this monument was furnished by the University, that is, the Custodian's residence and the public camp ground, has been furnished with water from their well. In order to put water to their new headquarters building, with the pipe that they had on hand, they took up their line. We are now hauling water from the Government well, a distance of a quarter of a mile. We are badly in need of a water system at this time. We have enough water in the well, but no money available to pipe the water to the Custodian's house and the public camp ground.

The Soil Conservation Service has been working in Hundo Pavi Canyon this month. Much has been accomplished on erosion control.



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## CHACO CANYON (CONT.)

### Boundary Fence and Cattle Guards:

Regular inspection trips have been made by the Custodian. The fence has not been molested this month other than a few of our 17 gates have been left open. It was necessary to make trips on horseback to move stock out of the Monument and close the gates.

The two cattle guards on the main road through the Monument are fast becoming bridges. The one in the Gap on the south is almost leveled up with blow sand. These cattle guards were built by contract and there were no provisions made in the plans so that they might be cleaned out. It will be necessary to drill holes through the concrete head walls, large enough that the sand can be shoveled or raked out.

### Yucca House and Hovenweep National Monuments:

After the meeting at Farmington mentioned elsewhere in this report, I inspected these monuments and returned to Chaco on the morning of the 22nd. Found everything in good shape. From evidence found around the ruins the early visitors have begun to visit those places. The roads were pretty good.

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## MONTENZUMA CASTLE

By Martin Jackson, Custodian

### Weather:

Good weather conditions prevailed throughout the month, few cloudy days with some snow on the mountainous regions nearby. With the Easter vacation period ideal weather greeted the large crowds traveling at that time. Spring-like days are still holding out and so far we have had no complaints of hot weather.

### Roads:

In general the roads have been excellent during the month. The roads in the valley proper have been even better than usual while the road up Oak Creek Canyon has been beyond reproach. However, the section of the State Highway 70 between Jerome and Prescott, one of the main arteries into the valley, has been in almost impassable condition during the full month. Had it not been for this, our total of visitors would undoubtedly have been much higher. It is thought that this section of road will not be completed before another three weeks or month.

### Visitors:

The total number of visitors for the month numbered 1,054, 563 of which made the Castle trip.

### Special Visitors:

Ranger D. D. Jacobs and family of Yosemite, California. Cashier

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## MONTEZUMA CASTLE (CONT.)

James Luther and wife, Carlsbad, New Mexico, and Dale King from Headquarters were with us during the month. Dale's trip, an inspection tour, occurred on April 6.

### General Cleanup

During spare time and after hours during the month our regular cleanup of the grounds in the Castle and Picnic areas was undertaken and accomplished. At present writing the grounds are in very presentable shape to greet the expected great influx of summer visitors.

### Facilities

The picnic tables on both the lower and upper picnic grounds are in process of being painted at the present time. We have received signs from Bandelier quite recently and have erected most of them. We are still awaiting, however, sign posts from the Coolidge office to replace destroyed signs at neighboring road interesections. We hope these will be forthcoming before the summer season is upon us.

### Irrigation

Irrigation of shade trees around permanent buildings has been begun during the last month. This rather meager supply will probably help some but as I have mentioned before, the present water system is too small (and antiquated) to do full justice to the needs of the monument. It is hoped an adequate water system will be established in the near future. If this is not done the work of planting all the trees in the immediate area of the permanent buildings, will be wasted as the present system will not take care of both the needs of the visitor and that of the trees and other vegetation.

### Vandalism

The name RUTH (the "H" not crossed) was scratched in the plaster of one of the rooms in the Castle during the past month. The name was inscribed on or before April 20, 1936, and can be practically placed either the afternoon of the 19th or 20th. Since receiving notice from the Department of Justice in Phoenix, that they are charged with the duty of investigating violations "of the law on Government Reservations," we will, with the permission of the Coolidge office, turn this matter over to them at once. Unless some example is made of one of these violators there will be vandalism from time to time that is unavoidable.

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## AZTEC RUINS

By John Will Paris, Custodian

Again the visitor record scores with one of the best like months since 1930. Visitors for the month total 701, and the same month in 1930 we showed 814. Figures for the years 1933, 1934, and 1935 were

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## AZTEC RUINS (CONT.)

468, 579, and 554, respectively, so we are quite proud of this year's showing.

Things have been moving along in good shape at the Monument. We started the month out right with a visit from Dale King, which also included one of these much dreaded inspections, and instead of it being dreaded in the future we are actually looking forward to the next one that we might see how much better we can present our show than we did the last time. Both Mr. Hart and I welcome these regular inspections and certainly do not feel that your office is snooping into our field. Our Monument benefited materially from the last one (or shall I say the first one), and we trust that each one shall point out a feature that we can correct and thus enable us to become that much nearer the standard that is the goal of the monuments area.

In addition to the inspection that Dale gave us, his visit was certainly worth while since it gave us an opportunity to go over much of our museum work and get it lined up for the summer season. We were still thinking over Dale's visit when Mr. Moffett from the San Francisco office drove in with several new case displays for the Monument. These were set up and in operation only a few days after they arrived, and we are testing them thoroughly and acquainting ourselves before the regular season hits us. We are very well pleased with them and instead of making it more difficult to explain the features as we imagined they might, we find that the new displays are working out fine, and that it is possible to get even a clearer picture across than it was before. Again Aztec takes its hat off to the boys in Berkeley and admits that they know their stuff.

We enjoyed Mr. Moffett's visit very much and hope that they send out their men quite often. In addition to meeting some splendid fellows we get a great deal of information first hand and realize the purpose of the displays and what they are intended, making it a great deal more simple to explain. We, meaning both Mr. Hart and myself, were scared to death of the history case as it first presented itself on paper, and upon installation we find that it is one of the most interesting cases in the museum.

This month finishes up the work of the ECW and we benefited greatly from the work here. As you mention, the sewer is the greatest benefit, but then the other work is of lasting benefit and enhances the value of our monument considerably. These past few weeks have been spent in general cleanup and rocking some of our ditches. Both of these items are needed badly about this time of the year, and the boys helped out a lot.

We are thinking about our parking area and hoping that we can get it completed before the visitors start coming too fast. There are several methods of doing it that we are considering at the present time; as soon as we decide on one, I guess that there is nothing to keep us

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## AZTEC RUINS (CONT.)

waiting very long for the completed unit. This, too, will be a big help to the monument and a need that is certainly being of long standing.

We were honored this month by a visit from one of our colleagues in the Service. Earl Jackson, Betty, and Mr. and Mrs. Morris were in for a short visit. We greatly regret that they could not have lingered longer, but realize that they wanted to get back to their own monument. It is ashame the way we custodians feel that our monuments will fall to tiny bits if we are not right on the ground almost constantly. Anyway, Boss, they are our babies and we just can not help worrying about them.

This month also brought us a visit from the Governor of the State of New Mexico, and the party that accompanied him on his tour of the northern part of New Mexico. The Governor has been very kind in his mention of our attraction and never comes by this section that he does not come out if only for a few minutes. We are proud that he feels this way about it and trust that we merit the consideration that he is giving us. In several of his speeches he has mentioned the Aztec Ruins and their value to the State.

We are in the midst of one of our prettiest seasons of the year right now. The numerous orchards in this section of the country are all in bloom right now and it is simply beautiful to see.

We have promise of some oiled roads in the county and since the State of Colorado is also planning a big road program of this section of its state, I feel that within the next year or two we might normally expect a large increase in the number of visitors.

Must get to other things, Boss. I am planning to make an official trip to the towns of Albuquerque and Santa Fe, and find, in order to attend certain meetings, that it is necessary for me to leave Sunday and I have a lot to do yet. Will write you in detail as to the results of this trip. It has promise of being very worthwhile to the monument, and I trust that I shall find this to be true.

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## CASA GRANDE

By W. J. Winter, Custodian

The visitor count this month was 3,436. This seems to be somewhat higher than usual. It includes the following special groups:

March 27 - 24 in University of Arizona baseball squad.

April 3. - 36 of Social Science class of Pima Indian school at Sacaton.

April 3 - 60 of beginning archeology class of University of Arizona, Tucson.

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CASA GRANDE (CONT.)

April 7 - 20 21th J. W. Lesueur of the Mormon temple at Mesa.

April 9 - 100 in a motorcade promoting U. S. 80, "The Broadway of America," en route to a convention in California.

April 11 - 23 from the Roskrige School of Tucson.

April 12 - 175 attending the Easter sunrise service held at the ruins by the churches of Coolidge and Florence. This was not as well attended as in previous years because of the number of other similar services being held within a radius of 30 miles.

April 17 - 20 from the Juvenile Detention Home in Phoenix. So-called bad boys, but really not so bad as near as I could tell. In fact, I rather enjoyed showing them around.

Only one NPS visitor is recorded. Ranger D. D. Jacobs of Yosemite stopped to see us April 3. Of course, a number of others were in, but were calling on Headquarters, not the Monument.

A few other newsworthy visitors were noticed. March 26 we were visited by James E. Van Zandt of Altoona, Pennsylvania, National Commander of the Veterans of Foreign Wars. April 4 we met Colonel Frank Van Vleck of Washington, D. C., one of the founders of Sigma Xi, honorary scientific fraternity. April 13 we were pleased to greet W. B. Hare, climatologist of the U. S. Bureau in Phoenix. April 18 we were very glad to meet Charles Amsden, Secretary of the Southwest Museum of Los Angeles. April 19 there came John C. McGregor, Curator of Archeology of the Museum of Northern Arizona, Flagstaff. This custodian was not around while he was here and was mighty sorry to have missed him, as we are old schoolmates.

The weather warmed up a bit this month, reaching a maximum of 103 on the 17th from a minimum of 28 on the 2nd. Precipitation was zero.

Perhaps I should have listed this under "Newsworthy Visitors:" Our first rattlesnake of the season showed up in the ruins on April 7. Since there were so many visitors around he was speedily dispatched without ceremony. We hope to catch alive any more that show up, to be used for study purposes elsewhere.

Speaking of sneks, Ranger Charlie Steen returned April 14 from seven days' leave, spent in the old home town. We missed him considerably. Charlie says he missed us too, as around home he had to be polite to everybody. The afternoon of April 17 Charlie gave a talk to the third grade pupils of the Coolidge grammar school. Not having had much luck with the run of visitors that morning, Charlie said it would be a pleasure to talk to the third grade in the afternoon. I guess it was. The subject of the speech was "Birds" and I hear that Steen went over big, as he usually does.

The middle of the month was an occasion of great mourning around this Monument on account of the departure of Al Bicknell. Al's monument, Craters of the Moon, in Idaho, is emerging from its winter's hibernation under the snow and Al had to get back to shine things up in preparation for the summer tourist season.

The staff here is unanimous in wishing that Al could stay longer, permanently, in fact, for we think that he is the greatest asset this monument has had since the Boss moved up from the Custodianship. In addition to his practical capabilities we think that he is a swell guy personally, so surely are hoping that he returns next fall.

Took another day off this month (but perhaps we should keep that dark!) and went up the Apache Trail to visit Tonto National Monument. We arrived rather late in the evening and were sorry to miss seeing Woody who apparently had gone out to supper. We did have a look at the cliff ruin and I was glad to renew my acquaintance with the place, it having been seven or eight years since I last saw it.

This completes the list of monuments that can be visited on our days off. Others are too far away for a one-day trip so it's hard telling when we can get to see them.

We have finished Bob Rose's question survey but will let him do the talking about it as he conducted it for several monuments in addition to this one. I suppose that the dumb questions make the greatest impression on us, so much so that I was somewhat surprised to find that the great majority of questions were intelligent enough. It was, however, noticeable that many questions were asked after they had already been answered in the guide's talk. This was true with all guides. We used to charge this up to lack of intelligence on the part of the visitor, but upon considering the matter we have agreed that we really should not blame the average visitor for failing to assimilate the terrific mass of information with which he is deluged in such a short time.

Now for the monthly gripes about maintenance, inadequate appropriations, etc. I did not begrudge spending money getting our well pump fixed. New leathers were installed March 27 and water is now being pumped with considerably less loss of energy and time. I did hate to put more money into our electric plant, however. A new armature for the Kohler was necessary March 31. The money that we have spent on that plant this fiscal year was enough to pay for electricity for twenty years, at present rates, if we were hooked on to the line that runs by our fence.

Our other complaint, now chronic, the sewer system, is still very much with us. The atmosphere around the public contact area is pretty bad when the wind is from the direction of the ditch. I have oiled the open pools in an effort to keep down mosquitoes but still have many

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## CASA GRANDE (CONT.)

misgivings concerning possible health conditions when the weather gets hot.

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## TONTO

By Woodrow Spires, In Charge

A few more months like this one will justify a new road and a few of the other well-deserved improvements, such as a museum, a permanent custodian, and an improved picnic ground.

This monument is so situated that it is practically midway on the Apache Trail loop trip. Therefore people plan their picnic luncheons here. Several times there have been as many as three groups of picnickers here at the same time, which would make picnicking anything but a pleasure for two groups as there is only one shade tree on the parking area.

We could, for a small sum, fix up a very nice picnic area in the canyon below the cabin.

The travel and weather have been going along arm in arm until the last week when they must have had a falling out as there was a rise in temperature and a decline in visitors. Notwithstanding the last week, the month's total is 7.8% over the same period last year. The following figures are derived from SWM Stencil No. 16:

Total visitors at the Monument	876
Total time guiding	6,890 minutes
Total visitors taking field or ruins trip	546
Total time field or ruins trips	3,515 minutes
Total number of field or ruins trips	90
Average time field or ruins trips	61.2 minutes
Average group field or ruins trip	6.06
Total visitors museum trips	478
Total museum trips	80
Total time museum trips	1,373 minutes
Average time museum trip	15.6 minutes
Average group museum trip	3.4

Trips to the Upper Ruin were so few that I counted them as regular field or ruins trips.

This month brought more uninterested visitors than any previous month since I have been here.

Lots of special visitors this month: March 29, Lt. French, M. D. Reid brought 60 CCC boys from the Superstition camp.

April 1, Custodian Winter of Casa Grande, accompanied by the H.C.W.P.

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TONTO (CONT.)

and her parents, stopped by but missed me.

April 3, Prince ShahMir, Tiflis, Caucasus, was an interested visitor.

April 4, Mrs. John F. Tanner and 60 students from the University of Arizona.

April 5, Dale S. King, Jr. Park Naturalist, stopped by for a visit and an inspection.

April 8, a Prince and Princess of Warsaw Poland were interested visitors.

April 15, D. D. Jacobs and family of Yosemite National Park stopped for a couple of hours.

April 16, Mr. & Mrs. James Luther of Carlsbad Caverns National Park were extremely interested visitors.

April 25, Mr. and Mrs. Elmer Rising of Harvard, at present illustrating the Snaketown dig for Gila Pueblo, were interested visitors.

The general work program for the month included the finishing and painting of the new latrines, the destroying of the old ocotillo fence and some cleanup work.

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## EL MORRO

By Evon Z. Vogt, Jr.

Business is picking up. This month's visitors total 42. This is no stupendous number, of course, but it looks pretty big to us considering that we had only 16 visitors in March and none in February.

Newsworthy visitors include Earl Jackson, Custodian of Bandelier National Monument, and wife, and Mr. and Mrs. Frank Vesely from Santa Fe. Mr. Vesely is New Mexico's Commissioner of Public Lands. I was certainly sorry to miss Earl Jackson. I wanted to meet him and show him El Morro. This monument is usually so isolated that we seldom are honored by visits from other custodians.

The weather has been generally fair all month and roads are in unusually good condition. The road to Gallup has been smoothed down by Indian Service and county graders. A crew from the Navajo Central Agency just finished grading up the road from Ramah to the El Morro Airport. This leaves only three miles of unworked road all the way from Gallup to El Morro, and this little portion is even quite smooth.

I am glad to report that the switchback trail up the north side of



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EL MORRO (CONT.)

the Rock is in good condition despite an unusually large run-off from winter snows. Last spring this trail was washed badly by the run-off, but the deepening of the drainage ditches last summer apparently prevented a similar occurrence this spring.

This is the month when all farmers in this region come out of hibernation and begin their struggle for existence for another season. Bear farmers, homesteaders, and Navajos all get out their plows and harrows and really make the soil fly. There seems to be an exceptional awakening in the Ramah Valley where one ambitious farmer has even plowed up the baseball field.

The reason for this is that the Ramah Irrigation Reservoir is three feet higher than it has ever been, and farmers in the valley expect a bumper crop. The Navajos are also breaking more sod than is usual proving that this Ramah Chapter of Navajos is an industrious and self-reliant bunch who are not dependent on the government.

Last spring I reported that the piñon business would boom this fall, and now I am quite sure that it will, for all the piñon trees in this country are heavily loaded with small cones which will bear nuts this fall.

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## NAVAJO

By Milton Wetherill, In Charge

I am enclosing SWNM-16, Visitors Report for March, which shows 31.

When I came up the first of the month (March) I found that things were three weeks to a month ahead of last year at this time. The willows and Aspen are showing catkins, (flowers) and several other spring plants are in bloom.

Most of the Juncos have left, although I see a few Grey-headed Juncos. They are general the last to leave. One or two of the summer resident birds have come in but not many. Have been unable to get any banding done as the Chipmunks and Squirrels clean up the feed faster than it can be put out. (Will have to get 24 feet of 24-inch rabbit wire netting and put a fence around the traps).

Had our big snow March 22; started between one and two a.m. The first was a wet snow and melted almost as fast as it fell; snowed nearly all day. Would probably have accumulated 15 or 16 inches on the ground if it had laid on.

Trail work is slow but another week or ten days and the upper half will be finished. The switch backs on that steep rocky fill will help. I am afraid the goats will give us trouble as they do not care where they go.

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## NAVAJO (CONT.)

### Birds in Be-ta-ta-kin Canyon:

Woodhouse Jay	Shufeldt Junco
Longcrested Jay	Greyheaded Junco
Pinon Jay	Ravins
Clarks Nutcracker	Say Phoebe
Spurred Towhee	Flammulated Screech Owl
Tit-mouse	Red-shafted Flicker
Bush-tit	White-breasted Woodpecker
Canyon wren	Robin
	Rocky Mountain Nuthatch

Banded two spurred Towhees, one Shufeldt Junco, four gray-headed Juncos.

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## BANDELER

By Earl Jackson, Custodian

### Visitors:

Visitors numbered 742, arriving in 214 cars, from 30 states, England, Toronto, and Montreal. Only 22 states were represented by cars.

The six highest states by visitors were: New Mexico, 468; Colorado, 91; California, 34; New York, 24; Illinois, 22; Texas, 14.

Visitor attendance is quite satisfactory, being by far the biggest April in history. As compared with travel figures of 843 for April of last year, we have an increase of 13.35%.

On three separated days during the month, I checked the percentage of return visitors. In 60 visitors there were 16 returns, or 26.66%.

### Weather and Roads:

Days partly cloudy:	15
Days cloudy:	7
Maximum temperature:	77 April 14.
Minimum temperature:	17 March 25.
Mean Maximum:	58.77
Mean Minimum:	32.51
Precipitation:	.79 Against 1.03 for April, 1935.
Snowfall:	4" March 30 and April 6.
Rain and Sleet	April 5, 18, 19, and 20.
Dust Storms:	April 16.

Weather has been mild. Snow melted within a few hours after falling. Only one bad dust storm occurred, with total limit of visibility at two miles.

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BANDELIER (CONT.)

Roads have been good, although slightly corrugated in places. At no time has there been difficulty of approach.

Visitor Trip Chart:

Seventy-four parties took the guided trip through the ruins, numbering 284 people. Average time per trip was 59.32 minutes. Nineteen parties, numbering 63 people, were given talks without ruins trips, or with only partial ruins trips, averaging 22.52 minutes per party. All visitors to the monument were contacted and registered.

Special Visitors:

March 27 - Lieutenant Cosgrove, Sub-District Commander, CCC, was in. He is a new man in the position.

April 3 - Warren C. Hubert, Science Department, a professor in the College of the City of New York, was in with his family. They were an exceedingly interested party.

April 5 - Fred C. W. Parker, Secretary of Kiwanis International, was in for an afternoon visit.

April 8 - Jack Diehl was in and out again on official business.

Lieutenant Colonel John A. Hoag, Field Artillery, U. S. Army, was in.

April 9 - Dale King and his mother were in for the better part of a day, and out again. As usual, Dale and I exchanged much speechifying, and we jointly took his mother through the ruins. She held up admirably under the strain of having two guides take her through, although Dale allowed me to do most of the orating.

Mr. and Mrs. Raymond V. Ingersoll, of Brooklyn, New York, were visitors.

April 10 - Mr. and Mrs. Charles C. Morris, of New Haven, Connecticut, arrived for a ten-day visit with Betty and I. They are my ancestors-in-law. He is an ardent bird and nature enthusiast, and she is quite interested in archeology and ethnology.

April 11 - 15 high school students from Hollene, New Mexico, were in for an afternoon guided trip.

April 13 - A. E. Borell and better half arrived for a six-day stay. Their very elegant new trailer was the envy of all eyes except mine. The reason I didn't envy them was the ceiling was so low I couldn't stand erect under it. The trailer is exceedingly well furnished and comfortable, and I see the time when our camp ground is going to have to be modified to handle trailers as well as autos.

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## BANDELIER (CONT.)

April 14 - Norman Appleton, parasitologist in charge of the PWA Tent Caterpillar Laboratory in Santa Fe, was out for further discussion of the caterpillar problem.

April 17 - Dr. and Mrs. H. E. Hawkes, of Columbia University, were in for an afternoon. Dr. Hawkes is Dean of the undergraduate college there. He has been here two or three times before, but is always interested in each new development.

April 19 - 24 students of the Pojoaque public school were in to picnic.

### Nature Notes:

Apparently the beavers have left Frijoles Canyon. There are no signs of fresh dam or timber work, and the beaver house found by Landscape Foreman A. C. Groce is abandoned and filled with silt. If there was only one beaver, it is thought he may have gone back to the Rio Grande river to bring himself back a wife. Otherwise, living possibilities here may have been found too frugal.

The garter snakes are out, several having been seen. The lizard population blossomed out almost overnight a couple of weeks ago. Horned toads are stalking through the grass.

Birds are arriving rapidly. Bird banding is now practically a dead issue, but Betty's report will mention several spring arrivals.

### General:

With the report I am submitting the requested 30-day check-up on the questions visitors ask. Of course, a lot of questions were asked that the CCC boys, who were helping guide, and myself, couldn't remember, but we got down all we could. Over the 30 days 669 visitors asked 182 separate questions, and by counting repetitions of questions we get 424 questions.

A hasty estimate of percentages of questions asked on different subjects follows:

Archeology	48.5%
Park Service	16.5%
Geography	14.5%
Geology	5.5%
History	5.0%
Nature	5.0%
Personal	5.0%
Total	100%

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## BANDELIER (CONT.)

The commonest question asked, in fact, more than twice as common as any other was: "What is the altitude here?" The next four questions, all of the same frequency, were:

"Did the Indians live in all of those holes?"

"Do you charge for a guide?"

"How many visitors a year do you have?"

"How far up and down canyon do ruins extend?"

### Archaeology Notes:

A half mile up canyon from the Ceremonial Cave, on the same side of the stream, Betty's father discovered an hitherto unmentioned cluster of cave rooms. These rooms were eight or ten in number, and some were quite well preserved. They are located atop a very high talus slope, requiring a considerable climb to reach them. One room has the original front masonry wall almost entirely intact, and shows the sockets for the lintels. This is the best preserved front section we have found in Frijoles Canyon.

### Field Trips:

On April 20 Betty and I accompanied her folks on a four day trip, to see some of the monuments I had never seen.

We motored to Aztec Ruins the first day, via Bernalillo and Cuba. Ranger Hart started us through the ruins, and presently Johnwill joined us, and together they really made it an exceedingly interesting and instructive visit. Those fellows are really on their toes.

Johnwill demonstrated his silent support of Darwin by a graceful trapeze act through one of their trick doorways, and then we went to the Museum Building and saw the model museum. I like it, but agree with Johnwill that it could be improved. I don't believe the new tree-ring explanation case is as easy to understand as the old chart he was using.

Next day we drove down to Chaco Canyon, almost got stuck in the sand on the north mesa, and met Carrol Miller as he was leaving for important business in Aztec. After a 30-minute chat with him we went on to headquarters, met the Missus, who also welcomed us cordially, and had lunch.

Mr. McKinney guided us through the ruins of Chetro Kettle, through Bonito, the museum, and across the Wash to the ruins of Rinconada. Although he protested that he knew very little about the ruins, he disproved the contention by rendering a very capable and interesting interpretation of the ruins.

From Chaco to Gallup the roads are as bad as they were nine years ago.

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## BANDELIER (CONT.)

From Gallup we went southward to Zuni, then across to El Morro. Mr. Vogt was away, so we visited the monument unattended. The roads were bad, but the monument was quite worth while. We enjoyed the climb to the mesa top, the view, and the Indian ruins far more than we did the inscriptions. That is a marvelous ruin, and the abundance of pot sherds indicates quite a long occupation. It's too bad an archeologist can't stick his shovel in it.

From El Morro 40 miles over the Continental Divide to Grants is the worst road it has ever been my privilege to gaze upon. I wouldn't send the meanest man in the world over that stretch. Part of the time you can make 12 miles an hour over it. We saw the road when it was practically dry, too.

En route back to Bandelier we visited Acoma, Laguna, and the Laguna Church. A custodian couldn't have had a better educational trip.

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## BANDELIER FORESTRY

By James Fulton, Forester

On April 2 I returned from Chiricahua, having started a planting project which promised to proceed satisfactorily without my continued presence.

Most of this month my time was spent at most any odd job. For the past two weeks, I have been doing painting in Quarters No. 1. In a few days the Forest Service will permit me to begin cutting timber for Quarters No. 2.

About April 29, beetles began attacking the landscape-planted trees. The extent of their damage has not been determined at this time. Next month I expect to carry out a control project and I will submit a complete report at that time.

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## HEADQUARTERS STUFF BRANCH OF EDUCATION

April was a hectic month for the Educational Staff, with its three members scattered far and wide over the west.

Park Naturalist Rose was occupied with office routine matters until April 14, when he left on an official business trip to Rocky Mountain National Park, remaining there the rest of the month. Mr. Rose's report of his month's activities will be included in the May report.

Junior Naturalist Caywood was stationed at Tumacacori National

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## BRANCH OF EDUCATION (CONT.)

Monument on relief duty. While there he made considerable progress on the museum layout plan for that monument.

Junior Naturalist King left Headquarters April 5 for a trip through several northern monuments and then to the Field Division of Education Offices in Berkeley, California. He returned to Headquarters April 24.

### Report of Junior Naturalist Dale S. King

The period from March 25 to April 5 was mainly occupied with preparing the March Monthly Report.

I left Headquarters April 5 for Bandelier National Monument, making inspections of Tonto, Montezuma Castle, Aztec Ruins, and Bandelier. Walnut Canyon was also visited. Botany blotters were delivered to the mentioned monuments, and a large museum storage case was taken to Bandelier.

April 10 I left Santa Fe for Berkeley where eight days were spent in consultation with the Field Division of Education staff concerning museum problems in Southwestern Monuments.

In addition to much detail, the following are some of the problems which received attention:

1. Selection of deep wall cases to be tried experimentally in the Bandelier museum.
2. Determination upon a standard color scheme to be used in maps and charts in Bandelier museum.
3. Division of Bandelier exhibit projects to be worked upon by (a) Berkeley Laboratory (b) Custodian Jackson and Southwestern staff.
4. Final planning of two Bandelier cases and consultation with preparators and technicians.
5. Preparation of complete Bandelier layout plan for approval of Director and Educational Division.
6. Re-submission of several temporary Aztec museum exhibits to Berkeley for preparation of final exhibits.
7. Collection of several finished Aztec exhibits to be displayed at the Monument before the travel season starts.
8. Selection of one definite exhibit for Tumacacori on which to start work immediately. Same for Montezuma Castle.

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## BRANCH OF EDUCATION (CONT.)

9. Discussion of cases and layouts for Casa Grande and enlarged Aztec museums.
10. Discussion of museum building plans for Casa Grande, Tumacacori, Montezuma Castle, Bandelier, and Aztec.
11. Discussion with Branch of Plans and Design concerning case, heating, and lighting plans for Bandelier.

I visited Wupatki National Monument the morning of April 24 and arrived at Headquarters that night.

### Report of Junior Park Naturalist Louis R. Caywood:

The month was spent at Tumacacori National Monument on relief duty. Considerable time was spent on preliminary plans for the Proposed Museum Exhibits Plan for this monument. The remainder of the time was spent in giving guide service. For further details see the report for Tumacacori National Monument.

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## ENGINEERING

By John H. Diehl, Park Engineer

A. E. Clark, transitman, and C. E. Schmidt, rodman, with the assistance of CCC enrollees, have been busy the entire month on topography mapping at Chiricahua National Monument.

J. H. Tovrea, chief engineering aide, at the Coolidge headquarters office, has attended to general office matters and preparation of maps and plans.

Duties at Carlsbad Caverns National Park and in the field kept me away from Coolidge headquarters the entire month except for three days, April 15 to 18. During the time at Coolidge the Roads and Trails Six-Year Program was studied and outlined. A total amount of \$2,816,000 was estimated for this program, including \$61,750 for preliminary surveys. Priority of surveys over project construction is not only logical, but I believe this is the first time that a Park Superintendent has definitely gone on record to that effect.

On April 3, with Chief Engineer Kittredge, White Sands National Monument was visited and engineering problems discussed.

Two other visits during the month were made to White Sands in connection with the construction project being carried on by the Resettlement Administration.

April 8, Bandelier National Monument was visited and 7th period projects discussed with Project Superintendent Chase of the CCC camp.



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## ENGINEERING REPORT (CONT.)

His enrollment at this time below 100 was retarding progress on the various projects underway.

Three trips were made to Gran Quivira National Monument, where Foreman Gipe met with difficulty installing pipe in the well, owing to the bore at the time of drilling having gone off at an angle. This angle throws an additional strain on the pump, and friction on the sucker rods will cause future maintenance troubles. At present a pumping period of  $1\frac{1}{2}$  hours exhausts the water supply, but it is expected that time will increase the flow and relieve this condition.

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## WILDLIFE DIVISION

(Extracts from a report of A. E. Borell, regional wildlife technician)

### White Sands National Monument

- (1) Weather: Heavy wind and dust storms.
- (2) Scientific studies: Continued observations on birds and mammals. Migrants were first observed as follows: Spoonbills, March 15; Bufflehead, March 21; Sandpiper (Least?), March 21; Black-necked Stilt, March 21. A total of 43 species of birds were recorded. Two of these, Bufflehead and Sandpiper, Least?, were new to my previous records. This makes a total of 73. Five specimens of birds and mammals were prepared as study skins. All of these were new to the monument collection, and one, Sandpiper, was new to the monument list.
- (3) ECW Supervision: Went over levee and road work several times. All work was progressing rapidly and satisfactorily.

Considerable time was spent on office work.

### Chiricahua National Monument

- (1) Weather: Cold, cloudy, windy.
- (2) Scientific studies: Recorded 26 species of birds. Two of these, Painted Redstart and Black Phoebe, were new to the monument list. Prepared two study skins.
- (3) ECW supervision: With Project Superintendent Wm. Stevenson went over all of the trails on which crews are working. The trail work deserves commendation. The trails are being kept to a minimum width, and great care has been taken to avoid

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WILDLIFE DIVISION (CONT.)

damage to vegetation and rock formations during blasting. Rock supporting walls have been carefully laid so as to give a natural appearance.

Planting of trees and shrubs in the camp ground Area is now being started. I am afraid that it is so late in the spring that there will be a comparatively heavy loss among transplanted trees and shrubs.

Saguaro National Monument.

(1) Weather: Mild and sunny.

(2) Scientific studies: Ten species of birds were recorded. One thrasher nest (probably Palmer's), with four half grown young was located in a cholla.

In Phoenix, I discussed mountain lion control at Saguaro National Monument with B. E. Foster, District Agent, and H. P. Williams, Assistant District Agent, U. S. Biological Survey. These men provided the following data:

1. There are five Biological Survey lion hunters in the State of Arizona.
2. They take about 140 lions each year.
3. Lions are not numerous in the Rincon Mountains, in which Saguaro National Monument lies.
4. Not over eight lions have been taken out of the Rincon Mountains during the past three years although several hunting parties have hunted the area. There are three private lion hunters who hunt occasionally in the Rincon Mountains.
5. One lioness, containing three embryos, was taken from the Rincon Mountains on January 14, 1936, by Frank Colcord (U.S.B.S. hunter), but he was unable to take any others during the next ten days of hunting.

Mr. Foster said he does not have enough hunters to satisfactorily cover the state, and assured me that he would be quite willing to keep his hunters out of the monument if the Park Service requested him to do so. He further stated, that if in the future, due to pressure by cattlemen, the Park Service wanted lion control, he would try to send one of his hunters if the Park Service requested him to do so.

(3) ECW supervision: Most of the Crew is working on road repair and old road obliteration. All work is being done carefully, and I saw no damage to cactus or other vegetation.

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WILDLIFE DIVISION (CONT.)

CASA GRANDE NATIONAL MONUMENT

- (1) Weather: Warm and sunny.
- (2) Scientific studies: Recorded twenty-three species of birds. One of these, Brewer Sparrow, was a new record for the monument. Put up three study skins (Verdin, Vesper Sparrow, Brewer Sparrow) which were new to the monument collection.
- (3) ECW supervision: With Superintendent Pinkley and Park Naturalist Rose went over ECW, museum, and wildlife programs for White Sands, Chiricahua, Saguaro, Chaco Canyon, and Bandelier National Monuments.

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## CLOSING

Well, Chief, the record would seem to indicate that we did manage to keep busy last month and I think every one of our men will agree that the record is right.

You will notice that we have had quite a shifting of men this past month. Mr. W. H. Smith, of Gran Quivira National Monument, retires because of ill health. Mr. Boundey goes from Tumacacori to Gran Quivira where, being more or less used to pioneering conditions, he settles down to carry on the good work Mr. Smith has so well started.

Mr. Caywood transfers from headquarters to Tumacacori where he can stay in one place for awhile instead of flitting hither and yon as he has been doing this past year or so and also where Winnie's health seems to be much better.

Charlie Steen shifts across the porch at Casa Grande from Ranger, Casa Grande National Monument to Junior Park Naturalist, Southwestern Monuments, and thus becomes the shuttle which, flying back and forth, will strengthen the web of our organization during the coming year.

Don Irskine comes down from the northern part of Arizona where he has been pinch hitting at Walnut Canyon, and becomes ranger at Casa Grande just as we break into the so-called dull season and the hot weather.

Luis Castellon will be our ECW Clerk, vice Robert Cole, resigned. This isn't such a big change for Luis as he will remain right here in the office, which is good news to the local volley ball players who play out on the residential parking area each Tuesday and Thursday night.

Paul Bezubien is spending a day or two at headquarters as this is written and then goes up to take over Walnut Canyon for the summer.

All of us, and I am sure this includes yourself, Chief, join in wishing Mr. W. H. Smith a speedy return to good health. We understand that he is going back for a visit at the old home in Arkansas this summer to rest and renew old friendships. He is the first man we have had go under the Retirement Act and we are again impressed with the wisdom and justice of that act. We have had no more faithful and enthusiastic worker in the last fifteen years than Mr. Smith and it is comforting to

know that he will continue to receive a pay check which will do much toward wending off financial worries. We of course will still consider him as one of our men to be carried on our mailing lists, to whom we can go for advice as to future development at Gran Quivira, and who will, we feel sure, always maintain his deep interest in our work.

I think you will agree with me that the reports this month are good and the men are keeping up a sustained interest in their work. That these reports of our men seem to carry a wide interest is evidenced by the following letter which turned up in the mail yesterday:

"We have in our files some copies of Southwestern Monuments Monthly Report, beginning with February, 1935. Is this publication available for free distribution? If so we shall be very grateful to have our name placed on your mailing list to receive it regularly. If they are in print may we have the back numbers necessary to complete our file? They are January, April, June, September and November, 1935 and on to date. Our reference department will be able to make valuable use of this material."

That was from one of the largest County Public Libraries on the Pacific Coast.

And here's one from another division of our own Service:

"If it is possible I would like to get current copies of your monthly narrative reports, and whatever back numbers are obtainable.

"On a recent visit to Wind Cave National Park I discovered the November issue attached to the other narrative reports of the parks and monuments. There is a wealth of ideas and information contained therein which I am sure would be of immense practical value here at -----."

If we weren't so modest, Chief, we would feel all puffed up by letters like these:

Cordially,

*Frank Pinkley*  
Superintendent.

# THE Supplement



MONTHLY REPORT

RT



# SUNSET CRATER GEOLOGICAL REPORT

By Vincent W. Vandiver, Regional Geologist

## INTRODUCTION

The almost perfectly preserved crater of an extinct volcano, known as Sunset Crater, was established as a National Monument on May 26, 1930. The name is derived from the various shades of red color of the cinders in the upper portion of the cone which gives the appearance of being illuminated by the setting sun. To the Hopi Indians Sunset Crater was called "Kana-asKatchinki" which refers to the house of Kana-asKachinas, a group of friendly spirits who are supposed to dwell in the crater. The reserve area of the monument contains much of interest besides the remarkable crater and includes very recent lava flows, fissures or vents, contacts of the different flows, and ice caves. The reserve covers 3,040 acres and is located some ten miles east of the summit of San Francisco Mountain. The distance from Flagstaff is seventeen miles. It lies approximately ten miles north of U. S. Highway 66 and is therefore most accessible to a main route of transcontinental tourist travel.

## NATURE OF REPORT

H. H. Robinson has given an admirable geological report on the "San Franciscan Volcanic Field of Arizona" in the United States Geological Survey Professional Paper No. 76. Since the facts covering this area, of which Sunset Crater is a part, are presented in such detailed manner in this report that there seems no need for duplication as regards to minute description of the geology. It is not considered possible at any rate to make meritorious contribution to such a treatise without months or even years of field work.

It will therefore be my endeavor on the following pages to outline briefly the geological history of the area of Sunset Crater and vicinity; to indicate certain important features connected with this history, which should be brought to the attention of the visitors, by signs along the roads or trails or in a wayside shrine, in order that they will carry away a more complete and vivid picture; and to point out my observations which you may care to consider in any development of the monument, which in my opinion will best portray the geological phenomena of the area. It is also hoped that this resume will be useful to the Rangers assigned to this monument.

## PHYSIOGRAPHY

The volcanic field of the San Francisco Mountains occupies a large part of the southern portion of the Colorado plateau region, wherein is located so many of the natural wonders now included in the National Park chain. This field has an area of some 3,000 square miles. Within the large plateau area are lesser plateaus, outlined by canyons trending generally north and south (with the exception of the Grand Canyon of

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## SUNSET CRATER GEOLOGICAL REPORT (CONT.)

the Colorado), fault scarps with the same general trend, and erosion escarpments trending mainly east and west. Strictly speaking there are no mountains in the plateau region with the exception of the volcanic masses of Mount Trumbull and the San Francisco Mountains.

The most conspicuous landmark of the San Francisco Mountains is the San Francisco Peak, which attains an elevation of 12,611 feet above sea level, rising approximately 5,000 feet above the surrounding plain. This mountain is surrounded by several other large peaks ranging in elevation from 8,500 to 10,500 feet above sea level. The general area of the volcanic field is studded with cinder cones, but since few of them are more than 700 feet in height, they appear insignificant as one drives among them. They are indeed more impressive when viewed from the tops of some of the larger peaks or if studied on the U. S. G. S. topographic map of the Flagstaff quadrangle. Sunset Crater is one of the more prominent of these cinder cones, having an elevation of 8,000 feet above sea level, and rising some 1,000 feet above the level of the adjacent country.

The drainage for the volcanic area finds its way in due course to the Colorado River. The water courses or washes are comparatively few in number and they naturally radiate from the higher portions of the field. Oak Creek is the only perennial stream existing in the region and it is fed by several large springs which come to the surface at the intersection of two fault planes at the head of the canyon. The climate of the plateau country as a whole ranges according to altitude from semi-tropical to temperate.

Robinson (1) mentions some special characteristics of the lava flows which have caused numerous minor changes in the drainage system of the area. He states that the damming of the water courses has given rise to small lakes, some of which still persist, while others have been drained by the cutting down of the obstruction that formed them, although not before they had been more or less filled with sediment. The grass covered glades, which are a picturesque feature of the landscape throughout the pine forest, generally indicates the location of former lake sites. Two typical examples of drainage modification by lava flows may be observed on the Little Colorado River at Black Falls and Grand Falls. It may be worth while to consider side trips to these two points for people visiting Sunset and Wupatki National Monuments. At least some interesting models could be made of these features for a wayside shrine which would depict the encroachment of lava on the stream and the changes resultant therefrom.

### GEOLOGIC HISTORY

The Paleozoic Era of the plateau is admirably represented in the section which is exposed at the Grand Canyon of the Colorado. Various types of sedimentation are represented in this section, extending from



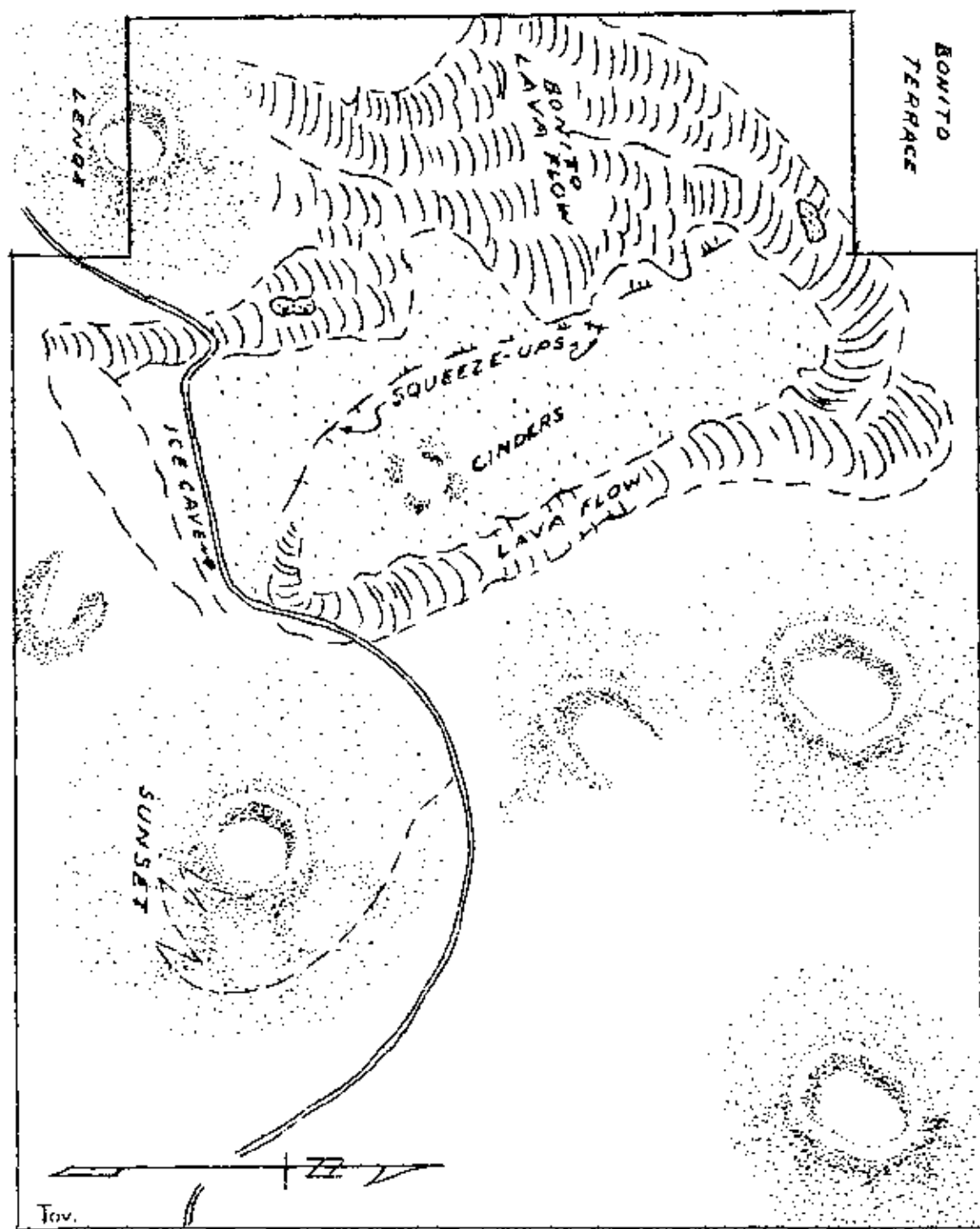


PLATE NO. 1  
SUNSET CRATER NAT. MON.

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## SUNSET CRATER GEOLOGICAL REPORT (CONT.)

the Tonto platform to the rim of the canyon. Deposits of marine sediments are present which contain shells and corals; beach and flood plain deposits are represented by formations bearing sea weeds and the remains of crab-like animals; also formations of continental origin, such as great thicknesses of dune sands, containing tracks of primitive reptiles or amphibians. Thus during this era there is evidence of repeated fluctuations in the land surface with the resultant encroachment and withdrawal of the seas. At the close of the era the seas had invaded most of northern Arizona as indicated by the widespread distribution of the Kaibab limestone formation and the abundant fossil record of marine life which it includes. This formation forms the rim rock at the Grand Canyon and may be observed in most any direction near Sunset Crater.

The Paleozoic is followed by the Mesozoic Era and from a study of the formations included during this interval it is evident that there were also fluctuations of the sea during this time but in the main the lands were generally depressed. Great thicknesses of sandstones, shales and limestones were deposited on top of the Kaibab formation. At the close of the Mesozoic (Age of Reptiles) the waters retreated and the era of recent life of the Cenozoic followed.

The surface of the earth is rarely stable and constant adjustments are being made even at the present time. When strains or stresses are too great during these crustal movements, faulting and fissuring takes place, and oftentimes quantities of molten lava is poured out on the earth's surface through these vents or lines of weakness. Adjustments on a huge scale were in vogue at the close of the Mesozoic when the great Rocky Mountain construction took place.

During the Miocene period of the Cenozoic the area west of the Little Colorado River was rising to form what is known as the Little Colorado Monocline. This may have been due to an intrusion of molten lava which did not reach the surface which is termed as a laccolith. Following this general uplift erosion proceeded at a much more active rate and the Mesozoic formations of the San Francisco Mountains was almost entirely eroded away. In fact parts of the Permian formations of the Paleozoic were stripped.

During the Pliocene period (late Cenozoic) we have the First Volcanic Period of the San Francisco Mountain area. Huge fissures gave vents for the pouring out of sheets of basaltic lava, from 50 to 300 feet in thickness, covering a wide area and extending from the Tonto Rim to Cedar Wash. Following in the latter part of this period the uplifting continued when great north-south faults cut the earth's crust and the Second Volcanic Period began. As tremendous quantities of lava was poured forth on the surface, such prominent peaks as Bill Williams Mountain, Kendrick Peak, Sitgreaves Peak, the San Francisco Peaks, and O'Leary Peak (near Sunset Crater) as well as others were formed. A variety of different types of lava was extruded at this time

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## SUNSET CRATER GEOLOGICAL REPORT (CONT.)

but in general they were more acid, contained more quartz, and were therefore lighter in color than the basalt of the First Volcanic Period.

As the plateau continued to rise the erosive agencies became more severe and great canyons were carved on the surface. Several thousands of feet of volcanic rocks were no doubt removed from the crests of the San Francisco Peaks as is indicated by a projected profile of their surface. With physiographic features of the plateau much as it is today the Third Volcanic Period began. To the Third and last general period of volcanic activity in this field, covering a considerable interval of time (beginning near the close of the Second Period and extending into comparatively recent geologic time), some 200 basalt cones and lava flows over 1,200 square miles represent the volcanic activity during this period. Sunset Crater is one of the cones formed at this time. This activity certainly occurred during the quaternary period and presumably during the latter part of this period according to Robinson (1). The state of preservation of the cones and lava flows is so perfect that they may date from historic time. Due to their presence, however, in an arid to semiarid region they naturally retain a much fresher appearance than would otherwise be the case in a humid climate.

Generally speaking throughout the geologic history of the plateau there have been two opposing forces which have produced the detailed topography - erosion, which is destructive; and volcanism, which is constructive.

One question that will probably be asked many times, due to the recent character of the surface evidence of volcanic activity, and that is has the activity actually ceased in this region. Robinson (1) advises as follows on this subject: Broadly speaking it may be said to have ceased. There may be further small outbreaks of basalt, but this does not seem probable in view of the insignificant volume of the latest eruptions compared with the total volume of lava of the last general period of eruption. These very latest outbreaks may be looked upon as representing the final feeble manifestations of a long and very complete cycle of volcanism.

### SUNSET CRATER

Sunset Crater is the most dominant feature of the monument. It rises to a height of about 1,000 feet from its base, and its summit has an unbreached crater about one-fourth mile in diameter and 400 feet deep. The upper portion of the cone is covered with tinted cinders and lapilli (little stones). The mountain has received its name from the rainbow effect, where the color of the cinders grades downward from the summit of the cone through the various shades of yellow, orange and red into the black material of the lower slopes. There is practically no evidence that the cone has been shattered by explosions and the fact

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## SUNSET CRATER GEOLOGICAL REPORT (CONT.)

that erosion has not produced any noticeable change of form attests somewhat as to its recent age.

Basaltic lava is exposed around the rim of the crater. It has been altered and bleached to tones of yellow and pink by fumarole action. Hot spring minerals may be found in this zone. Sulphur crystals, gypsum and limonite are present. Fragments of sandstone and limestone which have been ejected from the crater are found around the rim. Some of the specimens of sandstone have their stratification preserved in part but the edges have in most cases been well altered due to the action of heat. Most of the limestone has likewise been metamorphosed so that it is now classed as marble.

The eastern rim of Sunset Crater is 150 feet or more higher than the western rim. This characteristic is common among the two hundred cinder cones of the last period of activity. The fact is explained by the reason of the prevailing westerly winds during the main eruption when ash, cinders and lapilli fell in this direction and thereby building up the eastern rim to greater heights.

Because of the various indications of recent activity at Sunset Crater and vicinity, which are more or less visible to the visiting public, the determination of the age of the last eruption has always been an interesting question. Robinson (1) states that the latest cones and flows are older than the pine trees growing at the edge of the Bonito lava flow, west of Sunset Peak, which would make them not less than 300 years old and possibly not more than 1,000 years old. A possible Hopi tradition of the eruption of Sunset Crater is mentioned by Dr. Colton (4). Geologists, who are generally credited with being unable to think in terms of a few years, have been content to call it a very recent cone. Exact determinations in this regard have required other means of approach. The ash from this crater undoubtedly covered hundreds of square miles. It is known that this black sand buried numerous pit houses of an ancient people (pueblo) which had been constructed on Bonito Terrace. A number of these houses have been excavated by archeological expeditions of the Museum of Northern Arizona, McGregor (5). Attempts were made to collect additional data from the sites that had been abandoned before, or at the time of the eruption of Sunset Crater. Charred beam material was particularly desirable, as well as information collected as to the nature of the ash fall accumulated above and in the sites, with data as to the pottery in use, artifacts, and types of houses contributing factors.

A trail leads to the summit of the crater and the round trip can be made in one hour if one is rushed for time. It is best however to spend at least a half day on the rim and in the event that the interesting details of the mouth of the crater fails to hold one, there is the magnificent panorama of the Painted Desert, San Francisco peaks, and the Bonito Lava flow below with its many interesting features.

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## SUNSET CRATER GEOLOGICAL REPORT (CONT.)

### BONITO LAVA FLOW

This lava flow is probably the second most important feature of the monument and is almost entirely contained within the boundaries. The map, Plate 1, which accompanies this report shows the relationship of the lava flow with Sunset Crater. This lava escaped from a vent opened through an older flow of the Third Period and spread out quietly into an intercone basin. As the lava could not flow far it has probably piled up to depths of several hundred feet.

A badly disrupted cone known as "Yaponecha Crater" is located in the central portion of the flow. The exact nature of this cone is not known. It is possible that it has been the source of some of the lava and that it was disrupted at the time of the flow. Another explanation is that it may have been more or less floated on the lava and thereby disintegrated.

Along the surface of the Bonito flow to the west of the above-mentioned cone and extending in a northwest direction is a large vent or fissure which has also been termed "Anosma" or "squeeze-up." After the surface of the flow had solidified, the fissure tore the surface, and semi-plastic lava was squeezed upward. In places the lava has been forced some ten feet in the air and frequently crumpled under their own weight. This type of flow seems to be rather unique among volcanic phenomena and it has been suggested that there may be some relation to the fact that the main lava flow was dammed.

The Ice Caves immediately west of Sunset Crater on the Bonito flow seems to be the principal attraction to a great many people. In fact at the time of my last visit some people were asking how they could get to the Ice Caves and seemed little concerned or anxious to ask questions regarding the multitude of volcanic phenomena about them. The cave has only been explored a few hundred feet. It is likely that the roof has collapsed in places and it may well be rather extensive. This type of cave is typical of lava flows where the lava has drained away, leaving the solidified roof standing. It is most unusual to enter the cave in summer and find it filled with ice. The details as to the method of the formation of ice caves is not fully understood. Lava is a poor conductor of heat and the cold air which settles to the bottom portions of the cave is protected to a certain extent. It is possible that some interesting information could be collected which might have a bearing on this feature if temperature readings were taken at regular intervals in the cave.

Besides the above-mentioned important points in connection with the Bonito flow there are several others worthy of attention. There are a number of fumaroles at the base of Sunset Crater and vicinity where gases escaped during the last active stage of the crater. A sink hole is shown on the map just east of the Yaponecha crater. In this case the lava flowed out from under the crust forming the sink.

## SUNSET CRATER GEOLOGICAL REPORT (CONT.)

The remains of a hot spring is also shown on the map. It is located very near the large fissure of "squeeze-up" previously discussed. A considerable portion of the Sonito flow is covered by a more recent ash fall. Examples are numerous illustrating this feature and it has been noted that considerable more ash fell on the southern than on the northern end of the flow. -Cooling cracks, contacts of the different flows and other fascinating features are prevalent and it is considered that as the monument is developed many other interesting facts will be divulged of interest and importance.

### ARCHAEOLOGICAL

The Hopi legends of the Sunset Crater region have been described by the staff of the Museum of Northern Arizona. The Museum Notes (4) give a vivid picture of Yaponcha, the Wind God and the Kane-a Kachinas of Sunset Crater. We have endeavored to show how determination of the age of the last eruption of the crater has been made by a study of the remains of pit houses. This type of material when authenticated will form a most important background for a story of the monument.

### FUTURE DEVELOPMENT

I do not know if detailed plans have been formulated as to the development of this monument. It seems to me that one custodian could probably take care of Sunset and Wupatki as is now the case. It is my thought that a Wayside Shrine near Sunset could portray all the facts of the monument and that directions from this point could be given to the various trails to illustrate the features in place. Exhibited in the shrine we could arrange generalized sections and inexpensive models to show the different stages of volcanic activity in this field. A collection of the various types of lava, hot spring minerals, rocks and material from the outcrops of sedimentary formations in the surrounding area and corresponding material which has been ejected from the crater would all no doubt prove of considerable interest. I believe that panorama photographs could be taken in this general area and that ink sketches could be made therefrom to serve as a guide to the various trails. Actual trail construction should be kept down to a minimum and it is thought that with the proper use of signs the visitor will be directed sufficiently to see all of the points of interest. It is possible that some sort of a guide to prominent features of the landscape will prove essential from the summit of the crater. Some of these things will of course not be necessary if a permanent ranger is maintained for this monument.

### POINTS OF INTEREST

It is considered that the following features of the monument will be worth while calling to the attention of the public when it is developed:

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## SUNSET CRATER GEOLOGICAL REPORT (CONT.)

1. Sunset Crater - Signs is what seems to be needed most at the present time especially in view of the fact that there is no permanent ranger present and there is no pamphlet available.
2. Benito Lava Flow should have markers at different points to better depict the facts for the visitor.
3. Attention should be called to the most important fissures or "squeeze-ups" with signs.
4. An explanation of what we know of the formation of ice caves might well be posted at the entrance of the caves.
5. Fumaroles, sink holes, spatter cones, hot spring remains, contacts of different flows of lava should all be marked by directions from the main road or "turn-around." A sign could very well be erected at each feature explaining briefly its origin.

I am aware that some people object to too many signs but I see no recourse under the present setup of the monument. I am sure that many people go there and see the ice cave and go away with very little knowledge of what has gone on about them. The monument is most accessible to a main artery of travel and many more people will visit the area if a little money is spent on the development. It seems to that there is every justification for some development as Sunset Crater is really one of the most important monuments in the Southwest.

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# SOME EARLY HISTORY OF PIPE SPRING NATIONAL MONUMENT

By Leonard Hession

Our records indicate that the first white men came to Pipe Spring in 1856. This party was send out by President Brigham Young, of the Mormon Church, to explore and report on the country lying in and around the Colorado River and, if possible, make a treaty of peace with the Navajo Indians living on the south side of the River.

Jacob Hamblin was captain of the party and among the members were William Hamblin, sometimes called Gunlock Bill, one of the best rifle men in a country where expert shooters were common, Amon Tenny, and Dudley Levett. While camping at the spring, which was then without a name, some of the men played a joke on William Hamblin by telling him he could not shoot through a silk handkerchief hung at a distance of fifty steps. Hamblin accepted the challenge and failed to puncture the silk cloth, not because he could not hit it but because the silk, hung by the upper edge only, yielded before the bullet and remained unpunctured. Hamblin, somewhat vexed by the joke, turned to Amon Tenny and dared him to put his pipe on a rock near the spring, which was at some distance, so the mouth of the bowl faced directly toward the party, hamblin wagering that he could shoot the bottom out of the bowl without touching the rim. Tenny accepted the wager, laid the pipe on the rock as described and Gunlock Bill promptly and neatly shot the bottom out without touching the rim. Whence the party named the spring Pipe Spring and the name remains to this day.

The first settlement at Pipe Spring was in 1863 when Dr. James M. Whitmore and his brother-in-law, Robert McIntyre, established a cattle ranch and made some improvements. They built a dugout of earth and cedar logs, locating it about 50 or 75 feet east of the southeast corner of the present fort.

In the winter of 1865-66 the Navajo Indians were giving some trouble to the white settlers in Southern Utah and Northern Arizona and on Jan. 8, 1866, some Indians stole the cattle and sheep that Whitmore had in the pasture near the spring. The two white men discovered their loss at once and followed the trail to the southwest. At a point about four miles away they were attacked and killed by the Indians and all the clothing was taken from their bodies.

That night the Indians came back and raided the place but did not go into the dug-out where Whitmore's eight-year old boy was in hiding. The boy heard the Indians and, since his father and uncle had not returned as they had promised, decided that they had been killed. It was a night of terror for him and the next morning he started, on foot and alone, for St. George, 96 miles away, to report the killing. By noon he had reached a point ten miles from the Pipe Spring, when he met some



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## EARLY HISTORY OF PIPE SPRING (CONT.)

men who, upon hearing the news, sent the word on to St. George.

Some of the state militia, under the charge of Captain James Andrews was sent out to get the bodies of the two men and to bring the Indians to justice.

After hunting for several days in two feet of snow, the bodies were found. Also six Indians were caught who had on the clothing of the murdered men. These Indians would not talk except to say that they did not kill the white men. Thinking the Indians were lying, the militia men killed them and left them lying in the snow,

Years later, when the truth came out, it was learned that the real killers were the Navajos and a few piutes, who then traded the clothing of the victims to some more peaceable Piutes, who told the truth when they denied killing the white men but lost their lives on the evidence of the clothing which they wore. A son and brother of two of the Indians who were killed, whose name is Captain George, lives a couple of miles north of Pipe Spring.

In the settlement of the Whitmore estate the Springs and the surrounding lands were purchased by the Mormon Church. Bishop Anson P. Winson was sent out in 1868 with instructions to build a fort, improve the place and take care of the tithing cattle for the Church. Winsor's first task was to erect some temporary buildings in which to live while constructing the larger edifice. He constructed these two buildings of rock walls and juniper roofs at some distance to the northeast of the spring. This building faces east, has two rooms with a shed between. Each room has a fireplace, two windows and a door. This structure was a mass of ruins and was restored in 1925,

The second house built by Winsor is to the west of the spring and faces south. It is a two-room house with a double fireplace in the partition between the rooms. Each room is entered by a door and the west room has two windows, the east room, three. This building was restored in 1929.

Work was begun on the fort in the fall of 1869, a crew of forty men working that winter and spring. The fort is made of native red sandstone taken from the hill behind and to the west. The fort consists of two two-story buildings facing each other across a courtyard. The courtyard is closed at the ends with heavy gates. The north building was erected directly over the spring, the water flowing through the south building so the inhabitants were assured of a plentiful supply of fine water at all times.

These two buildings are gradually being restored as funds permit to their condition when built and it is hoped that before many years the fort will be furnished with the pioneer furniture of that period.

## EARLY HISTORY OF PIPE SPRING (CONT.)

In the winter of 1871 the Deseret Telegraph Company's line reached Pipe Spring and was put into operation in December of that year. The room used for the office was in the west end of the second floor of the south building. The office was opened by Superintendent Amos Milton Musser of the Deseret Telegraph Company, who sent the following message to the Deseret News: "The office at Pipe Spring is now open with Miss Luella Stewart as operator." This lady remained for only three or four months as Bishop Winsor did not think that an operator was needed since the Indians were giving no trouble at that time. Miss Stewart was transferred to Kanab, Utah, where she was operator for several years and in that capacity sent Major Powell's messages for him when he was exploring the surrounding country.

Bishop Winsor left the Springs about 1875 and the place was later sold to private interests for a cattle ranch. It has always been a point where thousands of cattle were bought and sold each year and where herds were prepared for shipment and drives were started for the railroad.

By proclamation of President Warren G. Harding, May 31, 1925, this place became known as Pipe Spring National Monument to be administered by the National Park Service under the Department of the Interior. Here the visitor can obtain a fair idea of some of the pioneering conditions which confronted those who made the early settlements in this country and can learn something of that most interesting phase of the early Mormon settlement of Southern Utah and Northern Arizona.

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### NOTES TAKEN IN AN INTERVIEW WITH ALONZO WINSOR

BY LEONARD HEATON, March, 1936

These are some of the incidents that happened in the life of Alonzo Winsor at Pipe Spring National Monument from 1868 to about 1876. Alonzo Winsor was a son of Bishop A. P. Winsor who was sent there by the Mormon Church to erect a fort and act as foreman in handling the herds of tithing cattle which were to be sent on that range by the Mormon Church.

The Winsors went to Pipe with a pack outfit in the fall of 1868 in order to look the country over and pick out the site for a fort and locate the supply of building rock.

They made their first home in the Whitmore and McIntyre dug-out which had apparently been unoccupied since its owners were killed by the Indians in January, 1866. This dug-out is located east of the fort about 150 feet and was about 20 feet long by about 15 feet wide, facing southeast. It had a fireplace in the back and a doorway in the front. The walls were worked up about eighteen inches above the ground and were made of rock. The roof was rather flat and was constructed of

## EARLY HISTORY OF PIPE SPRING (CONT.)

juniper poles covered with loose bark and dirt making it fairly water-proof. This roof extended out over the front of the dug-out several feet, making a porch or shed.

Mr. Winsor says that there were very few trees close to the spring at that time. Mr. Whitmore had several corrals there and had probably cut all the trees that could be used in buildings.

The disintegration of the Whitmore dug-out began when the boys were having some fun with an old cow that had been taught to fight at an early age. One day while they were teasing her, the cow ran one of the boys up on the roof and tried to follow him, but she was too heavy and fell through. After that the dug-out became a trashpit until it was finally filled up.

In the spring of 1869 A. P. Winsor had 20 or 30 men sent out to him to start work on the fort. They first built two rock cabins, one on each side of the fort to be used as living quarters while the fort was under construction. These cabins were roofed over with poles, bark and dirt. The doors were home made and the windows were shipped in from Salt Lake City.

Alonso Winsor does not remember the number of men employed but thinks it would probably have averaged 25 workers and that the construction was finished in 1870. Some of the straw bosses were: Elijah and Elisha Averett who were responsible for getting out the rock; an old Danish man was head carpenter; Joe Hopkins was the blacksmith and also worked as a carpenter; and Graham McDonald was the plasterer.

Most of the lime used for mortar came from Pocketville or Virgin City, Utah. Mr. Winsor tells that on one of his trips for lime a rain storm came up and he had to shovel out a lot of lime to keep it from breaking the wagon box. The rocks for the construction were dragged in on a stone boat from the side of the nearby hill with the aid of an old mule. The lumber was cut and hauled from the Buckskin Mountains about 45 miles east.

There was a trap door and ladder in the east room of the lower house by which men could be shifted from the ground floor to the second floor if necessary without going up two flights of steps out in the courtyard. When the ladder was not in use it was swung up against the ceiling and fastened there.

The watch tower, which was on the north house, had a pole on which a flag could be raised by getting up into the tower.

About 1870, or soon thereafter, the Mormon Church had built a small fort on the west bank of the Colorado River at Lees' Ferry where two or three men were stationed to keep the Navajos from crossing at that place.

## EARLY HISTORY OF PIPE SPRING (CONT.)

The Indians had to swim to get across at that crossing. This fort made the Indians cross the river further north where they came out among stronger settlements and this soon caused them to give up trying to plunder the whites.

The Winsors seemed very anxious to get into the fort as they moved in as soon as the first story of the lower house was completed, having a stove in the east room and using the west room as a cellar. In the west room the water from the spring ran through and out at the south-west corner of the room.

After the fort was completed these two rooms were turned into a cheese factory. The Winsors milked on the average one hundred cows per day throughout the year, making butter and cheese which was sent to St. George, Utah, to be used by the men who were working on the Mormon Temple at that place. Mr. Winsor had besides his own sons four men to help in the milking and doing the range work among the cattle; this help would be increased considerably at roundup times.

About every two weeks small bunches of beef steers would be driven to St. George, Utah; in the spring and fall large bunches were driven to Salt Lake City to market.

Aside from the cattle industry the Winsors had another side line; that of hunting wild horses for their oils which would be sold to the tankers, and for the hair of their manes and tails which would be made into hair ropes. They would use all kinds of devices in getting the wild horses; running them down, roping them, trapping them, and shooting them. One time they caught an old mule belonging to Major Powell. To have some fun they stuffed an old pair of trousers full of grass and tied them on the back of the mule which they then turned loose among the wild horses who immediately scattered in all directions.

When A. P. Winsor left the fort he turned over to Mr. Charles Pulsipher, the new foreman, about 3,000 head of cattle. Young Aionzo Winsor remained at Pipe about a year showing Mr. Pulsipher the range and helping with the cattle.

The Winsors did not have a great deal of furniture and most of what they had was homemade. The chairs were the old-fashioned raw hide seat style; the beds had cords or rawhides ropes for springs. They also had a writing desk and a stand or two. This furniture was all taken with them when they moved to St. George in 1875.

Upon one occasion the telegraph at Pipe proved very useful. Some Navajos came out to trade their blankets for horses at Kanab. They found the men were few so they did the trading to suit themselves, taking what horses they wanted and giving in return the blankets they thought the horses were worth. They then went on to Pipe to finish

## EARLY HISTORY OF PIPE SPRING (CONT.)

their trading. In the meantime, Mr. Winsor had received a telegram over the wire which came into the fort, telling him how the Indians were acting and to be prepared for them. He sent out for help which arrived in the night without the knowledge of the Indians who had come in the day before. The following morning it was a great surprise to the Indians to see so many armed men come out of the fort and the trading that day was all on the side of the whites.

Alonzo Winsor was under the impression that 13 Indians were killed in the episode which cost the lives of Whitmore and McIntyre. He also said his father told one of the young Indians if he told the white men where the bodies of Whitmore and McIntyre were he would not be harmed. The Indian took them out in a southeasterly direction for about four miles and there, under two feet of snow, he showed them where the bodies were, shot so full of arrows they looked like porcupines.

The young Indian mentioned above lived with the Winsors for a number of years because he said they had saved his life and he did not care to go back to his tribe. He was subject to epileptic attacks which finally caused his death as he was seized with an attack while in the hills between Moccasin and Short Creek and, falling over a cliff, was killed.

Mr. Winsor said he would like to go back to Pipe Spring once again as it had been more than 50 years since he was there. Also he said that he was very much pleased that the National Park Service had taken it over and was keeping it as a monument of the early pioneer history.

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## RECONNAISSANCE OF TONTO

By Victor R. Stoner

Five miles east of Roosevelt Dam, Arizona, there is a group of very interesting cliff dweller ruins. Although these ruins are easily accessible, practically no systematic and scientific investigation has been made of them. Pot-hunters and tourists, however, have done inestimable damage to them.

The earliest mention of the Tonto Cliff Dwellings that I have been able to find was made by Patrick Hamilton who wrote in his "The Resources of Arizona" in 1884:

"In one of the caves on the south side of the Salt River the bones of a large animal, evidently of the mastodon species, have been found... In another cave, on removing the debris, pieces of cotton and cotton cloth have been discovered six feet below the present floor. These relics were in good state of preservation, the cotton being of a fine silky fiber. One of the pieces of cloth showed a rude attempt at ornamentation, having small eyelets worked by some sharp-pointed instrument.

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## A RECONNAISSANCE OF THE TONTO CLIFF DWELLINGS (CONT.)

A piece of coarse matting, doubtless made from native grasses, and in a good state of preservation, was also found.....Nearly all these remains are of stone, showing that the ancient builders used that material in preference to adobe or concrete whenever they could get it."

Cushing and Fewkes visited the Tonto Ruins, but apparently their reports were never published.

James H. McClintock wrote in his "Arizona the Youngest State" in 1916:

"Fully typical of cliff dwellings in general, and yet embracing two of the largest of the kind in the Southwest are ruins in a canyon now only a couple of miles distant from the main traveled automobile road between Phoenix and Globe and about four miles from Roosevelt----. The lower is the smaller, but the better preserved. Its roughly moulded walls fill a shelf-like open cave 140 feet long, forty feet in extreme depth and thirty feet in extreme height. The exterior wall, now broken, was built upon the edge of the cavern ledge, above which was once a sheer descent of about twenty feet. The building is of three floors, even now. The rooms have notably high clearance and a few years ago still in place was a rough upper flooring from which could be touched the cave roof at front and rear. Here it was, no doubt, that the primitive home guard peered over the low parapet and where the papoose in days of yore had his playground. The lowest floor is of clay hard-trodden. The upper floors had typical construction. Fixed firmly in the walls were set slender red cypress logs, rough hewn at the ends, the work of the stone or obsidian axes appearing not unlike the tooth marks of beavers. Across the logs were laid small cypress or juniper boughs; then came the ribs of the giant cactus, then river reeds and lastly a well-packed coating of adobe clay.

"The so-called red cypress is to be found in all the cliff dwellings of the Tonto Basin region, sound and firm wherever it has been kept dry. Some of the beams, peeled of bark, are about ten inches in thickness and often twenty feet long. ....It is said to be peculiar to Arizona, yet now it is to be found in only two places. One is in a grove near the Natural Bridge, sixty miles to the northward of the Roosevelt cliff dwellings, and the other, now comprising only a few trees, is in the Superstitions, about twenty miles west of the caves.

"The upper ruin has suffered within very modern times by fire. Within both were found pottery by the wagon load, with a number of stone implement sand half a dozen corn mortars (metates). The pottery closely resembles in marking that of the valleys of the Salt and Gila with the same terrace designs, jagged lightning flashes and twice-broken lifelines (signifying nourishment). ....In the valley below are the remains of houses and of irrigation ditches one of which had been dug through hard limestone with remarkable precision and which is assumed

## A RECONNAISSANCE OF THE TONTO CLIFF DWELLINGS (CONT.)

to have crossed the Sally May Creek by some form of high and long aqueduct. A latter-day ditch follows the same lines but at a lower elevation, for the river bed is not where it was in prehistoric days."

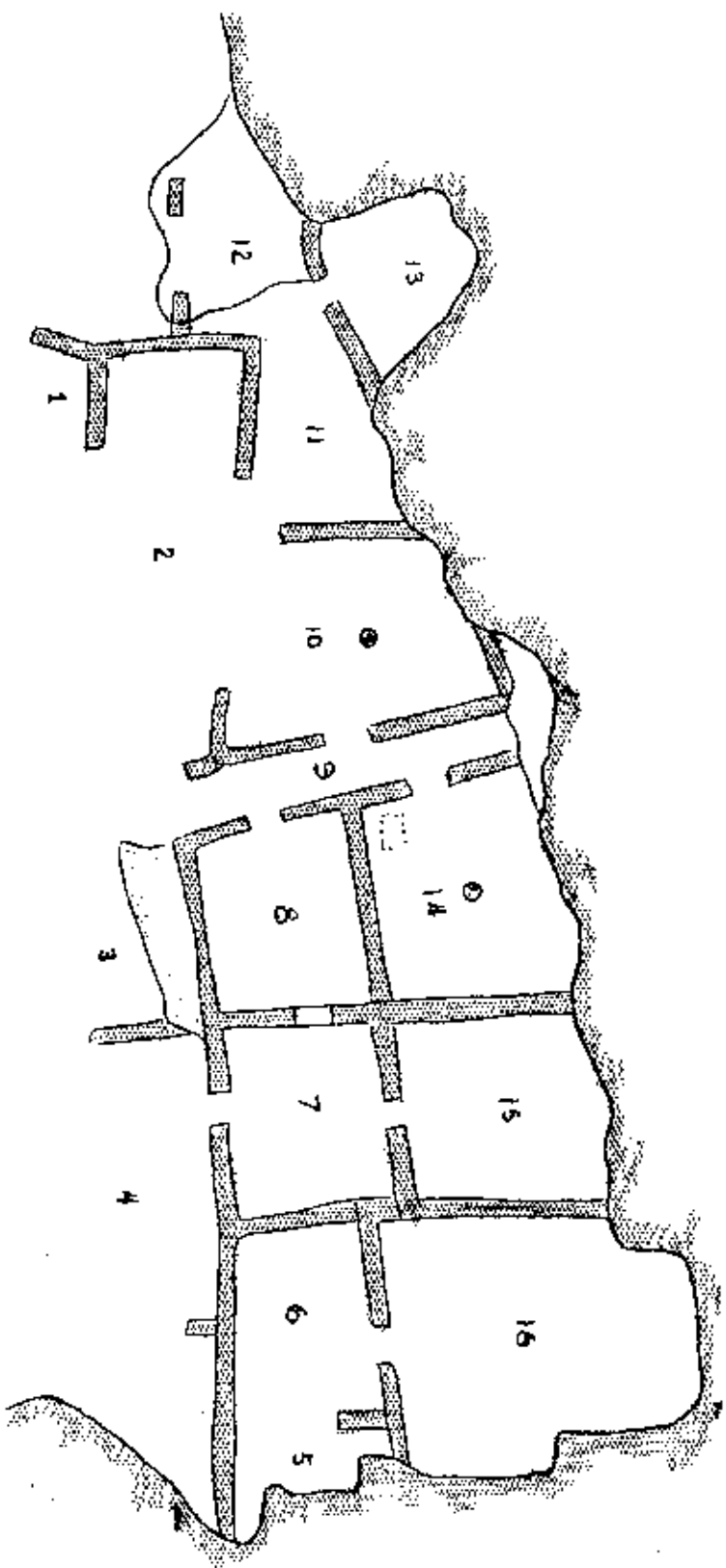
These cliff dwellings were created a National Monument in 1909 by President Theodore Roosevelt. No care was taken of them, however, and they were rapidly disintegrating under the vandal hands of tourists and pot-hunters. In order to preserve them as a point of interest for its Apache Trail visitors, the Southern Pacific Company secured permission to erect a high fence across the entrances of the caves. Later the company employed an Apache to act as custodian of them. In recent years, the National Park Service has placed a resident custodian at the Monument.

During the Christmas holidays of 1920, I visited the Tonto Cliff Dwellings and mapped and photographed them. When I visited them next in 1934, I found that a number of walls and ceilings had fallen. Particularly noticeable was a room in the Upper Ruin. This room is numbered 28 on the map of Ruin No. 2.

In December, 1920, this, the largest room in either ruin, was entirely intact, both doors and the window being tightly sealed. When I next visited the Ruin in May, 1934, both doors and the window had been broken open, and the ceiling entirely demolished. Although the room is about thirty-five feet long and fifteen feet wide, at present there are only two timbers remaining in it. One is an upright post and the other a beam about sixteen feet long. I have been unable to find anyone who knows when or by whom the room was broken open. No doubt there were valuable finds in it for otherwise it would not have been so carefully sealed by its prehistoric inhabitants. It would seem that the vandals were no ordinary pot-hunters, since the roofing timbers, of which there must have been several, were taken away. Or, possibly, the vandals used them for fuel for their camp fire, and the rains have since washed away all trace of the fire.

The Tonto National Monument consists chiefly of two groups of ruins. There are said to be other smaller ruins in the vicinity, but I have not visited them, nor do I know the exact location of them. Because of the great width of the canyon in which both these ruins are located, it is very difficult to photograph them.

The Lower Ruin is the smaller of the two. At present, the traces of 36 rooms are visible. Apparently part of the overhang of the cliff roof has fallen, and probably carried away some of the outer rooms. This is particularly evident in rooms 1, 2, 3, 4, 17, and 18. Room 9 is a hallway, two feet eight inches wide and 23 feet nine inches long. One door each opens into this hall from rooms 8, 10, and 14. Room 14 is the best preserved room in the Monument. Even at the present time, its walls and ceiling are intact, the primary beam supported by one center post. In the southeast corner of the ceiling there is a fair



RUINS  
NO. 1





## A RECONNAISSANCE OF THE TUNTO CLIFF DWELLINGS (CONT.)

sized hatch, probably used as an exit for smoke rather than for human traffic, since there are two doors at the ground level, and one window. The ceiling now is very weak, due to the fact that the part of the cliff receiving the end of the primary beam has crumbled. However, in 1920 this ceiling was in excellent condition, and my companion and I made our bed above it on the last night of the year 1920.

Room 8 of this Lower Ruin is very interesting. It consists of a shallow, irregular cave in the back of the cliff, across which a substantial wall, ten and one half feet long, has been thrown. This wall does not appear to have reached the roof of the cave. If such is the case, the chamber was not likely a granary. It was probably a storage room for some article that was not susceptible to attack from rodents.

A present, there are evidences of two rooms, or a room and balcony with high parapet, above rooms 7 and 8. One large room occupied the space above the hallway and room 10. At least one story is yet visible above rooms 2, 3, 14, 15, 18, 19, and 20.

### THE UPPER RUIN

About half a mile away, and three hundred feet higher, is the second ruin of this group, designated by the National Park Service as the Upper Ruin. This ruin is almost twice as large as the Lower Ruin, 64 rooms yet being visible. A great deal of the overhang of the cave roof has fallen, the canyon below being filled with huge boulders. Undoubtedly many rooms were crushed by this falling overhang.

There are a number of interesting details connected with this ruin. The sealed room which has been broken open, as mentioned above, is room 28 of this Ruin. Room 4 is a hall of varying width and forty-six feet seven inches long, with doors entering into it from rooms 7, 8, 10, and probably 9. In the cave wall in room 30, there is a natural tunnel which gives some evidences of having once been a spring. The reed ceiling of room 5, the sahuaro-rib ceiling of room 20, and the half reed and half sahuaro-rib ceiling of 21, show the variety of building materials used. The diameter of the primary poles seems to indicate that at this point the building was originally three stories high. Room 27 is about six feet higher than room 23. There a primitive step had been installed in order to reach the upper room.

Several of the plates show the type of wall structure utilized in this cliff dwelling. From a mere reconnaissance, it appears that the two groups were contemporaneous. The walls, in general, are built up of roughly shaped stone, laid ashlar-fashioned, in very thick layers of adobe. In fact, the mud mortar is about half the thickness of the stones. This is plastered over with an inch to three inches of adobe plaster. The finger-prints of the prehistoric plasterers are very abundant. The usual structural defect of the cliff dwellings--failure to tie in the

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## A RECONNAISSANCE OF THE TONTO CLIFF DWELLINGS (CONT.)

walls at their junctions--is in evidence here.

The floors are usually of tamped mud, although in some rooms, the native rock of the cliff was left untreated.

A typical first-floor ceiling and second-floor floor was constructed as follows: a large log was embedded in the walls of the room, and usually supported by an upright post in the center. At right angles to this primary beam, smaller beams were placed, being embedded in the other two walls of the room. Upon these secondary timbers layers of sahuaro ribs or bamboo canes were placed. In some cases, these elements were lashed together with yucca cords. Upon this mat, large rocks, about six to eight inches thick were placed at irregular intervals. Mud was poured over and around these rocks, covering them to the depth of two or three inches.

It is worthy of note that practically all the doors in both these ruins are half-T in shape. I have found no mention of this type door in any ruin except in the nearby Canyon Creek Ruin. There, Dr. Emil W. Haury reports only two for the entire group. (Haury, 1934. The Canyon Creek Ruin and the Cliff Dwellings of the Sierra Ancha.) Generally, the lintels are of two poles about three inches in diameter. The sill, and the sill of the half-arm of the T are of flat rocks.

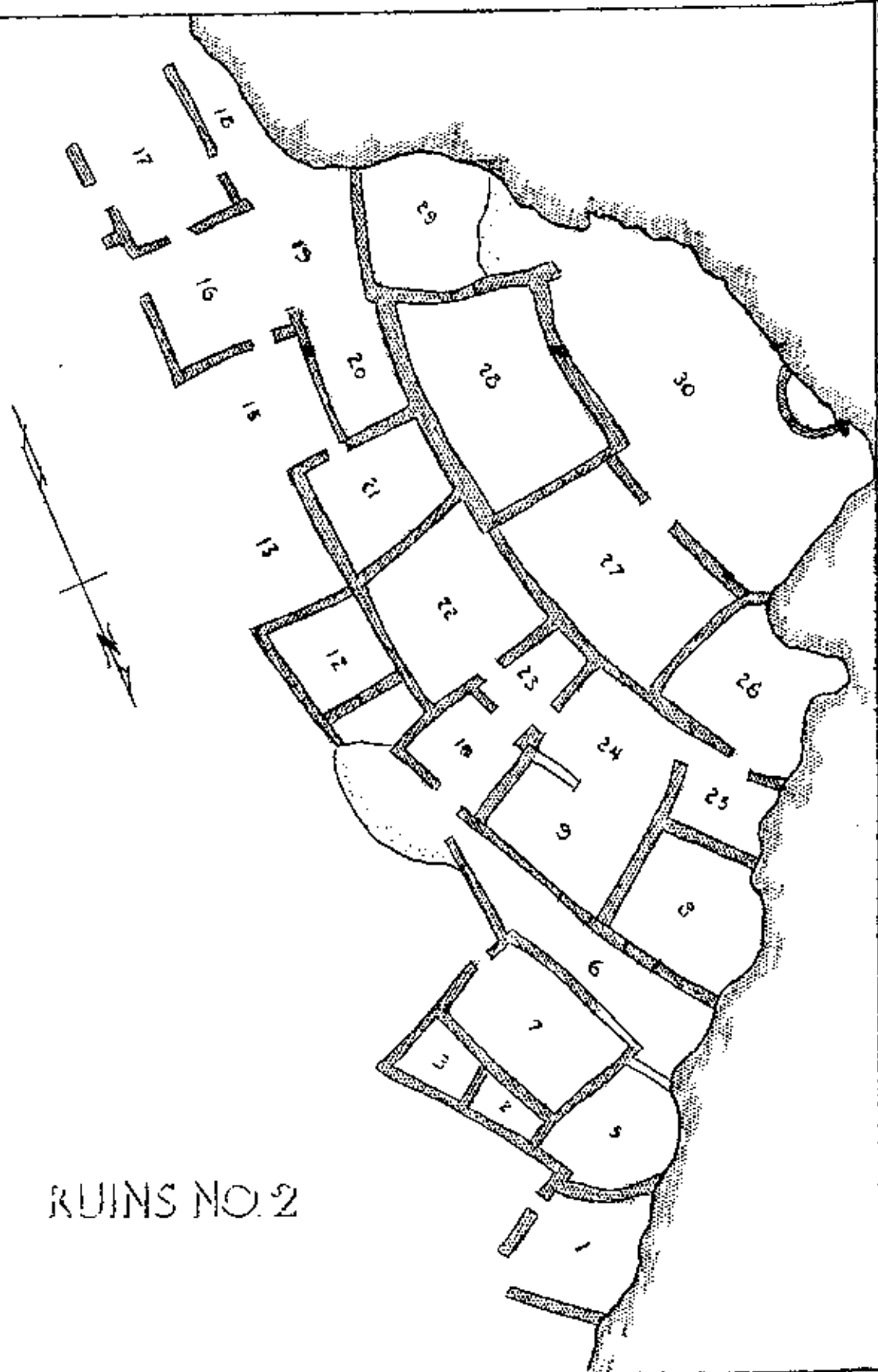
### ARTIFACTS

Due to the vandalism at this group of ruins, very few artifacts are available. Their textiles seem to be among the finest of the Surface Pueblo Period. (Pueblo III-IV). The few sandals I have been able to examine are typical of the period. Two sandals from Tonto are of split yucca leaves in simple basket weave. Two of them are more carefully woven of yucca cords, with woven ties. Haury reports almost identical sandals from the Canyon Creek Ruins and the Sierra Anchas.

Several pieces of cotton cloth in over-and-under weave have been taken from the Tonto Ruins. One of these, a piece about 18 inches wide and about four feet long, is in the possession of Dr. Cron of Miami, Arizona. It is ornamented with the weft-wrap openwork technique, falsely called "eyelet work." Haury reports also a fragment of "gauze-weave" from the Tonto Ruins.

One of the most excellent pieces of prehistoric textile art was found with a burial in Tonto Ruins some years ago by Mr. Rupke of Coolidge Dam, Arizona. It is a cotton gauze upper garment woven in intricate design.

Charlie R. Steen, formerly custodian of the Tonto National Monument, reports the discovery of a fragment of a very rare weave known as the "Slit Tapestry Weave." This, a 11.5 centimeter fragment of a tump line, is described at length in *American Anthropologist*, Vol. 37, No. 3 (pt. 1)



RUINS NO. 2



## A RECONNAISSANCE OF THE TONTO CLIFF DWELLINGS (CONT.)

Page 458. The only other example of textile art from the Tonto Ruin which I have seen, is a perfect yucca oile ring in the museum case of the custodian's residence.

Among the artifacts of stone which have been found here are metates, mortars, and manos; three-quarter grooved axes, and arrow-polishers. A fragment of a paint mortar is also in the Tonto National Monument museum case. An abundance of bone awls and punches have been found.

I have seen only one specimen of pottery from these ruins, an almost complete olla of Gila polychrome, about eighteen inches in diameter. In a personal interview, Dr. Haury stated that the chief wares of the Ruin are Gila polychrome and Salado redware.

Quantities of corn kernels and cobs, squash stems, and acorns in the debris of the Ruins indicate the food staples of the prehistoric occupants of these cliff dwellings. Even today, after the depredations of hundreds of visitors, great quantities of yucca quids lie about the floors of both ruins.

### CONCLUSIONS

In general, the Tonto National Monument ruins very closely resemble those of the Sierra Ancha region. The masonry is almost identical. There is great similarity in their textiles. Geographically, they are neighbors, apparently culturally the same, and contemporaneous.

Although there is an abundance of wood in both the Upper and the Lower Ruins, only one piece has yielded to dendrochronology. From a loose portion of a pine pole in the Upper Ruin, Dr. Emil W. Haury secured the date 1346. (Southwestern Monuments Monthly Report, May, 1935, page 255). The last date secured in the Canyon Creek Ruins by Dr. Haury was 1348.

### RECOMMENDATIONS

A scientific excavation and reconstruction program should be carried out at this National Monument. There is yet time, but within a few years, several more walls will collapse unless something is done very soon to strengthen them. What appears to be a plaited mat of pine needles is visible a few inches under the debris in room 14 of the Lower Ruin. This room adjoins the cave wall at the back, and appears to be a refuse heap. Undoubtedly it would yield much cultural material.

The talus slopes in front of both ruins should be carefully excavated. It is possible that ceremonial chambers might be found along the face of the canyon wall immediately in front of the cliff dwellings.

If a suitable museum building were constructed, it is possible that

much of the material that is located elsewhere could be returned to the museum at the Ruins.

Since this is the southernmost cliff dwelling of Arizona which can be reached with any degree of ease, it should be preserved and partly reconstructed.

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VISITOR RESEARCH

AT CASA GRANDE

Some most interesting visitor research work has been conducted during the past month at Casa Grande National Monument and a preliminary report has been turned in, giving the statistics thus far gathered by Custodian Jack Winter.

In his letter of transmittal Custodian Winter says:

"As requested in your memorandum of March 14th, a survey of questions asked by visitors has been conducted for 30 days. The period chosen was March 15 to April 15 and the results are shown on the attached sheets.

"It is believed that the 195 questions listed cover nearly all that is asked at the monument. These were asked in thirty days but it does not appear that the total would exceed three hundred in the course of the entire year.

"Of the number of times that these questions were asked it is believed that we have recorded about one fifth. Some days no one had time to record questions. Sometimes the recording was so long after the party had been guided that many questions were lost. Of course no one attempted to write down questions as they were asked in the ruins or the museum. The usual procedure was to sit down in the office after each trip and write down all questions that could be remembered. Sometimes the guide would be too busy to do even that. So we feel sure that we did not catch more than one fifth of the questions in the matter of repetition. We do believe, though, that we got most of the different questions.

"Lest anyone thinks that these questions all cover points that the guide failed to mention, I wish to say that it doesn't really matter much if the question asked has already been answered in the lecture. Some questions are asked prematurely, too, before the guide has had a chance to cover the points in his talk. Many are asked after the guide has already given the answer in the course of his talk. This last is not entirely due to dumbness on the part of the visitor. We fling such a mass of information at them that we really should not blame anyone for failing to digest the total at the first hearing. Sometimes I wonder if we should hand out so much fact verbally. It might be better and easier on the average visitor if the lectures were not so extensive but were

## VISITOR RESEARCH AT CASA GRANDE (CONT.)

supplemented by a printed folder for those who were sufficiently interested. Of course, visitors should be given every opportunity to ask questions."

We agree with Jack that it seems to matter little if the guide has already made the point, certain questions will almost invariably be asked after the information has been given. We agree that this is partly, at least, due to the fact that we are handing out information faster than the visitor can absorb it. In the nature of the case this must be so because the visitor stays such a little time and there is so much he wants to know. We doubt the advisability of cutting down the talk and handing out the other information in a folder. We rather favor of giving the information to the visitor as he walks around and sees things, well knowing that a large part of it will slip out of his mind, and then giving him the folder which will, if he reads it, jog his memory and bring back the statements we made to him while he had the thing before him. In other words, the folder is a good idea but is no excuse for cutting the visitor's trip. There is no meat for argument, in these questions reported here, that we tire the visitor out and should turn him loose sooner. Visitors with museum or ruins fatigue would not be asking questions, especially questions as intelligent and as much to the point on the whole as we have here. One angle of our visitor research should be directed at determining if we do hold the visitor too long at our monuments, but these questions seem to us to have little bearing on that and that problem must be attacked in some other manner.

### CLASSIFICATION OF QUESTIONS

	No. of Questions	Times asked.
1. Ruins and ancient inhabitants-----	75	973
2. Material in Museum-----	14	255
3. The Ranger-guide himself-----	11	158
4. Modern buildings on the monument-----	10	106
5. National Park Service-----	4	30
6. Wild Life-----	15	137
7. Botanical Life-----	16	158
8. Modern Indians-----	5	38
9. Monument area and facilities-----	22	220
10. Climate and weather-----	10	77
11. Other Parks and Monuments-----	3	58
12. Travel Information-----	10	109
	195	2,309

It will be noted at once that the first two classes, dealing with the ancient people, their ruins, and their material in the museum are the cause of more than 47% of the number of questions and of 53% of the number of times asked. This is as it should be; the visitors have manifested the greatest interest in the things for which we have made the



# VISITOR RESEARCH AT CASA GRANDE (CONT.)

monument. Wildlife, Botany, and Modern Indians, grouped together come next.

THE SEVENTY-FIVE QUESTIONS ASKED 973 TIMES UNDER CLASSIFICATION 1, RUINS AND ANCIENT INHABITANTS, WERE AS FOLLOWS:

Times asked.	Question
64	Is this original wood?
48	What became of these people?
43	Where did they get their water? See 21-25-12-16.
41	What was the name of these Indians? What tribe was this?
41	Did you put this cement on the walls?
39	How old are these ruins?
35	Why did they abandon these villages? these compounds?
35	Do the doors indicate a small people? (see 26)
35	Is this adobe material?
33	How high was the outside wall of the compound?
31	How did they get to the upper floors? (of Casa Grande).
27	What became of the timbers? (Of Casa Grande). See 64.
23	Why did they have such low doorways? (See 35)
25	Where are the ancient canals? (See 16, 21, 12) See 43.
25	Have you found the burial ground?
25	What was that hole in the third story? (West wall, north room).
22	What are these holes for? (Ventilators).
22	How many people lived in this village? See 11.
21	How long has this roof been over Casa Grande?
21	How did they get their water? See 16-25-12.
21	Didn't they have fires in here? See 10
19	How did they light this inner room?
17	Did Casa Grande have a roof when first built?
16	Are these ruins older than the cliff dwellings?
16	Did they dig wells? See 21-25-43-12.
15	Is this the outside wall?
13	Is any excavation going on now?
12	Is this the original plaster?
12	Was anything found in these buildings?
12	Where can I see a canal? See 25-21-16-43.
11	How many people lived in this building? See 22
10	Where did they have their fires? See 21
10	How close to here did the canals come? See 21-25.
10	How high is this building? How many stories did this house have?
8	Were these people Indians? See 41
8	How does Tonto compare with Casa Grande?
8	Are these Indians represented anywhere today? See 48
8	Where did this building material come from?
7	Was this a chief's house?
7	How thick are these walls?
6	Did these people raise cattle? See 4-3-2.

# VISITOR RESEARCH AT CASA GRANDE (CONT.)

## QUESTIONS ASKED (CONT.)

<u>Times asked</u>	<u>Question</u>
6	Did this tribe also inhabit Pueblo Grande?
6	Did they use adobe material?
6	Do you believe they were Masons? (Belonged to Masonic order)
4	Did they grow cotton?
4	Can finger prints be discovered on the walls?
3	What crops did these people raise?
3	Did the Spaniards build this building?
3	What is the evidence that these ruins date back 1,500 years?
2	Are there other walls underneath these?
2	What are the dimensions of Casa Grande?
2	Did they know how to mix straw with mud?
2	Did they grow tobacco?
2	How far is it from this village to the river?
2	Did they ever take their finger prints?

The following were asked once each:

Did the Indians build this present roof over Casa Grande?  
 Were these holes used to shoot guns through? (Rafter holes).  
 Is that where you are excavating? (Potsherds on wall, NE corner).  
 In which room did Fort hold mass?  
 Any evidence on unit of measure?  
 Did these people come from the north?  
 Any indication as to age they reached before death?  
 Was their culture higher than the present Indians?  
 Is this wall material same used in making pottery?  
 Did they have engineering knowledge?  
 Why isn't this 1,500 years old?  
 Is the excavation at Pueblo Grande complete?  
 Were these people related to those around Mexico City?  
 Nobody knows anything about these people do they? (After complete ruins and museum trip).  
 What points argue against the Big House as a Kiva or ceremonial house.  
 Did this outer wall sink into the ground this much?  
 Are the holes for the north star stopped up?  
 How do you get in there?  
 Isn't this odor from the Indians that lived here?  
 What about the dates on the walls?

The first thing that struck us about these questions are what we might call for want of a better phrase, the high percentage of hits registered? It is only in the 'once asked' list that you find a few foolish questions.

The following condensed tabulation of the most important questions seems to show what the average visitor wants to know and is given here.

# VISITOR RESEARCH AT CASA GRANDE (CONT.)

for further study.

## CONDENSED TABULATION OF MOST IMPORTANT QUESTIONS

	Times asked	Total
Who were these people?	41-8-----	49
What became of them?	48-----	48
Why did they leave?	35-----	35
What was their stature?	55-----	35
How many were there in village or building?	22-11-----	33
How did they live?		
Water questions	43-25-21-16-12-----	117
Buildings?	31-26-21-19-10-----	107
Crops, etc?	6-4-3-2-----	15
How old are these ruins?	39-16-8-3-2-----	68
About materials	64-35-27-6-----	132
About dimensions	38-10-7-2-----	52
		691

One question is remarkable for its absence: "Where did these people come from?"

We hope to report further next month on these questions.

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## AT PUEBLO GRANDE

(Ed. note: Some months ago Odd Halseth, director of Pueblo Grande, Phoenix, Arizona, started to accumulate visitor questions with the idea of devising efficient methods to answer them. Temporary Ranger Paul Beaubien at Saguaro National Monument independently had hit upon the same scheme at about the same time. Foreseeing valuable possibilities, Park Naturalist Rose issued a memorandum asking monument custodians to accumulate similar data. The preceding article is an analysis of the Casa Grande report, the first received. Following are some of the questions asked at Pueblo Grande, Mr. Halseth very kindly having granted permission to use them in the Supplement. His methods differed from those used by the Casa Grande staff in that he gave writing materials to unhurried visitors, while Casa Grande men were forced to pick up the normal run of questions on regular guided trips. Other questions asked at Pueblo Grande will appear in this section of the Supplement from time to time.)

### Questions Asked by College Students and Graduates:

1. Why did these Pueblo Indians move away from the site of these ruins?
2. Approximately how long did it take the Indians to dig the irrigation canals and about how much land did they cultivate?

ABOUT PUEBLO GRANDE (CONT.)

3. I have noticed west and south of Phoenix a long ridge. Some say this is an old prehistoric irrigation canal. How about this?
4. The above ridge is prominent between laterals 16 and 17 - one-half mile south of Buckeye Road.
5. At its greatest development, about how many people inhabited the pueblo?
6. Are the Indians who visit Pueblo Grande interested? antagonistic? etc.?
7. Were the Indians at Casa Grande Ruins friendly to the Indians at Pueblo Grande?
8. Are the ruins prehistoric and if they are - what ages were they built?
9. Are there any more ruins built at the same time as these? Any nearby?
10. Were they built before or after the Casa Grande Ruins?
11. What was the nature of the tribe that inhabited them?
12. What other Indians were their friends? Enemies?
13. In what ways, if any, do they differ from the other Indians in Arizona?
14. Did they have any special methods of making jewelry, pottery, basket making?
15. What did the tribes excel in?
16. Does the timbers, if any has been found, fit into the tree ring? The theory of judging age.
17. What became of the Indians who have vanished?
18. How did the Indians live at Casa Grande without water?
19. Did the prehistoric Indian have a higher civilization than those found by white men? If so, what caused them to lose this civilization?
20. Which is the older? Casa Grande or Pueblo Grande?
21. Could this have been one of the seven cities of Cibola?
22. What did these people eat?
23. How did they prepare their food? Type of clothing? Shoes? Material? etc.
24. What was their attitude toward the sun as evidenced by location of doors or openings?
25. Size of families?
26. Is it necessary to have an extensive knowledge of archeology to get into this work?
27. What are the qualifications for entering same? Where does one apply?
28. Are the different Indian Ruins in the Southwest under Government or local supervision?
29. Why have there been no works of similar nature done in known sections of the East where Indians were known to have lived? i.e.: Mass., R. I., etc.?
30. If these present ruins at Pueblo Grande were termed "the community house" what kind of houses did the majority of Indians live in?
31. What are the ruins of?
32. What has been taken out of them?
33. Has any connection with any particular Indian tribe been found?
34. Is it possible to place the use of the various rooms or has any idea of the Indians' activities been reconstructed?

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ABOUT PUEBLO GRANDE (CONT.)

35. How does the excavation take place and how long has it been going on?
36. In what way do the Indians of North America differ from those of Mexico and South America?
37. Why did the Indians move from this site - if they did?
38. Did the Indians who inhabited the top layer of this ruin eat the same staple foods? Corn, wheat, as those living on the bottom?
39. How did the people living here tell time?
40. What mode of travel did they use?
41. Is there any connection between these Indians and those of Mexico?
42. Did these Indians work in metal as well as clay (art)?
43. Did animals of which we know nothing live here?
44. What kind of clothing did they wear? Did they make the material?
45. How do you determine the antiquity of these ruins?
46. Are there any maps of ancient irrigation canal lines?
47. Also of S. W. Ruins - giving locations and brief description.
48. Did the Indians (ancient and modern) regard gold and silver as unlucky or did they just not bother themselves to work it?
49. What is the connection, if any, between the American Indian and the Eskimo, or what is the latest theory?
50. Is it not possible that the primates could have developed in all parts of the inhabited globe simultaneously as far as conditions are concerned?
51. What are the mostly used Indian medicines?
52. When do the Indians have their ceremonies?
53. How long does the average Indian now live?
54. How did the Indians haul water in the dry seasons?
55. When the first white men came to Arizona, did they find the Indians living or using such so-called ruins as Montezuma Castle, Pueblo Grande? When were such ruins abandoned?
56. Is this ruin and the contents found within of the same type as others found in Arizona?
57. Has anything new been found in one that is not like anything found in the others?
58. Can you judge the date of this ruin from what has been found?
59. What is the description of the things that have been found in it.
60. From the findings in each ruin, is each kind of basketry, pottery, etc., are any of them similar in design? Material?
61. What are some of the designs?
62. How many are there?
63. Are there any traces as to the tribe of Indians that settled there?
64. How would it be possible for one to tell the age of the ruins and for how long were they undisturbed after the Indian vanished?
65. Were there any other nearby or were these segregated from the rest and built the ruins as a shelter from some unknown cause.
66. Are the articles being collected from the ruin itself, or from some other part of the territory?
67. What does Dendrochronology mean? What does Hohokam mean? How do you account for the holes in the floor? Were these ancient Indians

- related to Mayas and Aztecs from Mexico?
68. Have these tribes known how to always make pottery, basketry and stone implements?
69. Are there any traces of related tribes around?

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## BACTERIA IN TUMACACORI WALLS

(Article from Arizona Republic, April 17, 1936)

Deathless bacteria have been aroused from a period of 249<sup>(?)</sup> years of suspended animation and again are busy reproducing themselves.

Dr. Ira B. Bartle, who has spent most of his life in studying spores and fungi, reported success today in resurrecting the small creatures which were put to sleep 2 $\frac{1}{2}$  centuries ago by the Indians who built the Tumacacori mission near Nogales, Arizona, in 1687.

He finds the bacteria are creatures of environment and conditions just as are humans.

Last month Dr. Bartle went to the old mission founded by Eusebio Francisco Kino almost a century before Fra Junipero Serra established the California missions. From the four-feet thick adobe wall, forming the staircase to the belfry, he obtained a core of the inner adobe brick. Extreme care was taken in the procedure to insure that the specimen was not contaminated in the operation.

In sealed, sterilized tubes, he took the adobe material to his laboratory here, and succeeded in bringing the bacteria out of their lethargy.

"The samples obtained were incubated on gelatin agar and dextrus plates and showed 94 colonies to 60 square centimeters in 24 hours," Dr. Bartle reported. "These colonies are light gray, of a flocculent texture and are neither elevated nor depressed, but rather flat with the surface of the media.

"In 43 hours this plate showed 131 colonies. These colonies under the microscope showed soil bacteria and spores. No fungi have been found as yet. The life cycle of the predominant spore is about 96 hours; is homosexual and reproduces by mitosis."

In discussing the putting to sleep of these minute creatures, Dr. Bartle said:

"When the adobe is made these spores and bacteria live and multiply as long as there is moisture and oxygen. As this disappears they

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## BACTERIA IN TUMACACORI WALLS (CONT.)

begin putting on a thicker cell wall and the protoplasm thickens and contracts until eventually respiration and reproduction cease and they go into a state of suspended animation, in which condition they are immune to almost every condition except fire itself.

"You cannot freeze them under any ordinary condition and it takes strong antiseptics some time to kill them. Now the ones in the more exposed locations occasionally get a little more moisture and they start a new life cycle for a few thousand generations, and in each of these there is a loss because only the stronger ones live. It is always survival of the fittest."

## KEET ZEE CANYON VEGETATION

By K. C. Karbachuer

### Trees and Shrubs

#### Conifers

Fir, Douglas  
Fir, White  
Juniper, ground  
Juniper, Utah  
Juniper, one seed  
Juniper, Rocky Mt. red  
Pine, ponderosa  
Pine, pinon  
Spruce, Engelman  
Spruce, blue

*Pseudotsuga taxifolia*  
*Abies concolor*  
*Juniperus communis*  
*Juniperus utahensis*  
*Juniperus monosperma*  
*Juniperus scopulorum*  
*Pinus ponderosa*  
*Pinus edulis*  
*Picea engelmannii*  
*Picea pungens*

### Other trees and shrubs

Antelope brush  
Apache Plume  
Aspen  
Birch bog  
Black brush  
Box Elder  
Buckthorn  
Cactus  
Ceanothus or Buck brush  
Chanuse or White Greasewood  
Chokecherry black  
Cliffrose  
Cottonwood  
Currant, golden  
currant, black  
Estafiata or Fringed wormwood  
Fendler brush

*Furshia tridentata*  
*Pallugia paradoxa*  
*Populus tremuloides*  
*Betula fontinalis*  
*Coleogyne ramosissima*  
*Acer negundo*  
*Rhamnus* spp.  
*Opuntia* spp.  
*Ceanothus fendleri*  
*Atriplex canescens*  
*Prunus melanocarpa*  
*Cowania stansburyana*  
*Populus occidentalis*  
*Ribes aureum*  
*Ribes* spp.  
*Artemisia frigida*  
*Fendlera* spp.

## DEET ZEEL CANYON VEGETATION (CONT.)

## Other trees and shrubs (cont.)

Gooseberry	Grossularia spp
Gooseberry, Mountain	Ribes montigenum
Greasewood	Sarcobatus vermiculatus
Manzanita	Arctostaphylos pungens
Mistletoe	Phoradendron spp.
Mormon tea	Ephedra viridis
Mountain mahogany	Cercocarpus intricatus
Oak, gamble	Quercus gambelii
Oregon Grape	Oostemon repens
Poison oak	Rhus toxicodendron
Prickly Pear	Opuntia chloritica
Rabbit brush, large	Chrysothamnus spp.
Rabbit brush, gray	Chrysothamnus spp.
Rabbit brush, small	Chrysothamnus spp.
Rose	Rosa fendleri
Sagebrush, common	Artemisia tridentata
Sagebrush, small	Artemisia spp.
Serviceberry	Amelanchier jonesii
Silverscale	Lepargyrea rotundifolia
Snakeweed	Gutierrezia sarothrae
Joint grass	?
Lambs quarter	Chenopodium album
Larkspur low	Delphinium arizonicum
Lobelia	Lobelia splendens
Loco	Astragalus spp.
Loco, purple	Astragalus mollissimus
Lupine	Lupinus spp.
Maidenhair	Adiantum capillus
Mallow	Melva spp.
Mariposa lily	Calochortus nuttallii
Milkweed	Asclepias spp.
Monkey flower	Mimulus spp.
Mustard	Brassica spp.
Nettle	Urtica spp.
Pentstemon	Pentstemon spp.
Peppergrass	Lepidium spp.
Phlox	Phlox spp.
Red and yellow pea	Lotus wrightii
Russian thistle	Salsola pestifer
Scarlet bugler	Pentstemon spp.
Spiderwort	Tradescantia spp.
Sunflower	Helianthus spp.
Thistle	Cirsium spp.
Virginia creeper	Parthenocissus vitacea
Wild buckwheat	Eriogonum spp.
Wild candytuff	Thlaspi coloradense
Wild onion	Allium spp.
Wild potato	Solanum fendleri



# SOUTHWESTERN BIRD BANDING TOTALS

Species	Randellor	Chaco	Navajo	Pipe Spr.	Tumacacori	Walnut	Yupatki	Total
	Prior	Prior	Prior	Prior	Prior	Prior	Prior	
Bluebird, Ch-b.						215		215
Cardinal, Ariz.		1			1			1
Crossbill, Bend.						17		17
Chickadee, Mtn.			6			3		9
Creeper, R. Mtn.	2							2
Dove, W. Mourn.		11	2		1			14
Dove, Inca		2						2
Finch, House		129	3					132
Flicker, Red-sh	1							1
Flicker, Ariz.		2						2
Gladfuch, Gr-bkd						2		2
Jay, Long-crstd	2							2
Jay, Woodhouse	3		6					9
Junco, Gra-hfd	51	5	3	4				68
Junco, Montana			9					9
Junco, Pak-side	7							7
Junco, Red-bkd	9		2			36	4	53
Junco, Shufeldt	7		13	1		10	1	32
Mockingbird, W.		2						2
Nuthatch, Pyg.	21					25	1	47
Nuthatch, R.M.	2					6		8
Owl, W. Horned		1						1
Phoebe, Say		13			4			23
Quail, Gambel		58			1			59
Roadrunner		4						4
Robin, Western						7		7

Species	Bandelier	Lasagrande	Chaco	Navajo	Pipe Spr.	Junacacori	Walnut	Mupatki	Total
Spoecker, H-nape							4		4
Spoecker, R. Mtn							2		2
Shrike, White-r.		3					1		3
Siskin, Pine							7		7
Solitaire, Town									
Sparrow, Gambel		403	13		43	1		15	22
Sparrow, Lincoln		1							450
Sparrow, W. Lark						4			1
Sparrow, Nev-Sav.					1				4
Sparrow, W. Vesper		1							1
Sparrow, Wh-crn.				6					1
Swallow, Ro-wing.		3	2						6
Thrasher, Bend.		5				1			5
Thrasher, Criss.		7							9
Thrasher, Sage									7
Titmouse, Gray								2	2
Towhee, Canyon						2	1		1
Towhee, Gr-tail		2				4			5
Towhee, Spurred	1			1		1			3
Waxwing, Cedar								1	2
Woodprk, Cactus									1
Woodprk, Gila		8				1			1
Woodprk, Mearns							5		8
Woodprk, RM Hairy	1								9
Wren, Cactus		35	1			1			1
*---new species to this listing									
SUB-TOTAL	107	5	637	21	0	0	0	44	9
TOTAL	112		718		56		353	13	19

## BANDELIER BIRDS

By Betty Jackson

Birds have been invading the canyon this month in hoards. Most of the earlier birds are still here -- Robins, Juncos, Ravens, Solitaires, Canyon Wrens, Nuthatches, Spurred Towhees, and Jays -- but even they are beginning to change their chief interest from food to mating.

On the eleventh came the White-Throated Swifts and the Rocky Mountain Evening Grosbeaks. The Swifts will stay all summer, but the Grosbeaks will go soon, if they haven't already. Ravens are mating, and should have nests, but I haven't found them yet. The Rocky Mountain Hairy Woodpeckers and the Flickers are mating, too. House Finches are becoming common in the Detached Section, in flocks of pairs, but I've only seen one in the canyon.

A Red-Winged Blackbird was here for a week early in the month, and later came a Brewer Blackbird, who is still here. He arrived on the sixteenth.

Audubon Warblers have been seen, down the canyon by Mr. Borell, and on the south mesa by me. A flock of Hoover Warblers came in while we were away, and are now to be seen flitting about the trees and bushes near the office. Though Bailey states that they are rare in New Mexico, I am sure of my identification.

Five Grey-Headed Juncos were banded.

I'm going to study hawks, and then tell you which ones came in this month.

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## RUMINATIONS

In looking over this issue of the Report and the Supplement, Chief, I am reminded of the old days when, if we wanted a thing done, we had to go out and do it ourselves. In spite of our best intentions we are liable to go soft if we don't watch ourselves and we have had such a multiplicity of hired help around to refer problems to that it is no wonder we were getting soft. Seeing, as reported in last month's Ruminations, that psychologists were not having a depression like the other experts, and therefore we couldn't hire one to study visitors for us, we have come around to where we ought to have started from in the first place and set up a little research bureau of our own.

Visitor Research will just be a side line with us, for of course our first duty is protection and the second is giving information, and with eighteen thousand visitors last month this was quite a little chore by itself, but as a side line, to keep the boys occupied, we have decided to try to find out how a visitor thinks and why. We have no

## RUMINATIONS (CONT.)

illusions about the size of the job we are tackling. For you see we have been handling visitors for a good many years; so I think we are competent to get the very best results out of the time and money we expect to expend, but there is no doubt that it ought to be done and if we haven't an expert on the road who can do it, we will just have to go on and do the best we can. Look you, we haven't an time and energy to waste and if I didn't think the results would more than pay for the expenditure of both we will have to make, I wouldn't start the boys out on it. We are modest up to a certain point, but, while admitting we are not experts in psychology, we think we can work just as hard gathering information as one who is, and, after we get a good body of information together and begin drawing conclusions maybe we can get an expert to come along and sit in with us.

Again was I impressed the other day when the two volumes of the December monthly reports of all the superintendents descended on my desk for perusal affording me the chance to gather pearls of wisdom. The thing that impressed me was that everything under the sun is gone into in great detail except the handling of visitors. I wonder why that is? I am not much interested in how many miles of new trails a man has built; what interests me is, how many visitors are using his trails and is there any way to increase that number? How long does his average visitor stay and why does he leave so soon?

Anyway, we are going to have some fun trying to find out what visitors think. Which reminds me of an interesting experiment described to me the other night by the fine Secretary of one of our fine western museums. It seems there was a door leading from the museum exhibit rooms back to the offices and laboratories and, although it was marked "Private. No Admittance" visitors had a great way of going through and causing a deal of bother to the officials who were interrupted thereby. Several changes of wording were tried with no better success until some one thought of the thing that stopped them cold: "For members only, why not subscribe?"

Odd Kjelseth, who is the only City Archaeologist in the United States so far as we know, is also interested in these visitor problems and has promised to share his information with us and we have the first installment of questions his visitors ask him, at Pueblo Grande Ruin in the edge of the City of Phoenix, in this Supplement.

Bob Rose happens to be in the field at this writing and we just didn't have the time to digest the material and catch up his Visitor Contact tables this month. We will probably get this done by next month and being a month late won't hurt the figures any. We have no extra funds to take on a little help over the month end rush and so we have a rather hectic time for a few days around the office if one or two of the force happens to be away as is the case this month. I wonder why it is that so many deadlines occur around the first of the month? When

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RUMINATIONS (CONT.)

anybody wants a report from a field man he thinks it is a brilliant inspiration to set the deadline on it between the first and the tenth, thinking, I suppose, that all the other Departments, Bureaus, Divisions and Sections will set theirs on the thirteenth or twenty-third and that no one else will think of the first of the month! Anyway it keeps a field man from worrying over the fact that he is a field man, so there seems to be some value to it.

Incidentally, we printed some separates of Van's report on Sunset Crater and ran them as our No. 3 Special Report. Also we printed three hundred of the Pipe Springs article by Leonard Heaton and put on special covers so he will now have something to send people who are constantly writing him for information on that monument.

Also, and again incidentally, we have received some nice compliments on that series of Special Reports from folks who matter, and the Southwestern Monuments Monthly Report is again noted in the current issue of American Antiquities. While, as I said above, we are modest up to a certain point, it doesn't keep us from pointing with pride.

Note the new Report and Supplement covers. We think Tov. did a nice job, don't you?

Cordially,

*The Boss*

GENERAL INFORMATION ON  
CHACO CANYON NATIONAL MONUMENT  
CROWNPOINT, NEW MEXICO

The Chaco Canyon National Monument is located in San Juan and McKinley Counties, Northwestern New Mexico. The Monument is reached by leaving Highway U. S. 66, at Thoreau and traveling 65 miles north, over an Indian Service road, to the monument headquarters. The road is well marked with National Park Service signs. It is a graded road maintained by the Indian Service. The Monument is reached on the north by traveling State road 55, south from the little town of Aztec and Aztec Ruins National Monument, a distance of 40 miles, then take state road 55 a distance of 24 miles, to the Monument headquarters. Excellent tourist accommodations may be had at Gallup on the South, Aztec and Farmington on the North.

The Chaco Canyon was proclaimed a national monument March 11, 1907. It is administered by the Department of the Interior, through the National Park Service. A permanent custodian is stationed at the Monument for the guidance and information of the visitors, as well as the protection of the Monument. It is open to the public every day in the year. The National Park Service maintains a picnic area; food and supplies may be secured at the Chaco Canyon Trading Post, at the Monument headquarters. Normally good tourist accommodations may be had at a privately-owned lodge in the Monument.

Within the Monument boundaries 18 major ruins are found. These ruins are without equal in the United States. Together with the cultural material recovered from the abandoned rooms, these ruins represent the very Zenith of Pueblo civilization in prehistoric times. No other archeological area in the entire Southwest exhibits such a high development.

Pueblo Bonito, one of the major ruins of the Monument, was intensively explored by the National Geographic Society from 1921 to 1927. Pueblo Bonito covers more than three acres of ground; in its heyday, it had about 200 rooms and 32 kivas or ceremonial chambers. Mr. Neil M. Judd, of the United States National Museum, who conducted the excavations for the National Geographic Society, characterizes Pueblo Bonito as the largest apartment house built anywhere in the world prior to about 1887, and estimates that it, at one time housed 1,200 people.

Pueblo Bonito and other ruins of the Chaco were dated by the tree ring methods, by A. E. Douglas, Director of Steward Observatory, University of Arizona. Seven beams from the western half of Pueblo Bonito gave A. D. 919 as the building time. The major construction appears to have been in the 1060's, followed by a lesser activity 20 years later. Then it dwindled away, ending, so far as our evidence is concerned, shortly after 1130.