See p. 21 A
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SOUTHWESTERN MONUMENTS
MONTHLY REPORT
OCTOBER 1933

IN MEMORIAM

This cover is left unillustrated as
a memorial to our valued friend
and trusted coworker, Edgar Rogers.

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UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF NATIONAL PARKS
BUILDINGS AND RESERVATIONS
SOUTHWESTERN MONUMENTS

Coolidge, Arizona, November 1, 1933.

The Director,
Office of National Parks
Buildings and Reservations,
Washington, D. C.

Dear Mr. Director:

October has become a matter of history, the checks have been issued and it remains for us to tell you what has been happening among the Southwestern Monuments for the month.

The event which startled and shocked us most during the month was the death of Edgar Rogers, Custodian of Bandelier National Monument, which occurred by his own hand on the morning of Monday, October 16, 1933.

Chief Clerk Hugh Miller and myself were on the way to Bandelier to help Ed. out in the matter of the CC camp which was to be put in his Monument this winter. We had gone from Headquarters at Casa Grande National Monument to Petrified Forest National Monument on Sunday, the 15th. On the 16th Mr. Miller and Mr. Smith had some matters to talk over and we then left the Forest at 10:30, expecting to stop for the night in Albuquerque.

Some time after we left Mrs. Smith drove to Holbrook and found a wire from Mrs. Rogers saying Ed had killed himself and asking if she could come. The Smiths immediately tried to communicate with us and did get a wire to us at 5:30 in Albuquerque through the police force who were on the watch for our car number. We of course went on into Santa Fe that night and telephoned out to the hotel at Bandelier, but, finding that everything possible was being done and that we could be of no use that night, we stopped over in town.

Mrs. Smith had come through by bus the next morning at 5:30 and she and I left town at 8:00 and went out and brought Mrs. Rogers in with us. She remained with us until Wednesday after the funeral when she and Mrs. Smith, Mr. Miller, Walt Attwell, who was there on engineering business, and myself went back to Bandelier and spent the night at the hotel. Thursday morning we went up to the house and straightened things up somewhat and did some packing. Thursday afternoon late, Mrs. Smith, Mr. Miller and I returned to Santa Fe and started on the return trip to the Forest Friday morning.

Fortunately Mr. Attwell was in the Canyon when the death occurred and Mr. Vint and Mr. and Mrs. Richey were just checking out of the hotel in

Santa Fe. Mr. Lyle Bennett was also in the Vint party. Thus there were five Park Service people in the Canyon with Mrs. Rogers within an hour. Mrs. Frey, at the Hotel, did everything possible.

The inquest was over a little after noon and the body was removed to the mortuary chapel in Santa Fe. The funeral ceremony was held from the chapel at 10:00 o'clock Wednesday morning and burial was made at the beautiful cemetery at the edge of the city. Five Clarkson drivers, with whom Ed had worked for several years, and one Park Service man, acted as pall bearers. The services were simple and impressive.

We were never able to put our finger on a single cause for Ed's act. Everything, his financial affairs, his home life, his official affairs, seemed to be breaking in his favor. As you know, he had recently been promoted. He was doing his work well. His monument had every chance to grow and he to grow with it in the next few years. Yet he had despondent streaks and I am inclined to think he has contemplated this action off and on for some time. With such a background, he needed no immediate cause for the last act. So simple a thing as digging around in his bag for something else and running on to his gun might have snapped the final circuit in his mind and carried him over the line where he had often hesitated.

He did his work well and we who knew him will miss him as we go about our duties and regret his passing.

Mrs. Rogers will continue to hold her place in the hearts of the Park Service family of the Southwestern Monuments, and we hope that she will continue to feel that we are her folks.

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On Friday the 20th, we left Santa Fe and went across a short cut road through Cuba to Aztec National Monument. We got in there about four o'clock and remained until nine when we went on down to Farmington for the night. We thus had a chance to see the ruins and get about thirty pictures to be used in the Six Year Program, Mr. Miller had a chance to meet the Faris family and we all had a chance to enjoy some more of that chicken gravy, which you only know about by hearsay, but which Johnwill and Dorothy wish you would know about from experience when you come west next summer.

On Saturday, the 21st, we drove from Farmington through by Chaco Canyon National Monument to Gallup for the night.

Here again Mr. Miller had a chance to get acquainted with Hurst and Winnie Julian and we got thirty or forty pictures for use in the Six Year Program and talked over some of the problems of that monument.

On Sunday, the 22nd, we drove to the Petrified Forest National Monument and remained there the rest of the day.

On Monday, the 23rd, we drove down over the mountain to headquarters at Casa Grande National Monument.

While we were in Santa Fe we met the Army and the Forest Service on matters connected with the 3C camp which will move in on us about November 10th and got fairly well acquainted with the paper work connected with the camp. The camp we are getting has the highest rating of any in that district. It is under the supervision of a former State Highway Engineer who knows road and trail work from A to Z. We are taking his outfit over practically complete

with the substitution of two landscape foremen in place of two forestry foremen. This means that the camp ought to shake down in a few days and go right to work. We are going to have Walt Attwell with us as Engineer and he and Mr. McGill will get the greatest efficiency possible out of the camp.

Lieutenant Roberts, who has been in charge of the construction of the camp ~~[illegible]~~ told me he would also be there during the winter, a thing that pleased me very much for I am sure he will be a fine man to work with.

In fact, the set-up as it now stands is so good I am going around with my fingers crossed.

We have sent Martin Evenstad up in temporary charge of Bandelier and his familiarity with forms and paper work guarantees that with an enrolled man under him to do the actual work, that end of it will be well cared for.

It looks like the Engineering Division are going to back us up with stake trucks, dump trucks, caterpillars, bull dozers and other heavy equipment and the camp ought to come to us with enough small tools, so, if our present promises are made good, we are going to be able to put it up to Walt and Mc and find out how good they are.

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Report of Ass't Sup't Bob Rose.

On Sunday, October 29th, the Staff of the Museum of Northern Arizona conducted a conference on the progress of excavations at Wupatki National Monument.

Leaving Coolidge on the morning of October 28th, I arrived at Flagstaff on the morning of the 29th, having spent the night at Williams. Before proceeding to Wupatki I contacted Mr. Lyndon L. Hargrave, Field Director of the museum of Northern Arizona. My early arrival at Wupatki gave me an opportunity to discuss excavation and C.C.C. camp problems with Dr. H. S. Colton, Director of the Museum, for about one hour.

At 3:30 p.m. about 100 members of the Northern Arizona Society of Science and Art, benefactors of the Museum, gathered at Wupatki to hear Director Colton and Field Director Hargrave discuss the results of archaeological field work during the past season at Wupatki. Needless to say, I was greatly impressed with the manifestation of interest in Wupatki and in the scientific activities of the Museum of Northern Arizona. Picture, if you will, about 100 of the civic and cultural leaders of the City of Flagstaff driving 45 miles to Wupatki over 25 miles of highway deeply rutted and dusty because of construction and 15 miles of crooked, bumpy, unimproved road to complete the journey. One must conclude that this interest is active and genuine.

The amphitheater consisted of a circular structure more than fifty feet in diameter which resembles a kiva in that it has a banquette, and there the similarity ends. Excavation and repair of this peculiar project, along with the excavation and repair of a rectangular room kiva are among the fine achievements of Field Director Hargrave and Staff. They have cleaned and restored rooms, repaired walls, and carefully studied field relations of their finds. There remains much to be done and the Museum hopes to resume careful scientific work next field season.

Work contemplated by the C.C.C camp was explained to me by Dr. Colton

and Mr. Hargrave. Trails to make structures more accessible in instances, moving debris away, mapping, and other work are contemplated upon establishing the camp. Dr. Colton pointed out the need for recreation for the men and we shall give this problem careful thought.

Mrs. Colton, assisted by the Museum and Field Staff, served appetizing refreshments of sandwiches and coffee. During the course of the Conference I was invited to make a few remarks on the relation between Wupatki, the National Parks organization and the community.

Both before and after the program I spent some time getting pictures showing the present condition of the ruins.

I was particularly pleased to have this opportunity to meet Dr. Colton and his Museum staff. They have been most generous in assisting us along various lines in museum work in the Southwest. The Museum of Northern Arizona is also among the comparatively few institutions that are making a genuine success out of the popularization of scientific information.

At the gathering I was pleased also to see Mr. Berton I. Staples of 'Crafts del Navajo' Coolidge, New Mexico. Seeing him recalled a pleasant visit Dr. Russell and I had there in May visiting the Wayside Museum of Archaeology. Through the generosity of Mrs. H. S. Gladwin, Mr. and Mrs. Gladwin and Mr. Staples have developed there a most interesting and appealing museum lay-out. A visit there is well worth the museum scholar's time.

Mr. Woodward, publisher of the Southwest Tourist News, was also at Wupatki and I was pleased to renew acquaintance with him.

Leaving Wupatki I drove to Flagstaff for the night. On the morning of the 30th I spent one hour at the Museum of Northern Arisaona completing our discussions of excavations and C.C.C. camp matters. I was interested to see several popular museum projects completed or nearing completion which had not been started when Dr. Russell and I had been there in May.

From Flagstaff I drove to Montezuma Castle National Monument by the beautiful Oak Creek Canyon route. This is really one of the outstanding scenic drives of the west. Here on a large scale is some of the scenic quality both the Grand Canyon and Zion combined.

At Montezuma Castle I found Mr. and Mrs. Jackson and their son Earl enjoying some of the season's finest weather. The C.C.C camps in the vicinity have given Jack some very heavy Saturday and Sunday runs. This reminds me to mention the fine Park Service signs which I saw clearly directing the way to Montezuma Castle. A person trying to find Montezuma Castle would have to be blind to get on the wrong road now. We of the Southwestern Monuments who spend a considerable portion of our time doing guide and public contact work, know that people appreciate these services that the Government has done.

After a couple of hours at Montezuma Castle I proceeded to Casa Grande National Monument, finding that in my brief absence of three days uncomfortably hot weather had given way to brisk, cool conditions. The cooler weather will bring increased travel to Casa Grande and Tumacacori. The genuinely interested type of visitor to Arizona is now beginning to show up, all of which materially increases the pleasure of doing guide services for them.

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I wish to acknowledge the kindness of Dr. H. H. Forbes, Director of the University of Arizona Experiment Station in sending us an Experiment

Station Bulletin describing some of the features of the prehistoric canals of the Gila and Salt River Valleys. I wonder if it is generally known that a short distance from their take-off from the river, the ancient people provided settling basins which allowed the sand and silt carried in the water to be deposited thus making it unnecessary to clean the canals so often? Equally ingenious was the practice of digging a small steep-walled channel within the broader canal channel thus allowing waters in dry weather to be confined to the smaller channel. This arrangement materially decreased seepage and evaporation losses during the period of scant water-flow in the rivers. Prof. Forbes had an absorbing interest in the archaeology of this region. We derived profit as well as a great deal of pleasure from his visit. In the Supplement will be found another reference to this visit of Dr. Forbes and his comments on how the prehistoric canal courses were determined.

This cooperation of individuals and institutions of high standing with our Service is one of the things we should always appreciate and maintain.

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The Casa Grande Museum has just come into possession, by loan, of a remarkable group of artifacts found in association with a cremation burial. The materials were found outside the monument by Mr. Leonard Spruell who has loaned them to us for exhibit purposes.

Mr. Spruell first brought in five small moulded head pieces which were undoubtedly mounted on small canes or wands by the ancients. The quality and style of sculpturing and moulding seem to bear a remarkable resemblance to articles found in Mayan excavations. The indentations and facial characters are executed with a precision not commonly found in true early period. Sculpturing and ornamentation in the early period in this region are crude.

A few days after making this loan, Mr. Spruell startled us again by bringing in two small red-on-buff saucer vessels with massive crouched human figures supporting them. Except for one broken leg, one human figure is quite intact while the arms and one leg are missing from the other. The more intact figure sits as a man would sit upon the floor with legs bent up in front of him, feet flat on the floor drawn close and hands placed on knees. The figure with three limbs missing gives evidence on its broken parts of having had arms and legs in about the same position as the first. Each figure supports the shallow saucer type of red-on-buff vessel on its head. The saucer supported by the more intact human figure has its concave bottom next to the head and about one half of its rim present. In other words it has only 1/3 to be restored to be perfect. The other has 2/3 of its rim portion gone. With 1/2 restoration this vessel would have its original form.

We do not share the enthusiasm of those who consider the Ho-ho-kam of this region a direct offshoot of the Mayan culture: we maintain only that some Mayan cultural influence did extend as far as the Gila and Salt River Valleys and found expression here and there in the early Casa Grande culture. We have to guard vigilantly against placing too muchcredence in superficial resemblances and too limited comparisons. Vaillant, in his paper, "Some Resemblances in the Ceramics of Central and North America," published in the Medallion, of the Gila Pueblo, 1932, clearly sounds the warning. This author discusses several characteristics in ceramic arts, figurines found by Woodward, and mixtures of elements found in Casas Grandes pottery south of this region which indicate ultimate northern penetration of distinctly Central

American traits. Tripod supported vessels also indicate a penetration of Southern influence.

These finds are among the most important ones ever made which indicate the Mayan or Central American influence on the early period of Ho-ho-kam occupation.

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Reports from the various monuments for the month of October follow:

AZTEC RUINS NATIONAL MONUMENT, Johnwill Faris, Custodian.

"Visitors for the month total 528. This is almost up with the same month last year. The weather has been ideal and the conditions for travel excellent, but the travel is not going through the country.

"Chuck Richey was kind enough to drive down from the Mesa Verde the early part of the month and we went over the general layout for the new building and a report to your office was received from Chuck about the tenth of the month.

"Near the middle of the month we were again favored with a visit from the landscape department. This time Tom Vint, Mr. and Mrs. Richey, and Bennett from Mesa Verde all stopped with us and we spent a portion of the afternoon going over the new building and taking measurements, etc., for the plans.

"Just prior to this visit I made an official trip to Santa Fe, and while there held a conference with Department Archaeologist Jesse Nusbaum, relative building material and needs for repair. It was as a result of this visit that a report was made to the Washington office on need for repairs, and a copy of the same was mailed to your office. I want to again mention the fact that I most certainly appreciate the cooperation and assistance of both the Landscape and Engineering Departments and their men in the field. Especial credit do I give to Engineer Hamilton, and Chuck Richey for their untiring assistance. Without these boys to help us I do not know what we would ever do.

"We were particularly favored this month with a visit from our own folks. On the 20th 'The Boss,' Mrs. White Mountain Smith, and Hugh Miller dropped in on us and not for many moons have we spent so enjoyable an evening. It was the first time Mrs. Smith and Miller had ever been inside our house, and now that they have the ice broken we want to entertain them often and of course we want them to bring the Boss with them.

"The trees are taking on the most beautiful colors and if only some of the other boys could see the Ruins now, I know you would find all the Custodians congregated at the Aztec Ruins. That's all right, Boys, we can not all have the best ruin, and in this case I am just fortunate.

"We were most sory to hear of the tragedy at Bandelier, and will always remember with the greatest of pleasure the times that we were shown the features of that monument. Our deepest sympathies go out to Gay and we are offering ourselves and our resources to her at her wish.

"We are getting quite the reputation as something. A couple from Durango was down the 24th and were married in the Kiva. This is the second time such has happened this year. How about some souvenir for the bride, Boss?

"With every good wish to the entire force, I am, "

BANDELIER NATIONAL MONUMENT, Martin O. Evenstad, Acting Custodian.

"I arrived here on the afternoon of Monday the 23d. Found that Engineer Attwell had already left for Devils Tower. Met Lieutenant Roberts who is with the CCC camp. Found the construction of the barracks well under way, with a crew of about 30 men on the job. The lieutenant informs me that the CCC boys will move in about the 15th of November, when they expect to have all the necessary buildings completed, and water developed for the camp.

"I find this a most interesting place and so far have found the present personnel connected with the CCC to be a very fine bunch. The construction work is going on with real enthusiasm and the men in charge are looking forward to an interesting winter of work.

"Based on the actual count up to October 15, and estimating for the travel for the balance of the month the total travel for October is 340. The weather is very fine and favorable and the coloring of the dying foliage on the trees along the Rito de los Frijoles is gorgeous.

"The Acting Custodian has been kept busy since his arrival sorting various correspondence in the desk, cleaning house and getting started lining up on the duties he will be taking up under the ECW program. Had a most interesting trip through the various ruins along the canyon wall with Mrs. Rogers acting as guide yesterday.

"Best regards to the Bunch."

CASA GRANDE NATIONAL MONUMENT, Hilding F. Palmer, Custodian.

"Monthly report time has once more rolled around and we come up smiling to tell about the many important and interesting happenings at Casa Grande.

"Our visitors, although not quite as numerous as the same month last year, are showing a decided turn toward the more interested type. This is, of course, to be expected at this time of the year, which is the beginning of our busy season. Last October there were 1,847 who made the guided trip through the

ruins and museum, and this year 1,751, a slight decrease of 96. There were however 282 people who entered the monument and used some of its facilities, such as picnic grounds, comfort stations, etc., but who did not require guide service. Of the 1,751, 1,049 were from Arizona, 301 from California, and 77 from Texas; the balance came from 35 other states, 3 territories and one foreign country. They came in 524 cars. They were personally contacted on 233 trips through the ruins of Compound A and 224 lectures in the museum.

"The weather the first of the month was unseasonably hot, but the last few days have been of that unsurpassable Arizona kind and life in a uniform has once again seemed better. The maximum temperature was 104 on the 1st, and the minimum 45 on the 20th. The mean maximum and minimum for the month being 92 and 62 respectively; total precipitation was 1.90 inches, of which 1.50 inches fell during the 1½ hours on the 9th. This rain did considerable damage to road shoulders and ditches. There were 26 clear, 4 partly cloudy, and 1 cloudy days.

"The Public Works program is going along nicely. All force account projects are started. The camp ground development project is 90 percent complete, and work has been temporarily suspended on it on account of need for the men working on that on other jobs. Report of completion can be expected next month. Project 119, Repair of two quarters, is also nearing completion and this project will also be finished during November. Quarters No. 3 has been given an outside coat of stucco and the interior has been redecorated and put in good condition. Quarters No. 2 has also been given an outside coat of stucco and the interior is undergoing a complete remodeling. This building was the old museum and had never been finished suitably for living quarters. A new wood floor was placed on top of the old cement floors which were badly cracked. A two-coat job of hardwall plaster reinforced with chicken wire was put on over the old sand plaster. Carpenters are now building kitchen cabinets and work boards, closets in the bedrooms, etc. When this is completed the floors will be varnished, the walls kalsomined and the wood work painted. Although when completed it will not be the highest class house on the monument, it will be, as far as interior finish is concerned, modern and very comforatable. An entirely new built-up 10-year guarantee roof was also installed on this building. The outside of both those quarters is now completely weather-proof. Project No. 120, Water Extension, will also be completed very shortly. This work consists of replacing all ¾-inch lines with 1½-inch lines and running 1½-inch fire lines with hose valves. These valves will set about 8 inches above the ground level and two have been placed near each building. The plan has been to bring two lines to each building at such a point that two 50-foot lengths of hose would reach any part of the building. The storage capacity will be increased from 1,000 gallons to 2,000 gallons as part of this project. When it is completed, although we will not have adequate fire protection, it will be enough so that in case of fire at any building it will be possible to prevent it spreading to adjacent buildings, although we would be helpless to put out any fire that had gained headway. We have very little fire hazard because of the type of construction and when this project is completed our danger of fire loss is going to be small, especially since each building is

equipped with chemical fire extinguishers.

"Project 121 is well under way. This project is walls around the Administration Building and will simplify our problem of handling visitors. Foundations are partly in and adobes are being made. Project 122, a new residence, is in the preliminary stage. This project will be contracted. Sketch plans have been submitted and working drawings will be ready soon so that possibly bids will be out by December 1 to 15. Plans are delayed because of the rush of work in the San Francisco office on park projects that cannot be carried on in the winter. Down here at Casa Grande the winter climate is so "ideal" that we can work straight through.

"All of these improvements were badly needed. The camp grounds are now in excellent condition and our many visitors have a place unsurpassed for enjoying themselves before or after their trip through the ruins. Employees will be in much more comfortable quarters, the administration area will be much improved in looks, and the visitors can be handled much more easily and vandalism will be decreased; our fire hazard will be much reduced.

"Assistant Architect Langley made an inspection visit during the month and settled several little problems that were worrying us. He accompanied Superintendent Tillottson of Grand Canyon on a trip into the southern part of the state. Harry sure knows his "stuff" and we are always glad to see him.

"Finally, everyone is busy and happy. We are trying to put out a good brand of service to our visitors and the Public Works is doing a lot of good around this section.

"The stray cat situation is in status quo."

CHACO CANYON NATIONAL MONUMENT, Hurst R. Julian, Custodian.

"There were 532 visitors at the Chaco Canyon National Monument during the month of October. A few interesting facts are observed in the register. There are nine states, New Zealand, and Tasmania represented. On one day ninety Colorado people signed the register, and some of the visiting Mayors and Commissioners who attended the convention in Phoenix stopped by with us.

"The Rotary Club of Durango, Colorado, was with us Sunday, October 22, and the number of visitors varied from day to day with ten on the lowest days to 127 representing the busiest day.

"Our distinguished visitors include Mrs. White Mountain Smith, of the Petrified Forest, Mr. Frank Pinkley, and our Chief Clerk, Mr. Miller. Mr. Miller took thirty-three photographs of pressing needs at the Chaco. They represented falling walls, eroding masses, need of improvements, and the sad story of the inroads of the Chaco wash on some of our great ruins such as Pueblo del Arroyo.

"The state magazine, "New Mexico," has announced that they will publish a three thousand word Chaco article in the October issue of their publication. Radio Station K O B is to broadcast the same material. The American Legion Monthly has asked for a similar article, and the Rotary Magazine has requested that I write one for them. This at first hand appears to be considerable work at the typewriter for me, but it is not so difficult because I have written much of it for various newspapers during the past year. These newspaper articles are combined in sufficient number and in such manner that the required length story is obtained.

"I wish to make public announcement of a belated but just recognition of the efforts of Dorothy L. Keur in connection with the report which was issued in the last Monthly Report to the Director. Mrs. Keur not only did ". . . . most of the careful, painstaking, important work" in connection with the matter of the investigation of the "Cliff Cavities," but wrote most of the catalogue of materials and some of the interpretations as well. I think that this last fact was not made clear in the original report.

"There is an Indian Service engineering party in the field making a survey of the Crownpoint-Chaco Canyon road and the state maintenance crew has been at work on the old road, putting it in shape to handle the traffic temporarily. Being without funds, and the road having been impassable by recent heavy rains, it has been necessary that I work several days on the highways. With the volunteered assistance of the neighbors, including the moving spirit of the expedition, Mr. A. P. Springstead, the concessioner, we labored mightily. Drainage ditches were dug, holes filled, and other emergency repairs were made. The Superintendent of the Eastern Navajo Agency loaned us five Indian assistants for this work.

"Nothing has been done during this month on the cataloguing of museum specimens. It begins to look as though that job will be postponed until some particularly snowy and blustery period of the winter. Just now the weather is fine and the ground is not frozen, consequently I hope to get all the dirt moving jobs done before it is too late. The inside work can be done at any time that the weather makes it impossible to haul dirt."

EL MORRO NATIONAL MONUMENT, Evon Z. Vogt, Custodian.

"The weather has finally changed to October normalcy as President Harding used to say. Up to this time the fall has been anything but normal. It has been so mild that corn did not freeze until the 15th, a month later than usual.

"But we had a long slow rain on the 15th which brought a few clear nights on after it cleared up and these nights were cold enough to put quite a crimp in green growth.

"Grass continues green and owing to filling up of water holes and lakes again the grazing conditions are good. This is mentioned for western New Mexico is essentially a grazing country what with thousands of sheep owned by Americans, not to mention some 35,000 owned by my friends the Zunis and well over a million by the Navajos. The cattle also turn the grass into a living for many cow men though prices are not so favorable for them as for the sheep owners.

"Farmers are getting in their beans and corn, and selling what they can. Prices are slow, however, but there seems to be a cheerful feeling abroad at any rate.

"At El Morro the physical conditions are fine. Grass is tall, flowers still blooming, birds lively in the trees. A few tracks of wild cats in the wet sand around the Monument and a coyotte track trotting along the trail from the Camp Site in the Pine Tree Cove. Pack rats are making themselves at home in the comfort stations and laboriously building nests in which they are storing the few pinon nuts that grew on our pinon trees. We had to disturb the process of building these homes where they would interfere with human needs.

"The pinon crop generally is light, having been weakened by the heavy fall rains so that above the needs of the pack rats and pinoners or pinon jays there seem not to be enough to pay any one to go nutting on a large scale. However some of my Navajo neighbors have gone out to Cerro Alto, 15 miles south of the Monument and are bringing in fair gatherings of nuts which bring 6 cents per pound in trade at the trading stores.

"There has been no damage at our Monument since Mr. Peterson left. I went over everything very carefully and included in my inspection the inscriptions first, the pictographs, the ranger cabin, bridge, reservoir in the cove which is full to overflowing, roof of ranger's cabin, which I am going to give a coating of tar soon. No cans, no trash, just two banana peels to spoil nature's grandeur. The fence needed some repair in places and I am taking out a few short strands of wire to replace a spot where there are but three wires when four are needed. One wire was taken off for about 100 feet by some one needing a tow rope for a broken car, a resourceful little habit which often occurs in these parts where bad roads live forever and cars have short lives.

"The distressing thing at El Morro is the way the erosion is eating the soil away from the south side of the cliff from the De Vargas inscription on to the big arroyo. Unless we tackle that job soon we will have another deep arroyo parallel to the other one. I am counting on the landscape engineers of the Park Service on helping us out on this problem before another rainy summer comes along.

"The roofing paper caps placed by Ranger Peterson over the translation signs are very effective I think and do the work well enough.

"The west gate is in bad repair so I am planning to put up the iron gate which we have stored in the cabin and which was bought for this entrance to our grounds. I will have to get a good cedar post and replace the one which has been up many years and now rotted out so as to weaken it. The east cattle guard needs some concrete on the ends of the rails to keep them from bouncing loose and I hope also to get this done the same day I fix the west gate.

"We have had a steady run of visitors, many from afar. Studying the visitors' book shows that an increasing number from Grants and Alququerque come in from the east. Brigadier General Wood visited El Morro with some of his officers and friends.

"Another visitor who came was Mr. A. W. Barth who came along almost a year to the day from his first visit in 1932. You will recall Mr. Barth as that graduate of the University of London who now lives in San Diego, where he is a landscape gardener by vocation. Mr. Barth is the author of "New Notes on El Morro" in Art and Archaeology (Washington, D. C.) in the May-June number, 1933, in which he made many interesting observations. His translation of the last line of the Governor Silva Kieto inscription as, "Well May to Zuni proceed and the Faith thither Carry" seems to be a solution of a long standing doubtful line and it seems to me a correct solution.

"Mr. Barth hitch hikes his way and despite his age and deafness makes fine progress. His knowledge of Spanish history seems unending. At present he is translating Castaneda's Narrative of the Coronado Expedition, 1540-1542. I think we may expect some more illuminating articles about our Monument and its historical treasures from Mr. Barth.

"After having lunch with Mrs. Vogt and myself I took him to El Morro where he at once delved into its mysteries.

"I am expecting a visit from Mr. C. A. Richey of the Landscape Engineering staff, after which I will write you.

"Your last month's report was very interesting. I read with especial interest the Pipe Springs notes on old frontier history.

"With best regards all around."

GRAN QUIVIRA NATIONAL MONUMENT, W. H. Smith, Custodian.

"Another month has passed and I find it time to send in my monthly report again. I have registered 361 visitors entering the monument in 78 cars, with two well-loaded trucks of picnickers. This shows an increase of 174 visitors, nearly 50 percent, and 32 more vehicles over the same month last year. Apparently financial conditions are on the mend.

"Weather conditions have been fine for travel this month with scarcely any rain and but few cloudy days. The days are staying warmer this fall than is customary for this country. Nights are beginning to get cool. Only last week we had the first ice I have seen this fall, which is 20 or 30 days later than usual. Generally at this date in this altitude we have had several freezes and occasionally a snow or two.

"In the afternoon of October 14 quite a gale came up and blew our flag pole down, breaking it off near the ground and also in another place near

the center of the pole. This is going to require a new pole before we can float the Stars and Stripes again.

"As the grass and other vegetation of the monument are drying up, there will be some danger of fire. I will spend my spare time in the next few days erecting some fire warnings, which may caution our tourists to be more careful with fire."

MONTEZUMA CASTLE NATIONAL MONUMENT, Martin L. Jackson, Custodian.

"For the month of October we have had a total of 991 visitors to Montezuma Castle, with 267 registrants in the building. These came from 18 states and Washington, D. C. Weather has been very good for the past three weeks, and consequently the roads are pretty fair.

"The Old Settlers' Picnic was held here on October 15. They totalled 320, and parked in 77 cars, which we handled in the new parking area. Only a small percentage of the old-timers climbed to the Castle, as most of them had been there many times. In accordance with policy I am not encouraging these large reunions and picnic affairs on the grounds. I believe the Old Settlers will not convene here again, as they disliked not being able to drive their cars all over the picnic grounds.

"We look for a much busier winter season this year than usual, for we will have three large C.C.C. camps in the valley, located at the mouth of Oak Creek, and the Clear Creek ranger station, and at the Beaver Creek ranger station, of which at least one will be a permanent camp. As the Castle is the nearest place of public interest, we expect these boys to visit us on Sundays and holidays. Also, we hear that the several guest ranches in the vicinity have reservations for all available quarters this winter.

"The Smoki people and the Chamber of Commerce of Prescott are working conjointly in the interests of the Smoki museum there, and have some young archaeologists working in the field gathering material. They accosted officials of the United Verde Copper Company for permission to excavate a large ruin on company owned property. The company has the Castle interests at heart, for they specified if any digging was done the Castle museum should receive firsts on any artifacts found.

"If the Verde dam goes in, as we have high promise it will, the high water mark will cover some exceedingly interesting ruins and one of the two finest groups of prehistoric cavate lodges in the United States. It seems a shame that such fertile ruins should be covered forever from the eyes of science when our museum in the future could so well harbor artifacts from those places."

NATURAL BRIDGES NATIONAL MONUMENT, Zeke Johnson, Custodian.

"Seems like the months roll by pretty fast these days. Fall is gone and winter will soon be here. People are still going out to the Monument -

nearly every day a car.

"I have bought 100 pounds of sweet clover seed to sow in the canyons out at the Monument. I believe it will thrive and help things out a lot. I am going out tomorrow to sow it and cache all my outfit for the winter, and then go out west and get me a few red fox pelts to sell. I have orders for 6 or 8, and I can get them very easily. This has been the most perfect fall I ever remember in this country. The canyons are still full of beautiful flowers.

"I hate to leave here this beautiful time of the year, but I will be prepared to come back early in the spring.

"I forgot to tell you that I succeeded in getting Floyd Dalton out to Caroline Bridge and taking his name off. It is all OK now and I am very glad."

NAVAJO NATIONAL MONUMENT, John Wetherill, Custodian.

"We have had quite a summer. To begin with, we had Ansel Hall's Monument Valley and Rainbow Bridge exploring expedition here to visit our ruins and all the other points of interest over the larger part of the section between Kayenta and the San Juan River and from Chin Lee to Lee's Ferry. Then we had our superintendent and his son with Miss Story from the Washington office, and Mrs. White Mountain Smith's sister from the Petrified Forest National Monument. Then we had a fall of rock from the roof of Kit Sil cave of about ten tons that carried down the part of one room, but did no other apparent damage. In August Dean Cummings walked from the Marsh Pass to Betatakin with his eighteen students. They slept at the ruin and one of the boys, thinking he was a cliff dweller, went in one of the rooms to sleep. In the night he thought the enemy was after him and he jumped out of the door wrapped in his blanket. He landed in one of the lower rooms and they carried him the eight miles back to the pass on a stretcher. He was in the hospital for two days, and as the nurses made him put on his clothes and got out, he drove his car on to Gallup with the rest of the party.

"I don't know when you will see this letter. It has been raining for five days and the roads are almost impassable. The bridges are all gone. The trails in the Tsegie are badly washed out.

"Marshall Finnan passed through Kayenta a few days ago. He was going so fast that he couldn't stop his car, so I did not get a chance to see him. He left word somewhere along the road that he had to be at the Grand Canyon by noon or he would have stopped. The Shanto outfit are building a trail down the head of Betatakin Canyon. We need a ranger on the job as soon as we can get one. You might make me ranger until you can send one up; as it is I cannot spend all my time up there without a salary.

"Hoping you have a full season, with best wishes, I am . . . "

PIPE SPRING NATIONAL MONUMENT, Leonard Heaton, Acting Custodian.

"I don't know just where to begin on this report for October, as there are several items of interest that have occurred that need to be recorded in this monthly letter.

"First I might give an account of the travel and the new way I am endeavoring to follow. As you mentioned in the September report that there would be a different system of counting for the future, I have been trying to work out something appropriate for this monument that will answer the requirements and give what information you might want.

"To give you an idea of what I am working on I will try and outline what I have done. First I have counted all people that have passed or come to the monument, whether once or more times per day, and whether they are local people or not. Then of this number I have another count of those that stop to see the fort and are shown through either by myself or H. C. W. P. Mrs. Heaton. Then we have a lot of night travel which I only guess as to the number of passengers in the cars. Using this system for the past month I have a total of 694. Of this number I have contacted and shown through the place 67; 90 is the estimate of the night travel.

"In the past I have not kept track of the travel that comes by on business or don't seem to have any special interest in the place, as some of thelocal people, but just those who I consider interested in knowing of the old fort and its history. For example of a days travel I will give you October 23. Seven men on horses in the morning and back at night; count 14; 2 men with teams; count 16; mail driver and 1 passenger; count 18; 3 in car from west to Kanab and return; count 24; 2 in car from west; count 26; 4 in car from east; count 30; 6 from east and return; count 36;count for the day, 36. I do not keep this kind of record, but that is the way my travel is by this monument. I am trying to get some form worked out where I can keep a better record of the travel and classify it.

"Now for a few lines regarding the visit of Tom Vint and party. On the 27th of September Mrs. Heaton had been suffering with a tooth ache, so I started to the dentist with her about 2 o'clock and had only gone about 4 miles when I met a Zion Park car. I stopped to see who was in it and to my surprise I found Mr. Tom Vint, Harry Langley, Superintendent Patraw, and Mr. Hommon. I came back with the Park Officials and sent Mrs. Heaton on to town.

"On arriving here I showed them through the fort and gave them about the same line of talk I give all tourists. Of course there were interruptions, as we came upon some problem that we discussed on the spot. Then for an hour and a half we went over the grounds and the drawing Harry had made of the place from his earlier visits, making corrections and suggestions. Also discussed the water question and how the water was being used, how much the Park Service would need, what the Indians and cattlemen needed, also the past history of the use of the waters and what rights were given over to the government.

"The opinion expressed by these men was that the one-third rights of the cattlemen be recognized, the park taking what water they needed for residence, rest rooms, camp ground taps, irrigation of meadow and trees in the camp grounds and possibly a garden for the custodian, Indians getting what water was left.

"Development plans call for a change in the road to go from the southeast corner of the ponds east, south of the woman's rest room to the east boundary of the monument. Between the new road and the large clump of Alanths trees will be the rest rooms with flush toilets. East of the fort is the camp ground to be planted with trees this fall. A barrier is to be placed so that cars cannot get up to any of the buildings or between the ponds and fort. The plans also call for moving down to the road to the corner of the west pond the water where people can fill their barrels and water cans; moving the store to some other site if travel demands a store. South of the new road will be the residence and garage. The two ponds will be left as they are in the meadow; and I will move my sheds that are by the meadow.

"The Indian Service has had two men working at enlarging the pond that was used by the two young Indians this summer. The pond will be, when finished, 130 feet long, 90 feet wide, and 6 feet deep.

"The past week I have been getting the water out on the camp ground and preparing it for the planting of the trees this fall and doing a bit of cleaning up of the dead weeds. I regret to report that I have cut out half of the big elm tree that leans against the house. Either it or the house had to be moved and, as Tom Vint said, "it is easier to move the tree and trees can grow. The Fort; well it would be quite a job." You know that something had to be done about it as the wall of the fort was being pushed in by the tree.

"In all the years that this old fort has stood and had all kinds of visitors, this fall is the first time since it began that the fall cattle roundup has not camped here for the last three or four days work in getting the steers off to market. This year the cowboys had to go to other parts of the range to find feed and pasture for their cattle. Of the usual two or three thousand head of cattle handled here each fall only a hundred or so saw this place and they were cattle that are pastured most of the time. I have been wondering if the corrals that stand in the southwest corner of the monument will soon be all that will be left to remind us of what was once a common sight here in the past.

"I am also hunting down any old relic that should be here in our museum, such as a telegraph instrument of 1871 and the telegraph signs that were here. I just learned that one was at a dry farm in Short Creek. I also want to get some couches and beds, guns, and the spools that were used to wind thread on as it came off the spinning wheels. I added an old chair this month, and a bullet loader.

"We had been bothered for the past two or three weeks by a polo cat. Don't know as to its being the one that was here last fall or not, but it came almost every night, getting into our butter and fruit. Then last night he met his death by the only real enemy that he has, the great horned owl. I found him this morning at the foot of the flag polo half eaten up. I took his remains and gave them a burial some distance from the house.

"I turned the snakes loose the fore part of the month and now I am forever having people ask what I did with them and why I didn't keep them so that they could see them.

"Our frost has held off so far this fall and the trees are just beginning to drop their leaves, which means work for the custodian keeping the leaves out of the house, spring, and ponds. That's what a custodian is for - work, and like it no matter what kind it may be.

"Well this is a lengthy report, but as I said at the beginning, there were several items of interest to report and maybe I am taking a lot of your valuable time in your reading this report, so if you don't like it, chuck it in the waste basket and forget it."

. . . . . .

Any time we put we put an interesting report in the waste basket!

. . . . . .

TUMACACORI NATIONAL MONUMENT, Tubac, Arizona

"Visitors for the month of October - 614.

"The past few days we have been getting quite a number of winter visitors from Tucson, and the Federation of Women's clubs held at Nogales also brought quite a number of visitors.

"Owing to the death of Edgar Rogers, Custodian at Bandelier, Mr. Evenstad has been transferred to Bandelier. Mr. Evenstad was by far the best man we have ever had at Tumacacori and we very much regret to see him go.

"The government has approved the construction of a new Federal building at Nogales and also money for the flood control at that place. Nearly $500,000 will be spent on these two projects and it is quite astonishing how this section of the country has already begun to boom. It is going to increase the number of visitors at this monument considerably.

"I made a short trip into the Cochise Stronghold country and almost every gulch and creek bed is being panned for gold. I picked up about fifty arrow points, but nearly all had been broken due to the stoney condition of the hillside.

"Says Phoebe is very common here on the monument and during cold weather they go into the garage at night where they are prisoners until we open the doors in the morning. Last year they did not seek shelter until late in November, but this year they came in the 21st of October which is a sign of colder weather I think.

"Mr. Langley of the San Francisco office, and Mr. Tillotson of the Grand Canyon National Park, also Mr. Pinkley and Chief Clerk Miller were among our visitors for October."

WHITE SANDS NATIONAL MONUMENT, Tom Charles, Custodian.

"At the suggestion of Leonard Hector that our monthly travel count is in some way connected with hoped for funds, I am putting my measly, part-time count at the head of the column. On Sunday, October 15, we left Albuquerque at about 8 A. M., visited the Elephant Butte Dam, ate lunch in Hot Springs, spent an hour with a new grand child and the happy mother (our daughter) at Las Cruces, and then drove, rather leisurely over the White Sands road 72 miles, between Las Cruces and Alamogordo. We drove the 72 miles in 100 minutes and passed 60 cars, 7 of which were stopped at the Great White Sands. Two-thirds of the 60 cars had Texas licenses and we presume that practically all of these were making the loop drive from El Paso to Alamogordo, picnicking at the White Sands, and returning home by way of Las Cruces.

"We did not count the cars which we met between Albuquerque and Las Cruces, but it is safe to say that we met twice as many cars on the 72 miles of White Sands road as we met on the other 250 miles of the trip.

"Your 'Custodian of Sands' took a day's trip through the Lincoln National Forest one day this month, guest of Ranger Lou Laney. Far up on the hills, near the timber line, at the side of the road was a half bushel or so of pure white sand, unquestionably a part of my charge. What would Tom Boles do if he found one of his Carlsbad Cavern stalactites lying out along the side of the highway? But this was different - this is a story of pathos and love, of the old flivver with its last breath trying to make the top of the hill. Of the tired mother walking with an armfull of rocks, scotching the car. Then the finale; the crying child having to give up its cherished box of magic sand - the imprint of the chubby fingers still showing in the pile of sand tells the story of the fond farewell.

"Even the cold policy of 'undisturbed' could not fail to melt before such a scene. Some line of reasoning must show that the Great White Sands is different, for one of the outstanding values of this new monument is the pleasure which Young America is to get in carrying it away. It is probably the only National Monument where the policy of 'Come and Take it With You' may safely be advocated. Tonight's mountain breeze will heal today's most tragic scar. The factory at the old Black Lake, with its perpetual production, will pile up more magic crystals tomorrow than all the children in New Mexico

can carry away tonight.

"Your guess that the water turns red in our lakes as a sort of signal to the cattle that there is too much alkali is all wrong. Old timers tell us that no cow ever lived on that water long enough to see the danger signal. Professor Botkin, of the Chemistry Department of the State College, reports that the red in the sample of water is not due to inorganic compounds. The Biology Department of the same school believes that the red is due to some strain of bacteria. If these college fellows cannot figure it out, we expect to turn it over to the Alamogordo Chamber of Commerce. There is little doubt but some one in that group will give unqualified information as to what the red lakes are all about, especially if they are as good on lakes as they are on weather.

"George Boundey, of the Tumacacori National Monument, acquired his first love of the southwest in the years that he spent at a cow camp near the White Sands. We are glad of it, for there may come a time when we will need a corroborating witness for some of those flash reports of ours."

WUPTAKI NATIONAL MONUMENT

"The following story of work done this summer at Wupatki National Monument by the Museum of Northern Arizona makes a most interesting addition to this report.

WUPATKI NATIONAL MONUMENT
By
Lyndon L. Hargrave, Field Director
Museum of Northern Arizona.

From April 1st to October 1st of this year the Museum of Northern Arizona maintained an archaeological camp at the pueblo of Wupatki. As the work was in my charge, I suppose I might consider myself a self-appointed Custodian. Since the lamented death of Mr. J. C. Clarke last summer, this monument has been without a Custodian. Members of the Museum staff have at various times made official trips to, or have been in the neighborhood of, the pueblo and have been able to keep a weather eye upon the place.

A few words about the Monument, and the pueblo of Wupatki in particular, will not be amiss at this time for they are scarcely known even in official circles. Wupatki may be considered one of those Monuments which has been set aside because of the foresight of a group of interested citizens anxious to preserve for posterity a unique and scenic spot of general and scientific interest. Within the boundary are innumerable ruins of prehistoric peoples whom we know occupied that section between the tenth and thirteenth centuries A. D. Ruined habitations from the pithouse stage to that of large communities of stone buildings are to be seen there. For persons of general interest only

these larger pueblos have more appeal because of their conspicuousness and also because they harmonize so perfectly with the surrounding country.

Wuptaki is not recently discovered, for it was visited as early as 1851 and was reported upon in 1853 by Lt. Sitgreaves. Its date of discovery thus antedates by more than twenty years the discovery of the famous Cliff Palace and many another of the larger pueblos. Wupatki is, therefore, one of the earliest of the pueblos discovered by officials of the United States Government. At the time it was seen by Sitgreaves, many rooms were in perfect condition with large beams supporting a roof of grass, brush, or reeds, and earth. Until recent years a part of one of these roofs remained. Its remarkable state of preservation is due to the extreme dryness of the locality and because the walls are constructed of flat sandstone slabs, which conditions have insured the durability of the pueblo. The most impressive point of consideration, however, is that the pueblo is entirely in the open and is thus exposed to the elements at all times.

The natural setting of this pueblo is a thing of beauty. At an altitude of 5000 feet, sunshine and warmth are assured the greater part of the year and the locality is a favored spot for picnicking when the nearby San Francisco Mountains are covered with snow. The southern boundary of the site is a high black lava escarpment at the foot of which are large dunes of volcanic cinders. The foreground is of red Moencopi sandstone which extends to the Little Colorado river, about six miles away. East and north the variegated colors of the Painted Desert contrast strongly with the somber hues of the volcanic background. Probably in no monument of the southwest is the beauty of the Painted Desert and the appeal of Man's past so strongly linked together and emphasized as it is at Wupatki.

Repeated observations made by the Museum upon the Monument these past two years have revealed that the situation there was not too encouraging. In fact, the Monument lay open to attack from anyone. Its distance from Flagstaff, the nearest settlement, is more than forty miles. Few people, other than those who know the country, ever visit these ruins. The isolation of the locality and the fact that within the past two years a fair road, graded part of the way, has made it possible for pot-hunters to easily reach the Monument where depredations could be made without great fear of being discovered at the time. In fact, so many changes for the worst were noted that the Museum secured a permit to conduct archaeological investigations at the pueblo of Wupatki. Through this work it was hoped to save for science the cultural material remaining there and at the same time to devote some time to the preservation of the more dilapidated part of the pueblo.

At times this season as many as eight men composed the personnel of the expedition and the work consisted of mapping, excavating, and restoring. A contour map of the quarter section containing the pueblo of Wupatki was made, contours being run at ten foot intervals. On this map was located every indication of a prehistoric habitation, all arroyos (thus determining the drainage immediately affecting the community), and residual junipers. A detailed plan of the pueblo was also made and data were tabulated for a model restoration of the pueblo should it ever be completely excavated.

Before excavation could be undertaken, however, the talus accumulation had to be removed from the southeastern block of rooms where the major work was to be done. Also a trail had to be built along the western side of this block where two rooms had been selected for restoration. Nineteen rooms were completely cleared out, some to a depth of twenty feet through three rooms deep. These superimposed rooms were back-filled to the floor level of the remaining upper room. One room (R 49) was found to be a rectangular kiva. Excavation was also made of a large depression on the eastern slope, which work revealed a large circular area, approximately fifty-three feet in diameter. This area once had a high enclosing wall of masonry except on the northeast where there was an entrance. The absence of kiva features, other than a banquette, suggests that this "amphitheater" may possibly have been built as a plaza since no evidence of a plaza was found. This structure is by far the most imposing architectural feature of the pueblo.

Weakened walls were partially restored and three rooms and the "amphitheater" were reconstructed. Roofs of the rooms were copied from types found while excavating. Materials used, with the exception of the roof beams, were gotten at the site.

In addition to the actual archaeological investigations much information was gathered from other sources. The Museum had maintained a rain guage at the site during 1932 and so during the summer of 1933 meteorological data were increased by maintaining a weather bureau. At intervals during the summer Dr. Colton and Miss Bartlett continued their study of the geology of the locality, a project started some years ago. Data on the wild life of the vicinity was gathered both by Mr. Charles Quaintance, Associate in Mammalogy, and by various members of the summer archaeological expedition. Collections of the mammals, birds, and reptiles were made. Near the Citadel pueblo the Museum recovered pleistocene paleontological material from a solution crack in the limestone.

Travel conditions were improved by signing the road, by marking the Monument, and signs warning against unauthorized excavating were placed at strategic points in the Monument.

A register was kept during the summer months and about 300 visitors were recorded, the most important party being the International Geological Congress of more than forty members from various parts of the world. A lecture upon the pueblo was given by a member of the Museum staff. Though this number of summer visitors is small when compared with that of most Monuments, few tourists hear about, or learn of, the location of this Monument. As a result of the summer's work, however, the attendance this coming year should be much higher.

The investigations of the Museum of Northern Arizona on the Wupatki National Monument are not completed and it is hoped and planned to continue these investigations another year. The possibilities of this Monument are so great and varied that it rightly should receive more consideration both locally and nationally.

IN GENERAL.

The weather through the district seems to be ideal for travel. The roads have been in good condition except as to side roads just after rains. The road from U.S. 66 past the Chaco Canyon National Monument to Aztec Ruins National Monument is in better condition than I ever saw it.

It seems to me that business in general through the district is on the upward trend. Tourist traffic, however, has not yet shown much upturn; it would be natural for it to lag behind general business conditions.

The Service men in the Southwest are all busy and have work laid out ahead to keep them busy for the winter months.

We are now badly short handed and have no funds to hire help in handling visitors on busy days. Ed. Rogers' death and the separation of Hugh Curry from the Service have automatically impounded those salaries for the rest of the fiscal year. It isn't fair, in these times of thirty and forty hour working weeks, to ask George Boundey and Martin Jackson to work three hundred and sixty-five days a year, yet that is what they are up against unless we can get a release on those impounded funds and hire help when and as needed.

In our headquarters, the paper work has increased about one third in the last six months. If it doesn't level off pretty soon we will be sunk. Our Chief Clerk has had about three days off in the last two months and our office hours are from eight in the morning to about six in the evening. We don't get the seasonal let-up which occurs in some places either. Our winter is as heavy as our summer and we have a high peak of work over every month-end. All this isn't a complaint; I'm just telling you. I know you folks in Washington are in the same fix and I just want you to know why we can understand and sympathize with you.

Cordially,

Frank Pinkley

Frank Pinkley,
Superintendent.

Jim Didn't we send the [illegible] a copy of your report
K 11/22

SUPPLEMENT
OCTOBER REPORT
SOUTHWESTERN MONUMENTS

November 1, 1933

Dealing with people, "shop talk" and other subjects of interest.

"Threatening Rock" standing behind Pueblo Bonito has been the subject of considerable study by Park Service Engineers and by students of Archeology. We take a great deal of pleasure in presenting here a most interesting report entitled "A Study of Primitive Indian Engineering Methods Pertaining to Threatening Rock" by John Yak Keur of the Biology Department, Long Island University, Brooklyn, New York. During the Summer of 1933 Professor Keur pursued studies on Threatening Rock while Mrs. Keur of the teaching staff in Anthropology of the same university made studies of the cliff cavities or cliff cysts of Chaco Canyon. Mrs. Keur's catalogue of materials from the cavities and her descriptions can be found in the Supplement of the September Report dealing with these excavations.

CHACO CANYON NATIONAL MONUMENT

THREATENING ROCK

Introduction.

"Pueblo Bonito in Chaco Canyon was constructed by its ancient builders close to the North wall of the canyon. This North wall rises almost vertically to a height of 100 feet directly behind the present ruins. The cliff shows the effects of erosion, its surface is streaked and weatherbeaten, full of cavaties which give the face of the rock a lace like appearance in places. The base of the cliff shows erosion to a much greater extent, here and there wind and sand have caused a deep undercutting resulting in the formation of caves. An enormous block of sandstone has become detached from the cliff and threatens to fall on the West part of the Bonito ruin. This report deals with the attempts which the ancient Bonitians have made to prevent or delay the falling of this huge mass. The inhabitants of the pueblo must have been aware of the damage that could be done by such a mass of rock when and if it fell; for rock falls and slides are of frequent occurrence in the canyon. It has been suggested (E.L. Hewett, "Ancient Life in the American Southwest" page 303) that this "threatening" rock might have been a cause of the abandonment of the Pueblo by its inhabitants. The Navajo refer to the rock as Sabachnnei or Ysabeadnei meaning "Place where the rock is braced up".

The relation of the rock and the Pueblo.

"During July and August 1933 the writer investigated the attempts which the inhabitants of Pueblo Bonito had made to prevent Threatening Rock from falling. The West corner of this rock stands 120 feet from the North wall of the Pueblo. The North wall curves away from the rock in such a manner that the further part of the curve is 190 feet removed from the East corner of the rock. Threatening Rock is 100 feet high, 140 feet long and approximately 34 feet wide. (at midheight) If this rock had fallen as a unit without splitting - which was quite unlikely * its West corner would have jarred and probably crushed the back wall and rooms of Pueblo Bonito. If the rock had split while falling the resulting masses might have rolled right through the back wall which at present shows evidence of four stories. The damage of such an occurrence would have been considerable and it is not surprising that the Bonitians did what they could to prevent such a fall. Their handiwork, now uncovered, presents a marvellous and constructive example of the ancient engineering which they practiced.

The relation of the rock and the cliff.

"Threatening rock stands now entirely detached from the cliff. It is slightly wedgeshaped, with its greatest width at midheight. The vertical split between the rock and the canyon wall is from 10-12 feet wide at the top and from 3-4 feet at the base. This difference in width at top and base is not entirely due to leaning forward of the rock but rather to the weathering and loosening of smaller sandstone blocks from the surface of the cleft. The space between rock and canyon wall is partly filled with these loosened rocks, which may have a great effect in hastening the fall of Threatening Rock. Water collects between these loose stones and during freezing weather considerable expansion pressure may be exerted upon the rock.

"In addition to a slight forward leaning the rock also shows a settling in the alluvial mass of the canyon floor. This can be judged by making a comparison of the relative position of the same stratum in the rock and the canyon wall. At some points the difference in levels is 8 inches. The rock shows not only a leaning away from the cliff but its upper part (3/4 of its height) is beginning to split away horizontally from its lower part. Thus a wedge shaped horizontal crack can be seen at the back of the rock, indicating an additional tilting of the rock on its own base.

The front surface and base of the Rock.

"The front part of the rock shows a fairly uniform -though

weathered - surface. One large vertical crack, 40 feet from its East end is visible, extending from top to base. Several other smaller cracks are present in the front surface. The base of the rock is far from uniform, showing a deeply extending erosion in spots. This undercutting extends in one place from 14-16 feet, which is almost to the gravity axis, the width of the rock at midheight being 34 feet. About 1/4 of the area of the base of the rock lies in front of the gravity axis. As a result of the erosion at the base we find several caves, especially at the West base of the rock. If this undercut had been uniform along the entire base the rock would have undoubtedly fallen long ago. In its present condition the rock may remain standing for centuries provided that further erosion can be prevented and barring earthquakes.

"The overhang at the base of the rock is greatest at the West end where over a length of 60 feet the undercut varies from 4 to 15 feet. The overhang of the remaining 110 feet is much less, ranging from 3 to 6 feet.

The embankment in front of the rock.

"The ancient Bonitians constructed a large embankment in front of Threatening Rock which at the start of this survey appeared as a much eroded talus. The flat top or terrace of this embankment extended to the base of the rock for a distance of 15 to 20 feet depending on the erosion. From this more or less horizontal terrace rocks and sand had formed a slope extending 20 to 30 feet further to the front. This slope had been previously dug into at right angles to the embankment exposing at two points parts of a rock veneer, 5 and 8 feet long respectively. On the flat top of the embankment remnants of a wall parallel to the face of the rock could be seen, constructed at the place where the overhang was most pronounced. At the West end of the rock 60 feet of this wall was standing while at the East end a 26 foot stretch of wall was visible. At present the height of these walls does not quite reach up to the overhang, the highest wall fragment now standing comes to within 2 feet of it. It is probable that originally this wall was constructed clear up to the overhanging parts of the rock.

Determination of the construction of the embankment.

"The first part of the work consisted of the exposure of the remaining stone veneer which at one time covered the entire front of the embankment. It was found that the East corner of this veneer extended originally to a point 40 feet beyond the East corner of the rock. This point was marked by a huge 20 foot long

block of rock which apparently had been used as a corner stone or starting point for the embankment. Next an attempt was made to locate the West corner of the veneer. At the West end of Threatening Rock a large pile of fallen rock is present, consisting of huge blocks of sandstone and much debris. At one time this mass of rock might have been in the same position in relation to the canyon wall as we now find Threatening Rock to be. This fallen pile was present in 1900 and probably referred to by N. C. Nelson ("Notes on Pueblo Bonito" Anthr. Papers Amer. Mus. of Nat. History, vol. 27, 1920 page 389) who raised the question if this fall had occurred during the occuparion of the Pueblo. Earlier visitors and investigators give little information about the presence of this particular rockfall. W. H. Jackson states (Report on the ancient ruins examined in 1875 and 1877", 10th annual report of the U. S. Geol. and Geogr. survey, Washington 1878 page 442) that: "The Pueblo was built within about 20 yards of the foot of the bluff, but a talus of broken rock occupies all of this space, excepting a narrow passage next to the Northern wall, quite clear if the mass of fallen rock referred to was present in 1875 or not.

"The writer succeeded in following the veneer Westward to a point 8 feet underneath this mass of rock, indicating that the embankment and its veneer were built before the mass fell. The weight and size of the individual stones as well as the complete absence of laborers made further excavations impossible. The entire length of veneer exposed was 185 feet.

"As the next phase of the work an attempt was made to locate the veneer on the other (West) side of the fallen mass of rock. There a trench 5 feet wide was made at right angles to the cliff wall. If the veneer continued underneath the rockfall in a straight line no evidence was found of it appearing again at the West end. The trench did show evidence however of walls at right angles to the cliff, badly crushed by fallen blocks of stone, some of which were too large to be removed and interfered with a thorough excavation. These walls might indicate the presence of rooms at the base of the cliff, a possible continuation of a small previously excavated dwelling consisting so far of one small kiva and a room, located a few yards further West against the cliff wall. If laborers had been available further excavations might have shown better results, the writer had to abandon further digging due to the cumbersome debris. As yet then the West corner and extent of the embankment remain covered. At some future date this may be determined by moving the debris or by sinking test shafts straight downward from the center of the fallen rock mass.

"The 185 feet length of veneer uncovered is at present in a precarious condition due to of erosion. The veneer was exposed to a height of 2 to 5 feet. At intervals of 50 feet shafts were dug to determine the base foundation of the veneer. The distance from this base to the flat terrace on top of the embankment varied from 16 to 19 feet, indicating the original height to which this embankment was constructed.

"The material removed from the foot of the veneer consisted of blown and washed sand, stones fallen from above and near the base of the veneer several piles of mixed clay mortar. The veneer itself is in a fair state of preservation, it appears banded in construction, regular rows of larger stones alternating with from 1 to 4 rows of much smaller ones. No doorways, entrances or stairways were found.

"Behind this veneer and extending to the top of the terrace a mass of irregular stone set in adobe was uncovered, extending the entire length of the embankment. These large and mostly flat stones had been placed horizontally and covered layer upon layer with adobe. However, this mass of stones did not fill the entire space between the veneer and the base of the rock. The width of this stone pier ranges from 14 feet at the West end to 18 feet at the East end, while the terrace is from 28 to 34 feet wide (measured to the base of Threatening Rock.) In order to determine the character of the fill between the stone pier and the rock-base several trenches were made at right angles to the rock. The fill material consisted largely of a top part of blown in sand mixed with stones fallen from the wall above, while below the terrace level the fill was found to be composed almost entirely of a mixture of sand and clay, free from stones. The above mentioned trenches were constructed to the base of the walls erected ~~[illegible]~~ underneath the overhang of the rock. However, these walls are not present along the entire front of the rock, 60 feet from the East corner, extending to a distance of 40 feet west no evidence of such walls could be seen on the surface. Through the center of this space another trench 4 feet wide was made at right angles to the rock. This trench did not show the presence of a wall connecting the East and West walls which had been erected under the overhang. The following evidence relating to the construction of the embankment was obtained from this particular trench. The width of the stone pier was first determined, 16 feet to the front veneer. The distance from this stone pier to the base of the rock was found to be 16 feet also. After the top part of the trench consisting of drifted sand and debris had been removed it was found that in filling in the space between stone pier and rock clay and sand had been used, clay near the rock and pure sand near the stone pier. At the ~~[illegible]~~

top of the trench the sand fill was found to be 10 feet wide and between this fill and the rock a 6 foot wide area of clay was uncovered. These measurements are taken at right angles to the rock. On excavating deeper the sand area became more narrow, the clay area correspondingly wider. At a depthof 7 feet the sand occupied only 3 feet of the 16 foot trench, the remaining 13 feet were found to be clay. This clay was very closely packed and very hard. It showed evidence of having been poured in layers, slightly tilting away from the base of the rock. The stratification could be clearly discerned. The area occupied by the pure sand between the clay and the stone pier was more or less wedge shaped. In making an interpretation of this unusual construction the following suppositions can be made. If--at this point--the entire space between the stone pier and the base of the rock had been filled by hard packed clay any forward settling of the rock would have caused a tremendous pressure on the embankment, causing it to be pushed forward which in turn would have resulted in a leaning forward and perhaps falling of the front veneer. However, with a sand wedge present, any pushing forward of the clay buttress would have resulted in an upward pushing of this sand, preventing in this manner the weakening and cracking of the front stone pier. In other words the sand would have acted as a sort of pressure absorber.

The part of the clay buttress nearest the rock to a width of 2 feet was excavated carefully with a trowel to study the rock surface. Gradually in this manner the rock base was uncovered. When approximately 12 square feet had been cleared of the rock surface, faint cracking sounds were detected. Close inspection showed the appearance of fresh cracks in the rock. These cracks were carefully plotted from day to day. Eight separate ones were thus located, varying in length from 4 to 13 inches. It was thought at first that these cracks might be a result of the frying of the rock on exposure to the air. However the clay was very dry, due to a slight overhang of the rock no rainwater had fallen directly on it. Also in the lower 2/3 of the trench the rock showed no evidence of cracks whatever. The sandstone layer in which the cracks did form appeared weaker than the underlying layers. The cracks must have been the result of the tremendous pressure from above. The question arises: "Is the rock still settling?" The Threatening Rock stands at present in somewhat the same position as a brick on a piece of soft material suchas rubber, with one half of the rock on it, the other half off. (J. B. Hamilton, "Survey of Threatening Rock", Report of the engineer, October 1932.) As a result of such a position greatest crushing weight occurs under the center of the load, because the overhang tends to tip the rock at the back. Such tilting can at present be seen at the back of the rock near its East end where horizontal wedge shaped cracks have appeared. These cracks are from 2--3 inches wide at the back and extend into the rock for a distance of nearly 15 feet.

The construction of walls under the overhang.

From the terrace level the Bonitians constructed a wall parallel to the rock and apparently up to the overhanging part of Threatening Rock. This wall is not continuous along the entire length of the rock, it is found only underneath the greatest overhang of the rock. There are two such walls, one at the west end of the rock and one near the east end, with 40 feet of open terrace in between. The East wall starts at a point 22 feet West of the East corner of the rock. This wall is 26 feet long and from one to four feet high at present. The highest fragment now standing is ten feet above the terrace level and comes to within six feet of the overhang, which at this point is ten feet. From this outer wall three smaller walls have been constructed dividing the space into rooms or compartments. In this manner two rooms have been formed. The East corner of this group of rooms forms a large buttress-like mass of stones, eight feet wide and built ten feet to the base of the rock. The overhang was used apparently for the ceiling of the rooms, remains of plaster being still visible upon it. The wall parallel to the rock is very solid, it is 4½ feet wide at its base which is three feet below the terrace level and three feet wide on the top of the highest piece yet standing. Between this small group of rooms at the East end and a larger group at the West end of the rock is a space of 40 feet which shows no evidence of a connecting wall even at a depth of seven feet. The rock in this particular area shows the least overhang, less than three feet. The wall at the West end is visible for a length of 60 feet, at which point it seems to have been crushed by the rock-fall immediately to the West of Threatening Rock. It could not be determined at this time if and how far this wall continues underneath the fallen mass. With the aid of trenches the base of the wall was located three feet below the terrace level. At certain points the base of the wall was set in pure sand, at other points the entire base had been constructed in a block of clay, protruding one foot from the base of the wall and extending downward three feet. The base of the West wall was found to be 5½ feet wide while the top of the present highest fragment is three feet wide and comes to within four feet of the overhang. The height of the wall at its highest point is fourteen feet from its foundation. This wall as well as the East wall are constructed out of rather large and often irregular pieces of sandstone, separated by smaller stones. The masonry is not banded as is the front veneer. The part of the wall facing Threatening Rock is nearly perpendicular, the outside surface is slanting, thus forming a wedge shaped buttress. If the two upper parts of this wall are continued upward it is found that the overhang must have rested at one time on a stone wall 2½ feet thick. This, however, did not constitute the entire support given the overhang. Where the wall has fallen away several circular pits are seen in the interior masonry, containing a log each. These vertical logs, of which nine can still be seen, are approximately eight to ten inches in diameter. They have been removed, cut or burned in the past so that at present only those parts surrounded by masonry are still standing. Originally these logs might have extended to the edge of the overhang. Only one log is at present found in a similar condition. Their function must have been to shore up the overhang.

The width of the overhang varies from nine to four feet and the space between the wall and the rock is divided by cross walls (from 16 to 29 inches wide) into 9 (or 10) rooms or compartments. The largest compartment measures nine by five feet, the smallest, three by four feet. Some floors of these rooms are constructed of adobe, others of stone. Due to lack of time no thorough investigation could be made of these rooms. They showed evidence of having been used for sheep corrals or shelters quite recently. The cross walls were of very poor construction and might have been built by Navajos. No evidence of doorways, ventilating holes, fireplaces, etc. and very few potsherds were found in these rooms. What was the function of these rooms? That question must at present remain unanswered. What was the function of the wall? It seems inconceivable that the Bonitians would go through all the trouble of putting up an embankment and buttress-like wall for the sake of obtaining a dozen small, inaccessible rooms under the rock overhang. The way in which the wall was constructed, i.e. solid, buttress-like, reinforced with vertical logs, underneath an overhang, etc. point to the conclusion that its main function must have been for support. The wall by itself could not support the entire weight of the cliff, the embankment would prevent weathering and enlargement of the undercut of the rock. This embankment would have to be twice as high as it is at present in order to reach the top of the overhang. It seems logical to assume that the same effect -- prevention of erosion -- could be obtained by building a wall at the points of greatest erosion, shutting them off from the influence of rain, wind and sand. The embankment in addition formed a solid buttress to prevent or retard a downward sinking of the rock. As a secondary function of the wall on the terrace we might assume that it was used for additional support. Mr. N. M. Judd (Everyday life in Pueblo Bonito, Sept. 1925 vol. National Geographic Magazine) states on page 260: "They (the Bonitians) even had the presumptuousness to erect a puny brace of sticks and stones to hold back 100,000 tons of solid rock that threatened to topple upon their dwellings." The evidence presented in this survey hopes to establish the conviction that after all, the efforts of the Bonitians were far from "puny" but to them as magnificent as some of our present day engineerig undertakings are to us.

Mr. Judd gives 100,000 tons of weight to the Threatening Rock. In order to check this figure several samples of sandstone were taken and their weight and volume determined. From these figures the total weight of the rock was computed, amounting to approximately 25,000 tons.

Can anything be done to insure the stability of such a weight? It would be an expensive and difficult undertaking. The cheapest method would be to remove the rock debris between the canyon wall and the rock. It is unlikely that the entire block would fall as one unit, barring earthquakes. The East corner block might be the first piece to go, due to its greater leaning forward and the continuous vertical crack. When this corner falls it will do the least damage because it is furthest removed from the Pueblo wall.

It would be of interest to know if the Threatening Rock is moving from year to year. As no measurements or opinions were available it was decided to establish points on top of the rock and the cliff between which

measurements could be taken at intervals, in order to show any motion of the rock. To this purpose twelve holes were made, each filled with cement with a copper pin in the center of each. These twelve holes were located as follows: numbers 1. 2. 3. 4. and 5 on top of Threatening Rock spaced approximately 25 feet apart. Numbers 6, 8, 9, 10, and 11 in roughly corresponding positions on top of the mesa and numbers 7 and 12 further back on the mesa. The distances between these points were carefully measured and re-checked with a steel tape. The distances are tabulated as follows:

From	point	1	to	point	6	:	16	feet	8 5/8	inches.
From	point	1	to	point	7	:	39	"	10 1/2	inches.
"	"	1	"	"	8	:	23	"	8 1/2	inches.
"	"	2	"	"	6	:	25	"	10	"
"	"	2	"	"	7	:	35	"	8 1/8	"
"	"	2	"	"	8	:	9	"	5 3/8	"
"	"	6	"	"	7	:	25	"	8	"
"	"	7	"	"	8	:	26	"	7	"
"	"	1	"	"	2	:	20	"	5	"
"	"	1	"	"	12	:	64	"	11 1/2	"
"	"	2	"	"	12	:	46	"	7/8	"
"	"	6	"	"	12	:	62	"	2 1/4	"
"	"	8	"	"	12	:	42	"	4 3/8	"
"	"	3	"	"	9	:	15	"	9 7/8	"
"	"	4	"	"	9	:	33	"	3 1/8	"
"	"	5	"	"	9	:	68	"	8 1/4	"
"	"	3	"	"	10	:	36	"	4 3/8	"
"	"	4	"	"	10	:	18	"	9 3/8	"
"	"	5	"	"	10	:	43	"	6 1/2	"
"	"	4	"	"	11	:	55	"	6 3/4	"
"	"	5	"	"	11	:	31	"	3/8	"
"	"	1	"	"	2	:	20	"	5	"
"	"	4	"	"	5	:	37	"	10 1/4	"

Recommendations for preservation and reconstruction.

1. The veneer in front of the embankment should be repaired to a height of five or six feet to prevent further deterioration. The top of this veneer should be protected against water seepage. It was thought at first that the same method might be applied here as the one used to cap the walls in Pueblo Bonito, i.e. with a layer of cement. On close inspection, however, this method seems far from satisfactory. Walls thus treated in Pueblo Bonito show many areas where water has seeped through in spite of the capping. The cement shows much cracking and water has penetrated through holes and cracks, causing the washing out of adobe, loosening of stones and streaking of walls. In treating the top of the veneer the following method might prove successful, viz. setting the entire top row of flat stones in cement. The cement should be applied thinly to replace as exactly as possible the removed adobe, giving the veneer a more natural appearance.

2. The stone embankment behind the veneer should also be repaired and gutters placed here and there to drain the water. The stones should be

replaced wherever possible and the ones present set more firmly in cement.

3. The terrace should be cleared of debris, levelled off and a drain constructed through the entire length in order to remove the water to the East end, preventing it from flowing over the roofed.

4. The walls underneath the overhang should also be repaired as much as possible, using the stones that have fallen from the walls on the terrace or in the space between the walls and the rock. The top of the wall should be treated in the same manner as the top of the front veneer.

5. The area underneath the overhang should be cleared of the blown-in sand, exposing the floor levels of the rooms. The cross walls should also be repaired.

6. Finally, what can be done about the Threatening Rock? The inevitable question is: when will it fall? This, of course, cannot be answered directly. The Rock may remain standing for a thousand years, except in the case of an earthquake. It will be interesting to note if yearly measurements between the hubs placed on top will show any appreciable movement of the block, be it downwards, forward or sideways. If these shifts should prove to be considerable, measures would have to be taken to prevent the block from falling and damaging the ruins by crushing or jarring. In that case the rock would have to be anchored by strong cables to the rock of the canyon wall. If, however, the measurements should show hardly any movement, it would not be necessary to incur the great expense involved in the above procedure. At any rate it would be an excellent undertaking to remove most of the fallen rocks between the rock and the canyon wall, or to cover them with cement to prevent water seepage and the resulting expansion pressure during freezing weather. The writer urges that this primitive engineering should be repaired and preserved for the enlightenment of future visitors as soon as possible.

In conclusion the writer wishes to express his sincere thanks and appreciation to Mr. Hurst H. Julian, Custodian of the Chaco Canyon National Monument, without whose help, encouragement and suggestions this survey would have been impossible. He is also greatly indebted to the members of the staff of the School of American Research, especially to Dr. Edgar L. Hewett, Mr. Paul Walter and Mr. Paul Reiter, for their criticisms of the work, suggestions and interpretations. Last, but not least, the efforts of Mrs. Dorothy I. Keur have been stimulating and helpful.

List of artifacts found during excavations.

Sherds of pottery. (corrugated, indented, Chaco black on white.)
One sandal of, woven yucca fibre.
Several corn cobs and corn kernels.
Many small pieces of rope including one bound with feather shafts.
A small piece of woven material.
One piece of leather-like material.
A flat stone showing signs of a swastika design.
One large squash stem.
Several pieces of cedar wood.

I want to take the opportunity here, Chief, to thank Dr. Keur for his excellent report which contains so much good meat to us. I intend to sic the Engineers on that job again with his report in their hand and see what conclusions they will come to on his recommendations. Then we will ask Mr. Julian to include an item in his Six Year Program to cover any necessary work. I think Dr. Keur plans to be back in the Canyon next season and I will be very glad to recommend a permit if he wishes to go on with his work.

I have asked Mrs. Dorothy L. Keur, who did the work in the U2 Cliff Cavity, which was reported in last month's Supplement, to give us a report from the 'humanities against the 'statistical' standpoint. This diferentiation does not belittle the former report which was necessary and which gives the archaeological shark the condensed information of just what she found and how she found it; but the human side of these things has always interested me more and I am sure that is true with most of the readers of this report. I still have a vivid impression of the afternoon she and I sat on the floor of the office at Chaco and talked while she sorted the results of the week's dig and tabulated the dry facts about the..

THE EXCAVATION OF A CLIFF CAVITY.
Chaco Canyon, New Mexico.
By Dorothy L. Keur.

In walking along the base of the cliff marking the north side of Chaco Canyon, from that ancient apartment house now called Kin Kletso to the town beautiful, Pueblo Bonito, one is amazed by the many signs of former life and activity. Hardly a square yard of the face of the cliff which does not bear some evidence of the hand of man. There are rows of small viga holes where once rested the cross poles supporting some roof; there are broad black bands extending up the face of the cliff wall, where once fires blazed and left the tell tale smoke. There are talus slopes made up of debris containing countless squared building stones and potsherds; sometimes part of a wall still stands. Here, then, man lived, close to the sheltering rock. Many lines and groves indicate that stone axes and other stone tools were kept well ground and sharpened. The petroglyphs are legion, some showing no mean skill in execution; all difficult in ~~xxxxxx~~ interpretation; but indicating a rich symbolism. There are many natural features of interest, also, as crevices, cavities, great blocks of sandstone sheared off from the main body of the cliff wall, assuming threatening or grotesque shapes.

A stone's throw east of Kin Kletso, at the top of the talus, and at the base of the cliff, occurs a natural cavity, lying almost parallel to the face of the cliff, formed by an out-jutting slab of rock. It is fully eight feet long.

Here was an excellent place for an ancient inhabitant of the Chaco to store away some of his worldly goods. Alas for the foolish one with his 'barn' well stocked with supplies for his future. Time has passed; the ancient world of Chaco has been abandoned for centuries; he who cached his worldly goods here is no more. Packrats have long since discovered

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this hiding place. But it is highly probable that no fellow human being probed within, until Mr. Hurst Julian's curiosity and keen sight led him to it. As his humble assistant, I enjoyed the privilege of a large part of the excavating.

By lying flat on one's stomach, inserting a hoe, and slowly dragging out whatever material the hoe happened to catch, the inquisitive excavator brought to light what had been the worldly goods of a past life. The work was somewhat arduous, but never tedious, for this combination 'closet-and-pantry' had been well stocked. Despite the fine dust, drift, and copious pack rat manure, hardly a single hoeful came forth without some bit of dessicated food, or fragment of artifact. In a country where now only cactus, sage, and chico abound, once agriculture of a high order must have flourished, for in this one cavity along, almost 2,000 corn cobs were found; a few corn kernels, 200 pieces of squash and gourd rind, a few red beans; several small wads of raw cotton, and one small cotton boll. Other plant products were stored away here too, such as piñon nuts, arrowreeds, yucca seeds, and thousands of stripped yucca leaves. All of these were no doubt gathered by human hands for some purpose never fulfilled.

Of artifacts, too, there were many. Braided and twisted cord was found in abundance; somepieces as long as ten or twelve inches; much of it was knotted; some was bound with feathers. How many uses such cord may have had to an ancient inhabitant of Chaco, one can only surmise. Perhaps the owner of this 'closet' liked to collect cord, even as some scrupulously economic souls today. Of course it is always possible, too, that a great deal of this material was carried to its hiding place through the agency of pack rats. A prosaic interpretation, indeed, but the enthusiastic excavator must strive hard to keep sentimentality in check, in an attempt to be scientifically truthful.

Part of a fire stick was found, indicating the ancient way of striking a light. There were two fragments of arrow shafts, both notched, one bound with sinew, the other painted red; weapons which we have replaced with rifles. Many fragments of basketry and minute pieces of cotton cloth gave evidence of skill not surpassed by handiwork today. Such craftsmanship never failed to amaze the excavator, who has neither patience nor skill to produce anything comparable. There were also more than a dozen pieces of leather and leather thongs; and various potsherds, obviously belonging to different pots.

Most thrilling of all was the discovery of 1½ pair of sandals. Hunt as we could, the fourth sandal was not found. The complete pair was plaited of broad stripps of yucca leaves. The odd one was of very fine yucca fibre, beautifully woven, with a design on the under side. Centuries ago, feet protected by these sandals trod the very ground we were standing on; feet of fellow human beings who loved, hated, and feared, even as we today.

Another discovery brought us closest of all to the biological side of this past life. Among many bones of assorted varieties and sizes, belonging mostly to small rodents, there were two which were indubitably human. They were portions of the parietal bones of the cranium. Here in our trembling fingers we held the small pieces of badly weathered bones, the only remains of some mortal body, truly as frail as dust.

But the spirit of man lives on. In this day of marvels, we must still marvel at the daring of him who took fire and curbed its mighty force,

and turned it to his use. In this same cavity, so rich in indications of human life, evidence of fire was also found. The inner walls and ceiling were blackened with smoke. Sixteen inches below the mouth of the cavity was a layer of ash four to six inches deep, containing much burned and charred material. There were many reeds set in the earth, firmly embedded at either end, at the level of the ash. These might have been ceremonial in function.

He who utilized this cavity had apparently taken care to seal up a long crevice which occurred directly above. The crevice is approximately twenty feet long and extends directly upward for about six feet, then veers in an eastward direction ~~for~~ at an angle of 60 degrees. The sealing of adobe and the stones held in place by it were removed. The crevice was two feet deep in parts. No material was discovered here; but it is possible that the crevice was sealed to prevent the rain from running down into the cavity proper.

The story of this cliff cavity bears testimony to the life of an early American; to his courage, daring, and inventive genius. Hence it is of interest to us, who are of the same human essence; and who strive in much the same ways, to solve the problem of life.

Don't you think that is an interesting write-up, Chief?

After we went to press last month, I found I had forgotten to speak of the cover on that report. It was due to a sort of jam we got ourselves into over the month-end when the work piles up and we get short-handed. I wish we had some sort of a folding clerk or stenographer who could help us out over that rush period and then let us fold him up and put him up on one of the back shelves until the next month.

Well, that cover, which is our last one from poor Ed. Rogers, was of The Mittens up in Monument Valley, and if you will take another look at it I won't have to tell you why it is so named. It is only one of the many formations which you can see in a day's drive with Harry Goulding who has picked one of the best cooks outside the Park Service and talked her into settling down up there with him where you can sit on their front porch and look into a fresh world that man has not yet spoiled and see sun-sets that the Great Architect seems to build just for his own pleasure. It is one of the three biggest churches I know of, - - Tillie and Tom Boles being the janitors of the other two. Some day that country is going to be in a national park and if we don't watch out it will be cluttered up with a lot of so-called improvements like good roads and million dollar hotels and so on. Chief, don't let them do it. Busy as you are, the best investment you could make of a couple of weeks of your very crowded summer next year would be to go out there with the Wetherills and the Gouldings and the Wilsons. That country isn't just restful for the body; some way it sort of cleans out a man's soul. You will only understand what I mean after you go out into it. Pint size humans don't stand it very well and have to get together after supper and play cards or do some of the other every day stunts, but I'm paying you the compliment of believing you will like it and can sit down and soak it all in and not have to run from it or cluster up with a lot of human bugs to keep it from over-powering you.

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Say, Chief, Tom Vint has gone and pulled another publicity stunt for the Landscapers. You remember about four years ago when he went down into one of the farthest reaches of the Carlsbad Caverns and broke a hind leg and had to be packed out? At the same time he pretty near broke Tom Boles' heart because it was such good publicity yet Boles couldn't use it for fear it would flare back on his Cavern and scare people into believing the trip through there was dangerous; so he had to keep pretty quiet about it.

Well, this time the Chief Bopad pulled one in Bandelier National Monument and we are keeping quiet about it just like we would about a raise in our salary.

He fell out of a tree!

Now that it is all over and Tom is back to normal, we don't mind snickering a little about it, but he had us scared that night. Fortunately he fell on his shoulders and head, which seems to be a pretty safe landing gear for Landscapers.

He does pick out the funniest places for these publicity stunts. There he was at the bottom of Frijoles Canyon, so battered and sore that everybody thought he had broken his differential or something, and he rode up the 900 foot tram way to get out of the Canyon. There wasn't any charge about that elevator, but when he got to town, the elevator pretty nearly ruined him because in the La Fonda the elevator goes up among the highest priced rooms in the hotel and Tom was so sore by that time he couldn't walk around to the Scotch rooms and had to take a seven dollar and a half one next to the elevator.

I forgot to say it was a pinon tree and he was up there with the other nuts.

Bob Rose wrote Dr. Forbes, Director of the Arizona Agricultural Experiment Station, in part as follows: "Information you might have as to how the ancients determined the grade of their canals would be greatly appreciated. We have surmised that little pilot ditches were run in advance of the digging operations, and in this way the most satisfactory course was determined. However, about a week ago a young engineer mentioned the possibility of an instrument having been used consisting of a hollowed out trunk of a cactus to hold water, and a device mounted on this trunk to determine grade. The principle, according to him, hinged upon the fact that level of water in the log section was the reference level. The long stick device running the length of the log could be set at any desired angle with reference to water level. This young engineer was unable to give me any reference to such a device in literature; he could only tell me that a certain young fellow of his acquaintance had found a few scraps of wood which he took to be the pieces of such an instrument."

In reply, Dr. Forbes had the following to say: "I think the possibility of an instrument for water levelling such as you describe is most unlikely. A good irrigator can stand in the middle of a quarter section of land and tell if one side of the tract is six inches higher than the other; and the Indians with no instrument to guide them, probably could do as well in determining direction for a canal. The ancient canals in Salt River Valley were laid out on a flatter grade than the modern ones, - - quite practicable by following pilot canals or observing the run-off of storm waters. I am not

"I am not aware of any device in use by our Indians of this degree of ingenuity; moreover there are old ditches in localities far from giant cactus territory, and hollowed out logs would be still less likely.

"The modern Papagos take out their storm water ditches on judgment only, and judgment, plus trial and error seems to me most likely for the ancients."

All of which reminds us of a talk we once had with a Governor of the Territory of Arizona in which he told me of the use of what he called a 'belly level' in running some of the early ditches around Florence. You just filled a tub full of water and floated a board on the water and nailed a good sized nail in each end of the board, leaving the heads projecting above the board to form the angle you wished to run. The 'surveyor' laid down on his 'tummy' and, sighting over the nail heads, showed the rod man where the line would have to go. The Governor said he had run very good ditches with such an instrument, though at the time I was talking to him he had such a portly figure that I thought it would take a pretty tall tub to fit him.

It is a very widely held theory in the Southwest and has been so for many centuries, that when a potter creates the breakable, perishable body of a bowl, she at the same time creates the imperishable spirit of a bowl which can never die but which will be released and go into the spiritual world when the body of the bowl is broken.

I am minded to speak of this because when we were running from Santa Fe over to Aztec a week or so ago, we stopped at a little wide place in the road called San Ysidro and Hugh bought himself a nice Zia bowl. It had some rain cloud symbols and some birds on it and was pretty nice and he was tickled about it and wrapped it up in a couple of blankets and took a great deal of care of it the rest of the five or six hundred miles home.

Then when we arrived at the parking ground in the residential area at home, Frank, out of the kindness of his heart, helped unload the car and pulling an armload of blankets out, dropped the Zia bowl on the pavement and its spirit departed promptly into the other world. I think Hugh talked it all over with his gods but the net result was that he had a couple of handsful of broken pottery and the value of his bowl was considerably reduced.

Here's one we picked out of the air as we went to press last month:

FRANK FINKLEY,
COOLIDGE, ARIZONA.

HAVE HAD BRASS HATS VINT, GABLE, HAMMOND AND LANGLEY ALSO TILLOTSON OVER THE WEEK END CONSEQUENTLY WILL BE A DAY OR SO LATE GETTING OUT MONTHLY REPORT. HOPE YOU CAN WAIT AND INCLUDE IT IN YOURS.

SMITH.

Needless to say we held the press, so to speak, and the report came through promptly. Hereafter if they gang up on you like that, White Mountain, I suggest you let them climb your petrified trees while you get out the report. We just put this in because we told Charles we were going to and he didn't think we would.

O

I am sure all hands and the cook will be glad to hear that Winnie Julian has recovered from her operation where we left her in the hospital last month and is back at home in the Chaco Canyon feeling fine.

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Here is one we picked out of the mail bag which shows how Leonard Heaton is going after the educational side of his work.

"Dear Mrs. Udall:

"I am writing you for some information regarding the first telegraph office here at Pipe Springs National Monument as you were the first telegraph operator in Arizona and at this Monument. I wish you would answer the following questions if you can remember the conditions.

"First, I want to thank you for the picture and autograph sent me by your daughter, Pearl Nelson, and also the reason that I am asking for this information. I want to put back into the fort the telegraph instruments and fixtures in the office as they were when you were here and make everything look as near like then as possible.

"First, I would like to know just what part of the building the office was in? I have always understood that it was in the west end of the lower building on the second floor.

"Next, I would like a description of the desk and fixtures used in the office and where they were located.

"I would like to know how long you were here and how much business was carried on over the line, also of any outsianding messages that might have been sent in connection with Indian troubles or the like.

"Probably you will remember the two signs that were placed on the east side of the fort advertising the telegraph office and the wording that was on them. If so will you send that along with the rest of the information to be used in the restoration of the fort.

"I am asking this on behalf of the Office of National Parks, Buildings and Reservations."

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That is an effective and affecting tale Tom Charles tells about the poor little kid having to give up his sand, isn't it, Chief? He had Bob Rose and Hugh Miller most crying the first time they read it.

Looks like we ought to get some reason for the redness of those lakes. Maybe they are blushing with pride because the Great Architect has located them so close to Alamogordo and one of the livest Chambers of Commerce in the whole Southwest.

We are glad to know that Tom seems to know George Boundey. Some way that seems to bolster up our faith and if we can get a couple of the boys here in the office to go in with us we may be able to absorb some of those weather reports; I'm willing to believe a third of them.

Strange that both Tom and George should have reformed and joined the Park Service and are now living better lives.

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Well, I guess this cleans up the desk, though the chances are that this won't get into the mail until we remember something we forgot to remember to put in before we stopped. Anyway, we had some fun getting this out.

The Boss.

UNITED STATES
DEPARTMENT OF
NATIONAL PARKS

SOUTHWESTERN MONUMENTS

AREA 520.24 SQ MI.