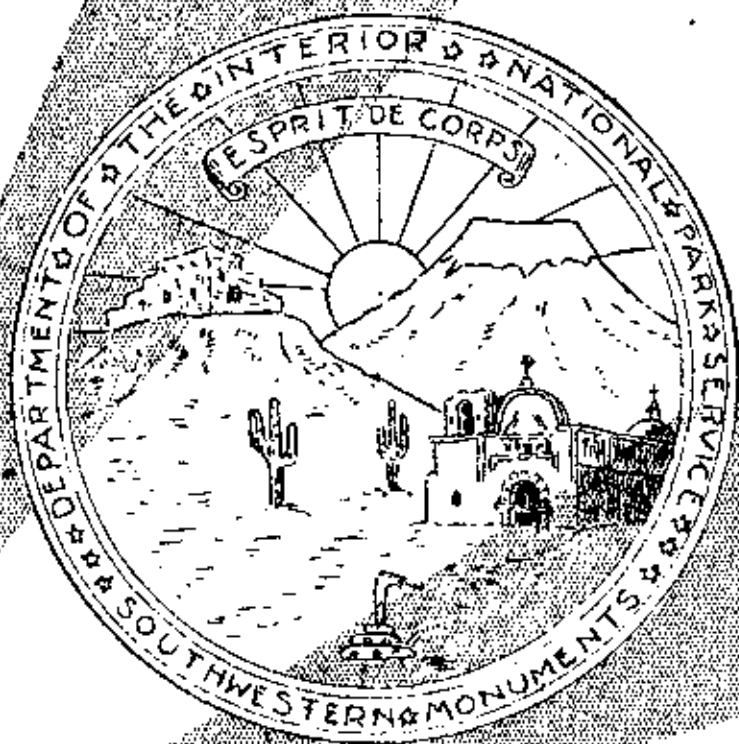


Southwestern Monuments

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• N. P. S. •

SOUTHWESTERN MONUMENTS

JUNE, 1936, REPORT

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SOUTHWESTERN MONUMENTS PERSONNEL

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; Millar Singerman, Clerk-Stenographer; Luis Castellum, EOW Clerk; Deric Nusbaum, Traveling Ranger; Clarence Cole, Student Technician.

GENERAL FIELD MEN: Charles A. Richey, Resident Landscape Architect; J. B. 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 669, Santa Fe, New Mexico. Earl Jackson, Custodian;
J. W. Hendron and Alfred Peterson, Temporary Rangers.
 4. Canyon de Chelly---Chin Lee, Arizona. Robert R. Budlong, Custodian.
Doug Harritt, Temporary Ranger.
 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---Crownpoint, New Mexico. Thomas C. Miller, Custodian;
Homer F. Hastings, Guide.
 8. Chiricahua---Willcox, Arizona. Frank Fish, Custodian.
 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 Jackson, Custodian;
Curtis Cox, Guide.
 14. Natural Bridges---Blanding, Utah. Zeke Johnson, Custodian.
 15. Navajo---Kayenta, Arizona. John Wetherill, Custodian;
Milton Wetherill, Ranger-Historian.
 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, Ranger.
 21. Tumacacori---Box 2225, Tucson, Arizona. L. R. Caywood, Custodian.
 22. Walnut Canyon---Flagstaff, Arizona. Paul Beaubien, Ranger.
 23. White Sands---Alamogordo, New Mexico. Tom Charles, Custodian.
 24. Wupatki---Flagstaff, Arizona. J. W. Brewer, Ranger.
 25. Yucca House---Cortez, Colorado. No Custodian.
-

CONDENSED REPORT

Coolidge, Arizona
July 1, 1936

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

Dear Mr. Director:

The Condensed Report for Southwestern Monuments for May, 1936:

TRAVEL

	<u>June, 1936</u>	<u>June, 1935</u>	<u>June, 1934</u>
Aztec Ruins	1,323	903	1,435
Bandelier	1,810	2,083	2,000
Canyon de Chelly	209	179	---
Capulin Mountain	2,500	2,500	1,200
Casa Grande	1,661	1,359	1,434
Chaco Canyon	643	649	264
Chiricahua	851	700	---
El Morro	223	373	296
Gran Quivira	309	386	---
Montezuma Castle	1,216	1,587	1,698
Navajo	33	---	25
Pipe Spring	362	461	660
Rainbow Bridge	66	28	---
Sunset Crater	459	563	---
Tonto	335	447	---
Tumacacori	911	843	764
Walnut Canyon	1,441	1,306	---
White Sands	8,852	---	---
Wupatki	267	178	72
Yucca House	---	30	---
Actual Reported			
Registration	23,471	14,575	9,848

The 17 monuments which reported both in 1935 and 1936 showed a slight increase from 14,575 to 14,619---74 visitors, or 0.5%.

The 11 monuments which reported both in 1934 and 1936 showed an increase from 9,849 to 10,949---1,101 visitors, or 11.1%.

Monuments where accurate counts are taken show rather constant increases. Basing estimates on them, we believe that June, 1936, as a travel month was about ten percent better than 1935, and approximately the same percent better than 1934.

Reports from various parts of the area indicate that dryness and heat are factors which deter visitors from leaving main highways.

CONDENSED REPORT (CONT.)

000 GENERAL

010 MATTERS OF UNUSUAL IMPORTANCE

El Morro: Interest rapidly making headway concerning important Cuatro-centennial celebration to be held in New Mexico in 1940, 400 years after the coming of Coronado. A director of the celebration visited El Morro last month inspecting conditions and making plans. This monument should play one of the most important parts. See page 447.
Hovenweep: See page 455 and following for important notes as to stabilization of ruins at this monument.

Wupatki: First Navajo Arts and Crafts Exhibition was a great success and is believed to have contributed toward the revival and development of old Navajo handiwork among the interesting Indians of the Wupatki Basin. See pages 423, 488.

020 GENERAL WEATHER CONDITIONS

North central New Mexico seems to be entering its rainy season, but the rest of the Southwest is hard hit by drouth and heat. El Morro reported one rain, but the remaining monuments seem to have had little or no precipitation. Range conditions are very poor in northern Arizona near Pipe Spring, and the dry cinders are crippling sheep in the vicinity of Wupatki. The normal July rains will remedy the situation, it is believed.

100 ADMINISTRATION

123 VISITS OF NATIONAL PARK OFFICERS TO MONUMENTS

Bandelier: Custodian T. C. Miller, District Architect Richey, District Engineer J. B. Hamilton.

Canyon de Chelly: Botanist H. E. Bailey, District Engineer J. B. Hamilton, Temporary Ranger Jimmie Brewer.

Casa Grande: Custodian Evon Z. Vogt, Mr. Harry Hammon of U. S. Public Health Service.

El Morro: District Engineer J. B. Hamilton.

Navajo: Regional Geologist Vincent W. Vandiver.

Tumacacori: Ranger Donald Erskine, Engineer Clifford London.

Walnut Canyon: Acting Chief of Wildlife Division Victor Cahalane, Regional Wildlife Technician Adrey Borell, Jr. Naturalist Charlie Steen.

White Sands: BCW Assistant Regional Director George Collins, Regional Architect Charles A. Richey.

Wupatki: Park Naturalist Edwin McKee. Junior Park Naturalist Louis Schellbach, Wildlife Technician Russell Grater, Regional Geologist Vincent Vandever, Junior Park Naturalist Charlie Steen.

180 CIRCULARS, PUBLICITY

Headquarters: Issued: 5,000 White Sands informational leaflets
1,500 Aztec Ruins informational leaflets

CONDENSED REPORT (CONT.)

180 CIRCULARS, PUBLICITY (CONT.)

2,000 Chiricahua informational leaflets

500 Natural Bridges informational folders

Wupatki: Local and Phoenix papers carried news stories on Navajo Arts and Crafts Exhibit which was held near the monument. See page 422.

200 MAINTENANCE, IMPROVEMENTS, NEW CONSTRUCTION

210 MAINTENANCE, UNUSUAL

Chaco Canyon: New dump truck proved very useful in clearing blow sand from cattleguards, a somewhat involved process. See page 431.

Tonto: Considerable time spent during June strengthening badly weakened walls of Lower Ruin. These stabilization measures are temporary at the best, and Tonto, like all other archeological monuments, urgently needs a comprehensive stabilization program. See page 446.

220 IMPROVEMENTS

El Morro: Acting Ranger Vogt experimenting somewhat successfully with copperas solutions to stain rock steps a more natural color. See page 450.

Navajo: Considerable work done on trails to make them passable in wet weather. See page 453.

230 NEW CONSTRUCTION

Canyon de Chelly: See page 452.

Pumphouse walls to four feet height.

Pump working smoothly; reservoir full.

Supplementary septic tank in place and reservoir almost covered by rock.

Chiricahua E.C.W. See page 430.

Echo Trail progressed 2,500 feet, making a total of 10,000 feet.

Work re-started on Massai Point--Balanced Rock Trail and 400 feet were completed. Trail now at 2,000-foot length.

All poles in place for Massai Point-Portal telephone line and six miles of wire are in place.

Grading of service road and utility area 85% completed. Surplus material being used to dress fill slopes and obliterate borrow pits on

Bonita Canyon highway.

Utility area wall 35% complete.

Usual maintenance on Bonita Highway accomplished.

Pipe Spring. See page 439.

Crew of eight men worked all month.

Parking area and road filled and graded. One hundred and fifty yards of graveling completed.

Now hauling flagstone for walks and stone for guard rails.

CONDENSED REPORT (CONT.)

300 ACTIVITIES OF OTHER AGENCIES IN MONUMENTS

320 COOPERATING GOVERNMENT AGENCIES

Chaco Canyon: Soil Conservation Service has accomplished much planting around headquarters and along flood diversion dikes on canyon floor. Constructed: 1,000 feet of earthen diversion dikes, three rock and wire sausage dams, three cable fences. All of construction work is in connection with revetment projects highly important to major ruins. See page 433.

320 NON-GOVERNMENT AGENCIES

Chaco Canyon: University of New Mexico and School of American Research under R. G. Fisher and Gordon Vivian began work of excavating and repairing Casa Rinconada. See page 432. University of New Mexico's new headquarters building now complete enough so that kitchen, dining room, and cellar are usable. See page 432.

Navajo: Fourth Rainbow Bridge-Monument Valley Expedition assembling. See page 454.

Walnut Canyon: Curator of Biology of Museum of Northern Arizona is making a botanical collection. See page 440.

350 DONATIONS AND ACCESSIONS

Chaco Canyon: Museum of New Mexico very kindly loaned a fine collection of Chaco artifacts for display at the monument. See page 431. Aztec Ruins National Monument transferred a Tree Ring Chart. See page 433. Headquarters. See page

2,000 Botany labels from Field Division of Education.

Rio Grande Culture Area map for Bandelier from Field Division of Education.

"Pottery of Pecos, Vol. II from Dr. A. V. Kidder.

Wupatki: Museum of Northern Arizona through kindness of Dr. and Mrs. H. S. Colton donated prizes for Navajo Arts and Crafts Exhibit which was held June 6 and 7 at Boundaries of monument.

Navajos built a sweat hogan and a ceremonial hogan which are permanent and will form an interesting addition to the monument's exhibits. These structures are located in a small basin entirely out of sight of the prehistoric ruins and thus will not cause confusion in minds of visitors.

Series of photos were obtained of use of sweat hogan and of belt and blanket weaving. These photos will be important in future museum exhibits. Temporarily they will be displayed in the sweat and ceremonial hogans.

See pages 422-426.

CONDENSED REPORT (CONT.)

400 FLORA, FAUNA, NATURAL PHENOMENA

440 INSECT CONTROL

Rainbow Bridge: Serious infestation of tent caterpillars in aspen of region. See page 437.

460 BIRDS

El Morro: See page 448 for June check list.

Young eagle captured and released. See page 448.

General: See page 468 for bird banding totals in Southwestern Monuments for fiscal year 1936.

A total of 1,547 birds of 63 species were banded in the nine monument stations during 1936. This seems a creditable total for the first year of such activity.

Montezuma Castle: See page 442 for June check list.

600 PROTECTION

620 FIRE PROTECTION

Chiricahua: On June 12, 50 CCC men were used in suppressing fire off monument boundaries in Rucker Canyon. See page 430.

Chaco Canyon: Custodian reports that Wildlife Technician Borell performed a good piece of work in controlling rodents in immediate vicinity of dikes by use of carbon bisulphide gas. No injury to other animals or birds. See page 432.

650 SIGNS

Montezuma Castle: Seven signs erected to replace missing ones. State highway wishes to cooperate in future. See page 441.

660 SANITATION

Casa Grande: Harry Hommon made inspection preliminary to installing of much-needed new sewage disposal system. See page 433.

900 MISCELLANEOUS

(CONDENSED REPORT (CONT.))

900 MISCELLANEOUS (CONT.)

MAIL COUNT

Incoming:		
Government	2,102	
Personal	<u>650</u>	
Total incoming		2,752
Outgoing:		
Government only	1,773	1,773
Telegrams:		
Outgoing	38	
Incoming	<u>33</u>	
Total telegrams handled		<u>71</u>
Grand Total		4,596

Cordially,

Frank Pinkley
Frank Pinkley,
Superintendent.

REPORTS FROM MEN IN THE FIELD

WUPATKI

By James Brewer, Ranger

500 Use of Monument Facilities by the Public

126 guests registered at Wupatki Pueblo; 227 at the Citadel Group; 86 names are duplicated, leaving a total of 267 registered visitors to this Monument in June, 1936; 1935, 178; 1934, 72.

179 additional visitors registered at the Navajo Arts and Crafts Exhibit and are not included in the above regular travel figures.

States were represented as follows: Arizona, 62; California, 26; Colorado, 16; Texas, 10; New York, 9; Pennsylvania, 7; New Mexico, 7; South Carolina, 6; Virginia, 5; Ohio, 5; Kansas, Illinois, Florida and Rhode Island, 3; Missouri, Oregon, Washington, Nebraska, and Michigan, 2; Utah, Nevada, Oklahoma, North Carolina, Alabama, 1. Foreign countries: England, 2; France, Germany and Australia, 1.

530 Newsworthy Visitors

Dr. and Mrs. H. S. Colton and Miss K. Bartlett brought Mr. and Mrs. Bartlett on the 25th.

Tony and Mrs. Richardson on the 5th.

Miss Mary (Arizonology) Boyer on the 7th.

Mr. and Mrs. M. J. Honning, veteran monumenters, on the 22nd.

100 Administration

123 Visits by N.P.S. Officials

Mr. and Mrs. Eddie McKee, Mr. and Mrs. Louis Schellbach, Mr. and Mrs. Russel Grater and Mr. Vincent Vandiver made unofficial visits on the 7th to see the Exhibit, and Junior Park Naturalist Steen in an official capacity on the 6th and 7th. (Sure do thank you.)

220 Weather

May 25 to June 1: High 86 degrees, on the 27th; low 45 degrees on the 30th. Precipitation, .03 on the 26th. This is the first measurable rain (?) we've had since the 25th of March, and not a drop since.

The country is very dry and the range is poor. The hot, dry cinders have crippled the sheep, and flocks are reducing in number as well as avoirdupois.

WUPATKI (CONT.)

June 1 to June 23: High 103 degrees, on the 19th and 20th; low 49 degrees, on the 7th. On the 12th the mercury rose to 100, and has risen to, or above, this mark daily, except on the 16th, (97 degrees).

180 Publicity

The Coconino Sun, The Flagstaff Journal, Tourist News, and the Arizona Republic carried announcements of the Exhibit.

The Sun and Journal had follow-up articles on the Exhibit.

300 Activities of Other Agencies in Monument

350 Donations and Accessions

The Museum of Northern Arizona paid the cash prize awards for the exhibitors in the Navajo Arts and Crafts Exhibit.

430 Archeology

The P II pick-up has given me more than its usual amount of maintenance, unusual. Little things, that are too small to voucher, keep breaking, and breaking me. If it doesn't two-bit me to the poorhouse it will to the hospital.

Having had no appropriation for minor repairs I have had to let major repairs go unattended also. Besides being a torture chamber it's a death trap, and if I fold it up I hope you will advise me to simply shovel it over and let some future archeologist wonder about the "flexed burial."

General

Both Sallie and I were feeling the need of a short holiday following our four months siege of Arts and Crafts, so Sallie packed off to Carlsbad for a rest. I picked up a bedroll and Clyde and Sarah, and at noon Wednesday (10th) we started for Canyon de Chelly, via Luepp, Oraibi, Pinyon and Chinle, arriving at Custodian Budlong's at 9 p.m.

Betty and Doug were holding forth when we arrived and Bud was burning the midnight oil en route from Gallup. He came in shortly, with a fine load of new tires.

Next morning we installed the new guns, and with Clyde and Sarah in the "rumble seat" Bud plowed up Canyon del Muerto as far as Antelope House. Retracing as far as the fork, we went up de Chelly as far as the Monument.

All this time Bud is cracking about "the best monument in the world,"

but we didn't get into an argument, simply because I made no reference to paper mache, said nothing about "being done with mirrors," and carefully avoided the use of "gaudy."

We left the canyon and took Clyde and Sarah to see the lovely Chinle vegetal dyed rugs. (Which was one of my reasons for taking the trip.)

Then we took off for home via Chambers and Highway 66. We got as far as Winslow and camped at the TWA Airport. At 12:43 a.m. a big Douglas flew in, and when the passengers got out Miss Judkins, hostess, showed Clyde and Sarah through the ship.

Friday morning when Clyde opened the Forest gate at the Pueblo he said, "Sarah, he no like that Canyon de Chelly for place to live allatime, just Luka-hockai keet Seel." (Wupatki to usDineh.)

The Navajo Arts and Crafts Exhibit

We wish you could have been here to see it, but since you didn't I am going to try to give you a little idea of what it was.

In the hogan, in as much a natural position as possible, were a mano and metate, sheepskins, cooking pots, buffalo rug, and a ceremonial outfit in an old Navajo basket.

Hanging to the vigas were an old squaw dress, a hoibitchai costume, cotton woven garters and belt, a quiver of lion skin with red Bayeta trimming, a buckskin quiver full of arrows, a coonskin hat, a shoulder blanket, two rawhide rentas, a marvelous old silver bridle, and Peshlecai's old silver concho belt.

A few of the older men sat in the hogan in their old type apparel. The pajama-like pants with split-seam legs, moccasins, plenty of silver and long hair predominated.

The four ramadas were placed in a quadrangle east of the hogan. Each ramada required 11 vigas, four forked uprights, two 2six axe" runners and five cross members to support the green juniper boughs.

In the first ramada Emmet Peshlecai worked silver. The sides of the shelter were hung with new blankets.

In the second shade were two museum display cases loaned by the Museum of Northern Arizona. One was completely filled with the work of Peter, and the other contained the assorted offerings of other children. The sides of this shade were hung with saddle blanket types, diagonal twills and herringbone weaves.

WUPATKI (CONT.)

The next shelter housed a bench and the registration sign and stand. Gladys' large rug filled most of the north side, and the other sides were covered with a shoulder blanket, vegetal dyes, and last-minute entries.

The fourth ramada, I believe, was most interesting. It contained the weavers at work on four looms, also the carders and spinners. Of special interest was the old type belt loom on which the brilliant red cotton belts are woven.

From the wigas we hung borrowed rugs. Museum pieces from M.N.A., a Chinle vegetal from a curio dealer, and some from the Brewer collection.

On Saturday morning, after the rugs had been judged by Mrs. Colton and Peshlakai Etsedi, Mrs. Colton opened the eyes of the Navajos with a scrapbook on Navajo Arts from her "Treasure Chest."

This was followed by a pow-wow in the hogan to explain why the blue ribbon rugs were judged as such. Forty-one people were counted in the hogan at this time, and Miss Bartlett said there was room for more.

It was encouraging to see the Indians come from the hogan and go about the ramadas feeling and discussing the quality of each rug.

On Saturday morning, while Charlie Steen and I took snapshots, Dr. Colton took color movies of Lester Little-Singer demonstrating the method of using the sweat house.

Sallie held a pow-wow in the hogan Sunday morning to promote better weaving, spinning, and more vegetal dyes for next year. Peshlakai spoke about 30 minutes, and Glyde the same, all toward the same end. (Much finger shaking at the ladies and a demand for more silver work from the men.)

Miss Bartlett came back Sunday and helped answer the thousand questions the 127 visitors asked.

There were 110 exhibits by 31 exhibitors, 21 of whom received prize money or sold exhibits. Thirty-nine of the 110 exhibits were sold. \$250 was collected by the Navajos for the sale of their exhibits.

The prizes were awarded as follows:

Plain weaving:

First - Ada Cody - \$5
Second - Gladys - \$3
Honorable Mention - Sarah

WUPATKI (CONT.)

Vegetal Dye:

First - Peter's Mother - \$5
Second - Amy - \$2.50
Honorable Mention - Bill Williams' Wife

Twilled Weave:

First - Sarah - \$5
Second - Peter's Mother - \$3
Honorable Mention - Gladys

Traditional Types:

First - Harry's Mother - \$4
Honorable Mention - Martha's Mother

Tapestry Weave (belt):

First - Irene - \$1.50

Old Silver:

First - Poshlakai - \$1

Children:

First - Peter (Spanish Saddle) - \$1
Second - Virgil (Chaps) - .50
Honorable Mention - Ruby (Doll)

The people who have no names in English are identified by their named relatives.

Thank You.

Our first thanks are due to the Navahos of Wupatki Basin, without whom there would have been no exhibit.

A written list of white folks to whom thanks are due would look like Who's Who in the Southwest, so rather than write our thanks we hope to be able to help them in some way any time we can.

About Navajos

When Dr. Bryant and Dr. Colton were here in August, 1934, Dr. Bryant asked Dr. Colton, "What does Wupatki have that no other Monument has?"

WUPATKI (CONT.)

Dr. Colton said, "The red-rock pueblo and this view of the Painted Desert," but none of us thought of the Navajos. Several Soil Conservation men have told us Indians in Wupatki Basin are as primitive as any on the reservation.

This is probably due to three things: (1) They are off the reservation and very, very little has been done for them by the Indian Service; (2) the great distance from the nearest trading store (40 miles); (3) their desire to live lives like their ancestors did.

So, with a fine start like that, it has been our aim to keep them (Park Service policy) as they are, un-"Americanized."

Considering the enthusiasm the Indians have shown to repeat the Exhibit yearly, we think we should add Navajo Arts and Crafts Exhibit to Dr. Colton's answer to "what no other Monument has."

Relying on my memory, because no statistics have been kept, I think 100% of the visitors to Wupatki who have been escorted to a Navajo camp have written back expressing thanks. And in many cases they have declared this unexpected side trip one of the high lights of their entire trip.

It is my intention to "furnish" the Exhibit hogan as best I can with our personal collection of authentic Navajo "furniture." This addition to the Monument will enable more visitors to see a Navajo camp without traveling miles over poor roads.

The sweat house can also be made most interesting by framing and attaching the step-by-step photographs of its use.

These photos were made on June 7th, during the Exhibit. Charlie Steen and I took pictures of Lester Little-Singer as he went about his sweat bath. The series starts with the fire-making sticks and ends with the blanket-covered sweat house.

In spite of 30 Navajos in our back yard it gets mighty lonesome around here, and if Sallie doesn't come home pretty soon I might be wishing I'd bought those etchings she wanted.

Sand Painting

A sing was started Sunday night for Grandma Peshlacai, a five day affair with three sand paintings. The ceremony is being held in the fine new hogan on the Monument.

On Friday I was approached by several of the men who asked me to come and help make the sand paintings. (At a dinner party Saturday night Oliver La Farge said I could consider that a great honor.).

WUPATKI (CONT.)

Monday morning Mr. and Mrs. M. Henning came to the Pueblo with Mr. and Mrs. Christman.

After the ruins trip we went down to the hogan to see and help with the sand painting. It was a four figure design with many rattlesnakes. After the design was completed I photographed (exposed negatives at it) through the smoke-hole.

As soon as I get this into the mail I'm going to rush back and photograph today's painting and try to get the whole thing on celluloid.

P. S.

Boss, I guess you better put a black mark opposite my name. I had an inquiry, I think it came from a Miss Brown in Tucson. The point in question was could a series of hogan construction photos be obtained.

I do not know the policy with N.P.S. official photos, and I filed the request under "correspondence to which I do not know the answer," and somehow the, well, it isn't ---what I mean to say ---is---I don't --(quit stalling, Brewer, you lost it - you know you did).

The writer of the letter had read last month's report, so I am hoping she will read this and apply to you directly about the requested prints. The negatives should arrive at your office simultaneously with Charlie Steen. I am sorry.

SUNSET CRATER

By James Brewer, in Charge

459 visitors registered at Sunset Crater in June, 1935; 1935, 563; 1934, no record.

WHITE SANDS

By Tom Charles, Custodian

We have had many interesting visitors the past month. If I may be permitted to review the subject from a viewpoint of public relations, there were two outstanding ones; Jone Bursey, manager of the New Mexico Tourist Bureau and Ward Hicks of the Hicks Advertising Agency of Albuquerque.

Incidentally, these are the two men who were responsible for the expenditure of Governor Tingley's \$50,000 fund for state publicity last year and it is said that they will have \$100,000 for the year to come. Whether there is any connection between the \$50,000 and the increase of tourist travel in the state, each must judge for himself but the Conoco Travel Bureau in Denver reports that New Mexico had 110% increase in tourist travel last year while the average increase for the nation was only 26%.

WHITE SANDS (CONT.)

Colorado 29% and California was taking a slight loss.

It strikes me that these men, in their clever search for tourists, had much to do with the outstanding increase.

Their visit to the Sands was well timed and fortunate. Great clouds of dust banked against the horizon, the rugged Sacramento range was a dim outline a mile or two behind us, clouds of swirling dust darkened the Federal highway in front and when we drove into the sleek, smooth, dustless road of the Monument it stood out in marked contrast. It was really beautiful in the Heart of the Sands that evening, remarkably free from dust or blowing sand.

Joe Bursey's inspiration should have stood at the peak as he viewed the gorgeous sunset, or he should have bubbled over when he beheld the long shadows and the velvet hills but his commercial mind seemed to "hop up" every time another foreign car rolled past, loaded with men, women and children. In 20 minutes a dozen foreign cars had whizzed past, at the Heart of the Sands. Remembering Joe's business and his interest in the foreign cars, it looked like a frame up.

"Sales Talk" was unnecessary. The atmosphere radiated enthusiasm. The open page of the register ran about like this:

Name	Town	Occupation	Impression
W. H. Buckhart	Dallas, Tex.	Merchant	"Dumbfounded."
Howard F. McGuire	Chicago, Ill.	Adv. Writer	"Mountains of Lux."
Ronald Wilkins	Detroit, Mich.	Insurance	"The world's Wonder."
Herbert Powell	San Marino, Cal.	Architect	"Mohammed-bring on the demals."
Peggy Metcalf	Pontiac, Mich.	Stenographer	"Never could I image any- thing so wonderful."
Red C. Vogel	Cedar Rapids, Iowa		"Like Iowa's snowdrifts."
W. A. Caswell	Bowling Green, Ky.		"Incomparable."

On and on these "foreign" visitors had raved about the Sands. Seven hundred and sixty had registered in 20 days. As modestly as possible I suggested to Joe that only about 20% of the visitors register here at this "open air" booth.

Messrs. Bursey and Hicks have been very kind to the White Sands in former state publications but with the added favorable impressions of this trip it looks like they may add a few "effusions" in the 1936 manuscript for state publicity.

From the work-a-day viewpoint of the Park Service our outstanding visitor this month was Mr. George Collins, the new regional director on his first trip to the Monument. He flew from Albuquerque to El Paso,

WHITE SANDS (CONT.)

took a birds-eye view of the Sands from the emergency route of the TWA, which takes a short cut through Mockingbird Gap of the San Andres, passes over the "Old Lake Bed" and the "Barbed-wire" landing field which are a part of the unexplored area of the White Sands National Monument. Not long ago we had a visitor who related his experience of running into a storm on this airplane trip between Albuquerque and El Paso and their landing at the "Barbed-wire" airport. It was a wierd and lonely place for the night but the next morning the storm had cleared away. The sunrise and the mirages of the Old Lake were beautiful, the pilot arose from an ideal runway and my friend said it was one of the pleasant recollections in his memory. So much for our present airport.

Mr. Collins and Chuck Richey inspected the new work which is being done at the Artesian well, under the Resettlement Division, pounded a few black golf balls over the alabaster hills, tried out the mineral water, just enough to be sure of what the other fellow is complaining about when he registers a kick on our drinking water, and got a fair idea of the temperature at the Sands on an average day.

There were 1,179 registered at the Turn-Around this month; forty-one states and three foreign countries were represented. The Sunday visitors were as follows

May 24	711
May 31	755
June 7	430
June 14	450
June 21	861.
Total Sunday visitors	3,207.

Our count shows that every time we have a Sunday visitor we have $2\frac{1}{2}$ week day visitors, but as there were five Sundays in this month I have reduced the Sunday count one-fifth in figuring the week day visitors. This gives us 3,207 Sunday and 5,645 week day visitors, a total of 8,852 for the month.

CHIRICAHUA

By Wm. Stevenson, Project Superintendent

Following is the monument travel report of the month of June.

During the month 851 visitors arrived in 205 cars, fifteen states and China were represented.

A large percentage of our visitors this month have made an overnight stop in the camp ground.

A great deal of concern has been expressed by some of our visiting technicians, over the monument water supply. June is the hottest, driest

CHIRICAHUA (CONT.)

month of the year in the Chiricahuas and the spring has supplied enough for both tourist and administrative uses. At present we are not able to furnish enough water to supply the entire CCC Camp in addition to our other uses but I feel that I can assure everyone that there is enough water for the monument supply.

Noteworthy Visitors:

Curry Long, regional engineer, US Forest Service, Albuquerque, N. M.
Levant Brown, US Bureau of Public Roads, San Francisco, Calif.
J. H. Brannan, US Bureau of Public Roads, Phoenix, Arizona.
Rex Rice, Douglas, Arizona.

CHIRICAHUA E.C.W.

By Wm. Stevenson, Project Superintendent

I herewith submit the following report for the month of June.

Echo Trail has progressed 2500 feet during the month, making a total of 10,000 feet. Work was started on the Massai Point - Balanced Rock trail June 5. 400 feet have been completed this month, making a total of 2000 feet to date.

All poles are set on the Massai Point-Portal Telephone line and six miles of wire have been strung.

Grading of service road and utility area is 85% complete. The surplus materials from this project are being used to dress fill slopes on the Bonita Highway and to obliterate borrow pits.

The Utility Area Wall is 35% complete.

June 11, fifty of our men were called out on a forest fire in Rucker Canyon. Two days were spent putting it out. There have been no fires on the monument to date this season.

Maintenance of Bonita Highway has continued throughout the month.

Visitors for the month:

June 5, Chuck Richey, district landscape architect, Dick Sias, ECW inspector, and landscape architect Clint Rose.

June 14,- 15, Landscape Architect Clint Rose.

June 20, George H. Keller, regional master mechanic.

CHACO CANYON

By Thomas C. Miller, Custodian

General

June has been a good month in the way of visitors. Our approach road to the north has been impassable part of the month because of the blow sand. It was necessary to make several trips by truck to the Escavada wash and pull the visitors out of the sand. On two occasions the visitors' cars were put out of commission by over-pulling them in the sand. The approach road to the south has been in fair shape all the month, so consequently most of our visitors were sent out that way. At this time the sand is passable, but tomorrow it may not be.

One official trip was made to Santa Fe by the custodian during the month. I left Chaco on the 10th and returned on the 12th. The purpose of the trip was that the University of New Mexico and the School of American Research offered us a nice collection of artifacts, Chaco material, for our museum. A conference was held with members of the museum staff on the evening of the 11th. It was decided at the meeting what was the best material for our small museum here at the monument. Orders were issued by Dr. Hewett to have the material catalogued and packed. Due to a sudden death in Dr. Hewett's immediate family we postponed the packing of the artifacts and they were delivered by Dr. Fisher and Mr. Stanley J. Milford on the 19th. The artifacts are now placed in our museum.

The morning of the 11th I spent at Bandelier National Monument looking the place over with Mr. Hendron and Mr. Chase. I did not know the place because of all the new developments. I surely enjoyed that trip and the all too short visit with Hendron, Chase, and Peterson. I visited Earl Jackson on my way home on the 12th. Boss, it is my opinion that that custodian just went to bed to take a rest. He looks better than I have ever seen him look. I told him so and he admitted that he had gained 20 pounds. Here's hoping that Earl is up and back on the job real soon.

Travel:

Registered by cars 643 people arrived in 219 cars coming from 18 states, the District of Columbia, and Hawaii. Museum and Guide service was rendered to 239 people in 55 parties during the month. A total of 7,330 minutes was devoted to field and museum trips.

Weather:

Maximum for the month was 99 on the 10th. Minimum 39 on the 28th of May. Precipitation .75 inch was recorded for the month; the greatest in 24 hours was .28, May 29.

Maintenance:

The two cattle guards on the main road through the monument were

CHACO CANYON (CONT.)

cleaned of blow sand during the month. The method used in cleaning the cattle guards was: The new hydraulic dump truck was used for a tripod, then a borrowed chain hoist was used to raise the 1500# steel rails. After the rails were raised and blocked, two-inch water pipe was used to roll the steel out of the way so that we could get in there and shovel the sand out. The sand was used to fill up mud holes near headquarters. This new dump truck is very useful in many ways.

Activities of other agencies in the Monument:

The University of New Mexico and the School of American Research headed by Dr. R. G. Fisher, Mr. Stanley J. Milford, and Mr. Gordon Vivian began work on Casa Rinconada June 20. Mr. Vivian is supervising the repair and the roofing of one of the greatest kivas in the Southwest at that ruin. The Kiva measures 72 feet in diameter. It is the largest and finest thing ever undertaken in the Chaco by this school. When completed, Boss, this structure will make the great Kiva at the famous Aztec Ruins National Monument look like a child's play house. This Kiva of Johnwill's has been the envy of all eyes in northwestern New Mexico for two years and you can't imagine how much pleasure it gives me to see this work pushed to completion this summer.

The University's headquarters building was near enough complete that the kitchen, dining room and cellar could be used by their staff. Their sleeping quarters are a bunch of tents stretched up near the canyon wall a short distance from their kitchen. These tents will be discarded when their buildings are finished.

Rodent Control:

A. E. Borell, wildlife technician, completed his work and departed on the 13th. The carbon bisulphide gas pump and five gallons of gas were left here at headquarters for use if needed around the dikes on the canyon floor built by the Soil Conservation Service. Mr. Borell completed a good piece of work here in this monument by exterminating the rodents around our dikes. No serious damage to birds or rabbits was noted in connection with this work.

Personnel:

Homer F. Hastings, Bayfield, Colorado, was put on the rolls as guide May 27, pending action being taken on the appointment for the new position of ranger-historian for this Monument. Mr. Hastings is doing a good job guiding our visitors through the ruins.

Special Visitors:

Mr. Joseph A. Bursey, director New Mexico State Tourist Bureau, was an interested and interesting visitor, June 2. Mr. Robert M. Patterson, Merion, Pa., Mr. V. W. Balderson, Albuquerque, both of the U. S. Bureau

CHACO CANYON (CONT.)

of Indian Affairs, visited the monument on the 4th. Mr. A. S. Coggshall, director State Museum, Springfield, Illinois, was here on the 5th. Mr. and Mrs. G. F. Bowser and son, Warren, Ohio arrived on the 13th, and departed on the evening of the 15th. Mr. Bowser is a lecturer, photographer, and world-wide traveler. The University of Utah Expedition headed by Dr. A. M. Woodbury, formerly naturalist at Zion National Park, arrived on the 15th and departed on the 16th. Mrs. Chet Markley and Mrs. Jess Faha, Mesa Verde National Park, arrived on the 18th and departed on the 22nd.

Museum Contributions and Loans:

The Aztec Ruins presented us with a very nice tree ring chart June 6. The University of New Mexico made this monument a loan mentioned elsewhere in this report.

Soil Conservation Service:

This Service did considerable planting around headquarters area and along the earth dikes on the canyon floor during this month. Approximately the following amounts were used:

105# *Oryzopsis heymanoides*
2000# Western Wheat Grass or Blue Stem
108# Sacaton.

All of the flood water diversion dikes were planted with a mixture of Sacaton, Wild Rice, and Blue Stem.

Approximately one thousand feet of earth diversion dikes were built, three rock and wire sausage dams constructed, and three cable fences were built in the Chaco wash for revetment purposes. One cable fence was below Pueblo del Arroyo, the second below the University of New Mexico windmill and the third between the ruins of Hundo Pavi and Chetro Ketl.

CASA GRANDE

By J. Donald Erskine, Park Ranger

With summer really upon us, travel dropped off this month to a low for the year of 1,661. This figure includes two groups of CCC boys totalling 80, and one of 36 Hopi school children from Hotavilla. On June 7th we had the pleasure of meeting Evon Z. Vogt from El Morro who signed our register while here on a visit to headquarters. Most welcome was a visit from H. B. Hommon of the U. S. Bureau of Public Health on June 20 and 21. Mr. Hommon was looking over the situation preliminary to the installation of our new sewer system.

After a very pleasant first week in June the thermometer went up and stayed up. Our day temperatures have run from 88 on June 1 to 116 on June

CASA GRANDE (CONT.)

18 with 14 days over 110 degrees. Night temperatures varied from 49 degrees on the 1st and 5th of June to 83 degrees on June 23. Two stormy days brought .01 of an inch of rain on May 26, and a trace on June 22, not enough to give any relief from the heat.

Early in the month Virginia Winter went East for a vacation and rest. A few days later Custodian Winter began to suffer from stomach trouble and on June 14 left for Chicago to join Virginia on his annual leave. It seems apparent that Jack doesn't make a very good bachelor. Assisting in guide duty during the absence of Custodian Winter are Clarence Cole, who is a student technician for the summer months, and Cliff London who is waiting for word which will shift him to Oklahoma City for engineering work. While we are certainly glad to have Cliff here, we hope for his sake that his prospective appointment will soon materialize.

As mentioned previously, we finally see the end to our troubles with the sewer system. Money has now been made available for the construction of a new and adequate sewer system which should be in operation before the summer is over. In the meantime, we must continue the make-shift methods which have given us so much trouble. However, the make-shift system is now working much better than before, thanks to the efforts of Addison Pinkley and Cliff London who gave it a thorough going-over two weeks ago.

The prize remark for the month came from an elderly gentleman as follows: "Well, sir, what these old people didn't have, ain't it?" Speaking of visitors, it occurred to the Boss and myself the other day that visitors to Casa Grande got an additional service here that probably is not duplicated in many other monuments or parks. Each car that drives up to the parking area is given a thorough cleaning by three or four Cactus Wrens who painstakingly remove every bug they can find, not only from the radiator, but from other parts of the car as well, including the inside.

The young Say Phoebes which hatched on May 23 are now becoming quite expert in their flights through the rooms of the Casa Grande. The Owl family is still around enduring the heat as best they can, though, they apparently don't like it very much. No more snakes or Gila Monsters have been seen, altogether a rather uneventful month from the wildlife standpoint.

We were all much amused by an advertising folder which we received a few weeks ago from an Eastern company trying to sell us a combination lawn mower and snowplow. A little snow would feel mighty good just about now.

TUMACACORI

By Louis R. Caywood, Custodian

We learn with sadness of the recent death of Frank Hands, a true pioneer of the Southwest. Mr. Hands was a great nature lover and at his

ranch in Pinery Canyon in the Chiricahua Mountains many valuable observations were made. At some time or other almost all well known ornithologists have visited Mr. Hands who was always glad to drop his work and accompany them to parts of the Chiricahuas where rare birds could be seen. It was Mr. Frank Hands who, in 1917, observed the Thick-billed Parrots migrate into Pinery Canyon from Mexico. Mr. Hands was also the proud possessor of a Thick-billed Ani, a bird rarely seen in the United States. Dr. Bryant and I had the privilege last summer of visiting the ranch and seeing Mr. Hands' collection of mounted birds. I am sure that all who knew Mr. Hands will mourn the passing of one of the finest and kindest pioneers the Southwest has ever known.

The weather has been warm, but there is usually a breeze that is cooling. The Mission is always cool inside. With the rainy season only a few days off, we have something to look forward to, as on St. John's Day the rains are supposed to begin, according to local people.

Visitors for the month of June numbered 911. Of these 831 were personally conducted through the Mission while 80 only used the facilities offered. This number is an increase over 843 for June, 1935, and 764 for June, 1934.

Noteworthy visitors included Don and Marie Erskine from Casa Grande National Monument on June 2, and Cliff and Detta London from Headquarters on June 3. We enjoyed their visits very much and hope they will come again soon. Father Victor Stoner, now president of the Arizona Archeological and Historical Society, Tucson, was an interested and interesting visitor to the Mission on June 4.

From spare funds I was fortunate enough to obtain a small steel filing cabinet with all accessories and I want the fellows in the field who do not yet have a filing cabinet to know that they can fill in the evenings setting up a filing system similar to that used at Headquarters. Martin and I have spent hours fitting all the letters, memorandums, orders, etc., into the proper folders and there are still stacks of material to be filed. After we feel we have finished we would like to issue an invitation to someone from Headquarters to come down and check all our mistakes.

The following article appeared in a recent issue of "Pathfinder" edited in Washington, D. C., under the title GERMS "SLEEP" 250 YEARS:

"When it was suggested a few months ago by Dr. Carrel that it might some day be possible for man to sleep for centuries in suspended animation, it raised quite a stir in the scientific world. However, similar sleeps are even now old stuff to the simpler forms of life. Dr. Ira B. Bartle, of California, recently reported taking a colony of soil bacteria from the wall of the Tumacacori Mission in Nogales, Arizona, where they had been sealed for two and a half centuries. Although these bacteria had been in a state of latent life since sealed in the wall, they were revived and began

TUMACACORI (CONT.)

to live and multiply normally. Dr. Bartle explained that the ability of bacteria to survive centuries in this state is due to the fact that when they are removed from the presence of oxygen the walls of the tiny cells thicken until the life within is protected against nearly all conditions except fire.

"Bacilli, those tiny organisms too small even to be seen with a microscope, can also endure some pretty harsh conditions. Experimenters have kept some for weeks in temperatures close to absolute zero without killing them, and tuberculosis bacilli are said to have been found alive in Egyptian mummies."

I thought the above might be of interest to those following the study recently made by Dr. Bartle.

A census of the 40 mesquite trees planted early this spring by Mr. Boundey shows that there has been a loss of 8 or a 20% mortality of the young trees. These were given to Southwestern Monuments by the Boyce-Thompson Southwestern Arboretum at Superior, Arizona. I have watered and fertilized them and am certain that if the remaining 32 survive this summer they will be healthy trees. Some of those which died had been planted in ground infested with pocket gophers. Probably the roots were eaten by these rodents.

There are a great number of pocket gophers on the grounds and they may prove serious as time goes on. There are also a few gray squirrels which have destroyed a number of bird nests including one Gambel Quail nest here on the Monument. A colony of round-tailed ground squirrels have made their home in the ruin mounds south of the church.

A very low water table now exists in the San Cruz Valley. The monument well pumps dry in about five minutes of steady pumping. It soon fills, however, if the windmill is turned off for a short time and then turned on again.

Birds banded during the month are as follows:

Arizona Crested Flycatcher	1
Arkansas Kingbird	1
Bendire Thrasher	3
Cactus Wren	2
Canyon Towhee	3
Phainopepla	3
Roadrunner	1
Say Phoebe	3
Western Mockingbird	7
Western Mourning Dove	2
White-rumped Shrike	4

Total

30

Now that nesting season is just about over bird banding will probably pick up. A great many immature birds are now to be seen on the monument and I hope to be lucky enough to band them soon.

RAINBOW BRIDGE

(Extracts from letter from Wm. & Katherine Wilson of Rainbow Lodge)

To say that we enjoy the monthly reports of Southwestern Monuments is putting it mildly. Bill and I read every word. We did not receive the February number, and don't want to complain but we hate to miss anything. We are surely glad to add them to our small collection of books and pamphlets on the Southwest.

Long ago we should have told you how very much we enjoyed yours and Nancy Margaret's hospitality. But better late than never. And then, too, we came away with a much better idea of Casa Grande than ever before, thanks to Dale's expert guidance.

We can safely say that it has been a slightly better spring up here than last year. In fact up to date we have personally guide 27 people to Rainbow Natural Bridge. 39 others have seen it via Snawk's Mares, 33 of the latter being members of the Hiking Club from Northern Arizona Teachers College with Robert Powers their faculty sponsor on their tri-annual trek to the Bridge. This compared with 20 guided last year and eight going on their own is some improvement.

Two Biological Survey men are on Navajo Mountain now catching butterflies. They caught 600 in a few days, which is easily explained, we think, for the reason that the "tent caterpillars" are about to take the quaking aspen. They were first seen up there last year and now the extent of their depredations is appalling. Bill says not one live aspen is left at Soldier Deep Springs. There were a few at the Lodge in the poplars and cottonwoods but we soon made an end of them. We wish that something might be done.

We've made a few improvements this spring, the chief one being our new Electrolux refrigerator, the largest we could buy. I wonder how we got along without it, and the hottest weather still to come.

GRAN QUIVIRA

By George L. Boundey, Custodian

Visitors for the month total 309. As all the local people are busy with planting, this number represents principally tourists.

We have had many interesting people during the month; several made

GRAN QUIVIRA (CONT.)

camp and spent several days with us. Among our campers were Mr. and Mrs. Henning whose visit we enjoyed very much and hope they will come back again.

When we first started to pump from our new well, the water would be exhausted after an hour of pumping. About the time Mr. and Mrs. Gipe left we could pump an hour and a half. For the past several weeks the water has been very cloudy and full of a fine sediment, but I notice the flow has increased and that the water is losing its bitter taste. Owing to a coating of creosote on the inside of the tank, this taste has been noticeable but is gradually disappearing. I believe in time the water will be quite palatable.

The morning of the 15th a party of surveyors started a survey for a road between Gran Quivira and Carrizozo with the intention of making it a direct route between El Paso and Santa Fe. The 1940 Coronado Centennial is doing much to improve the roads in New Mexico.

One of the Harvey Busses with a Courier who used to visit us at the Aztec National Monument made us a visit last week. The improved roads will do much to bring visitors into our part of the country.

Mr. Outry, who helped Mr. Gipe on the pumping plant, was struck by lightning the other evening and instantly killed. He got out of the car to open a gate and lightning must have struck the wire fence at some distant point just as he touched the gate.

Our bird baths are increasing the number of birds in this vicinity until nearly every tree has at least one nest.

This country is so overgrazed by cattle and sheep our monument is like an oasis in a desert where it comes to wild flowers. At night the air is so fragrant from the many varieties of blossoms one almost hates to waste his time in sleep.

The summer climate is so delightful here, if we had a river or lake nearby it would be one of the greatest summer resorts in the country.

PIPE SPRING

By Leonard Heaton, Acting Custodian

The weather has been the most talked of subject up here this past month, and it has been a hot one, at that---temperature reaching 108 out in the Pipe Valley, Fredonia, Arizona. June 21 was 106 and as a result we have some very stormy looking clouds this morning which we hope will do their stuff and give us rain.

We are very dry up here; most of the green has been browned by the

PIPE SPRING (CONT.)

hot sun. Most of the water holes on the open range are nothing more than mud holes, and the living springs do not supply all the water the stock need or perhaps it is that some are overstocked and others could stand to have a few more.

Our travel has amounted to about the same as last month and as comparison I submit the following:

May	Guided trips	16	Present	81	Local	275	Estimated
June	" "	28	"	84	"	362	"
	Increase	11	"	3	"	87	"

I believe people have shown greater interest in the place and since I have been keeping track of some of the questions asked by the visitors I have begun to find that I have been leaving out some the information I should include in the talk on the Monument. Consequently, I am in favor of the suggestion given out by Bob Rose last spring, and I had hoped to get some of these questions typed and sent in this month, but the last few days I have been working with visitors, and irrigation so much that I have not gotten them out.

I have used and am using three scouts in some light work here on the monument, doing clean-up and other odd jobs that I haven't gotten around to get done myself, and these boys are trying to earn some money to pay their own way to the summer camp for boys in July.

The ECW work has progressed very well this month. Have had the eight men all the time and the use of a truck. The boys have made the necessary filling of the parking area and road. Grading is complete and about 1500 yards of gravel on the east entrance road would have no doubt finished the graveling but they broke the truck and were given a stake in which they are hauling flagstone for walks, and stone for the guard rails.

I am happy to report that the CCC boys have stopped their raiding on the birds and animals on the monument; also they are realizing the benefits the Park Service is trying to give them by protecting nature as it is and was.

The boys have finally gotten the swimming hole to hold water and about three quarters full and to see them after work hours you would be reminded of the old water hole near town on a hot summer day. There has been as high as 50 or more boys in the pool at once.

And how the girls wish that the camp would move out for a while so that they could take a swim. I told them the pool will be there when the camp goes but it would receive a remodeling to remove some CCC handiwork and make it more natural.

Mrs. and the children have been visiting with their folks at Alton,

PIPE SPRING (CONT.)

Utah, the past two weeks and returned yesterday. All the children have been coming down with the chickenpox; otherwise we are okay.

WALNUT CANYON

By Paul Boaubien, Ranger

1441 visitors registered this month. 1082 are listed as "educational contacts," while the other 359 could only make use of the self-guiding facilities.

There were 29 overnight camping parties. After a week's stay, the M. J. Hennings are leaving as this goes to press. Mr. and Mrs. Lowell Christman and daughter arrived with the Hennings, and left yesterday. They are wonderful people who you will be glad to meet at Casa Grande this winter. Captain V. E. Lake, U.S.A., retired, who has been repeating frequently in the Southwestern Monuments since 1923, has been camping here for several days. He has a book shelf of information on photography, so I'm profiting greatly by his stay.

Park Service visitors include Victor H. Cahalane, A. E. Boroli, and Charlie Stoen. Mr. E. J. Bounday, a cousin of my old friend George Bounday, was here for a few hours on the 7th.

Three birds were banded during the month; a Western Mourning Dove, a Red-shafted Flicker, and a Western Robin. I forgot to report last month that Don Erakine had banded a Black-headed Grosbeak and a Western Tanager.

Mr. Alfred Whiting, curator of Biology at the Museum of Northern Arizona, has spent several days making a collection of the flora of the monument. Due to the very dry spring, he is having difficulty in gathering representative specimens. But with a shower on each of the last three days, we may have some flowers yet. We are planning to send two sets of plants to the Boyce-Thompson Arboretum with the hopes of having one set returned mounted.

The phone line has been repaired by the Forest Service, so I can now be called by the "lookout."

MONTEZUMA CASTLE

By Martin L. Jackson, Custodian

Visitors

Visitors for the month have numbered 1,212. 558 of this number made the climb into the Castle. This rather small number of visitors to the monument during the month can be laid to a conspiracy of conditions and

MONTEZUMA CASTLE (CONT.)

events found under "Weather" and "Roads."

ROADS

The road surface throughout the valley while in a good state of repair, is extremely dusty. State route 79 from Flagstaff thru Oak Creek Canyon to Prescott, which has been under repair for the greater part of the spring is in fine shape now.

Signs

During the past week I have erected seven signs at the most strategic points of entry in the valley. According to an official of the State Highway Department, more thorough directional signs will be erected by them in the very near future. They seem very willing to cooperate with us in this matter.

Weather

The weather during the past two weeks has been the hottest I have ever seen in the Verde Valley in June. Visitors are very reluctant to leave the main highways in such weather and I can hardly blame them. For the last six consecutive days the temperature outside the museum building under the shade of the trees has been above 109. In the past the hottest weather has been in July and August. I hesitate to think what the thermometer will register this year. Reports from along State Highway 79 and U. S. 66 indicate that many people are traveling at night to escape the heat.

Personnel

On June 22 Mr. Curtis Cox, of Flagstaff, Arizona, assumed duties as temporary ranger here to replace Charlie Steen who left for headquarters on the evening of the 21st to "escape the heat." Mr. Cox has promise of becoming an excellent ranger. He is qualified with an A.B. degree from the Flagstaff Teachers College and a year of southwestern archeology from the same institution. Mr. Fish is expected back within the next few days and while we don't like to see him leaving the monument, we are glad that he is being transferred to a forested region where he will be more at home.

Special Visitors

On the 15th of the month Irvin S. Cobb spent an enjoyable two hours with us. We found him to be equally as entertaining in the flesh as he is in the better magazines and on the screen. He would like the opportunity of seeing more of him. On the same day we had two boys directly from Paris, France. One of them said: "We have come all the way from France to see this. Tell us about it." They left well satisfied.

MONTEZUMA CASTLE (CONT.)

Nature Notes

Following is a seasonal check list supplied by Norman R. Jackson. He states the report is not at all complete but gives additional dates concerning nesting of birds and migrations.

Piranga hepatica (Western Tanager)

Pair of birds observed near museum----- May 26
(This bird is an annual summer resident)

Butorides virescens anthonyi (Anthony Green Heron)

Single bird observed at lower edge of monument---May 29

Mergus (Americanus) (?) American Merganser

Two birds continually on monument flying up and down the creek. Evidently nesting as in previous years high up in the castle cliff-----May 1, June 2

Pyrocephalus rubinus mexicanus (Vermillion Flycatcher)

Two males and one female observed near creek in front of museum building. I am convinced these birds nest in the valley, although the proof is lacking -----May 3 & 9

Cardinalis cardinalis superbus (Arizona Cardinal)

Three separate pairs seen on monument in thick brush. Cardinals have nested in the valley in past years and probably continue to do so-----May 19

Basolophus wollweberi (Bridled Titmouse)

Strangely enough these birds were with us for about a week in the middle of the month. This is entirely contrary to previous records of these birds in the valley. They can usually be seen in the early spring and fall but never in June. Possibly this is just a chance migration-----June 11-17

Mimus polyglottos leucopterus (Western Mocking Bird)

These birds are very numerous now and later in the summer will be the most abundant bird on the monument. One nest observed in mesquite bush in southern tip of monument, containing two young---May 31.

MONTEZUMA (CONT.)

Dendroica aestiva sonorana (Sonora Warbler)

Very numerous in mesquite and sycamores in vicinity of
museum building -----May 10-23

Catherpes mexicanus conspersus (Canyon Wren)

Estimated eight or ten birds in cliff near Castle.
Young bird in immature plumage captured in museum
building -----May 15-19

Phainopepla nitens (Phainopepla)

Several pair seen on the monument. They nest here but I have not
been so fortunate as to find a nest. Last year they were here
from May 14 to August 1 -----May 3

Icterus cucullatus nelsoni (Arizona Hooded Oriole)

As abundant as in previous years. Several nests in
sycamores on monument -----May 7-30

Lophortyx gambeli gambeli (Gambel quail)

Nest observed in mesquite thicket in southern part of
monument. Five young recently hatched -----May 21

Sayornis sayus (Say Phoebe)

Three young hatched in nest in eave of Ranger's residence.
Phoebes have nested in the same nest in previous years--May 16

Sayornis nigricans (Black Phoebe)

Nest with four young recently hatched seen under eave
of old bridge at southern extremity of monument -----May 20

Bubo virginianus palliscens (Western Horned Owl)

One adult bird seen flying up creek near Castle cliff--May 29

Zenaidura macroura marginella (Western Mourning Dove)

On 24th of May nest observed on east side of monument.
Two young (immatures) recently out of nests seen at museum
building -----June 22

MONTEZUMA CASTLE (CONT.)

Auriporus flaviceps flaviceps (Verdin)

Male seen in vicinity of old nest in Mesquite bush April 5. Several old nests seen in thorn bushes across creek from Castle proper on May 20.

Further information along this line will be forthcoming later in the season perhaps.

AZTEC RUINS

By John Will Faris, Custodian

We find that during June we were a little above the average. Visitors for the month total 1,323, which is quite a number over the same period for last year. It is most interesting to note that a decided visitor drop has been noted the latter part of the month which is almost perfectly timed with some road work being done on the Shiprock-Farmington road. This work is expected to continue the greater portion of the summer and it is very probable that we can expect a drop of a number of visitors throughout that time. We expect this completed road, however, to bring us many more visitors when it is complete, since this particular section has always been a stretch to be detoured if possible.

The Durango Archeological Society held its last meeting for the summer at our monument on June 2. They made a particular study of "Textiles and Cordage," and it was the pleasure of Ranger Hart and myself to arrange a special display of these materials for the group. We were well repaid for our efforts; a very interested group spent a most enjoyable evening and were high in their praise of our textile specimens and also very appreciative of the National Park Service making such study possible for them. We hope that they will come back and see us, and in fact we have their promise to return several times and carry out any particular line of study they might care to pursue. Another special party met at our monument June 4, and yesterday we had the pleasure of entertaining a number of boys and girls from the State orphanage. We enjoy these special groups and are proud that so many see fit to stop off with us. A rather strange coincidence made possible my showing through two ex-rangers and my present one all in the same party. We had a regular Park Service reunion for an hour or so. It was quite interesting to go over some of the old methods and manner of handling the monument and comparing it with our present method.

Two very loyal Park Service families stopped in with us this month. One the McGords from Pasadena, and the other the Bowers from Ohio. We had hoped to add the Hennings to this list but as yet they have not been by this way.

Nothing out of the ordinary has taken place this month; plans were formulated whereby we should have our parking area well paved when our

AZTEC RUINS (CONT.)

next report comes out. We have also made plans where the N.Y.A. is to supply at least one and possibly two boys to the monument and these boys will be a lot of service to us. We in turn are to help them develop themselves when and wherever possible.

The month as a whole has been dry and hot. Not hot to you desert dwellers but hot for us up here.

The Monument wishes to express its appreciation to the Educational Division for supplying us with the leaflet on the ruins. These will fill a need of long standing and we do appreciate them. I wish that at odd times, or whenever possible, we might be supplied more of our seven page booklets. It seems so much more in keeping, but we do not want to appear dissatisfied in the leaflets. They are fine but we would like something better at the first chance we have to get it.

So, Boss, in closing June we also close another fiscal year. The Washington Office, the various divisions, our Southwestern Monuments headquarters, and yourself as Superintendent have been most generous and cooperative. For this generosity and cooperation we are most grateful and express our sincere thanks.

TONTO

By Woodrow Spires, Ranger

I noticed last month our friend Tom Charles led off with, "The Lord still smiles on the Great White Sands." I can go him one better, "The Lord smiles warmly on Tonto."

The weather has been rather warm with the temperature reaching 102° once, yet the nights are surprisingly cool. Rain for the month almost wasn't, only .12 inch being recorded.

Travel for the month started off with a bang but soon took a reversal of form and from the 9th till the 18th there was absolutely no travel, probably due to the Texas Centennial. Total visitors for the month were 30 fewer than last month, but 43 more made the trip to the ruins.

The following figures are derived from SWM Stencil No. 16.

Total visitors at the Monument	-----	335
Total time guiding	-----	3845 Minutes
Total visitors taking field or ruins trip	-----	222
Total number of field or ruins trips	-----	46
Total time field or ruins trips	-----	2895 Minutes
Average time field or ruins trip	-----	63 "
Average group field or ruins trip	-----	4.82 persons
Total visitors museum trip	-----	195

TONTTO (CONT.)

Total museum trips -----	57
Total time museum trips -----	950 Minutes
Average group museum trips -----	3.42 Persons
Average time museum trips -----	16 Minutes

There were no trips to the Upper Ruin this month.

All officials and other newsworthy visitors eluded the monument this period.

I received a very nice letter from Ruth and Millard Henning. This I am very proud of as from a visitor's standpoint I know no one who is any better qualified to judge a monument than they are. Following is a cut from their letter: "Our visit to Tonto is one of the happy memories of this trip and for that we thank you. Best regards from us both and don't let the dudes get you down."

Ruth & Millard Henning.

I believe I can say this has been the dullast month I have witnessed here; nevertheless, I have accomplished quite a lot especially in the strengthening of the walls in the Lower ruin. This is also the banner month in trail work.

This is going to come to a rather abrupt end as the mail is due any minute.

EL MORRO

By E. Z. Vogt, Jr., Acting Ranger

Hope this manuscript reaches you in time to get in the Monthly Report without making the printers work after hours to cut the stencils for it as they did last month. June has been a very enjoyable month and travel has been good, particularly during the past week.

Weather and Roads

The weather has been fair, hot, and dry all month with the exception of the 22nd when we had a nice shower. It rained hard enough to run water into the Cove for which I was thankful because the pool was getting frightfully low.

The approach road from Gallup is in good condition. The road from Grants is passable except for a five-mile stretch which is in terrible condition---full of high centers and mean rocks, and according to some tourists it is impassable. They could never make it thru again. Once was enough.

The signs are down in a few places. It seems as though we are forever

EL MORRO (CONT.)

putting up signs and travelers are forever tearing them down, post and all. They use the posts to pry themselves out of the mud and then take the rest of them home and chop them up for firewood.

I have painted several new signs and intend to motor over to Grants Friday and put them up. I should certainly hate to have travelers run out of pry poles and firewood!

Travel

Visitors for the month number 223. An appreciable increase over last month's travel. Surprisingly we have had only three parties of overnight campers all month.

Newsworthy visitors include J. B. Hamilton & wife, George P. Hammond, formerly of the University of Southern California and now of the University of New Mexico, Agapito Rey, of the University of Indiana, Gilberto Espinosa, and party of three from Albuquerque and Las Vegas, New Mexico, and George Andrew Byrns from Fairbanks, Alaska. This is the second visitor from Alaska this year.

Jim Hamilton & wife were in on the 9th. Mr. Hamilton and I went over all trails, took pictures of disintegrating steps, and discussed ways of improving the trail in washed places.

Mr. Hammond and Prof. Rey are scholars of Spanish history and it was they who translated Luxan's diary and account of the Espejo Expedition into the Southwest and edited the first volume of the Quivira Society which contains the translation of the old conquistador's diary. These two gentlemen spent nearly a half a day at the monument and I learned much from them.

Gilberto Espinosa was also an intensely interesting visitor. He is to be one of the directors of the Coronado Celebration in 1940, and as this monument is to be one of the features of the Celebration, he wanted to go over the monument and carefully examine it with an eye to 1940. He spent the better part of the 21st at El Morro. Mr. Espinosa translated Villagra's History of New Mexico. This translation appears in the fourth Quivira Society volume.

Flora and Fauna

The month has been so dry that there have recently been three forest fires within ten miles of the monument. Two were on the south slope of the Zuni Mountains across the valley from El Morro. I could see the smoke and at night the flames could easily be seen. The third fire was ten miles south of the Rock on the high ridge between here and Atarque. The fires were all put out by the McGaffey forest ranger and a squad of fire fighters from Ramah.

There are no flowers in bloom yet except the spiderwort and sweet clover which is beginning to send delightful aromas into the cabin here making the ranger think of many things more romantic than writing a monthly report!

Just to inform readers that El Morro is also a good place to study ornithology, the following list is submitted as birds observed here during June:

Western Mourning Dove	Pinyon Jay
Cliff Swallow	Western Meadowlark
Western Mocking Bird	Red-shafted Flicker
Arkansas Kingbird	Western Nighthawk
Cassin Kingbird	Western Robin
Golden Eagle	Northern Violet-green Swallow
Turkey Vulture	Lewis Woodpecker
Mountain Bluebird	Canyon Wren
House Finch	Rock Wren
Desert Sparrow Hawk	Rocky Mt. Hairy Woodpecker
Woodhouse Jay	

About noon last Saturday I heard a loud commotion on the bill above the cabin. It sounded like a riot, but on running up to investigate, I found that one of our eaglets had made his first catch, a prairie dog, and was certainly telling the world about it. The two grown eagles were flying around overhead squawking their approval and praising the young one. I didn't have a camera, so I decided to catch the eaglet and put him in the cabin until someone came along with a camera. He was too young to fly very well, and I was able to capture him after a short chase. I carried him by the wings so his mean beak wouldn't grab one of my fingers. When I put him in the cabin the first thing the little fellow (I say little, but he had a wing spread of 5½ feet) did was to jump upon the desk and on top my typewriter, cock an eagle eye at me, and await further developments. It was then that I named him Oscar.

That night a party of campers came in and the next morning we took some shots of him tearing apart the remains of the prairie dog. As soon as Oscar was turned loose he went up to the water cove, jumped over the concrete dam to get a drink, and then couldn't get back over. He squawked all afternoon about it and tourists got quite a thrill out of seeing a live eagle when I showed them the water cove. But he kept making such a fuss that I finally went up and helped him out.

At the time of writing Oscar is on the north side of the Rock below the nest screeching loudly for good. One of the adult eagles will undoubtedly bring him a rabbit or snake after while and shut him up. However he is going to be a curiosity for visiting tourists for a week yet, because he still cannot fly up to the nest. I certainly wish I had a bird band to put on the eaglet. It isn't every day that one has a chance to

band an eagle.

After thinking for over ten years that there was only one kind of swallow darting around El Morro's pinnacles, I find after daily observation that we have two species here. We have cliff swallows which build the curious mud nests under ledges and overhangs along the cliff, and the northern violet-green swallows which build their nest of sticks and feathers in crevices in the cliff.

It is difficult to distinguish between the two swallows. Their flight is alike except that the violet-green swallows fly at a much greater speed and their underparts are pure white contrasted to the brownish underparts of the cliff swallows. From above the gorgeous green and violet colors can be seen on the violet-green swallows, and the authors of "Birds of New Mexico" do not exaggerate a bit when they call this swallow one of the most beautiful of western birds.

The mocking birds are numerous this year. They mock the Woodhouse Jays and Kingbirds and occasionally my whistling. I expect one of them to break out and whistle the "Red River Valley" one of these days.

I have found that the water cove is an ideal place to observe bird life. I believe that certain birds come for many miles to drink water there. Early in the morning and late in the evening is the best time to see the birds. Swallows dart down and scoop up a mouthful of water on the fly. The red-shafted Flickers and Kingbirds seem to be the boldest. They fly in and drink when visitors are in the rincon. The Mourning Doves are quite timid though, and the Mockingbirds won't even come near. They just sit in a tall pine tree and scold you for being there.

Monumental Improvements

If the administration building is to be built on the south side of the rock, I believe that it would be a good thing to move our entrance gate down to the eastern gate of the monument. The entrance road could then be built so as to have all visitors drive to ranger's cabin. The register should also be moved around to the cabin. This would make it more nearly possible for one man to contact all parties. The ranger is certainly expected to work on off days and not sit in the shade on the north side and wait for visitors. As it is now people will not come around to the cabin even though there are several signs telling them that the ranger is on duty and to please drive to ranger's cabin where a sign on the door would inform them that the ranger is at work on trail and to please sound horn loudly. Instead they stop at the register and go around by themselves, reading the translation cards which give nothing but the bare facts---no history between the lines and no connected story.

I cannot see cars drive in from the south trail and I never discover until evening when I go around to the register that two or three parties

EL MORRO (CONT.)

have been in, turned around at the register, and then gone on to the ice cave. Undoubtedly they came in, registered, and decided not to hunt up the ranger hut to go around unattended. After seeing the first inscriptions they tire and begin to wonder why they came anyway, over those terrible roads from Grants. The roads couldn't have been any worse in the time of the Spaniards, and at least those old ox-drawn carretas had a better chance to get over high centers.

The consequences are that they go away feeling like the farm boy who got gypped in a carnival side show. There was no one to really show them the interesting features of the monument, reveal the old Rock's secrets, and convince them that El Morro is the most interesting National Monument in the Southwest.

These last few paragraphs might be summed up in a simple sentence: We need a revision in our system of handling visitors, and probably the first step in the right direction would be to move the entrance gate to a handier place.

On off days I have worked and repaired the south trail from the water cove to the south ruin. I have also been experimenting with copperas in an attempt to get a fitting color on the concrete steps. The first flight finally turned a desirable color after the last application, but I have not had much luck with the upper flights yet. After the next application which I intend to make stronger, I believe that their appearance will be much better.

Inscriptions

Mr. Hammond and Prof. Rey thought that A. W. Barth's translation of the Silva Nieto inscription was correct, but they disagreed with the present translation of the Martinez inscription. They are going to borrow a set of El Morro pictures from the Washington office and work out a better translation of this inscription.

Mr. Espinosa also disagreed with the translation of the Martinez inscription and did not believe that any previous translation of the Silva Nieto inscription was correct. After a lengthy discussion on this matter, I finally loaned him a Park Service picture of this inscription so that he could work out his translation of the last two lines and send it to me.

General

I do not believe that the Gallup High School murals have been mentioned yet in the monthly report. These seven murals which hang in the assembly hall in the Gallup High School were painted by J. R. Willis, noted southwestern artist, and our representative of Spanish exploration and conquest in the early Southwest.

EL MORRO (CONT.)

The first one is a map showing the routes of the conquistadores across the Atlantic, through old Mexico, and across the Southwest. The second shows Cabeza de Vaca and the negro, Esteban, struggling across a Texas desert. The third mural depicts Fray Marcos de Niza as he looks at the Zuni pueblo of Hawiku from a distant mesa. As he uses his imagination and looks at the adobe walls in the setting sun, the pueblo certainly looks like one of the Golden Cities of Cibola. The fourth one shows Francisco Vazquez de Coronado and soldiers taking the pueblo of Hawikuh with a terrific battle.

The fifth mural depicts Governor don Juan de Onate riding up to El Morro on a beautiful white horse. Following him are his soldiers and a number of old carretas. One of his servants is unpacking a burro and putting on the chile and beans for supper. Naturally I think this fifth mural is the finest of the lot.

The sixth shows the American pioneers driving a wagon train into Gallup, and the seventh depicts Kit Carson's capture of the Navajos in Canyon de Chelly. Robert Budlong would probably think that the seventh mural is most beautiful, but if he does, he has no eye for real beauty which can be seen in the mural showing El Morro.

Is the visitor report for a month supposed to be taken from the 23rd of the preceding month? It certainly must be because if it was not there would be a week each month when there would be no record of visitors.

An old friend of yours was here the other day, Boss. Herbert V. Clotts sends his best regards.

CANYON DE CHELLY

By Robert R. Budlong, Custodian

June has been a most eventful month at this National Monument. Doug Harritt has arrived for summer ranger duty, the pumping machinery has been installed, the water reservoir is filled, the big tires have arrived for the car, and today we are moving into the new residence. This is entirely too much to have happen in any one month, and we are a little too dazed to fully appreciate all of it just now.

There were 209 visitors to this National Monument during the month. This is the greatest visitor travel in any month since I have been stationed here. Last June we had 179 visitors---our peak in visitor travel for 1935. Our 209 visitors this month took trips as follows: White House Trail, 5 trips (23 persons); south rim of de Chelly 21 trips (113 persons); car trips within the canyons, 19 (64 persons); horseback trips, 2 (4 persons). Total trips, 48; total time, 7140 minutes; average trip, 149 minutes. One party of people arrived on one of the hottest days, and did not attempt to drive to the rim, but spent two hours in the office, getting their views of the canyon from photographs.

CANYON DE CHELLY (CONT.)

Weather has turned hot. Maximum was 102 degrees on the 20th, minimum 42 degrees, on the 1st. We had but a trace of precipitation during the month. High southwest winds were frequent, and deep dry blow sand in the canyons has made car travel totally impossible for any cars but those equipped with the widest of tires.

The wide tires for the government pickup arrived during the month, and for the first time in nearly two years the custodian was able to drive into the canyons without bothering about dry sand. At last I am able to get into the canyons and find out just what this National Monument looks like. For nearly two long years I have descended the White House Trail and looked down into the canyons from the rim, hoping that some day I'd be able to drive in the canyons, and now that time has come.

Ranger Doug Harritt returned to duty June 1. It surely is fine to have him back with us again. We have mapped out a big program of projects for the year, and hope to accomplish much work this season.

"Doc" and Mrs. Gipe arrived at this National Monument in "Hohokam," their antiquated Park Service strugglebuggy, vintage of 1902, and work on the construction of the pump house and erection of pumping machinery was begun. At this writing the pump is working smoothly, the water reservoir is filled to the overflow pipe, the walls of the pump house are up about four feet, and we feel that construction worries here are a thing of the past, with "Doc" on the job. You know, Boss, he's another man who only works five days out of the week. The other two days in every week that he doesn't work (officially) he works just as hard, and if you could have been here Sunday night about 10:30 p.m. to see him enjoying his Sunday evening off duty, you'd have found him in the custodian's residence fixing leaky faucets and putting in gaskets so the custodian could move into the new residence. And you should taste the lemonade that Mrs. Gipe makes. On these hot days whenever we wander down to their tent, a glass of cool lemonade always materializes. Official trips to the tent by the custodian, the HCWP and the Ranger are in order very often.

Mr. and Mrs. H. E. Bailey arrived to spend a number of days at this Monument just as the last monthly report went in the mail. They made a large collection of the plants of this region, and we were mighty sorry to have them leave. They were the first of the Park Service specialists to visit this Monument.

Mr. J. B. Hamilton paid us several visits during the month. Mrs. Hamilton accompanied him on his last trip.

I returned from Gallup late the night of June 16 with the big tires for the government car, and was greatly pleased to find Jimmie Brewer, and Clyde and Sarah Peshlakai waiting for me. The following day we initiated the big tires, and showed Jimmie a portion of the finest Monument in the Park Service. Those folks must return and visit us again soon.

CANYON DE CHELLY (CONT.)

Work on the trail will commence at the completion of the pump house. Meanwhile the supplementary septic tank has been put in place, and the water reservoir mostly covered with rock. It does begin to seem as though most of our worries over the house, water and plumbing, are over.

As we go to press, Mr. Vincent W. Vandiver, Regional Geologist, arrives at the office. Tomorrow we are going to take him into the canyons in the car. We have been mighty anxious for him to visit us, for a long while, and are very pleased that he has managed to do so at this time.

CAPULIN MOUNTAIN

By Homer J. Farr, Custodian

This Monument has been visited by approximately 2,500 this month. Travel has been from almost every state in the Union, and it appears that ninety per cent of these have come in new automobiles. No matter how hard the drouth or depression, though they may be out of food and clothing, people will buy new cars.

The roads in general in the four directions have been fair but a little rough and plenty traveled; the roads in the monument has been slightly dressed and the rocks picked up. While being in only fair condition, I have heard no serious complaints.

The weather has been extremely hot and dry, with only a couple of small showers, and these have been strictly local; no general rains in this part of the state for June. The thermometer has been registering around 95 during the middle of the day for several days here. This is almost a record for this seven thousand foot altitude.

NAVAJO

By Milton Wetherill, In Charge

Under Roads and Trails 4x391 for June. Spent most of the time clearing up and rebuilding the wet weather trail to Keet Zeel, in one place which goes along a sloping cliff face I put in logs and filled over the top with rock and dirt. Several washes had to have new crossings.

On the upper part of the trail which is used all year, two washes had to have new crossing. In one place 50 feet of oaks had to be cut out in order to get through to where you could cross, in another 20 feet of oaks had to be cut.

Old Whiskers has a herd of cattle in Keet Zeel Canyon; four bulls in the bunch; one is an old white face. This old boy has the habit of scratching his back on the oaks along the trail, with each scratching one or two oaks are pushed over, generally across the trail. These have to be cut out

NAVAJO (CONT.)

and removed to keep the trail open.

Mrs. Cropp and daughter with three ladies, also John Claw, Navajo interpreter for Rev. Cropp, were in June 5, 1936. The oldest of the ladies was the most interested and kept saying is this real or is it a movie stunt; they all remarked that it was worth the trip down.

Went down to Kayenta with S.C.S. party June 10, 1936; returned with Uncle John and Mr. and Mrs. N. Roosevelt. Lunch was served at the camp ground. While eating lunch a party of two came in which I conducted through the ruins while Uncle John took Mr. and Mrs. Roosevelt.

Sunday June 14, 1936, Mr. V. W. Vandiver, regional geologist, National Park Service and Mr. L. T. Brady of the Museum of Northern Arizona came in. I took them to Kest Zee and returned to Be-ta-ta-kin, where I found a party of four. They had been through the ruins but had a short talk with them.

The western division of the R.B-M.V. Expedition is in camp at Marsh Pass. They are all putting up a camp in the main Tsegie.

At 12:30 a.m. June 15, 1936, a freak wind hit the canyon. A large number of box elders and aspens were snapped off like breaking a match. At camp the post that I had set to hold the stove pipe snapped off and partly wrecked things; outside of that, no damage done at camp.

I have three coyotes and a fox that come into camp at night to find if any food has been left where they can get at it; so far they have been out of luck.

Old Nick Wing (a Raven which has a nick in the right wing; there are three or four feathers missing) has been hanging around the head of Be-ta-ta-kin Canyon with a bunch of young ravens.

By Eusteen John Wetherill, Custodian

The forerunners of the Rainbow Bridge and Monument Valley Expedition arrived on the 19th. They are now scattered broadcast over the desert. Ansel Hall has not turned up yet.

Mr. George Harriman came in last evening with Jack Roache and Jack's two young daughters. They expect to visit the ruins before they leave Kayenta. I gave Milton instructions to keep track of all the questions visitors ask and what I consider more important his answers to them. I think sometimes the answers are interesting. In one case a lady from Boston or vicinity asked me what the rubbed places on the rocks in the

ruins were. When I told her they made by the ancient people sharpening their stone axes, she told me I was wrong. A certain ranger had told her that it was where they would stand and rub their sandals on the rock. I showed her some of the places where they would have trouble standing. With best wishes to you all and hoping you can carry out your wishes in the shade, I am.

NATURAL BRIDGES

By Zeke Johnson, Custodian

Report time is hereonce more and I am glad to say that all is well with me. The Monument is just as interesting to me now as it was 20 years ago, and more so because we are becoming more acquainted with each other. That makes it the more interesting.

I told you in last month's report that we needed rain. We still do for we have only had a few sprinkles and not enough to do much good. However, it rained enough at the monument to run down some fresh water into the tanks so I have plenty, such as it is.

Travel is just about as it was in May. It has been plenty hot and there is a good supply of those little black things they call gnats. You know those little fellows; they love to get in your ears and squeal about it. I have contacted or talked to 68 visitors, and have missed about that number as often when I am hiking with a party people come and go and I don't get to see them. Some register and some don't. However, I never have any complaints, except occasionally about the poor trails and accommodations, but most people are so interested they don't find time to mention those things. A number of professors from the University of Utah with students have been with me this month.

Deric Nusbaum hiked to the other bridges. He also visited the ruin above the Sipapu and he said he did not blame me for being enthusiastic about the monument for he could see plenty to be enthusiastic about. I am still in love with my little job and am trying to do all in my power to make it a success.

Thanks for the folders. I am sending them through the mails to many people who want to come and see the bridges. I am taking a party out today who were here three years ago. Will be with them several days.

HOVENWEEP

By Deric Nusbaum Ranger

Mr. Al Lancaster, farmer at Ackman, Colorado and past assistant to Dr. Paul Martin, Mr. Joe Brew and Mr. Earl Morris on archeological field trips, accompanied the traveling ranger on a trip into Ruin Canyon. His guidance facilitated finding the major sites of the region, and his advice,

HOVENWEEP (CONT.)

based upon past ruin restoration experience at Aztec and Mesa Verde, strongly influenced the following estimate on restoration work needed at Hovenweep and Cutthroat Castle.

Starting late the afternoon of June 18, we followed a newly improved country road due west from Ackman to the Lowrie Ruin turn-off, and then headed southwest. We camped on a truck out-crop 4.15 miles north of the Colorado-Utah line (at the point where it is traversed by the Hovenweep-Ackman road) or 4.9 miles north of Cañon Reservoir.

On the morning of June 19 we walked for about 1.25 miles southwest, --directly toward the center of the Ute Mountain range. On the south shoulder of the second ridge (about 1 mile from the road) stands a 14-foot high circular tower just to the north of a recently and thoroughly potted unit pueblo. We continued southeast across a deep draw (Cutthroat Canyon) and in a small east tributary found the excellently preserved site that Dr. Paul Martin named.

Photographs of this ruin will be sent to headquarters in the near future. I hope that they will add weight to my thought that this site should be included in Hovenweep Monument boundaries. The "Castle" is 8.95 (plus a mile and a quarter of walking) northeast of the D-shaped unit at the head of Ruin Canyon in Hovenweep. As the monument in question is split into three separate sections (to the best of my knowledge), the inclusion of a fourth, adjacent 5-10-acre tract would not be impractical.

Cutthroat Castle is larger than any single unit of Hovenweep and the preservation is better than that of any building visited in Ruin Canyon (with the exception of some of the single towers).

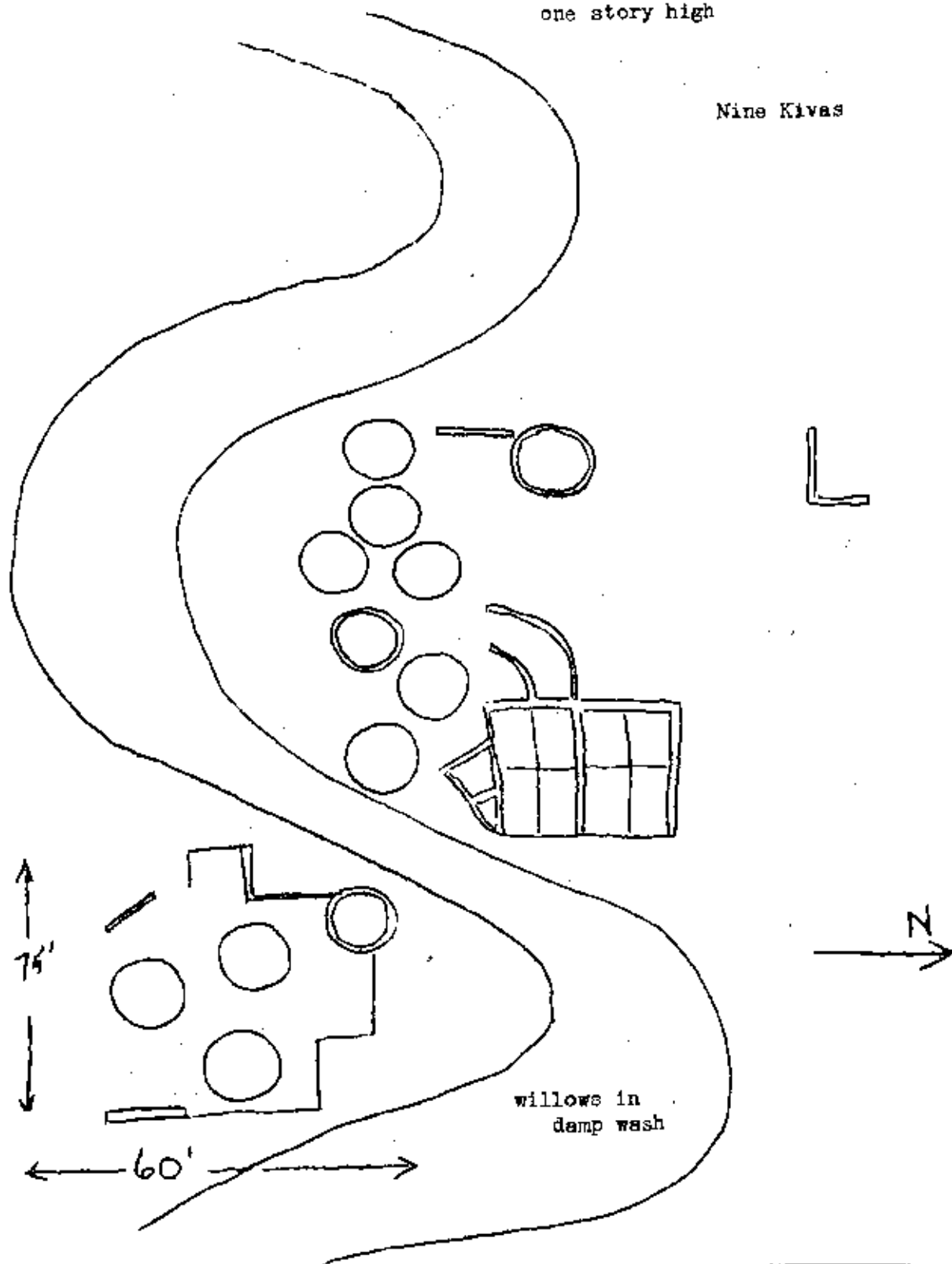
I've mentioned the visit to this ruin here in detail because it is certainly worthy of consideration as part of Hovenweep National Monument. It is on Federal land too.

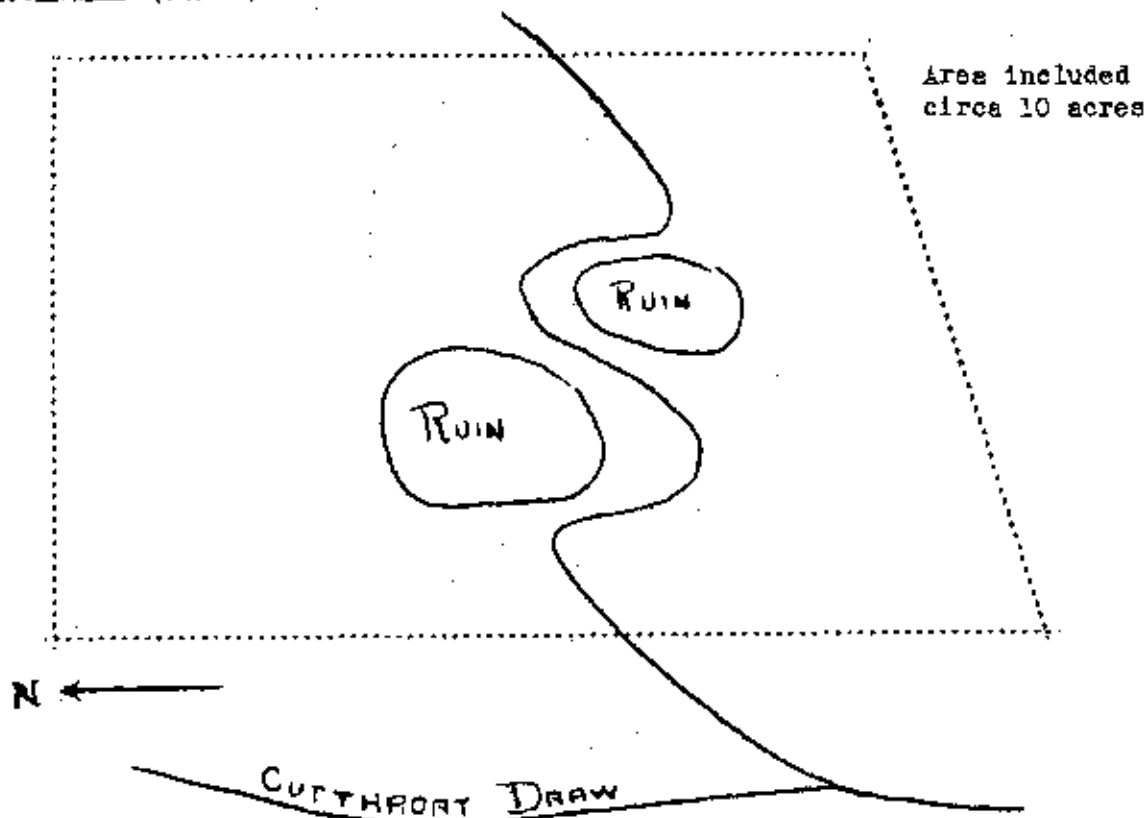
The following is a sketch map that gives some idea of the ground plan of the site. Mr. Lancaster believes that three men could strengthen the shaky walls in two weeks time if they worked in the winter when water was available in the draw below. (see following page)

This second sketch shows an area that would include the main site of Cutthroat Castle and the ground to the tops of the draw slopes as well as enough of the draw to protect the possibilities of water development that the presence of willows suggest. Unfortunately we could not find any corner markers to locate definitely the proposed area. (see page 458).

Double lines represent walls over
one story high

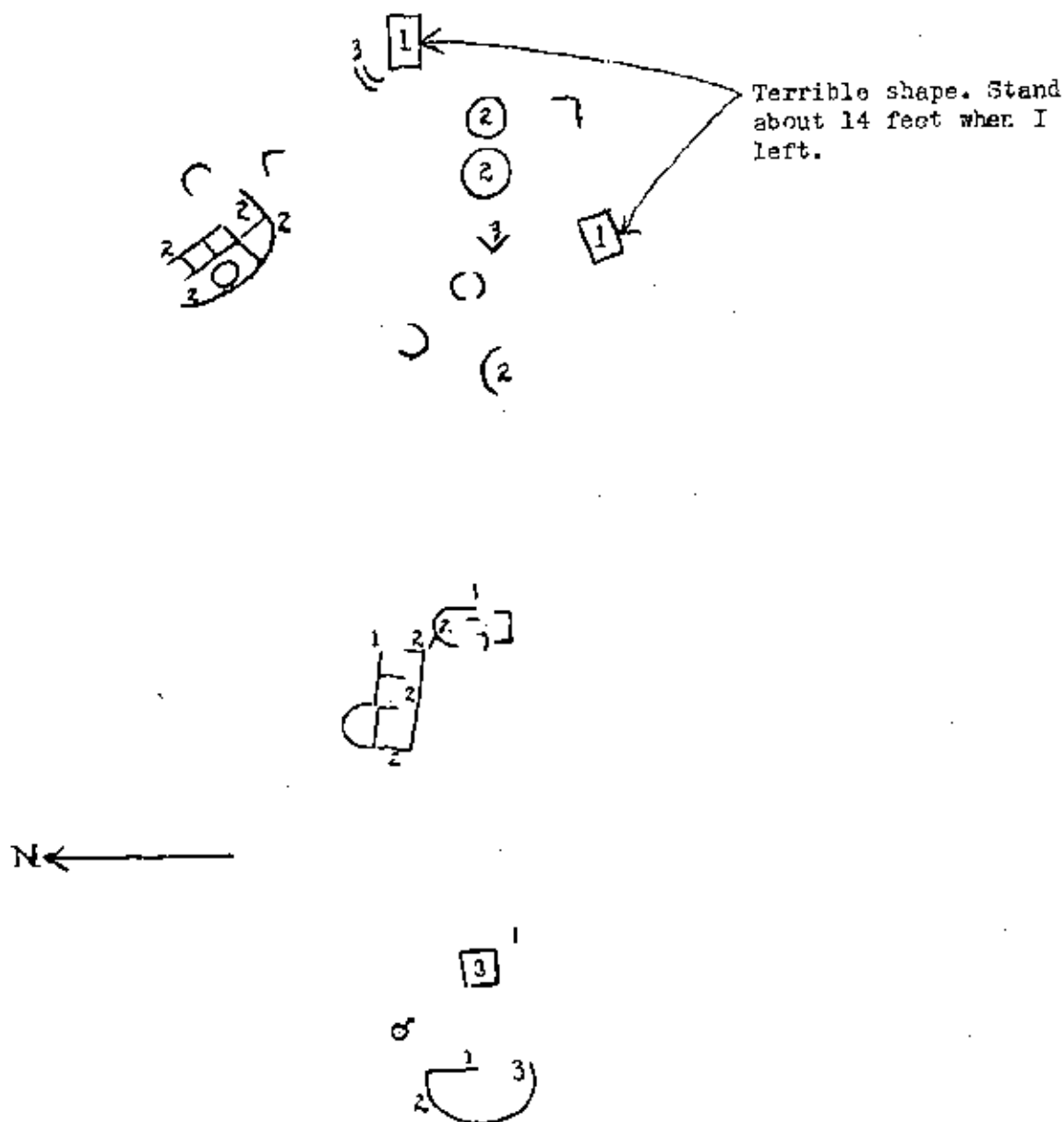
Nine Kivas





Hovenweep National Monument is pretty well protected from the casual tourist by a baffling maze of country roads. Signs would permit more people to visit the site, but I think it a good idea to forego posting them until a time when the ruins are restored to an extent. Just now half a dozen 'preventative' signs might do some good if placed at appropriate places.

The following sketch map includes most of the units around the head of Ruin Canyon. The numbers 1, 2, and 3 apply to restoration as to whether it is imperative, necessary or for adequate preservation. Mr. Lancaster stated that a crew of three men (mason and two helpers) could check the worst weathering in approximately six weeks. This work certainly is needed: two big walls have gone since last fall (the time of Mr. Lancaster's last visit) and a lot more are about to tumble, - and it would take so little to save them. (See following page.)



The spring at the head of the canyon has been cleaned by stockmen and now holds about three barrels of fair (slightly alkali) water.

There are comparatively few signs of recent vandalism within the monument area. Ranger Don Watson of Mesa Verde visited the monument last spring just after two rooms had been cleaned out. People familiar with the region attribute the vandalism of recent years to the stockmen that winter their animals in the region and have lots of time to explore around.

BANDELIER

By J. W. Hendron, Ranger

Visitors:

Visitors numbered 1,810, arriving in 489 cars from 38 states, and District of Columbia, England, India, Scotland, Canada, Germany, New Zealand, Australia, Honduras, Republic of Columbia, Costa Rico, and Mexico.

The six highest states in order by visitor count were: New Mexico, 814; Texas, 127; Colorado, 89; California, 67; Ohio, 56; and Missouri, 46.

Our attendance for this month increased 977 over last month, or 117%, but did not quite equal attendance for June, 1935.

Return visitors show a total of 151, and I do not think that we have made note of them all.

Weather and Roads:

Days partly cloudy:	19	
Days cloudy-----:	1	
Maximum temp.-----:	93	June 18
Minimum temp.-----:	41	June 12
Mean Maximum-----:	84	
Mean Minimum-----:	54	
Precipitation-----:	.89	against .06 for June, 1935.
Rain and sleet-----:		May 24, 25, 26, 27, 30, 31.
		June 10, 15, and 23.
Dust storms-----:		June 4, and 10.

The weather has been good with the exception of several disagreeable winds. Our heaviest precipitation record was on May 30, with a total of .60 inch, which began about 6:30 p.m. and lasted well into the night. The heaviest record for June was on the 15th and showed a total of .13 inch.

The roads were good in general until a few days ago when a heavy rain on the Ramon Vigil Grant and on the Detached Section washed several places, making it rather rough. I think our rainy season has just begun and it is most welcome. The roads have been dusty and the creek is going dry.

Visitor Trip Chart:

One hundred and sixty-eight parties were conducted through the ruins, and given short lectures, numbering 864 people. The average time per trip or party was 63.36 minutes. One hundred and forty-nine parties took complete ruins trips; nineteen were given short talks or special lectures.

Recently we have been escorting late visitors through the ruins.

BANDELIER (CONT.)

after supper time; as a matter of fact, it is much cooler at that time and more satisfactory for lectures. Several special lectures have been given at the camp ground in the evening or at the hotel or office. We have had our share of professional lecturers this summer, gathering their material for Travel Talk Series, and they have been very desirous of gaining information without having to go to the technical reports for it.

Special Visitors:

May 30 - Mr. and Mrs. Donovan Senter were in for a few hours with a group of young archeology students from the University of New Mexico. Mrs. Senter was Dr. Florence M. Hawley before her marriage the latter part of May. June 2--Mr. and Mrs. Millard Henning arrived at Frijoles for a several days' stay. The Hennings are visiting Southwestern Monuments, spending a few days at each place. June 3 - Mr. and Mrs. Branson De Cou were in, gathering material for their travel talks. The De Couts are famous as international lecturers, giving musical travelogs illustrated with masterpieces of art and photography. This is their seventeenth season. June 10 - T. C. Miller, Custodian of Chaco Canyon National Monument, was in the canyon for a short while, accompanied by Stanley Milford of the School of American Research in Santa Fe. Mr. Miller seemed to be very pleased with our little valley and his short trip through. I'm sorry he was not able to stay long enough to see it all. June 11 - Mr. and Mrs. G. F. Bowser of Warren, Ohio, arrived to spend several days in the canyon gathering material for a series of illustrated travel talks. They are making a tour of Southwestern Monuments. Mrs. Bowser seemed to be particularly interested in the pottery of the Rio Grande valley and wanted to include material of the same nature in her lectures. We helped her all we could by way of explanation since our collection of pottery for demonstration purposes is rather slim at the present time. Dr. James F. Zimmerman, President of the University of New Mexico, spent an hour or so in the canyon with a small party. June 12 - Chuck Richey and J. B. Hamilton were in for the day on business. June 15 - A. J. S. Eccleston, special agent, Division of Investigations, Department of the Interior, arrived for a day or so on business.

General:

Alfred Peterson, commonly known as Pate, arrived at Bandelier on June 4 to take over the duties of ranger for the summer. He received his B. A. degree from the University of Arizona a short time ago in Archeology and is now out to put it into practice for a while until he returns to school in the fall to take his Masters degree. Pate has been stationed for the last five summers at El Morro National Monument and knows the Park Service routine, and so he just stepped right in and went to work. I'm sure glad that he is out here; now we can concentrate on our visitors a little more and not have to rush them through so fast.

In view of the fact that Earl Jackson made a most comprehensive study

BANDELIER (CONT.)

of questions asked by visitors, I think I have run on to a couple that he omitted. A few days ago I was walking across the little footbridge near the hotel with a party and suddenly a young lady asked me if that was one of the Indians over in the flower garden; it happened to be Mrs. Frey. At another time a lady walking along the cliffs asked if the Indians were having a pow-wow or a dance or something across the canyon on the other side of the trees. I looked up very surprised and she asked what all the whoops and cries were. It happened to be Mrs. Frey's little boy, home for the summer vacation.

I haven't heard anything from Earl lately, but from the last report he seems to be getting along very well.

BANDELIER FORESTRY

By James Fulton, Forester

On May 28 a total of 41 landscape-planted trees, 39 of which were *Pinus ponderosa* and two of which were *Pinus edulis*, were cut and burned because they were attacked by *Ips confusus* var. Five man-days and one supervisory man-day were expended on the project, making a total cost of \$15 and a cost per tree of 37¢. All these trees were located near headquarters area in Frijoles Canyon.

During the first two weeks of June I have been cutting lintels for the Equipment Shed and aspen for ceilings in Quarters No. 2. In all, I cut, peeled and split enough aspen to make 9,670 lineal feet of ceiling material.

Since May 15, I have been excavating and pouring footing for the Equipment Shed.

HEADQUARTERS STUFF

BRANCH OF EDUCATION

By Robert H. Rose, Park Naturalist

During the month of June the Educational Staff has consisted of Junior Naturalists Dale S. King and Charlie R. Steen, Student Technician Clarence Cole and Park Naturalist R. H. Rose. King and Rose have been on headquarters work the entire month, while Steen returned to headquarters late in the month from his relief assignment at Montezuma Castle. Cole began duty at headquarters on June 4.

Headquarters and Field Personnel Changes and Additions:

Following is the status of seasonal positions in Southwestern Monuments as of June 30, 1936.

BRANCH OF EDUCATION (CONT.)

1. Jerome W. Hendron, temporary ranger, Bandelier.
2. Alfred Peterson, temporary ranger, Bandelier (not previously reported). Peterson entered on duty on June 4.
3. Doug Harritt, temporary ranger, Canyon de Chelly.
4. Ranger-Historian, Casa Grande, to remain vacant until heavy travel season during winter months.
5. Clarence Cole, student technician, headquarters (not previously reported), entered on duty June 4.
6. Jerome Hastings, ranger-historian, Chaco Canyon, to enter on duty July 1.
7. Evon Z. Vogt, Jr., acting ranger, El Morro.
8. Deric Nusbaum, traveling ranger, entered on duty early in June.
9. Zeke Johnson, Custodian, Natural Bridges, on duty May 1.
10. Milton Wetherill, ranger-historian, Navajo, to enter on duty July 1.
11. Woodrow Spires, temporary ranger, Tonto, effective July 1.
12. Paul Beaubien, temporary ranger, Walnut Canyon.
13. James W. Brewer, temporary ranger, Wupatki, effective July 1.

In order to complete the record on personnel, it is proper here to mention that Permanent Ranger Martin O. Evenstad of Tumacacori National Monument is transferring, effective late in June, to Muir Woods National Monument in the same capacity. For the time being the Tumacacori position made vacant will remain unfilled. Also, Frank L. Fish, permanent ranger, Montezuma Castle, is transferring to the position of Custodian, Chiricahua National Monument, effective July 1. Relief help is being secured at Montezuma pending filling the position made vacant by Fish's transfer. Our best wishes to these men in their new assignments.

Administration, Clerical:

During the month Park Naturalist Rose prepared copy on mimeographed leaflets for (1) Aztec Ruins; (2) Chiricahua; (3) Tonto, revised; and (4) White Sands, revised. In addition, general correspondence was handled while a total of two days was spent finishing up the geographic place names reports for Bandelier, Natural Bridges and Arches.

BRANCH OF EDUCATION (CONT.)

About 300 photographs were filed; educational contacts tabulations were brought up to date and a nine months' summary prepared; and time was given to study of plans and to correspondence relating to the proposed museum at Tumacacori.

Gifts and accessions received during the month, or not previously reported, include (1) "The Pottery of Pecos," Vol. II, by Kidder and Shepherd; (2) Rio Grande Culture Area map prepared by Field Division of Education from data by Dr. Mera of the Laboratory of Anthropology; (3) 2000 botany labels; and (4) a loan of a considerable amount of archeological material for the Chaco Canyon Museum from the Museum of New Mexico, Santa Fe. A consignment of bookcases for the Headquarters Library have been ordered and should be received within about a week. This will enable us to keep our books in much better condition than in the past.

Outside Contacts:

On Thursday afternoon, June 11, R. H. Rose gave an illustrated talk on the Kino Missions of Southern Arizona and Sonora, before the Community Church Auxiliary; attendance, 35.

Activities along other lines will be covered in the reports of Naturalists King and Steen and of Student Technician Cole, which follow:

Report of Jr. Naturalist Dale S. King

On duty at headquarters the entire month.

Ten days on May report.

Half day on Broadcast.

Compiled Southwestern Monuments Bird Banding Report for 1936.

Compiled Casa Grande Bird Banding Report for 1936.

Assembled and mailed bird banding reports from other monuments to Biological Survey.

Three hours on Natural Bridges informational folder.

Completed plans for Tree Ring exhibit, Case 4, Bandelier Museum and mailed details to Berkeley for preparation.

Wrote 23 letters.

Remainder of time on routine office work---library, incoming and outgoing educational supplies, etc.

Report of Jr. Naturalist Charlie R. Steen:

June 1 - 21 Relief at Montezuma Castle. Left Montezuma Castle on the evening of the 21st and arrived at headquarters that night.

22 - 30 At headquarters.

BRANCH OF EDUCATION (CONT.)

Report of Student Technician Clarence H. Cole, ECW:

Time spent mostly running mimeograph with various other odd jobs thrown in for good measure, guiding especially. I am thinking of changing my title from Student Technician to Mimeograph Technician or Head Hay-bailer. Some days my guiding and office work were mixed indiscriminately.

Guide Duty:

From SWM Stencil No. 16.

June 4-24, incl.

Total persons guided: 157

Total Trips Made (Ruins and Museum): 36

Office Duty:

Copied Aztec Library Index for Headquarters Master File.
Mimeographed, cut and packed 5000 White Sands informational leaflets.
Mimeographed, bound and packed 1500 copies Aztec informational leaflets.
Cut cover and map stencils for Chiricahua informational leaflets.
Mimeographed 600 copies Annual Bird-banding Totals.
Mimeographed, bound and packed 2000 copies Chiricahua informational leaflets.

CONTACTS DISCUSSION

By Robert H. Rose, Park Naturalist

Contacts tabulations for June, 1936, and for the elapsed nine months of the current travel year appear as a part of this report. The following observations (see June, 1936, Statistical Summary and the nine months tabulations) are significant:

1. Walnut Canyon with one temporary Ranger reports 1,441 visitors and 1,200 educational contacts. Checking the Form 16 reports, we find 115 of these are "double contacted" - that is, were given informal talks at the ranger station as well as field trips. Subtracting 115 from 1200 gives 1085 different people contacted.
2. The difference between 1441 and 1085 is 355 - the number of visitors not contacted at all at Walnut Canyon. This 355 who could not be contacted at all at Walnut exceeds the total travel of 267 at Wupatki; 335 at Tonto; 309 at Gran Quivira, 209 at Canyon de Chelly; and compares with the 362 at Pipe Spring.
3. The 1200 educational contacts at Walnut Canyon exceed the 864 at Bandelier; 209 at Canyon de Chelly; 456 at Chaco Canyon; and 826

CONTACTS DISCUSSION (CONT.)

at Tumacacori; and compare with 1,698 at Montezuma Castle.

4. The time per field trip at Walnut Canyon is 31 minutes - necessarily short since the ranger must keep fairly well within the vicinity of the Lookout in order to contact anywhere near all of the visitors to that monument.
5. The 4475 guide minutes for field trips at Walnut totaled with the 5610 minutes for the "Misc" contacts (not entered on Summary), make 10,085 guide minutes for June at Walnut - a solid 21 eight-hour days. This doesn't include the time required to gather the people into groups; time between groups, etc.
6. One must conclude that in the summer months Walnut Canyon is a very critical spot and that it is impossible for one man to deliver anything like adequate visitor service. The following three months bid fair to reveal the same condition, probably more critical. A study of the month by month tabulations through the winter months will prove beyond a doubt that Walnut Canyon badly needs a year-round custodian.

The variation of total travel for nine months in Southwestern Monuments is shown on the graph found herewith. Superimposed upon the travel graph the educational contacts have been indicated on the same scale. Note how for the summer months the contacts are approximately 50% of total travel. Consider that thousands of these contacts are "double contacts" and we have the fact standing out that there are thousands of visitors to Southwestern Monuments to whom we are yet unable to give any personal service. White Sands and Capulin Mountain travel, together more than 11,500, account for much of this difference.

Travel for these nine months is actual reported travel. There are many monuments having no personnel either the whole year, or part of the time, but which have had travel. Reported travel is 141,225 for the past nine months. Travel for May and June ran well over 20,000 for each month. If July, August and September average better than 20,000 each, the year's reported travel is going well over the 200,000 mark. The actual travel is considerably more than the reported travel. Hence we can foresee a record breaking year in travel when the final figures are tabulated at the close of June 30.

If Educational contacts exceed 10,000 per month for the next three months, which they are almost sure to do, the total educational contacts will amount to about 140,000 as a minimum for the travel year. Around 40,000 of these will be "double contacts" leaving about 100,000 individuals contacted. Thus we are beginning to see what the outcome will be for the travel year. It will be interesting to see how actual figures compare with these predictions.

STATISTICAL SUMMARY ON EDUCATIONAL CONTACTS FOR JUNE 1926

-SOUTHWESTERN NATIONAL MONUMENTS-																					
MONUMENTS	EMPLOYEES		GUIDED TRIPS					MUSEUM LECTURES					MUSEUM UNATT'D			LECTURES OUTSIDE		MISC.		TOTAL EDUCIN CONTACTS	TOTAL TRAVEL
	PERM	TEM	NO	ATT	TIME	AV ATT	AV TIME	NO	ATT	TIME	AV ATT	AV TIME	NO	ATT	NO	ATT	NO	ATT			
ARCHES	1/165	0																		(NO REPORT)	
AZTEC	2	0	255	1180	8497	4.6	33	227	1170	4113	5.2	18.2	8	27			1	27	2,404	1,323	
BANDELIER	1	2	170	864	10504	5.1	61												864	1,810	
C. DECHERLY	1	1	47	204	7140	4.4	152										1	5	209	209	
CAPTAIN	1/165	0																	(NO REPT)	2,500	
CLSA ENDE	2	0	231	1650	8324	5.7	28	266	1405	8421	5.3	20	46	245					3,300	1,561	
CHACO CANY	1	1	44	232	6400	5.3	146	42	224	1015	5.3	25							456	643	
CHIRICAHUA	0	0																	(NO REPT)	851	
EL MORRO	1/5	1	45	193	2847	4.3	63												193	*409	
GILA CLIFF	0	0																	0	(NO REP)	
GRAN QUIV.	1	0	65	309	3410	4.4	53												309	309	
HOVENWEEP	0	*0																	0	(NO REP)	
MONTEZUMA	2	0	180	653	5655	3.7	32	192	1043	3906	5.4	205							1,638	1,216	
NATL. BR.	0	1																	(NO REPORT)		
NAVAJO	1/165	1-1st	31	95	3600	3.1	116										5	11	106	*214	
PIPE SPR.	1-1st	0	28	83	680	3.0	25												83	362	
RAINBOW	0	0																	0	66	
SAGUARO	0	0																	0	(NO REP)	
SUNSET CR.	0	0																	0	459	
TONTON	0	1	46	222	2895	4.8	63	57	195	950									417	335	
TRIMACACQUI	2	0	181	826	5982	4.6	33												826	911	
WALNUT CANY	0	1	146	520	4475	3.6	31										198	680	1,200	1,441	
WHITE SNDS	1/5	0																	(NO REP)	3,852	
WUPATKI	0	1	26	91	1990	3.5	77										1	179	270	267	
YUCCA HSE	0	*1																	0	(NO REP)	
HICKERS.																1	35		35		
TOTALS	11.2	10	1555	7124	22399			784	4037	1540			54	272	1	35	1206	902	12,370	23,938	

*12 fulltime custodians & rangers; 1-actg. custodian; 3-temp. rangers and ren-historians; no ren.-artists; others on misc. assignments. *Yucca temporary ranger is "Travelling Ranger"; *El Morro and Navajo travel include some previously unreported; *Wupatki, "misc" for Arts-Crafts" Exhibition.

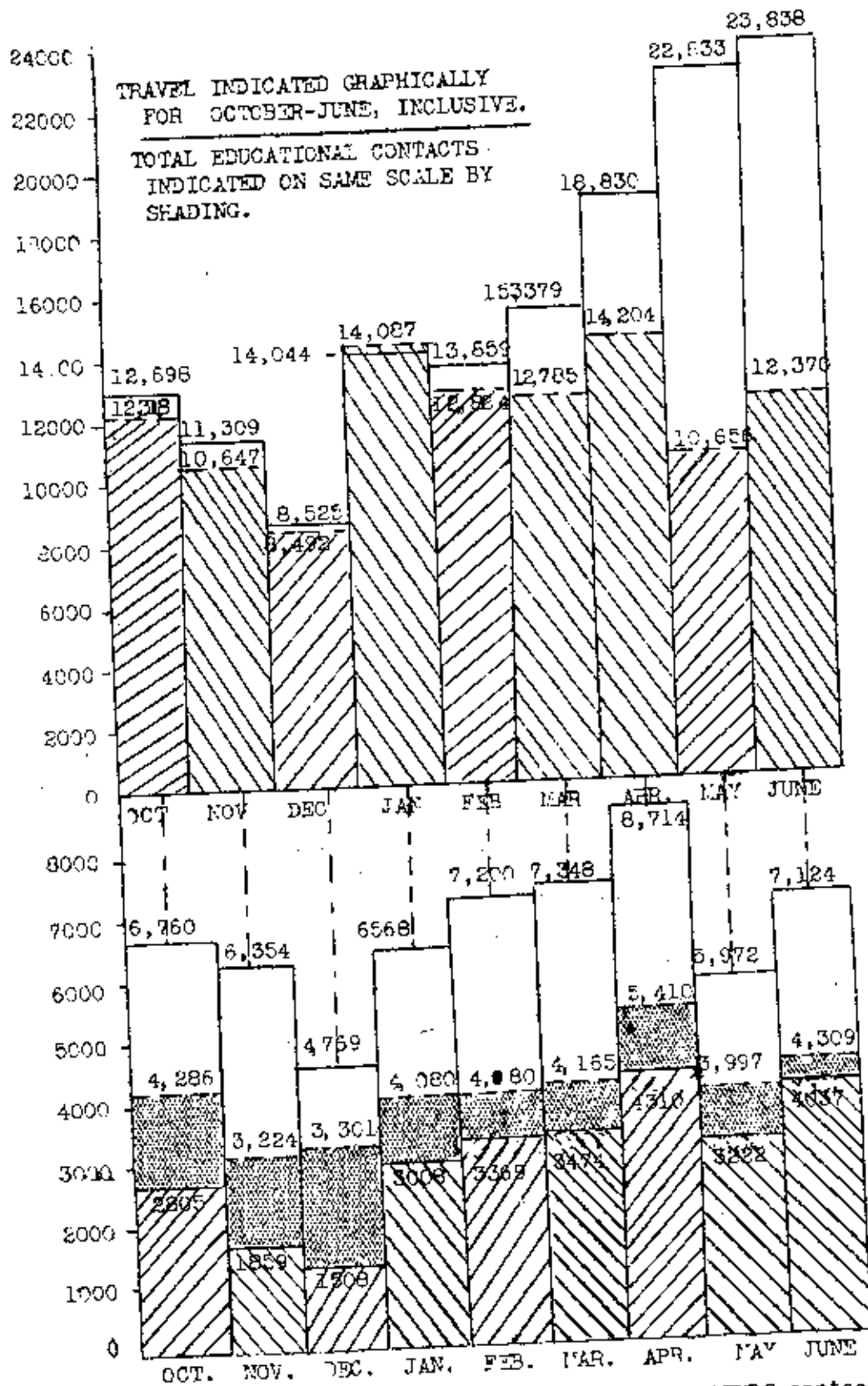
NINE MONTHS TABULATIONS SUMMARY BY MONTHS
OCTOBER 1935 - JUNE 1936 INCLUSIVE

MONTHS	FIELD TRIPS		MUSEUM LECTURES		MUSEUM UNATT'D.		LECTURES OUTSIDE		MISC.		TOTAL EDUC. CONTACTS	TOTAL TRAVEL
	NO	ATT	NO	ATT	NO	ATT	NO	ATT	NO	ATT		
OCTOBER	1045	6760	389	2805	175	1481	1	115	313	1157	12,318	12,698
NOVEMBER	1072	6354	295	1859	171	1365	7	485	156	594	10,647	11,309
DECEMBER	926	4769	284	1508	30	1793	1	20	70	402	8,492	8,525
JANUARY	964	6568	461	3008	128	1072	20	2283	289	1156	14,087	14,044
FEBRUARY	1141	7200	474	3369	81	711	11	1084	96	460	12,824	13,859
MARCH	1274	7348	535	3474	85	691	7	341	174	931	12,785	15,379
APRIL	1486	8714	642	4310	185	1100			25	79	14,204	18,830
MAY	1095	6072	614	3222	139	775	5	531	27	156	10,656	22,833
JUNE	1555	7124	784	4037	54	272	1	35	206	902	12,370	23,838
TOTALS	10558	60809	4478	27592	1046	9260	53	4894	1054	5927	108,383	141,225

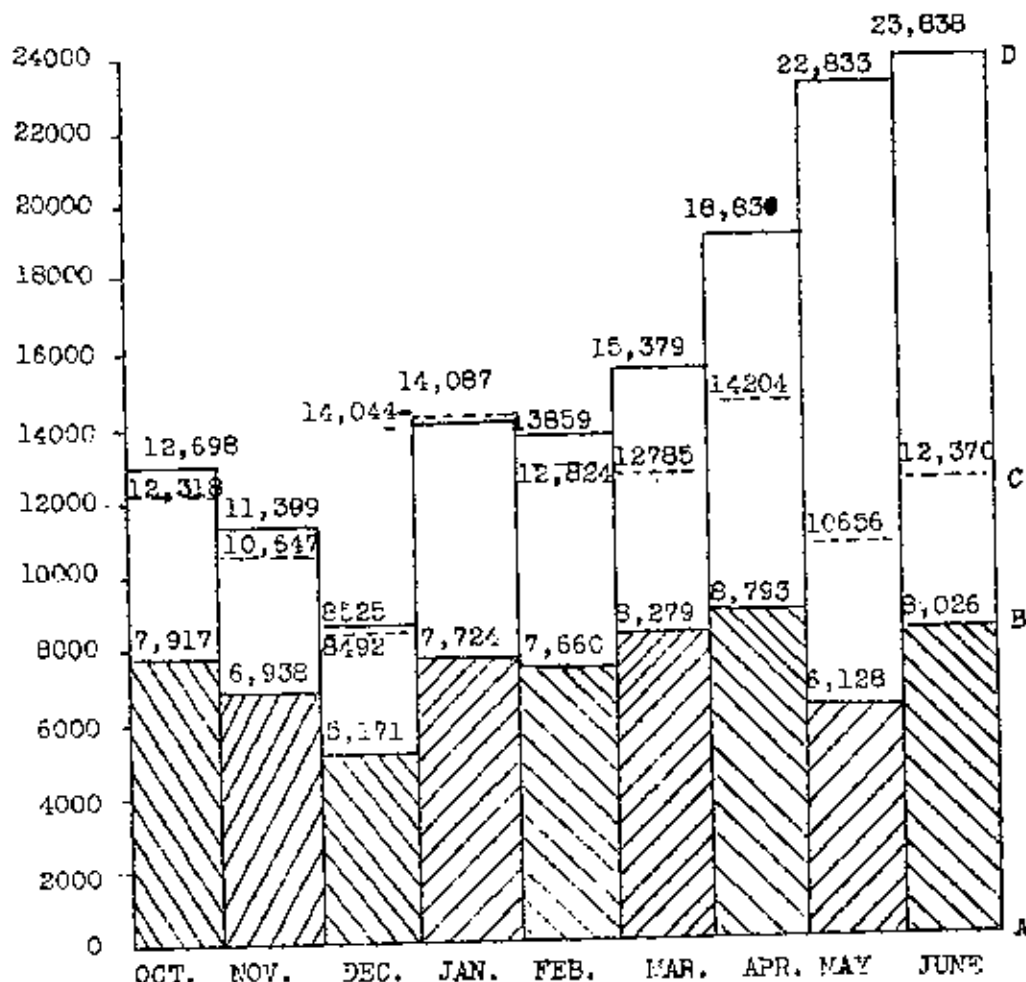
NINE MONTHS TABULATIONS SUMMARY BY MONUMENTS
OCTOBER 1935 - JUNE 1936 INCLUSIVE

MONUMENT	FIELD TRIPS		MUSEUM LECTURES		MUSEUM UNATT'D.		LECTURES OUTSIDE		MISC.		TOTAL EDUC. CONTACTS	TOTAL TRAVEL
	NO	ATT	NO	ATT	NO	ATT	NO	ATT	NO	ATT		
ARCHES											(NO REPORTS)	
AZTEC	965	5436	908	5415	19	51	3	600	1	27	11,529	6,265
BANDEL.	531	2688							156	533	3,221	5,637
C. CHELL	123	483					1	350	2	9	842	541
CAPULIN	13	85									85	8,450
CASA GB	2879	21290	1683	12826	1029	9209	1	100			43,425	23,070
CHACO	284	1197	123	644					55	225	2,066	4,495
CHIRIC.	43	207									207	3,158
EL MORRO	91	457							3	9	866	676
GILA CL.											0	(NO REPORT)
GRAN QUI	200	2059	13	78							2,137	2,460
HOVENWEEP											0	(NO REPORT)
MONTESZU.	892	4562	1080	5407					4	31	10,000	6,444
NATL. BF	6	25					22	1750	31	233	2,008	276
NAVAJO	38	131							21	51	182*	214*
PIPE SP.	179	893					5	99			992	2,457
RAINBOW											0	66
SAGUARO	415	1478							1	200	1,678	6,000
SUNSET									20	61	61	1,240
TONTO	617	3203	610	3014							6,217	4,957
TUMACAC	2002	10360									10,360	11,171
WALNUT	521	1957	61	208					302	1064	3,229	4,872
WHITE SDS	396	3672					2*	400	738	3121	7,193	47,599
WUPATKI	133	577					2	150	28	263	990	1,115
YUCCA	2	10									10	52
Hgters							17	1445			1,445	
	10558	60809	4478	27592	1046	9260	53	4894	1362	5927	108,343	141,215

*Three radio broadcasts and 2-showings White Sands films during period.



Line shaded portion indicates MUSEUM LECTURE contacts;
line shaded portion plus dot shaded portion indicate TOTAL
MUSEUM ATTENDANCE (lectures and Unatt'd); while total of
line shaded area, dot shaded and clear portions show field trip
attendance.



VISITOR SERVICE GRAPH

KEY:

1. Total height of graph from base line to upper solid line represents total month-by-month travel, October 1935 - June 1936, inclusive. (Shown as height AD for June).
2. Height from base line to dotted line represents total educational contacts; that is, field, museum, misc., outside lectures and films showings. (Shown as height AC for June).
 - a. Note that this total includes many "double contacts" - visitors who received both field trips and museum service. Thus, 100 people receiving both types of service are chalked up as 200 educational contacts.
3. Portions from tops of line-shading to dotted lines represent the number of people contacted a second time, that is, "double contacts". (Shown as BC for June).
4. UNSHADED PORTIONS FROM TOP OF LINE-SHADING TO UPPERMOST SOLID LINES REPRESENT VISITORS MONTH BY MONTH WHOM WERE NOT CONTACTED. (SEE LINE BD FOR JUNE). NOTE THAT ON AN AVERAGE WE ARE CONTACTING ABOUT HALF OF TOTAL NUMBER OF PEOPLE; INADEQUATE PERSONNEL, THE ANS.

THE Supplement

ASMA MONTHLY REPORT

1936 BIRD BANDING IN SOUTHWESTERN MONUMENTS

The Director
Bureau of Biological Survey
U. S. Department of Agriculture
Washington, D. C.

Dear Mr. Director:

During the fiscal year 1936 bird banding projects in cooperation with your bureau were carried on in nine of the 25 National Monuments which are administered by this office.

Stations at Navajo National Monument, Kayenta, Arizona, and Casa Grande National Monument, Coolidge, Arizona, had existed previous to July, 1935. During the summer of 1935 personnel of other monuments were informed of the program, and seven responded by obtaining federal banding permits.

Values gained from the banding of birds in National Park Service units under our charge are threefold: (1) custodians, rangers, and naturalists become increasingly familiar with the avifauna of their region, can more efficiently answer visitor questions and prepare museum exhibits; (2) the accumulating bird records at a monument will in time assume importance to visiting scientists, and the monuments thus will become valuable "scientific sub-stations;" (3) the normal work of a cooperating government bureau, the Biological Survey, is advanced, and knowledge is accumulated concerning the somewhat incompletely studied ornithology of the Southwest.

Southwestern Monuments are somewhat understaffed and Park Service work is heavy. Bird banding is carried on as a personal hobby of the individual concerned, and most work is done while the man are off duty. Consequently, only applications from known interested personnel were recommended by the headquarters office for approval.

It is a very conservative statement to say that far more than three-fourths of the bird banding work in the Southwestern Monuments was done while operators were off duty. Thus, the National Park Service has gained much valuable information and improved the knowledge of several of its personnel at very little actual cost.

Headquarters aided the work as much as possible by furnishing traps, literature, mimeographed forms, etc. The Field Division of Education of the National Park Service at Berkeley, California, very kindly constructed traps with the help of Emergency Conservation Work funds.

A total of 1,547 birds of 63 species were banded at the nine stations. Seventeen of the species banded by Monument stations were not represented in the Biological Survey totals of 1935, indicating that our work is being

BIRD BANDING (CONT.)

done in an area that needs accurate study possible only by the banding method. As these more than 1,500 birds return to monument stations from year to year, it is certain that our data will become increasingly valuable.

Brief resumes of the work at each station follow:

Bandelier National Monument

Frijoles Canyon, approximately 39 miles northwest of Santa Fe, New Mexico. Transition Zone. Altitude 5,600 feet.

Operator Mrs. Earl Jackson, wife of the custodian, banded 111 birds of 12 species. Operations were not started until September, 1935, and were handicapped at various times by lack of bands, delayed arrival of traps, etc. Natural food along the constantly-flowing Rito de los Frijoles is plentiful, and birds are attracted to traps with difficulty. Mrs. Jackson's time was limited and it was not feasible to set traps during the winter in positions across the creek on the attractive sunny side of the Canyon.

Notwithstanding these hindrances, Mrs. Jackson produced a very creditable total, and her work was characterized by extreme accuracy. It may be possible in f.y. 1937 to set up a small ECW project which will place a CCC boy at the disposal of the station operator and result in a large number of banded birds.

Casa Grande National Monument

Two miles north of Coolidge, Arizona. Lower Sonoran Zone. Altitude 1420 feet.

Operator Louis Caywood and collaborators banded 854 birds of 33 species, many of which are poorly represented in Biological Survey records. Of the 854 bands, 15 were used at Walnut Canyon and 173 at Tumacacori National Monuments. The remaining 736 were banded at Casa Grande.

Thirty-three station returns were received, including 15 interesting returns of Gambel Quail which had been banded in March, 1935. Work was started on an intensive study of this species, and approximately 70 colored bands were placed on resident species in an initiation of long-term studies of range and distribution, life history, sex ratio, longevity, pathology, weight, etc.

Chaco Canyon National Monument

Work at this Monument was not begun during 1936, only two Russet-backed Thrushes being banded.

BIRD BANDING (CONT.)

Montezuma Castle National Monument

Permission was granted to Norman Jackson, son of the custodian, to band within monument boundaries. However, due to the sporadic intervals in which Mr. Jackson was able to band, the station was dismantled and the permit rescinded.

Navajo National Monument

In Betatakin Canyon near ruin of the same name, southwest of Kayenta, Arizona. Transition Zone. Altitude approximately 6,500 feet.

Milton Wetherill, alternately Trail Foreman and Temporary Ranger at this monument, during his spare time banded 61 new birds of ten species during the 1936 season. He was not at the monument during the best banding period, the winter, and has experienced difficulty keeping traps baited due to depredations of chipmunks and squirrels.

Mr. Wetherill's tent ranger station is located in Betatakin Canyon, which with Dogozski Biko Canyon seems to afford poorer nest sites than the nearby Tsegie and Kit Sil Canyons.

Slightly increased funds have been allotted this monument for f.y. 1937, which will allow greater latitude in bird banding and other scientific work.

Pipe Spring National Monument

Four miles from small town of Moccasin, Arizona. Upper Sonoran Zone. Altitude 4,960 feet.

Operator Leonard Heaton was able to start banding in April after arrival of traps and file forms. In the two month period he made a fine showing and added 105 birds to the Southwestern Monuments total.

Heaton is proceeding very carefully with identification, and has released several individuals until positive identification was possible by means of loaned skins from various study collections.

During 1937, Pipe Spring will constitute the most northerly monument where banding is being done, and will provide an important link with Zion and Grand Canyon National Parks, Navajo, Mupatki, Walnut Canyon and other national monuments.

Tumacacori National Monument

Nineteen miles north of Nogales, Arizona, in Santa Cruz Valley. Lower Sonoran Zone. Altitude 3,250 feet.

BIRD BANDING TOTALS-FISCAL YEAR 1936-S.W. MONUMENTS

SPECIES	Ben- delier	Casa Grande	Chaco Canyon	Mont. Castle	Navajo	Pipe Spring	Tuma- cacori	Walnut Canyon	Wup- atki	Total	1935 in 1936
1. Bluebird, Chestnut-bkd								215		215	*119
2. Cardinal, Arizona		1					8			9	*1150
3. Chat, Long-tailed						2				2	*94
4. Crossbill, Bendire								17		17	0
5. Chickadee, Mountain					1			3		4	93
6. Creeper, Rocky Mountain	2									2	0
7. Dove, Inca		4								4	1
8. Dove, Western Mourning		16		2			1			17	*1897
9. Finch, House		137					2			139	3008
10. Flicker, Red-shafted	1						1			1	32
11. Flycatcher, Ariz. Crested		2					2			3	*24
12. Flycatcher, Vermillion										2	0
13. Goldfinch, Green-backed								2		2	*111
14. Grosbeak, Black-headed								1		1	276
15. Jay, Long-crested	2									2	*49
16. Jay, Woodhouse	3					6				9	9
17. Junco, Gray-headed	56				21					77	
18. Junco, Montana					5					5	
19. Junco, oregonus					13					13	
20. Junco, Pink-sided	8									8	
21. Junco, Red-backed	10				1			43		54	
22. Junco, Shufeldt	6				8			11		25	
23. Kingbird, Arkansas							8			8	155
24. Mockingbird, Western		2					16			18	*480
25. Nuthatch, Pygmy	19							27		46	91
26. Nuthatch, Rocky Mountain	2							6		8	*447
27. Owl, Mexican Screech										1	0
28. Owl, Western Horned		1								3	*22
29. Phainopepla								4		4	5
30. Phoebe, Say		19		3				12		34	35
31. Quail, Gambel		57		10				1		68	0
32. Roadrunner		4						1		5	0

SPECIES	San- Belier	Casa Grande	Chaco Canyon	Mont. Castle	Navajo	Pipe Spring	Tuma- Cacori	Walnut Canyon	Wup- atki	Total	Banded IND. S. in 1935
33. Robin, Western								7		7	*7009
34. Sapsucker, Red-naped								4			*46
35. Sapsucker, Rocky Mountain								2		2	0
36. Shrike, White-rumped		3			1		5			9	*101
37. Siskin, Pine								1		1	148
38. Solitaire, Townsend								7	53	60	1
39. Sparrow, Gambel		414				99	1			514	*4141
40. Sparrow, Lincoln		1					5			1	2115
41. Sparrow, Western Lark										5	0
42. Sparrow, Nevada Savannah						1				1	*985
43. Sparrow, Western Vesper		1								1	*300
44. Sparrow, White-crowned		7			3					10	*4141
45. Swallow, Rough-winged		6								6	37
46. Tanager, Western								1		1	56
47. Thrasher, Bendire		5					6			11	0
48. Thrasher, Crissal		9								9	0
49. Thrasher, Palmer							2			2	0
50. Thrasher, Sage									2	2	0
51. Thrush, Russet-backed			2							2	*1335
52. Titmouse, Gray								1		1	*34
53. Towhee, Canyon							10			10	121
54. Towhee, Green-tailed		2				3	5		1	11	16
55. Towhee, Spurred	1				2					3	*658
56. Verdin							1			1	0
57. Waxwing, Cedar									1	1	*5423
58. Woodpecker, Cactus		1					1			2	0
59. Woodpecker, Gila		8								8	0
60. Woodpecker, Mearns								9		9	0
61. Woodpecker, Rky Mtn Hairy	1									1	*108
62. Wren, Baird Bewick							3			3	*72
63. Wren, Cactus		38					5			43	0
*--Group total which may include several races											
TOTAL, FISCAL YEAR 1936	111	738	2	13	61	106	103	357	57	9,544	

BIRD BANDING (CONT.)

Operator Louis Caywood's total of 103 birds of 24 species were reported in the totals for Casa Grande, but deserve special mention because this potentially very important station will report in the future as an independent unit.

Several species have been banded that are not usually caught in the United States, and some interesting records are bound to result. Colored bands are being used for sight observations, and considerable careful work in the banding of fledglings has been accomplished with no known casualties.

Tumacacori seems to lie on a major north-south migration route, and its location in a well-watered valley with sufficient cover attracts many species.

Walnut Canyon National Monument

Ten miles east-southeast of Flagstaff, Arizona. Transition Zone.
Altitude 6,700 feet.

Operator Paul Beaubien was at this monument only intermittently during 1936, and all work perforce was done on personal time. 1937 funds will keep Mr. Beaubien at the monument during the whole year, and on ranger status he can do a reasonable amount of banding during slack periods on official time.

Bands arrived too late in the fall of 1935 to catch the big migrations, but utilizing drop trap at a bird bath which has been maintained at this somewhat arid monument for some years, Beaubien and collaborators were able to band 342 birds of 17 species---some quite rare in Biological Survey records.

An additional 15 birds were banded with Casa Grande bands and are reported in the totals from that station.

Stations at Wupatki, Grand Canyon, the Museum of Northern Arizona, and Walnut Canyon cooperating on specific problems will bring some interesting data in the future, it is believed.

Wupatki National Monument

Thirty-nine miles northwest of Flagstaff, Arizona. Upper Sonoran Zone.
Altitude 4,910 feet.

Pressure of other work prevented much bird banding activity by Operator James Brewer until late in the spring of f.y. 1936. A total of 57 birds of four species were banded. Indicative of possible valuable results in the future were the 53 Townsend Solitaires banded---only one of this species was banded in the United States last year.

Brewer and his wife, Mrs. Sally Brewer, are capable observers and with

BIRD BANDING (CONT.)

their experience of working as collaborators with the Museum of Northern Arizona, will produce excellent results next year.

Respectfully submitted,

Dale S. King, Operator #5310
Junior Park Naturalist

REPORT OF BIRD BANDING ACTIVITIES FOR FISCAL YEAR 1936
CASA GRANDE NATIONAL MONUMENT
LOUIS R. CAYWOOD, OPERATOR #5128

PERSONNEL OF STATION

Receipt of bird banding permit #5128 allowed banding activities to commence March 14, 1935. Operator Louis R. Caywood, then park ranger at Casa Grande National Monument, and Dale S. King, headquarters junior park naturalist, carried on the work until the middle of July when Caywood was transferred to naturalist rating and left Casa Grande for work at other monuments.

King and Ranger Charlie Steen then cooperated in maintaining the station, Caywood resuming the work intermittently as he returned to Casa Grande between field trips.

The station fortunately enlisted the services of John E. Fast, a very valuable collaborator, who established a sub-station at Vah-Ki Inn, his winter home a half mile south of the Museum, and banded from February 3 to March 24, 1936. Mr. Fast proved a very accurate observer, and succeeded in banding more than 40 percent of the total birds banded at the station.

As various men visited headquarters, they were given instruction and practical experience which will aid them in establishing and maintaining their own stations. These included Charlie R. Steen, now traveling junior naturalist, Southwestern Monuments; John E. Fast, already mentioned; J. Donald Erskine, ranger, Casa Grande National Monument; Leonard Heaton, custodian, Pipe Spring National Monument.

March 17, 1936, Caywood went to Tumacacori National Monument, Arizona, as custodian and established a station there. Banding at Tumacacori is necessarily reported here as if it were a sub-station, although it will issue individual reports in the future.

Casa Grande work during the remainder of the year was done under the permit to King, #5310.

EQUIPMENT OF STATION

Traps: Government Sparrow, Potter (two compartment), Baldwin woodpecker,

BIRD BANDING (CONT.)

and Michener water traps, all manufactured by the National Park Service Museum Laboratories at Berkeley, California, under E.C.W. funds.

Fast made a fine quail trap, drop traps, gathering cages, etc. A house trap was constructed by King.

Feeding and Trap Stands: To eliminate rodent damage, two pedestal feeding stations were made by King. These each accommodate a Government Sparrow Trap and a Potter Trap.

Files: As birds are banded, entries are made in pencil on a mimeographed form, prepared especially for the purpose. When a sheet of about 50 entries is filled, its contents are then transferred to the triplicate file system in India ink.

The filing system used at the Grand Canyon National Park station of Edwin McKee was adopted and found very satisfactory. Each new band issued is noted in three 3x5 card files: (a) by Band Number; (b) by Date; and (c) by Species. Returns also are entered in all three files. Repeats, however, appear only on the individual Band Number Cards.

Two additional files are kept: (1) Key to Colored Bands; and (2) Matings and Genealogical Notes.

An observation file is also kept on which entries are made on species cards by dates. Unusual observations not necessarily connected with banding are noted down. This file supplements the others.

King kept files current, with the assistance of Fast during the months of February and March, and of Caywood on several occasions.

Other Equipment: Included usual series of Biological Survey numbered bands, celluloid bands in five colors, especially prepared banding pliers, butterfly nets for capturing roosting finches at night, flashlights, gathering cages, etc.

The Southwestern Monuments Library, rapidly accumulating a full set of reference books on western ornithology, proved of indispensable help.

TIME SPENT ON PROJECT

Due to pressure of other Park Service work, little official time can be allotted to bird banding. Operators at the monuments band rather as a personal hobby than as an official duty and try to perform as much of the work as possible during their own time. Their records, methods, etc., however, are considered government business and are subject to inspection at any time.

King spent a little more government time on the project than he desired,

BIRD BANDING (CONT.)

chiefly to insure establishment of the several new stations at the monuments on a correct and efficient basis. As they run smoothly in the future, this expenditure of government time will lessen. He managed, however, to accomplish the bulk of recording in evenings on his own time.

File forms were mimeographed by King at almost no expense to the government. Operators of the station feel that the National Park Service has amassed a great amount of potentially valuable information concerning a worth while project in an extremely economical way.

STATION ACTIVITIES

(Note: The first 34 birds banded were reported too late to be included in published f.y. 1935 summaries, and will be included in this discussion. Activity started March 14, 1935, was hindered considerably by lack of bands during the summer and late fall of 1935. Banding was slowed or stopped several times by departure of operators to field.)

Number of Captures

854	bands placed on new birds of 53 species, some of which occur rarely in Biological Survey reports
33	returns
835	repeats
1,722	total captures

That the station is operating in a not-too-well-known area is shown by the following table, taken from information in "Bird Banding Notes":

<u>Species</u>	<u>Banded in U.S. in 1935</u>	<u>Banded by Casa Grande in 1936</u>
Arizona Cardinal	0	9
Inca Dove	1	4
Gambel Quail	0	58
Say Phoebe	35	31
Roadrunner	0	5
Rough-winged Swallow	37	5
Bendire Thrasher	0	5
Crissal Thrasher	0	8
Cactus Woodpecker	0	2
Gila Woodpecker	0	8
Cactus Wren	0	43

Approximately 70 colored bands, received relatively recently, have been used for sight observations and will bring valuable data.

Returns

A total of 33 returns were received during the period.

BIRD BANDING (CONT.)

- (A) Of these, nine were of birds probably resident, but uncaptured (one each of House Finch, Say Phoebe, and Crissal Thrasher; six Cactus Wrens).
- (B) Three roosting House Finches were killed when netted at night before operators had acquired necessary skill and knowledge of technique.
- (C) Six accidental deaths.
- (a) Two Gambel Quail: one apparently overheated by 55 (possible maximum) minute stay in trap in early spring. Stopped trapping quail immediately and have had no further trouble. The other entered trap at dusk and was killed by cat before operator made usual rounds at dark.
 - (b) One Cactus Wren broke neck after entering screen porch. No fault of operator.
 - (c) Two Gambel Sparrows died in trap due to unknown cause. Perhaps chick feed had soured, so trap was cleaned thoroughly. Of more than 1,600 captured birds, this was the only such instance.
 - (d) One Gambel Sparrow killed by Shrike. Shrike was captured and released at distance.
- (D) Fifteen bona fide returns of Gambel Sparrows

Of 31 Gambel Sparrows (*Zonotrichia leucophrys gambelii*) banded near the Museum between March 14 and April 1, 1935, the remarkably high percentage of 15 were re-captured, or "returned" during the following winter of 1935-36.

Seven of the 15 were banded as immature. All returned to the same location as adults. Of these, four never repeated after their return. Another repeated twice during the month of November. Another repeated twice during the month of December. The seventh one arrived November 16 and stayed until March 21, repeating five times.

Eight of the 15 were banded as adults. One returned February 4 not to the Museum but to Vah-Ki Inn, half mile south. Upon being released at the Museum, the bird made its way to Vah-Ki in 39 hours, repeated three times until February 23. Three were captured during less than two-week periods after their returns. One was captured during a three-week period after returning. Two stayed almost four months. One stayed three months.

No tenable conclusions can be drawn on data including only 15 returns, yet the following tendencies seem to appear.

(1) A remarkably high proportion (almost 50 percent) of the Gambels banded returned to the very same restricted locality where they had been banded. Very little tendency to wander, and when once established in another territory (cf. the Vah-Ki case) return to that locality with the

BIRD BANDING (CONT.)

least possible delay.

(2) Gambels in their first year of maturity return to the place where they spent the winter when immature, but tend to move on to another location or other locations.

(3) Gambels in the second year (or older) of their maturity tend to return to the same territory occupied before, and remain there all winter.

Some very interesting results should emanate next winter from the trapping of the more than 400 gambels now banded.

Mr. Fast started a special study of Gambels, and hopes to continue it the next migration season. Quoting from his report in the Supplement to the Southwestern Monuments Monthly Report for February, 1935, page 126:

".....I thought it would be interesting to test still further their homing instinct. I began to collect birds in lots of five in small transfer cages, taking as many full lots of five as I could gather each day before noon. I then released them, five at a time, along the road to Phoenix: five the first mile, five the second mile, five the third mile, etc., up to ten miles. Newly banded birds, repeats, adults, immatures, were all the same to me except that a bird sent on this mission and again caught was excused from further service. I released them all before noon to give them the best chance possible.

"The Phoenix road is toward the northwest. Authorities state that Gambel Sparrows migrate northwest and spend the summer in the territory from Montana to Oregon, and north through western Canada and as far as Alaska, so that the sparrows might be expected to say to themselves, 'Well, we thumbed a ride this far anyway.' But--no--back they came...The record of birds which flew back to Vah-Ki Inn is as follows:

one mile-----five	six miles-----one
two miles-----one	seven miles-----one
three miles-----two	eight miles-----none
four miles-----one	nine miles-----one
five miles-----none	ten miles-----one

"It may be expected that more are back, but are too smart to enter traps again. Migration takes place in about six or eight weeks.....All of these returning birds practically have to fly over the traps at Casa Grande Museum, yet none have been taken there....."

OBJECTIVES NOW CONTEMPLATED

Gambel Sparrows

Mr. Fast plans to return to Vah-Ki Inn next winter for the entire Gambel migration period and carry on intensive work in that species. If this is not possible, operators of the Casa Grande station will do as much as they can on the project. Further and more complete study will be made of territory, longevity, mortality, and as many other problems as seem feasible and productive.

Gambel Quail

Forty-five quail have now been banded with colored bands so that individuals can be recognized at some distance. Others will be banded similarly as captured. Utilizing advice of David M. Gorsuch, authority on this species, the station is embarking on an extended investigation including problems of territory, dispersal, family groups, mating activities, longevity, population, etc.

Nine probable mating pairs have been recorded this spring and attempts will be made in the fall to capture the hundred or so quail on the monument by family groups.

Cactus Wrens

Thirteen are now banded with colored bands, and others will be so marked in the near future. Fledglings are being banded in careful fashion, and the same course of study is planned for this species as for the quail.

Colored Bands

These are also being used on other species resident for the greater part of the year, and will allow us to make more observations: Cardinals, Inco Doves, Flycatchers, Phoebe, Western Mockingbirds, Roadrunners, Sbrikes, Thrashers, Woodpeckers, etc.

(Dale S. King)

TUMACACORI NATIONAL MONUMENT

Mr. Dan Clarke, a University of Arizona Agricultural student, knows the birds of this region and has been helping me band with a sub-station at Arivaca.

Banding has been more interesting here than at any other place I have banded yet because of the great variety of birds to be captured. May species, however, do not come to traps and therefore cannot be banded unless the young are caught while still in the nest. Care has been taken to band only those too young to fly from the nest when banded. In this way they grow up and the parents teach them to fly when they are ready.

BIRD BANDING (CONT.)

If birds are banded when they are just about to leave the nest, they may fly off and become the prey of some predator. No casualties are known to occur from banding nestlings. One casualty did occur when a Canyon Towhee, unbanded, suffered from sunstroke by being in a trap in the sun for less than an hour. All traps have since been provided with shade and no similar occurrence has happened.

Banding so far south there are many new species caught which are not usually banded in the United States. By next year a sufficient number of birds will have been banded to be able to obtain some interesting records. Four cactus wrens have been banded with colored bands. As soon as more colored bands are available I will begin the banding of Cardinals with them in order to make observations.

(LOUIS R. CAYWOOD)

BANDELLER NATIONAL MONUMENT

The birds banded during this period are as follows:

Rocky Mountain Creeper	2
Pygmy Nuthatch	19
Rocky Mountain Nuthatch	2
Rocky Mountain Hairy Woodpecker	1
Red-Backed Junco	10
Pink-Sided Junco	8
Shufeldt Junco	6
Grey-Headed Junco	56
Spurred Towhee	1
Long Crested Jay	2
Woodhouse Jay	3
Red Shafted Flicker	1
Total	111

The traps used were: (1) Higgins Trap, modified to have one door, and to close with a pull string and trigger; (2) Two Government Sparrow Traps, the one on the ground proving better than the one set on a table; (3) A 2-celled Potter Trap, baited with suet, which especially attracted Nuthatches and Creepers; and (4) a Baldwin Woodpecker trap, baited with suet. This last attracted only one Woodpecker. The Nuthatches fed there regularly, but seldom spring it, and when they did, could worm out.

In the three first traps Chick Chow was used for bait, with occasional bread crumbs. Suet was used in the Potter and Baldwin traps.

(MRS. EARL JACKSON)

NAVAJO NATIONAL MONUMENT

I have listed the birds banded under two headings; one, that which has been reported to the Biological Survey; second, birds banded this

BIRD BANDING (CONT.)

year and which have not been reported to the Biological Survey.

I miss the best banding up here which is winter as the ground feeding birds come in late in the fall and leave early in the spring. The canyon furnishes both feed and shelter. Be-ta-ta-kin Canyon is not ideal place (or so it seems) for nesting. It is good feeding ground and furnishes good shelter. The resident birds nest here, also a few of the summer birds. I have noticed more nests, also young which have left the nest, in the Tsogie and Keet Zeel Canyons, than in Be-ta-ta-kin and Dogozshi Biko Canyons.

Last year found nests of, Woodhouse Jay, Canyon Wren, Bush-tit, White-throated Swift, Mountain Chickadee and Raven. This year Canyon Wren, Long-crested Jay and two nests started by Bewick Wren. (Note on Long-crested Jay in May, 1936, report.)

My big problem here is with chipmunks and squirrels. (try and keep feed in the traps.)

(MILTON WETHERILL)

PIPE SPRING NATIONAL MONUMENT

Attached you will find records of the birds banded at Pipe Spring National Monument during the months of April, May, and June.

I surely have had lots of fun watching the birds come for the feed and learning of their habits, as well as the new birds that come around.

The past two weeks I have not been doing anything about trapping. One reason is that the CCC boys have been bothering the traps and birds, and the other is that I have been busy at other things and could not get around as often as I should, so have brought all my traps in.

I have discovered five nests of House Finches in a clump of trees not far from the Fort.

(LEONARD HEATON)

WALNUT CANYON NATIONAL MONUMENT

During the period covered, the station was operated intermittently by four different rangers-in-charge. With a new fiscal year at hand, it appears that one man will be stationed here permanently, and that more frequent and regular observations shall be made. The past season's work has contributed little beyond the banding of birds, but more serious research is contemplated.

(PAUL REAUBIEN)

TEXAS MISSIONS

By Ruth E. Butler, Historical Division
National Park Service

(Ed. Note: The following brief notes concerning Texas missions were gathered by the Historical Division, Washington, D. C. Incomplete as they are, we are publishing them as comparative material for the work now being done by the Park Service in the Arizona, Sonora, and New Mexico chains. As additional information is accumulated, we hope to make it available in this Supplement.)

San Francisco de los Texas (1)

This, the first permanent mission in eastern Texas, was founded by Father Massanet on June 1, 1690. It was situated somewhere in the north-eastern part of Houston County, about seven miles west of the Neches River. By order of the viceregal government, it was abandoned in October, 1693, after the mission bells had been buried.

Santisimo Nombre de Maria

Santisimo Nombre de Maria founded in October, 1690, and San Francisco de los Texas constituted the early outposts of Spanish influence in Texas, and were intended as a threat to French intervention in that region. The Santisimo Nombre de Maria was abandoned by decree of the government in 1693, because immediate danger of French encroachment ceased and because the Spanish officials were of the opinion that the Gulf region offered little inducement for colonization to the foreign nation.

San Francisco de los Neches (2)

This mission was founded in 1716 among the Neches about five miles southwest of Alto in Cherokee County. It was transferred to San Antonio in 1730.

Purissima Concepcion

The exact site of the Purissima Concepcion is unknown, but it was probably between the Trinity and Sabine rivers. Founded on July 7, 1717, it had only a short independent existence, for it was transferred to San Antonio in 1730.

San Jose de los Nazones

Founded in 1716, this mission was transferred to San Antonio in 1730, and its name was changed to San Juan Capistrano.

Nuestra Senora de Guadalupe (3)

Nuestra senora de Guadalupe formerly stood in the center of the present

TEXAS MISSIONS (CONT.)

town of Nacogdoches. It was established in 1716. Owing to the invasion of the French in 1719, the mission was closed for a short period, but in 1721 it was re-established in the same spot. Because of the hostility of neighboring Indian tribes, it was abandoned in 1733.

Nuestra Senora de los Dolores (4)

This mission was erected in 1717 by Fray Margil on the site of the present town of St. Augustine, in San Augustine County. It was temporarily closed in 1719 at the time of the French incursion but was later restored.

San Antonio de Valero (5)

San Antonio de Valero was founded in 1718 by Father Olivares and named in honor of the Marques de Valero, Viceroy of Mexico. It is famous today as the Alamo, site of the massacre of 1836 at the hands of Santa Anna. In 1719 the mission became a refuge for missionaries in eastern Texas when they were threatened by the French in Louisiana, and Father Margil and others remained there as refugees until 1721, when they were relieved by an expeditionary force sent by the government. Father Santa Ana, President of the Queretaran missions in Texas, used San Antonio as his headquarters from 1731 to 1734. Between 1731 and 1745 this mission served more than forty neighboring tribes and exercised great influence among the natives. About 1762 a church of quarried stone was built and a two-story convent fifty by fifty varas with two patios and arched cloisters served as an abode for the Queretaran. The pueblo which San Antonio served consisted of seven rows of stone houses with doors, windows and arched porticoes. A stream of water, bordered by willows and fruit trees, flowed through the patio. Weaving, agriculture and animal husbandry were taught in the mission school, and its personnel numbered many able and distinguished priests. About 1750 Father Francisco Mariano de los Dolores y Viana, who succeeded Father Santa Ana as President of the Queretaran missions, made San Antonio his headquarters. Several of the padres distinguished themselves in a literary way. In its spiritual influence among the natives, San Antonio had no rival.

San Jose de Aguaya (6)

The Franciscan mission known as San Jose de Aguaya was located in San Antonio, about four miles below the San Antonio de Valero Mission. Begun in 1720, and built of stone, it commonly acclaimed as one of the leading missions of its time. The architecture and sculpturing are unusually fine and are among the best examples of mission art in America.

Hallenback's succinct and revealing description is as follows: "This, the finest of the Texas missions and, until it began falling to ruin, one of the three finest in America, was begun in 1720 and finished in 1731. Its beautifully carved facade and baptistery windows, by the Spanish artist Huisar, are studied by artists from all parts of the civilized world. In

TEXAS MISSIONS (CONT.)

1868 a part of the north wall of the church fell in; and during midnight Mass on Christmas Eve, 1874, the beautifully colored dome, which the Indians called 'Day Star of their Manitou', collapsed. The structure has otherwise been greatly damaged by vandals and treasure hunters, and several of the statues on the facade have been maliciously broken."

The mission originally had a patio containing eight acres, surrounded by a high stone wall, with fortified towers at the corners. The original bells are undisturbed, as well as some paintings which were sent from Spain, but the murals have almost disappeared, and Huisar's sculpturing has been badly damaged by the elements and by vandals. The building is otherwise in a bad condition, in fact on the verge of collapse.

Architecturally, San Jose is important as the embodiment of Moorish features in mission design. Huisar is said to have been a descendant of the architect of the Alhambra, and many curious legends have been circulated concerning him.

San Xavier de Naxera (7)

San Xavier was founded in 1722 by the Marques de Aguayo on the outskirts of San Antonio, where the mission of Concepcion now stands. It was not very successful and in 1726 it was merged with San Antonio de Valero.

Espiritu Santo (8)

This mission, established in 1722, was first placed on the site of Fort St. Louis founded by La Salle. Owing to the barbarous nature of the Indians it served, it was transferred from time to time to other localities. Its ruins can be seen today near the present city of Victoria in Texas.

Purissima Concepcion at San Antonio (9)

This was one of the churches transferred to San Antonio in 1731. By 1745 a stone church was about half completed; an adobe building was being used temporarily for religious services. The stone church was completed and in use by 1762. It had vaulted ceiling, dome, and bells and contained a sacristy and a chapel. The neophytes lived in pueblo of two rows of houses, partly of stone and partly of thatch. The convento was a two-story stone building. A stone granary and stone house for the soldiers completed the unit. The workshop at the mission contained three looms and wool and cotton cloth were woven.

San Francisco de la Espada (1731) (10)

This mission was transferred to San Antonio in 1731. The neophytes, numbering 137, absconded in a body in 1737, but by 1745 work at the

TEXAS MISSIONS (CONT.)

mission had become stabilized, a stone church was in progress of erection, and a stone convento having two cells above and two offices below, had been built. This was later enlarged. There was a stone granary and a pueblo consisting of three rows of stone houses for the neophytes.

San Juan Capistrano (11)

This mission was established at San Antonio in 1730. The stone building erected later has been extensively repaired, but retains its original form. Its storerooms, living rooms, dormitories, offices, shops, school-rooms, kitchens and refectories have been identified. By 1762 two hundred and three Indians lived at the mission and its workshop and farms were the scene of great activity. Only San Francisco excelled San Juan in the raising of stock.

San Francisco Xavier (1746)

San Ildefonso

San Ildefonso, located in central Texas, was erected between 1748 and 1749, under the supervision of Father Santa Ana.

Candelaria

This mission was founded by Santa Ana on the San Gabriel River in 1749. It was abandoned in 1755 owing to friction between the soldiery and the Franciscans and after the murder of Father Ganzabal.

Nuestra Senora del Rosario

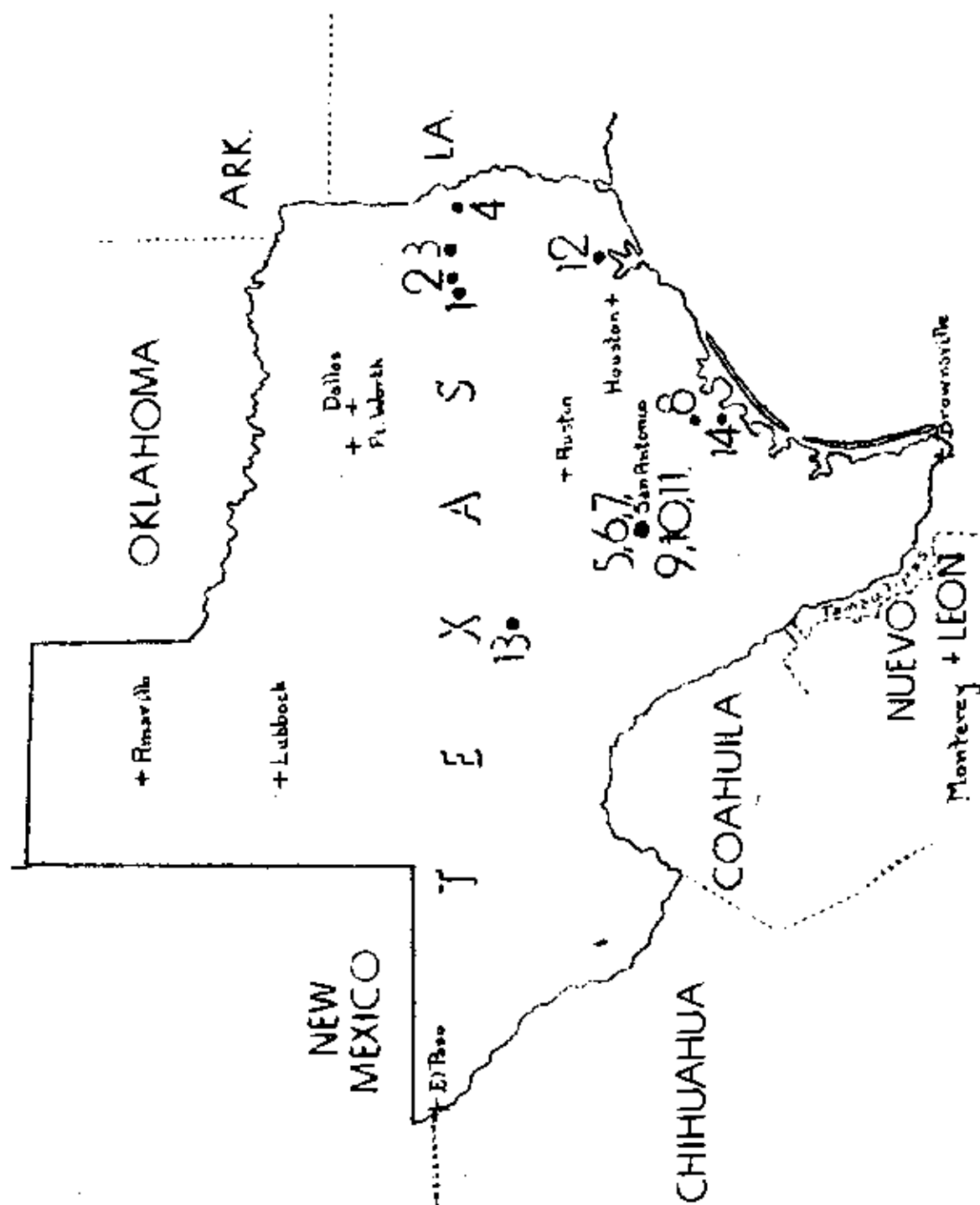
The foundation of this church was begun in November, 1754. The original wooden church was later replaced by a stone structure. The mission had little success, however, only twenty-one souls having been converted after four years.

San Marcos (1755)

This mission was founded on the San Marcos River in August, 1755, but was apparently of little importance.

Nuestra Senora de la Luz (2)

Established in 1756 on the Trinity River, near the north line of Chambers County, this mission was intended as a barrier to further encroachments by the French. Storm, flood, mutiny and disease combined to weaken its usefulness, and in 1771 it was abandoned.



Nuestra Señora de Guadalupe

This mission was established in 1757 on the Guadalupe River, but was abandoned the following year due to the fact that it lacked a garrison sufficient to protect it against marauding Indians.

Mission Santa Cruz de San Saba (13)

Santa Cruz was located on the San Saba River, near Menardville, Texas. It was founded in 1757 and dedicated particularly to the salvation of the fierce Apache Indians. Its career was short, however, for on March 16, 1758, it was attacked by the Comanches, two of its priests were killed, and the mission practically destroyed.

Mission San Lorenzo

Situated on the east side of the Rio de Las Nueces, this mission was founded in 1762 at the request of the Lipan Indians who were then apprehensive of the Comanches. The mission had a fruitless existence for it exerted but little influence upon the savages. It was abandoned about 1769.

Nuestra Señora del Refugio

This was the last mission founded by the Franciscan Fathers in Texas. It was erected in 1793 near the junction of the San Antonio and Guadalupe Rivers. The site was ill adapted to the purposes of the Fathers and was abandoned on January 10, 1795. The mission was reestablished some thirty miles south of the garrison of Espiritu Santo and its name survives in the modern town of Refugio. Its ruins can be seen today at the Copano Bay.

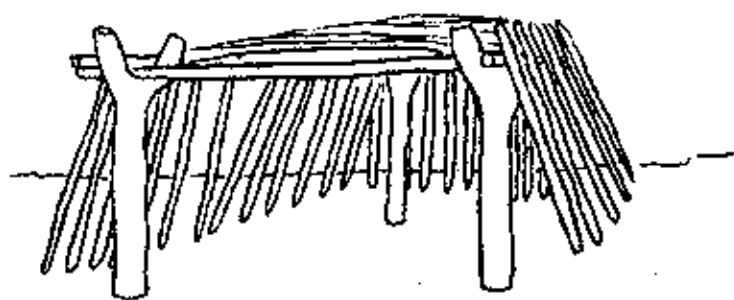
NOTES ON HOW TO BUILD A HOGAN

By James Brewer, Jr.

I advance the following information, not because you may want to build a hogan, but because when you get into a good one and are thankful for the warmth or for the shade you might sit down and wonder just how it is put together.

The first thing you must do is select a large forest with many different sized trees. Three forked ones are necessary for the main supports (assuming you are going to build a hogan of the old type ((Coolidge, "The Navaho Indian," page 79))); two long ones for the door structure; and many others of all sizes for filling in.

Next cut and trim what looks like enough trees to build four big hogans or one Union Depot; then cut about the same amount again; you now



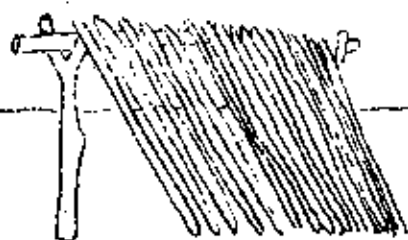
"Square-cornered"



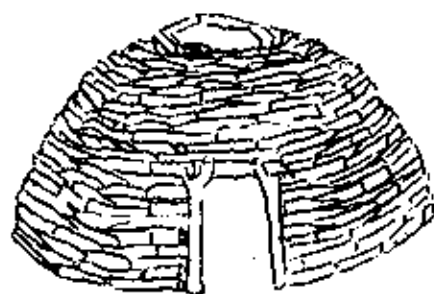
"Sweat"



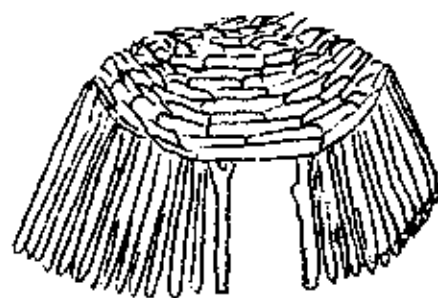
"Forked-together"



"Two-legged"



"Logs-stacked-up"



"Yeibitchai or medicine"



Modern

HOW TO BUILD A HOGAN (CONT.)

have enough to start.

Haul the logs to the site, after they are skinned (peeled) and carefully trimmed. The trimming is important because how can you get them close together if there are stubs of branches protruding. And what will hold the mud covering if they are not close together,

Next assemble all the Indians who want to work. After a careful count you will find you are alone. Then assemble all the Indians who in spite of not wanting to work will help you. You now have four or five Indians, depending on the local population.

Assuming that all the necessary logs are now on the site and that the bark has been left to mess up the forest rather than the camp site, you begin by letting the Navajos have the reins so that your hogan will be an authentic model.

They will select the two longest of the three forked logs and lay them on the ground with the forks interlocking and the point of the V thus formed toward the east. Then three ropes will be put around the locked forks; one is held from the east, steadying the poles as the other two are pulled westward rising the poles to an inverted V. When the poles are vertical, all the remaining men must be on hand to raise the third forked log from the west; as the forked end reaches the height of the first two logs the man on the east rope eases the tension and the first logs fall into the crotch of the third log.

This is an opportune time to have an exhibitionist in the party because the ropes must be removed. Lacking one, a man standing on his horse's back can reach the nooses and, by being careful and having led a good life, can accomplish the end without mishap.

Then the remaining logs will be laid against this tripod. This can be made fun (on a large scale) by simply pretending the tripod is a Christmas tree and the logs are ornaments. This is a simple operation requiring only that you get the logs close together and that they form a circle on the ground (except at the east where the two long ones--remember,--are placed). These eventually support the west end of the vestibule roof.

You now turn back to get another log and notice that they have all gone onto the Christmas tree. By stepping into the embryo hogan you will quickly notice that you could swing a cat through it without much trying.

So, back to the forest; and this time we must get plenty--let's say enough for a good size Boy Scout bridge. Skin them and trim them and put them into the gaps you won't have any trouble finding. Now when you stand back you will not notice any great open spaces. Then step through the door

HOW TO BUILD A HOGAN (CONT.)

space--no yes, funny I didn't tell you to bring some short stout ones for the door. Well, back to the forest and a door frame.

The door frame is made of three logs; two are placed vertically where the long door logs meet the ground and should be about five feet high. The third is laid horizontally across these two. This frame is very unsteady until the vestibule roof is added; this is done by placed two supporting poles almost horizontally from notches in the long door logs to the top of the door frame. At right angles to the supporting poles, and where they join the long door logs, you must place a short runner, just long enough to span the width of the smoke hole (the area above the notches on the long poles becomes a self-made smoke hole; you don't have to worry about it--just follow the directions and it will be there). This span with the horizontal door top holds the roof of the vestibule; simply lay logs east and west until covered; do the same for the sides of the vestibule.

Then stepping into the hogan you will notice that someone has rung in a few more or less decayed logs because they are easier to skin if the cambium is dried; so, not being Mohammed, you go to the mountain.

Now the foundation is laid and you must find an area of good adobe or clay; since the floor of the hogan must be lowered about 10 or 12 inches it is it is advisable to use this first.

I guess I should have told you to pick a site for the hogan near water, because the adobe must be mixed with water or it will filter through the cracks. Even after mixing it with water you will find cracks on top of which the mud will not stay; these places require further chinking. After all the mud is applied the hogan is very damp and quite uncomfortable. This condition prevails for several days. And it is just as well, because you should wet the floor so thoroughly that you can't use the hogan yet anyhow. Next haul several loads of good clean white river sand and partly fill the floor depressions. If the wetting has caked the top soil the sand will not get mixed into it and will stay clean.

There, now you know how to build a hogan and I'm glad it's written so that we will have a permanent record of how to do it. This is important ethnologically because the art is rapidly disappearing. The last Navajo camp I was in sported enough canvas to sail a grain boat through the doldrums.

FIRST SHOW BY NAVAJOS A SUCCESS

(Reprint from "Coconino Sun," Flagstaff, Arizona.)

Many from here and other Arizona towns visited the Wupatki National

Monument. Saturday and Sunday, taking in the Navajo Indian arts and crafts exhibit and came away enthusiastic about it. Two hundred Indians and 190 whites saw the show.

Custodian and Mrs. Jimmie Brewer made a success of the affair, which probably will become an annual event.

There were 39 exhibitors of 110 articles, 21 of whom received prizes or sold their exhibits. Three had exhibits not for sale. Only seven exhibitors failed to receive money.

Exhibits sold numbered 39, the total of purchases and prizes amounting to around \$240 in cash. The prize money was paid by the Museum of Northern Arizona at Flagstaff. Mrs. Harold S. Colton, curator arts and crafts at the museum, and Peshlakai Etsedi, Navajo, were the judges.

The cash prizes ranged from \$1 to \$5 for firsts; in each class, half as much for seconds. Ribbons also were awarded for firsts, seconds and honorable mentions.

Winners of first and second prizes and honorable mention, in the order named:

Plain weaving--Ada Cody, Gladys, Sarah.
Vegetal dyes--Peter's mother, Amy, Bill Williams' wife.
Twilled weave--Sarah, Peter's mother, Gladys.
Traditional types--Harry's mother, Martha's mother.
Tapestry weaves (belt)--Irene.
Old silver--Hesblakai.
Children's work--Peter (Spanish saddle), Virgil (chaps), Ruby (doll).
Bags--Ruby, Martha's mother

The Navajos had built one of their typical "sweat houses"--their nearest approximation to our steam baths. The building, a regular hogan, framed with forked sticks, covered with mud, floored with cedar bark and the door blanketed. Hot stones furnished heat. The fire by which they were heated was made in one and a half minutes with fire-making sticks.

The Indians stayed up all of Saturday night, visiting and singing.

The exhibits were in four sheds especially built by the Navajos.

Featuring the exhibit were native craftsmen at work.

The Indians attending were much pleased with the success of the exhibit and want to hold another next year. At a meeting of the tribesmen Sunday morning, several of the older bucks adjured the others to do better work, as in the old days--to card their wool better and be painstaking in selection of materials and weaving.

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WALNUT CANYON GEOLOGICAL REPORT

By Vincent W. Vandiver, Regional Geologist

INTRODUCTION

Walnut Canyon National Monument was reserved by the Government with the idea of the preservation of the numerous cliff dwellings which occur in this area. The geological features of the area are most interesting, however, and for those who will take the time to consider the various processes which contributed to the formation of this canyon, they will find that in miniature much the same factors are involved as those which resulted in the formation of the Grand Canyon of the Colorado River. I shall endeavor to relate in this report how these geological processes have played such an important part in the carving of the landscape in Walnut Canyon which resulted in an ideal location for the establishment of the homes of the Pueblo cliff-dwellers.

LOCATION

Walnut Canyon National Monument is located about 10 miles southeast of Flagstaff, Arizona, on a loop road connecting with U. S. Highway 66. The presence of walnut trees along the floor of the canyon has supplied its name. The reserve was created as a National Monument in 1915 although it is understood that the area was under the supervision of the Forest Service from 1906. It contains an area of 960 acres. There are of course many ruins in the Southwest of ancient pueblo peoples however there are relatively few cliff dwellings of this type. They are most accessible to large numbers of tourists due to the proximity to one of the main routes of transcontinental travel through this region.

ARCHEOLOGY

Dr. Harold S. Colton (1), of the Museum of Northern Arizona, states that the cliff dwellings in Walnut Canyon have been dated by the tree ring method indicating that they were occupied by pueblo Indians from around 900 to 1300 A.D. There may be some significance to the fact that these dwellings were being occupied shortly after the last eruption of Sunset Crater, situated some twelve miles to north, and whose last activity has also been estimated by the tree ring method as having taken place around 975 A. D. There are present ruins of some 300 rooms scattered along both sides of Walnut Canyon and it is easy to conceive of upwards to 1000 people living in this settlement. The area was visited by James Stevenson of the Smithsonian Institution in 1883 and he made the following statement: "The doors are large and extend from the ground up to a sufficient height to admit a man without stooping. The rooms are large and the walls are two to four feet thick. The fireplaces are in one corner of the room on an

WALNUT CANYON GEOLOGY REPORT (CONT.)

elevated rock, and the smoke can only escape through the door. The masonry compares favorably with the construction of the best villages in Canyon de Chelly. Many objects of interest were found in the debris around and in these houses. Matting, sandals, spindle whorls, and stone implements of various kinds abound." During the interval from the time of Mr. Stevenson's visit and the taking over the area by the Forest Service there was much vandalism. Practically all of the objects left by the pueblos were removed and in searching for these materials many of the cliff dwellings were broken down and more or less destroyed. As the result of this vandalism it is doubtful if the detailed story of the peoples of Walnut Canyon will ever be known.

Dr. Colton considers that the people who built these cliff dwellings were probably the ancestors of those who constructed Elden Pueblo and many other sites near Flagstaff. This supposition is arrived at from the similarity of the potsherds and flattened skulls which have been recovered from the various ruins.

The dwellings in Walnut Canyon were constructed under overhanging ledges of limestone two hundred feet or more above the stream bed. Not only were their homes built along the recesses in the side of the canyon wall but retreats were also made on at least five "islands" of promontories in the canyon which served as fortresses as a means of protection against invaders. A trail is in evidence to the right of the present entrance trail to the monument which is believed to have been the route taken to obtain water from the stream or pools in the canyon. Little water now reaches the stream channel to fill the pools due to the recent construction of the Lake Mary dam. During dry periods it is also conceived that water may have been obtained by digging pits in the sand along the floor of the canyon. The remains of broken stone hoes, etc., have been discovered along the flats of the rim areas, northeast of the village, and it is here that the pueblos probably cultivated their meager crops. Another factor which no doubt influenced these peoples to select Walnut Canyon as a desirable place to live is the presence of ledges and recesses especially in the walls along the north side of the canyon which formed a means of protection against the climatic conditions of the severe winters. The presence of water supply nearby and satisfactory soil for cultivation along the rim as well as the "islands" in the canyon which were used as forts were likewise desirable features.

GEOLOGY

The oldest rocks of the general vicinity of Walnut Canyon belong to the Redwall limestone formation of the Mississippian, along the northeast flanks of Elden Mountain, where uplifted portions of the sedimentary section are exposed by this great laccolith. Above the Redwall is the river flood plain deposit, consisting of sandstones and shales, and containing tracks of land animals and impressions of fern-like plants, which has been termed the Supai formation of Permian age. Next above the Supai is the

GEOLOGICAL REPORT ON WALNUT CANYON

cross-bedded Coconino sandstone and followed in order by the Kaibab limestone, both of Permian age. It is the two latter formations with which we are most concerned since they make up the sedimentary section of rocks exposed in Walnut Canyon.

Briefly the geologic history of the area may be described by stating that following the deposition of the Kaibab limestone the sea retreated as the region uplifted slightly with the sedimentary rock remaining practically horizontal apparently subjecting the formation to erosion long enough to produce a youthful topography. Upon this surface was deposited the shales and sandstones of the Moenkopi. A great thickness of vari-colored shales and sandstones were then deposited in a large basin by rivers and shallow water lakes. These continental deposits make up the Chinle formation. They contain a land fauna and the remarkable deposits of silicified wood at the Petrified Forest. They supply most of the beautiful coloring to the Painted Desert area and are classed as the uppermost Triassic formation in this region. While these beds form the last record of sedimentation in this territory it is known from a study of the stratigraphy of the surrounding country that great thicknesses of Jurassic, Cretaceous and perhaps Eocene rocks were once present but have all now been removed by erosion.

COCONINO SANDSTONE

Below the Kaibab limestone which forms the rim rock at Walnut Canyon, there is the light colored, highly cross bedded sandstone, which has been designated as the Coconino sandstone from its type locality at the Grand Canyon. The contact between the two formations is readily observed along the canyon walls. Located between formations of Permian age, as determined by fossil remains, the Coconino is likewise referred to the Permian Epoch. A closer determination of the age of the Coconino is made as Middle Permian, in view of the grading contact with the underlying Hermit shale in the Grand Canyon, whose age has been found to be upper Lower Permian from the fossil flora secured.

The Coconino sandstone occupies a large area in northern Arizona, north of the southern limits of the Colorado Plateau. While much of this region is capped by the Kaibab limestone, the presence of the Coconino is certain from the many exposures in the canyon walls throughout the province. From a thickness of 1000 feet at Pine the formation thins out to zero along the Utah boundary. It also thins in a northwest direction towards the Nevada boundary where it is only a few feet thick whereas there is over 600 feet of section in the vicinity of Holbrook. From samples taken by Mr. Edwin McKee (2) the sand grains are predominantly medium coarse grained along the southern limits of the formation and grade into much finer materials to the north. The source of the material is therefore concluded to be from the south, in a barrier believed to have existed during most of earlier Paleozoic time, which extended through central Arizona and is known as Mazatzal land. Geologists generally consider that there is

sufficient evidence to conclude that the sand grains comprising the Coconino formation were in the main transported by the winds and deposited in the form of sand dunes. The lack of pebbles seems to point towards the wind as the major agent of transportation. The wedge-shaped cross bedded units of this formation are inclined in many directions, a feature not widely produced by the action of water. The only definite fossils thus far discovered in these sandstones are the footprints of amphibians or reptiles and trails made by annelid worms. The fossil evidence available also tends to support the theory of eolian origin of the formation.

The Coconino has supplied its portion of the natural features necessary in the making of Walnut Canyon an ideal site for the cliff dweller. In the valley south of Elden Mountain there are some large sink holes, known as the Bottomless Pits. They form the entrance to caves in the Kaibab limestone, which have been dissolved out by the action of ground waters on the limestone, as they flowed underground along joints and fissures to outlets in the lower levels of Walnut Canyon. The more or less porous Coconino sandstone was favorable to the seepage of this additional water into the canyon. The normal weathering of the Coconino caused much sand to be deposited in the canyon. This condition may in some instances have caused the formation of pools of water just beneath the surface and permitted the pueblo Indians to dig for water during periods of dryness. Then, too, as the canyon was being carved the Coconino was susceptible to certain straightening of the channel and during this process the old meanders of the stream were abandoned and "cut-offs" were formed. These "islands" permitted the Indians to build homes in fortress fashion in the central portions of the canyon and gave them an excellent means of protection.

KAIBAB LIMESTONE

Overlying the Coconino Sandstone throughout large sections of northern Arizona, except in the east near Holbrook, is the Kaibab limestone. It forms the upper portions of the walls of Walnut Canyon and Grand Canyon as well and caps most of the high plateau of the north-central part of the state. It is composed of grey, sandy limestone, with many horizons filled with chert, also massive layers of limestone interspersed with less resistant beds of shaly sandstone. The lithology of the Kaibab limestone with the constant variation of hard and soft members, the soft weathering away leaving the more competent beds to form overhanging ledges, has resulted in a natural habitat for the cliff dweller in this canyon.

The Kaibab limestone is quite variable in thickness, ranging from upwards to 1000 feet in the Virgin River valley to 600 feet on the Rim of Grand Canyon, and from 300 feet in the vicinity of Flagstaff to zero just east of Holbrook. Mr. Edwin McKee, Park Naturalist at Grand Canyon National Park, has developed some new and interesting details concerning this formation and the results of his study will be published in the near future. At Walnut Canyon the Kaibab is quite fossiliferous. Many marine fossils of brachiopods such as *Productus* and *Spirifers* may be observed. In some in-

stances the silica nodules and concretions enclose fossils sponges. The various types of fossils collected of which there are some 80 species indicate that the limestone is of shallow water marine origin. Since the limestone was deposited below sea level and now has an elevation of approximately 7,000 feet above sea level there is every reason to believe that the region has been uplifted on a large scale. It will be noted along the walls of the canyon that the contact of the limestone with the underlying Coconino is practically horizontal and it is therefore assumed that the Kaibab sea advanced rapidly at the close of Coconino time since there is no evidence of erosion of importance along this line of contact.

An important point to consider with respect to the Kaibab formation and the cliff dwellers in this canyon is the presence of softer members of sandy limestone interspersed in the section with the more resistant or massive limestone beds. This condition during the process of the carving of the canyon and the normal weathering processes gave rise to ragged, vertical cliffs, with recessed grooves in the walls which finally formed the homes of the pueblo Indians. The ledges may have been formed in part by the action of the stream on the softer beds when it was cutting away at much higher levels, but the process may be explained in most instances I believe, by the normal agencies of differential weathering.

STRUCTURE

Since the structural details would involve a rather lengthy report it may suffice to say briefly that they include upward movements at the close of the Permian and profound uplifting during the Tertiary. Generally speaking the uplifts have caused greater displacements of the rock strata than the faults, especially in the southern portion of the Colorado Plateau area. The exact time of the uplift which resulted in the canyon cycle of erosion to form the Grand Canyon, Walnut Canyon, and many other canyons in this region is still the subject of considerable difference of opinion.

As regards to Walnut Canyon in particular, during one of the later periods of uplift, the rock strata were broken forming what has been termed the Anderson Mesa fault. This fracture in the earth's surface represents a displacement of around 300 feet, strikes N 65° W, with the uplifted block on the northeast side. The fault no doubt partially dammed the stream but since the uplift was so slow the stream was able to maintain its channel and thereby with the additional gradient and power supplied the cutting tool gained sufficient force to carve Walnut Canyon. Dr. Colton has referred to these clefts as being actually sawed, with the body of the saw composed of the water, the teeth made up by the boulders, pebbles and sand grains, and the energy being supplied by gravity. Much the same factors were necessary in the cutting of the Grand Canyon of the Colorado River. Minor North-south faulting along Walnut creek has probably been responsible for some of the zig-zag courses which the stream followed. The stream followed these breaks or cross-faults as a line of least resistance in the softer broken rocks before returning to its normal course. As cut-offs

GEOLOGY REPORT ON WALNUT CANYON (CONT.)

were formed and the old meanders abandoned the central "islands" were carved out.

SUMMARY

It is thought that the following points may prove of interest to the visitors without boring them with too much geological detail:

- I. Walnut Canyon may be termed a Grand Canyon in miniature in which a broad regional uplift supplied the stream with the necessary power to carve the gorge.
- II. The stream working through zones of weakness along minor north-south faults which cross the canyon, developed many meanders or goose necks, and when later these were carved through, cut-offs forming "islands" remained which the pueblos have utilized as fortresses.
- III. Ledges in the Kaibab limestone were formed by the differential weathering of the hard and soft members. The massive resistant limestone beds form the ledge which served as the roof and floor and the weaker sandy limestones eroded more rapidly to form the recesses in which the cliff dwellings were constructed.
- IV. The contact between the Kaibab and the Coconino seems a worth while feature to point out as well as the nature of the Coconino sandstone with typical characteristics of a wind blown dune deposit.
- V. The marine fossils in the Kaibab limestone should prove of interest as they clearly demonstrate the uplift that has taken place in the general area. These beds are now some 7,000 feet above sea level.

INFORMATIONAL SIGNS

The following informational signs are recommended:

I: WALNUT CANYON

The Canyon was formed as the result of a gradual uplift of the region with the stream being able to maintain its course. The additional power supplied the stream enabled it to saw out the gorge that we now see.

II: KAIBAB LIMESTONE

A shallow water limestone deposited in the sea and containing many remains of marine fossils.

III: COCONINO SANDSTONE

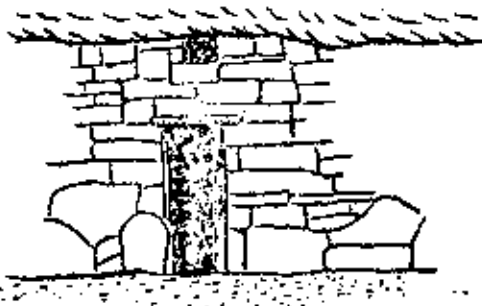
A wind blown dune deposit containing footprints and trails of land animals.

IV: LEDGES AND GROOVES

The ledges make up the more massive and resistant members of the Kaibab limestone. The grooves or recesses consist of the weaker beds which contain more sand in the limestone and are more easily eroded. This is the result of normal differential weathering.

BIBLIOGRAPHY

1. Colton, H. S. and Baxter, Frank C., "Days in the Painted Desert and the San Francisco Mountains," Privately printed.
2. McKee, Edwin D., "The Coconino Sandstone - Its History and Origin," Carnegie Institution of Washington Publication No. 440, Pages 77 to 115, November 1933.
3. Robinson, H. H., The San Franciscan Volcanic Field, U. S. G. S. Professional Paper No. 76, 1913.
4. Colton, H. S., Walnut Canyon, Museum Notes of the Museum of Northern Arizona, Vol. 2, No. 3, 1929.



VISITOR RESEARCH

AT PUEBLO GRANDE

(Ed. Note: Following are questions asked by various groups at Pueblo Grande, Phoenix, Arizona. Mr. Odd Halseth, director, kindly gave permission to use them in the Supplement. We hope, as time goes on, to make thorough studies of visitor reaction which will aid in museum planning and improvement of guiding technique).

QUESTIONNAIRE BY HIGH SCHOOL STUDENTS

1. How long have Indians been here?
2. Where did they come from?
3. Who were the first Indians?
4. What weapons did they use?
5. How did they live or in what kind of houses?
6. What was the largest tribe?
7. Who was the chief of the tribe?
8. What was the god they worshipped?
9. Did any Indians ever live at foot of or in mountains to east of Phoenix? Superstition?
10. Did any Indians who worshipped the snake ever live around Phoenix?
11. Were different groups of Indians formed who worshipped same things by law of isolation?
12. How can you tell the age of ruins? By the tree ring theory in the logs of the Pueblos?
13. Did the Indians practice irrigation any place else than the Salt and Gila River Valleys to a great extent?
14. What conception do most tribes have of the Deity, if any?
15. Which of the various theories concerning the origin of the Indians do you think most probable?
16. Are the Navajo Indians any kin to the Apaches?
17. Which group of Indians north of Mexico was the most highly civilized?
18. How long have the Indians been in North and South America?
19. Where did the Indians originate?
20. How many Indian cities have been discovered recently? What has been found in them?
21. Do Indians have a writing system?
22. Where did the Indians get their gold and jewels?
23. Did the Indians mine it or just find it?
24. How did they make their gods or images?
25. Who made them?
26. Did they all contribute gold for a temple?
27. Why did they have certain places for sacrifices?
28. How did they first learn about the gods?
29. Were there more than one race of Indians that lived in the Casa Grande Ruins at different times?
30. About what year, if there were two different races, were the first and last?

VISITOR RESEARCH AT PUEBLO GRANDE (CONT.)

30. About what year, if there were two different races, were the first and last?
31. Are there any Indian legends relating to Fray Marcos de Niza? His trek thru Arizona?
- 4 32. Any legends relating to the inscription on the rock in the South Mountains?
33. Were the Aztec Indians up in this part of the country?
34. Is there any connection in race of the Ruins of Tuzigoot and those of the Pueblo Grande and Walpi?
35. Where were most of the burials found at Pueblo Grande?
36. Were the three Pueblos mentioned in #34 built at the same time?
37. Do Indians still believe in their ceremonial dances?
38. Did the Spanish consider themselves amply rewarded for exploring Latin America?
39. Who were the first Indians to come to Arizona and where did they come from?
40. What is the oldest ruin in Arizona?
41. How many different tribes of Indians are there in Arizona?
42. What is the oldest tribe of Indians in Arizona?
43. Which ruin is the most famous?
44. Why did some Indians have only one door in a pueblo and no objects upon which to sit?
45. Why do we never hear of Indian wigwams any more?
46. Why do Indians as a rule outlive white people?
47. Did they ever have any system of names as we do?
48. About how long would it take an Indian to make a good stone knife?
49. Why is it that Indians are not allowed to possess or drink intoxicating liquors?
50. In about how many years will the Indian race be extinct?
51. Can Indian writing really be read by white men of today?
52. How or where did the plan or idea of the pueblo buildings originate?
53. Did the Pueblos trade or have anything to do with the tribes in Mexico?
54. Why are the tribes of Indians so different? They are all Indians.
55. Were the Indians polygamists?
56. Were the women respected or thought of as slaves?
57. How does Indian culture as a whole compare with ours today?
58. Were the Indians in this part of the country as fond of beauty as those of Mexico and Peru?
59. How did their scientific achievements compare with those of other Indians?
60. Why are other Indians so different from those in Arizona and New Mexico?
61. Why did the Maya Indians move north?
62. Did the Pueblos use many domesticated animals?
63. What was the main or most common illness among Indians?
64. Of all the Indian tribes, which tribe is the most advanced?
65. In what part of the country do most Indians reside at this time?

VISITOR RESEARCH AT PUEBLO GRANDE (CONT.)

66. Which tribe is considered the most brilliant and cultured at this time?
67. Are many Indians making rapid strides in modern times?
68. How did they make their weapons out of rocks without breaking?
69. Why did they live on the desert instead of in the mountains?
70. Do you think the Indians would go wild again if given the chance?
71. Where did the Pueblo Indians go and why?
72. How large were the Pueblos? Body structure; description.
73. What was their chief occupation?
74. When were they at the height of their civilization?
75. What form of government did they use?
76. How far were they advanced in mathematics, etc.?
77. What did the children do?
78. What was the size of the average family?
79. Who was the head of the house?
80. Was there such a thing as divorce?

Adults Questionnaire

1. What type Indian lived in the Amazon Valley?
2. Why is it that Indians living comparatively close together had such different religions?
3. What type of Indians lived in Patagonia?
4. What is conducive to the Indian's mastery of art?
5. What kind of dwellings typify the Indian's place of abode today?
6. Are the Indians content with what they have?
7. Is the mortality rate of the Indian increasing?

No Classification Given

1. How long did it take the Indians to build the Pueblos?
2. How many Indians now inhabit Arizona?
3. What group of Indians are independent?
4. What is the name of the material the Indians use to make baskets?
5. What group of Indians in Arizona seem to be the most intelligent?
6. Are there any records of the sign language used by the Southwestern Indians?
7. Did the Indians have any domesticated animals at all?
8. Did they drink any kind of strong drinks when they were holding their ceremonials.
9. When you tell of rich robes the Indians wore -- were they made of hides or cloth?
10. Did the Indians mummify their dead?
11. Did they make use of cactus?
12. If they did, is it known how they did it?
13. How many different tribes are in the Southwest?
14. Why were the Pueblos more talked about than the Mayas?
15. Were the Mayas great people of learning and understanding?
16. Would you please name some of the important Mayan cities?
17. Do you think Fray Marcos de Nizo's name is a fake or not?

18. In what years did the Mayas leave the cities?
19. Were the Mayas conquered by the Incas or other foreigners?
20. In what country did the first Indian originate and the date?
21. How many different tribes of Indians are there in the U.S.?
22. Did Columbus find Indians of wealth or not?
23. Explain marriage ceremonies among Arizona Indians?
24. Is there any effort being made to institute courses of study in public high schools on prehistoric people of our Southwest and their culture and their civilization?
25. Are you informed of the ruins and graves along Clear Creek north-east of Camp Verde and that these places are being destroyed by campers and fishermen without regard to their possible value and no thought of their desecration?
26. What is the relationship between the extinct Indian and the present day?
27. Does Preecology reveal any relationship in design or building to resemble Egyptians?
28. Did the ancient culture move from a course northern or southern in direction?
29. What was the cause of their disappearance?
30. Are these prehistoric Indians of the same race as those found in old Mexico?
31. Why do the Indians partake of the unsanitary living conditions that prevail in their homes after having attended good schools where they learned differently.
32. What type of social organization did these Indians have?
33. What are the general characteristics of the Indians?
34. Do you know whether the Pueblo Indians were peaceful or warlike?
35. Do all the Indians dance for several nights before Easter?
36. What are some of the chants of Easter? Sacred?
37. Has any one collected the music of Arizona Indians? Where may some be found?
38. Why do the Indians stop living in one place after a member of the tribe dies?
39. Why have the Indians stopped making baskets as they used to?
40. Why do the Indians believe they will get rain by dancing three or four nights?
41. Why do the squaws do the work?
42. Was there any shade in Salt River Valley when the Indians inhabited this dwelling?
43. Did the Indians live in cities? If not, why not?
44. What is the religious belief of the Indians regarding a hereafter?
45. Do all tribes of Indians bury the personal belongings with the deceased?
46. How did the Indians happen to choose this spot to build on?
47. How advanced was the stage in which the Indians lived as can be bound from their ruins?
48. Who is paying for the maintenance of these ruins?

49. How do these Indian homes differ from the homes of the Apaches?
50. Are these tribes related in any way to the Mongolian race?
51. Did these Indians write any hieroglyphics? If not, who wrote those in the South Mountains?
52. How the Indians irrigated? Were these Indians nomadic?
53. Who was the first to locate these ruins of Pueblo Grande?
54. Why have not people noticed or taken care of these ruins before?
55. I would like to know something of the people who lived on the present Chihuahua-Sonora line. There are huge vase-like structures which investigation (personal) showed it was first built of wattles, then overlaid with clay. The firing was done from within. The marks of the wattling showed clearly inside. A few ears of corn were in these vases. The vases were large enough that a human being could go into them comfortably. Who were these people? Where have they gone? Also mile after mile of hills are terraced. The terraces follow the natural contour of the country. There are also caves in which are buried dead. The bottom of the caves are covered with bat guano. The bodies are in a sitting position, knees under chin, arms crossed over knees. The flesh was dry and they sounded like a drum when tapped upon.

RUMINATIONS

My ruminations are going to be rather short this month, Chief, because I have been a sort of fifth wheel on the wagon this trip. I missed my timing a little in going through a clinic, taking a day or two longer than we had planned and then they took a young door knob out of the small of my back which kept me down a couple of more days and here, when I do arrive on the scene, Luis meets me with: "Hurry up those Ruminations and don't make them too long because we are just holding open the rest of this page and are going to press right now with the index!" A city newspaper has nothing on these boys when it comes to the hectic rush of getting the stuff out on time!

Otherwise it would be a good time to ruminate, because here we are, at the close of another volume of Monthly Reports, where we can point with pride to and you can probably view with alarm, the five hundred pages of explanation and description of what we have been doing in our district this last six months.

Also it is the close of the old financial year and the opening of the new, and we are looking forward with some satisfaction to the additional protection and service we will be able to render under those new appropriations.

But we forego all these ruminations and step over from the old volume to the new and from fiscal year '36 to fiscal year '37 with the ever recurring hope that the major breaks will continue to fall our way.

Cordially, *John B. ...*

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