The Southwestern Monuments Monthly Report for November, 1933

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SOUTHWESTERN MONUMENTS

Coolidge Arizona, Dec. 1, 1933.

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

Dear Mr. Director:

A busy month of November now becomes recorded history through the various reports that follow. Climatic conditions were quite mild until the latter part of the month when a snow storm north of the Mogollon Rim and cold rains to the south brought the ideal Fall to a close. Figures on travel for the northern monuments will read low until Spring. However, the pushing of the Civil Works Program, recently approved, will give plenty of problems of a different nature to look after.

Getting the recent work under way has been the main problem at Aztec, Bandelier, Chaco, and the next few days will find plans completely made for the Civil Works projects. It's a pleasure to see how the personnel is cautiously but speedily taking right hold of these new problems. There's nothing quite as pleasant as seeing all pull together promptly for all they're worth.

Report of Ass't. Sup't. Rose.

Upon the request of Architect Langley I drove to Flagstaff on November 28 meeting him there to talk over matters pertaining to Wupatki. Mr. Langley's special mission was to make a preliminary study of the future development of Wupatki National Monument.

On Tuesday Evening, the 28th we met Dr. Colton, Director and Mr. Hargrave, Associate Director of the Museum of Northern Arizona. We planned a trip out to Wupatki the next day. We visited Wupatki, Citadel and Wukoki ruins, the latter being off the Monument. It was our feeling that the matter of including all detatched areas of the Monument into one single area by addition should be considered carefully. Having detatched areas makes for certain difficulties of administration and development which would be greatly simplified by having the whole area in one unit.

While up there on this field trip word was received at Headquarters that Civil Works projects were approved. The Boss and

Chief Clerk Miller attempted to get in touch with me by wire at Flagstaff before our trip to Wupatki but were not successful. A heavy snowstorm was lashing northern Arizona disrupting practically all communication for 20 to 30 hours. However, we did go into the proposed C.W. A. work in a general way and from carefully prepared maps of Wupatki already made by the Museum of Northern Arizona and Colton and Hargrave's intimate knowledge of the work to be done, approved plans will be quickly forthcoming.

Leaving Wupatki, we drove to Flagstaff where Dr. Colton and Mr. Hargrave left us. Langley headed immediately for Grand Canyon and after about an hour I started from Flagstaff arriving at Williams for the night. The snow was banked along the road while in places the snowplow had not yet cut through. There were several delays of traffic for 15 minutes to an hour between Flagstaff and Williams.

Leaving Williams the following morning I drove to Grand Canyon. There I talked with Supt. Tillotson briefly on CCC matters and had an enjoyable hour with Ranger Naturalist Shellbach who is working on a revision of the Wayside Museum of Archeology exhibits plan. Temperature was about freezing and there were a few inches of snow on the ground. Mr. Shellbach gave the talk on the Story of Grand Canyon in the lecture room of Yavapi Station.

During the month more than 200 copies of a circular entitled "Protect the Ruins" were prepared for the CCC Camp in Bandelier. I might say that upon Acting Custodian Evenstad's request the matter of rules and regulations against vandalism was taken up with the men by the Camp Commander upon the arrival of the men in the Canyon. Shortly after that the Circulars I prepared were distributed to each man. Mr. Evenstad reports that vandalism will be far less than that which would be caused by an equal number of tourists. We're aware of new problems in ruins protection arising out of the location of camps of workmen in our monuments and in every instance the men are being informed clearly on the regulations.

At odd times cataloguing the Museum collection at Casa Grande has progressed. This is being done on standard catalogue cards approved by the Washington office. This should be done for Aztec Ruins National Monument before the present collection is disturbed or the new Museum building is completed. Mr. Faris realizes the importance of this and I hope in the near future to get up there to introduce the standard system.

AZTEC RUINS NATIONAL MONUMENT: Johnwill Faris, Custodian, Aztec, New Mex.

Visitors for the month total 361. This is a slight increase over the same month last year, which can probably be accounted for by the late Fall and the open passes. At no time since my arrival at Aztec has the number of visitors indicated less just how busy we have been. Cooperation of your office and of the Landscape and Engineering departments has been invaluable to us.

All work under our Public Works allotment is moving along even better than we had anticipated. With Oscar Tatman as my right hand man on the grounds we are making every effort to keep the work moving, and at the same time meet the seemingly hundreds of requests for reports.

It has been our good fortune to have with us Engineer Hamilton on several occasions during the past month. Mr. Bishop accompanied by Lyle Bennett also dropped in on us for a few minutes.

No doubt your office has received word that Earl and Ann Morris have a new baby girl who arrived November 9th. We are saving a portion of our Ruin that these girls might observe first hand proper methods of excavating and archeological research with their Daddy as instructor.

With every good wish to the entire force and our sympathies to Hugh Miller".

(In the Southwestern Monuments office we don't know whether Johnwill is sympathising with Hugh because of additional burdens connected with the recent works projects, or if Johnwill is under the impression that Hugh has recently gotten married. as to the latter, Johnwill must save his sympathies until later).

BANDELIER NATIONAL MONUMENT: M. O. Evenstad, Acting Custodian, Box 1321, Santa Fe, New Mexico.

Visitors for the month total 155. This is partly actual count and partly estimate for the days I have been away from the monument on ECW business. A rather heavy snow fell on the night of the 4th and continued on throughout the 5th. The total fall was about 12 inches. The weather warmed up in a few days, and most of the snow thawed in about three days. There are still traces of it on the north sides of the mountains. Except for the snow, the weather has been very fine. The thermometer has, of course, been below the freezing point every night of the month, with one or two exceptions, but on the whole we have not had any real cold weather. Our main activities for the month has been in connection with the ECW work and the establishing

of the CCC camp, further details of which are shown below.

ECW Activities: The Army temporarily suspended construction on the camp buildings on the 1st, due to depleted funds, and actual work did not start again until the 9th. At this time, most of the work has been completed, only the bureau personnel quarters being still incomplete. Some of the inside work is yet to be done. Officers quarters were made ready for occupancy yesterday, and officers moved in with their families then. They were quartered in the hotel's cabins up to this time. The heavy snow on the 4th and 5th caused the collapse of several of the tent quarters in the Los Alamos camp, and on the evening of the 5th, the CCC boys commenced moving into our more or less unfinished barracks. By the 7th, the move had been completed as far as the personnel was concerned, but supplies continued coming in for several more days, before the move was actually complete. This sudden change in plans caused many inconveniences, but everyone seemed to make allowances for the emergency conditions, and the camp was soon comfortably established even though the barracks were not ready for occupancy.

A separate camp was made for the supervisory personnel near the parking area on the canyon rim. This camp will be continued until the truck trail into the canyon is completed, which will be soon after the beginning of the new year if weather conditions permit. The first mile has been cleared for the grading crew, and some work has been done on the second mile, including some blasting of rock through a cut. A warehouse for the miscellaneous tools and supplies has been built on the canyon rim, and the combination blacksmith and machineshop is practically complete. A small powder house has been built at some distance from the other buildings. The shelter shed for the trucks and other equipment has been started, and should be done in less than ten days. This will practically complete the construction of the buildings for the ECW work.

Two cabins have been rented from the public utility operator for office and drafting rooms. A clerk from the CCC camp has been employed in the office as clerk, and I have good hopes that he will prove a competent man. Nine foremen have been appointed for the supervisory personnel, most of them men from the former Forest Service camp. These men are housed in tents, with wood floors, on the canyon rim, and are operating their own mess. Mr. Lyle Bennett, from the Landscape Department, reported for duty on the 16th. Mr. Charles Richey, also of the Landscape Department, spent three days here on official business.

The Acting Custodian has made a number of trips during the month, practically all of them on business in connection with his duties as procurement officer for the ECW work. Mr. Walter G. Abbell, who is the engineer in charge of the construction, also made many trips in connection with his

end of the work. Sufficient equipment has been secured by transfer from other parks for our use on the construction. Some miscellaneous tools have been purchased, but most of our tools have been transferred from the Forest Service. We have had very fine co-operation from the various Governmental departments we have dealt with.

With the exception of the materials needed for the truck trail construction, all materials connected with the ECW work has been brought into the canyon on the tramway owned by Mr. Frey. Mr. Frey has given me some interesting statistics on the transportation of these supplies, which follows:

An approximate estimate shows that about 1,500,000 pounds of supplies and materials, or 750 tons, have been transported, or 3,000 trips of the tramway made with an average of 500 pounds per trip. This includes 218,000 board feet of lumber, 42,000 feet of cellotex, 10,000 pounds of nails. The best record was 187,000 pounds in 3 days, while the camp was being moved. In 55 minutes, 3,600 board feet of lumber was transported. The tramway is 900 feet long, the drop is about 500 feet, the size of the cable is 5/8 inch. Two trucks were sent down after being dismantled and have been used for hauling the materials from the foot of the tramway to the camp. Mr. Frey reports that no damage was done to any of the supplies and there were no injuries sustained by any of the employees. This tramway will continue to be used for ECW purposes until the truck trail is completed. We believe that ours is the only CCC camp using this method of transportation.

CASA GRANDE NATIONAL MONUMENT: Hilding F. Palmer, Custodian, Coolidge, Ariz.

I have made so many reports during the month of November in connection with Public Works that I am late with my monthly report to you.

Much has been accomplished at Casa Grande during November and although we show a decrease in visitors over the same month last year it can be blamed solely on the weather for two or three bad days at the end of the month cut down our attendance which up to that time had been slightly over that of last year. 2025 visitors were given individual attention on 238 tours of Compound A and 227 museum lectures. These 2,025 visitors came in 593 cars from 40 states, Washington, D.C., Hawaii and 6 foreign countries; slightly over 60% , or 1,222 of these visitors came from Arizona; 15%, or 303 came from California, Texas being third with 68 and Illinois fourth with 51. In addition to these 2,025 who were personally contacted by the personnel and given guided service through the ruins and museum, there were 269 who entered the Monument and used some of it's facilities, but did not take advantage of the educational services, making a total visiting list of 2,294.

We are, of course, going into our busy season as far as visitors are concerned, and our visitors are improving in quality every day and require

more time of the educational personnel.

The weather was ideal up until the last two days of the month when for those two days we had 1-1/4 inches of rainfall with a consequent drop in the temperature. The average maximum temperature for the month was 80.2 degrees, the average minimum was 37.5 and the average was 58.85. The maximum temperature was 89 on the 16th and the minimum 28 on the 6th. Total precipitation was 1.29 inches. There were 25 clear, 2 partly cloudy and 3 cloudy days. One or two days before the rain were very disagreeable on account of bad dust storms.

The Public Works Program is going along nicely. Work was concentrated on the walls around the Administration Building and as a result they are ready for the plasterers who will start Monday morning. These walls have permitted the removal of temporary guard rails, wooden fences, etc., and the Administration Area now presents a very much improved appearance. They also prohibit people from going to the ruins of Compound A without coming to the Administration Building where they are met by a Ranger.

No more work was done on the Camp Ground project during November. The project is practically completed with the exception of the building of a swing or two and a teeter for the children. This will be done during December.

The water extensions project is completed. All lines have been enlarged to 1-1/2 inch; five lines have been run to each building in such a way that any part of the building can be reached with 50 feet of hose; the storage capacity of water was doubled by replacing 2 - 500 gallon steel tanks with 2 - 1000 gallon steel tanks.

The repair of two quarters is proceeding slowly. Painters are now at work. This Public Works Program has given work to fourteen men during the month. The monthly payroll was $1,025.40.

Our other project, the construction of a new quarters, is not started yet. This project will be contracted and working drawings are not yet available.

The month has been a very satisfactory one. Everyone has been busy and all work is caught up and we are ready to go on the new CWP as soon as we get definite instructions.

CAPULIN MOUNTAIN NATIONAL MONUMENT, Homer J. Farr, Custodian, Capulin, N.M.

I have the following report to make concerning Capulin Mountain National Monument for the month of November, 1933.

Weather, the most beautiful and warmest November this country has seen in twenty-five years. We have not had a cloudy day this month.

Travel has been fairly good this month, approximately six hundred visitors although the road has been almost impassable. A great many are taking the trail to the top. We hope to be able to place the proposed trail and the road in first class condition with the Emergency CWP aid.

General trade conditions in this territory are very very bad, and it appears to the writer that the depression is at it's very worst in this community.

CHACO CANYON NATIONAL MONUMENT, Hurst R. Julian, Custodian, Crownpoint, N.M.

The month of November, 1933, gave us 421 visitors who registered from eleven states and the Republic of Mexico.

There seems to be a dearth of news for this report, nothing unusual has occurred, nothing spectacular has been accomplished, and there is little to report.

Quite a bit of my time has been spent in the office, working out plans for the development of the Chaco, such as the "Six Year Development Program", the various public works projects, and the matter of the Chaco road. Mr. V.W. Marquis, of the Bureau of Public Roads, has been here twice inspecting and reporting upon the road project, but as yet, no dirt has been turned.

Some time has been spent going after, and answering telegrams which concerned development projects. A telegram is just a telegram to most of the units of our organization, but a telegram to the Chaco often means two days off to town to answer it, at considerable expense. But, if they will do any good, I am in favor of them.

We have been giving the visitors "service plus" on several occasions during this month. A rather plentiful snow fall, which melted quickly, left the freshly graded and soft road in a terrible condition in spots. I spent several days patrolling the road and digging visitors out of mud holes. Shovels, jacks, chains, and tow cables were standard equipment for a while. I also carried ten extra gallons of gas and a quantity of water. Once I had to go after a new battery for a stranded motorist. The gratitude of a rescued traveller is touching. They all seemed to feel that the "Office of National Parks, Buildings and Reservations" was the most eleemosynary and altruistic branch of a benevolent government. In fact, I find them more interested in my tow chain than they are in my lectures on the ruins.

The Griffin Lodge being closed, a number of visitors found themselves without the necessary accomodations, these we tried to supply at the Custodians residence. A number of very interesting people were met, and several gratifying contacts were made because of this condition.

The road to the north has been in fair shape during most of the month, it seldom gets very bad, although Mr. Vreeland, who comes with an introduction from Mr. Albright, could not get his trailer down the hill. Perhaps it would be more accurate to state that he felt that if he did get the trailer down the hill, he certainly would never get it up again. Unfortunately, I did not get to see the Vreelands, when they arrived I was out working on the southern approach road and when I came back to the Canyon, he had departed. However, it is perhaps the good fortune of Mr. Vreeland, as he received the expert attention of the H. C. W. P., in my absence.

The through traffic on the Chaco road, from the San Juan Basin to U. S. 66, shows signs of a steady increase, perhaps the news that work was being done on the road lured some of the traffic this way.

EL MORRO NATIONAL MONUMENT, Evon Z. Vogt, Custodian, Ramah, New Mexico.

The month has rolled around. The most notable happening is the letter I have from Chief Engineer Kittridge notifying me of the Civil Works Program as relates to my Monument. 50 men who can live at home are to be employed. I am now trying to make a set-up so as to cover the most pressed cases within this region who can go to work right away.

Unfortunately, I have not received Circular No. 1 on the Civil Works set-up so I am in the dark as to how to proceed. If you have a copy of this circular please let me have one at once.

Snow is liable to fall at any time now, and thus delay what we plan to accomplish and perhaps even stop some of the work planned. I am counting, of course, on all the help you can give me in a technical way, and in an advisory way.

I have been chairman of the Relief Committee for Western Valmecia County for a number of years now, and have dealt out a lot of Red Cross flour, etc., have made a study of the cases and families and know pretty well how to pick the labor so the greatest good can be accomplished.

Today I am going to Santa Fe on some land business and while there, I will get lined up on road equipment in case we need it.

I am most anxious to carry out the program with the greatest of care and efficiency and yet to do nothing at my Monument or have any thing done which will in any way detract or spoil it. It is so lovely now, that anything that is touched there must be done only after careful thought and advice.

The weather is still wonderful, but we do not and never will forget that we are now in the anniversary of the terrible snows we had in this month in 1931. Sheep and cattle are doing fine, the steers are not moving on the market to any extent.

Some are gathering their steers, expecting buyers who have paid the suicidal price of 3¢, but there is no certainty of sale at any price.

Sheep men are through shipping lambs which brought 4 to 5¢ for the most part. Our lambs weighed 56 lbs. and 2,500 head of them brought $5.05 per hundred weight. I delivered them on the cars at Grants on the 12th. All we billed to feeders near Greeley, Colorado.

The Indian lambs weighed out at Gallup were lighter than usual, and brought around 4 and 4-1/2¢ per lb. With the new Corridale and Romney rams which Mr. Collier, the Indian Commissioner, has had the Indians buy, I predict

a very much better lamb from the Indian sheep in a few years.

Farmers are getting 3¢ for beans and 1¢ a lb. for their corn so their prices are still down to a low price.

Travel has been light, but we have had a number of distinguished parties. One of them includes Witter Bynner the poet and writer of Santa Fe, and Mr. D. C. Kideer of Yosemite National Park, whom I take to be a National Park Official.

The cement capping I put on the east cattle guard looks like a good cure despite the cold weather at night. The new east gate is also a great improvement, but I wish to trim the gate posts off so that they will be of uniform height.

Road engineers are still surveying, but no construction started. With snow imminent, we really do not expect much work on the road this season. The Public Works Program was well planned and intentioned, but it's wonderful benefits have not reached our part of Valencia County.

I have read your last report and the Park Service Bulletin with great interest.

By the way, the map of the United States of the Recreational and Park Areas in the nation are in great demand among the homesteaders, and even some of the schools, which have no allowance for maps, have asked for them so I am making good use of them.

GRAN QUIVIRA NATIONAL MONUMENT: W. H. Smith, Custodian, Gran Quivira, N.M.

For the month ending November 20, I have registered 370 visitors, entering the Monument in 90 cars. I am boasting of this showing an increase of about 159 over the same month last year. The number of tourists varying from but very few some days to as many as 108 on October 29. That was my busiest day. I made a number of museum talks and as many guided trips through the missions and the Indian pueblo.

October 30 and 31, and November 1, were spent to do the most good where badly needed. I spent these three days repairing the road of approach and the stock guard. The time was undoubtedly well spent too. As we got the road in comparatively good shape and a temporary stock guard installed. This put the road in shape to where one car get over it fairly easy and eliminates the gate troubles. Weather conditions for the past month were the best I ever saw in this region at this season. There has only been two snows this fall. One came November 2nd, and another light skiff on November 5th. Since then, the weather has been warm. Beautiful clear days. This weather has been fine for travel, which possibly is one reason for the increase in travel, but I don't like to think so. I want to think that our Monument is gradually coming into it's own.

It was with great sorrow that I learned of Ed Roger's death, in last month's report. My sympathy goes out to Mrs. Rogers at this time of sorrow. Although I was not personally acquainted with Mr. Rogers, I feel sure that we all will miss him.

MONTEZUMA CASTLE NATIONAL MONUMENT: M. L. Jackson, Custodian, Camp Verde, Ariz.

Report time has arrived and not a great deal of interest to report. November is usually a slow month at this monument--a between season period--the summer visitor has come and gone, and a little early for the winter visitor.

Have had 696 visitors from twenty-one states, Alaska and Canada. The weather has been ideal in our section of the country. Roads have been in good shape, but are getting a bit choppy or corrugated due to the long dry spell.

On the 24th of October, we received a wire that Hugh Curry, who has been a ranger here for the past fifteen months, had been dropped from the service through the 'Reorganization Act'. Hugh made a good ranger while here, and we wish him all kinds of success at whatever he turns his hands to.

You can see by the above paragraph that I have been swinging the job alone for the month, with the exception of two or three days during the latter part of the month, and am afraid that the same brand of service has not been given as heretofore.

With the Verde dam assured and with the several CCC camps near by, we predict a better year than the last two or three have been.

We have been notified of the possibility of our getting some men under the Civil Works program and naturally we are looking forward to their coming as there are a lot of things that need to done here. I am expecting some engineer to wire me wanting to know "Where to get off" as the engineers will no doubt come in and line up the work that is to be done.

PIPE SPRING NATIONAL MONUMENT: Leonard Heaton, Acting Custodian, Moccasin, Ariz.

There is not much to report this month, as there has not been very much doing. Our weather has been ideal for fall, very little cold and frost at nights. The days are just right for working, neither hot or cold, so I have spent most of the time in moving the garage and other buildings that I had by the meadow, making irrigation ditches for the campground trees, and in the meadow so that it all could be watered with less waste.

Have had some work done on the house and grounds this month. I expect to set out about 75 trees Saturday in different parts of the Monument.

I have reported in a letter of November 20th, of a visit of the Indian office men, Dr. Farrow and Mr. Dabbs, so will not recount it here.

I have tried to keep an accurate count of all cars, trucks, wagons, horseback riders, and live stock that have come through this monument since October 24th to November 23rd, they are as follows:

Arizona -	trucks	101	passengers	52 trucks
"	cars	168	"	63 cars
Utah	trucks	34	"	17 trucks
"	cars	43	"	22 cars
Calif.	trucks	5	"	2 trucks
"	cars	77	"	31 cars
N. Y.	"	4	"	1 "
N.M.	"	1	"	1 "
U.S.D.I.	"	4	"	2 "
Horseback	riders	148		
Wagons		17	"	13 wagons
	Totals	602		205 vehicles

Of this number I have contacted 73 and gave them the usual visitors trip through the place. The rest, 529, have been local people going to and from town or to their places of business. I really did not think there was this much travel by this Monument, and am surprised at the amount of local travel in such hard times as we seem to have up here.

During the month 1,175 head of live stock have been driven through the Monument to pasture areas and to market.

TUMACACORI NATIONAL MONUMENT: Geo. L. Boundsy, Custodian, Tubac, Arizona

Visitors for the month - 924.

Winter visitors are beginning to arrive in Tucson which accounts for the increase in number of visitors.

The trees are beginning to take on the fall colors and as the weather has been ideal, many of the summer birds are still with us.

Four different parties during the month came to look over mission timbers in search for termites. Two different species of insects are at work on the mesquite trees, but neither danger the life of the trees.

The Mexican Government doing away with many of the restrictions in entering Mexico has increased the number of visitors considerably, but many of the visitors seem to have difficulty in obtaining guides for the different points of interest. If the Mexican Government would print some descriptive matter for distribution from this monument, many more visitors could be sent into Mexico.

The heads of families in our vicinity are all anxiously waiting for work to start at Tumacacori. Twenty-five men employed here during the winter months will help this whole community wonderfully.

WHITE SANDS NATIONAL MONUMENT: Tom Charles, Custodian, Alamogordo, N.M.

The White Sands National Monument has a fervent friend in the person of Jack Voyde, a local photographer and tailor. For the past few months Mr. Voyde has given his time largely to the manufacture of White Sands products, mostly statuary, placques and other articles of plastic art.

When the first Anglo-American families came to this vicinity about a half century ago they found that many of the Spanish American homes were finished on the inside with a marble like coat, usually a snow white but frequently in delicate shades and mottles. This was the first American knowledge of the uses of the Great White Sands. Investigation revealed that these early settlers heated the White Sand until each tiny crystal popped like a grain of popcorn. When the tiny crystal "popped" it was dehydrated and ready to be pulverized. When mixed again with water and spread upon the walls it formed an alabaster coat of snow white plaster paris, particularly clean and inviting.

Manufacturing plants have been set up from time to time and White Sands products shipped from New York to California. Women's Clubs have used little slabs of White Sand for place cards at their most exclusive parties; a few of Alamogordo's leading citizens have built their homes of these White Sands. The Sands have been used for many other purposes, but probably no one has been more successful in his accomplishments of making use of the White Sands than the present experimenter, Jack Voyde.

I am sending you a sample of his handicraft, Mr. Superintendent. If you think it is good enough you might pass it on to the Director, we will get you another.

Voyde combines his art of photography with his skill as a moulder and and produces remarkable placques of renowned scenes and characters. An old church is sprinkled with the sparkling crystals of White Sand and it looks like snow. Candlesticks, paperweights and picture frames are mixed with marble dust and mottled with wonderful effect. But probably the most successful of Voyde's efforts is the combination of his White Sands photographs mounted in a White Sands picture frame.

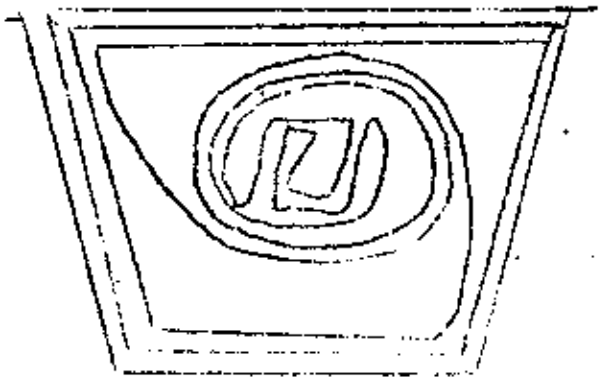
It strikes me that this activity should develop into a source of revenue when the Park Service really takes over the Sands and has even a partial control of the hundreds of daily visitors.

The work that Mr. Voyde has done was without thought of remuneration. It was just a hobby, an opportunity to let off steam along the lines of his inclinations. He has sold nothing, has so far offered nothing for sale. It is some satisfaction to him and to other White Sands enthusiasts that an art store in El Paso is now urging a wholesale manufacture of some of Mr. Voyde's best pictures.

November weather has been ideal - roses still in bloom, figs ripening on the trees here at Thanksgiving time. The recreational value of the Great White Sands is therefore at its very best. This week work was begun on a

$109,000 overpass of the Southern Pacific R R, part of the White Sands highway. We hope to get one more project on that highway early in the coming year.

Recently the Custodian found a very beautiful prehistoric bowl; where the flood waters had uncovered it in a deep arroyo. It was red on terra-cotta, with an endless design, (Copy inclosed). Can you tell me if this peculiar swastica design has any significance?



We have the following report from Associate Engineer Atwell, who is in charge of CCC work in Bandelier:

"Acting Custodian Evanstad has agreed to cover all monumental matters in his report and I all CCC activities, so our reports will not duplicate. For that reason I will stay with the new camp and its work.

The establishment of the camp in Frijoles Canyon of Bandelier National Monument was the main engineering activity during the month of November. Camp F19 of the Forest Service was to be transferred to Bandelier as NM-N on November 15th. Previous to November 4, the army had partially completed the barracks, but had suspended work several times on account of shortage of funds. On that date, 24 inches of snow fell and Camp F19 was flattened to the ground. Transfer of this camp started at 9 P M. on the following night with the arrival of several score of men with no sleeping quarters, fuel or food. These men occupied the partially completed barracks, but anyway the birth of Camp NM-N had arrived. As additional funds became available, the camp was further constructed with carpenters working over bunks and luggage. To date, the camp is not completed although many CCC men have been continually on it for three weeks.

During the construction of the camp, as there was no road of any kind into the box canyon there it is situated, all of the material had to be lowered and hauled over the cliff on Mr. George X. Frey's private e blevator. Mr. Frey

operated the machinery himself, and as yet, has his first egg to crack. The material moved consisted of two trucks, a quarter million feet of lumber, kitchen ranges, an electric light plant and enough incidentals to bring the tonnage to a million and a half pounds. Mr. Frey has constructed a novel stretcher where he can hang a crippled workman on the cable to be removed from the canyon.

The camp is well supplied with material to work with. From Chief Engineer Kittredge's office we secured eleven trucks, two compressors and two tractors. From the Forest Service, we secured a ripper, a tumble bug scraper, some rolling stock and small tools.

Although the camp has been in Frijoles Canyon since the first week in November, the men worked for the Forest Service until the 15th, when they were transferred to this Monument. The work for the two weeks that we have been operating since taking over the camp has consisted of:

1. Erecting small construction buildings for the work, as garages for the trucks, tool sheds, warehouse, blacksmith shop and powder houses.

2. Placing 10 miles of approach road into the Monument into shape with tractors and graders, thus assuring a fair road from the highway to the Monument.

3. Clearing, grubbing and burning the brush on the right-of-way for the first mile and a half. All timber of suitable size was cut into four foot lengths and delivered to the camp for fuel. The brush was piled in small piles and burned in the center of the right-of-way, great care being used to that no trees standing were scorched.

4. Rock cuts have been drilled and partly shot. Very good success was accomplished in the shooting. No material was wasted and the material was broken very fine. It could easily be fresnoed.

5. Grading with the tractors, tumble bug and bulldozers is getting the first mile into shape.

6. A ten man crew has started to reconstruct the trail from the hotel to the Rio Grande.

If the weather permits, the truck trail will be well into Frijoles Canyon by Nov. Yours, Art Boss, you could help a lot if you would arrange to have Sol take over the duties of J Pluvius for the coming month.

In a second letter, Mr. Atwell reports as follows:

I do not need anything and I have no complaint to make. This is just a news letter regarding the CCC camp at Bandelier National Monument.

The camp strength is not up to normal on account of men being away on leave. All should return in a few days. We will weed out the "no goods" and get to full strength before the closing day, November 30. The army is not turning out our quota, but as soon as we get plans enough O.K.'d, we will get 175 men.

The line is cleared to Sta. 55 as far as plans are approved. The grubbing will be that far Tuesday. The grading is getting well under way, and we will have the sod broken that far in a week. As there is no heavy grading on the first mile, and the cost of making the road wider than 12 feet will cost practically no more as all it consists of is blading out the ditches and putting up the shoulders, I will build a standard road across the top of the mesa as far as I can with the machinery without increasing the man output. From Station 80 on, the cost would be greater, so I will construct only a 12 foot trail.

Wednesday we will use the surplus men on repairing the first few miles of the trail down Frijole Creek to the Rio Grande. We are also cutting some wood for the camp. We have the tool house completed, the blacksmith shop and repair sheds nearly finished and are ready to construct the car sheds. We have invoiced every tool and dojigger that we took over from the Forest Service. Martin has a CCC clerk and his records are getting into shape. Martins is doing the buying and that is a job when he has to get a hundred little items.

The water system plans will be on the way to you in a few days.

IN GENERAL:

1. All reports indicate that weather conditions have been unusually fine during the month of November. At this time one year ago winter had descended in all its fury on the northern areas of our district.
2. The reins of our organization have been tightened considerably in interests of efficiency in handling the various works programs now under way. Generally speaking, book and paper work and plans have been handled promptly and been kept strictly up to date.
3. We're keenly aware of the added responsibilities with reference to vandalism which these projects are bringing and men in charge at the various monuments effected are acting on these problems in conjunction with camp officers and foremen.
4. In the Southern monuments of Casa Grande and Tumacacori the rising tide of winter travel is becoming effective. We're endeavoring, despite the work of special projects, to deliver the same good brand of public contact services.

That ends a month of considerable activity and at least some accomplishment,

Cordially,

Robert H. Rose,
Assistant Superintendent.

UNITED STATES
DEPARTMENT OF THE INTERIOR

Office of National Parks, Buildings and Reservations

PETRIFIED FOREST NATIONAL MONUMENT
Holbrook, Arizona

December 1, 1933.

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

Dear Mr. Director:

The narrative report for the month of November, 1933 is herewith respectfully submitted:

GENERAL.

The separation of J. D. Kirk, seasonal Park Ranger, was effective November 20.

WEATHER.

The weather continued clear and mild almost throughout the month, with the exception of the 1st, when the first trace of snow fell. The snow, however, melted as fast as it fell, and the balance of the month, up to the 28th, resembled summer time. On the last three days a cold wind came up, the days were cloudy, and about an inch of snow fell on the night of the 29th. High temperature for the month was 73 degrees on the 27th, low was 22 on the 23rd. Total precipitation was .65 of an inch. Mean maximum temperature was 61.2 degrees, and mean minimum, 27.6 degrees.

ADMINISTRATIVE.

All office work, including regular and special reports, has been kept up to date.

I have inspected the Monument regularly during the month, and everyone has been working in a satisfactory manner. The road, with the exception of the places where the shoulders are washed, is in good condition for this time of the year, being in much better shape than U. S. Highway No. 66 is now.

The approach roads just outside the Monument are fair. U. S. No. 66 to the east between Holbrook and the state line, is under contract for grading and surfacing, with the new right-of-way running almost parallel and slightly to the north of the old road. The paving of U. S. No. 66 between Holbrook and Winslow has been completed. U. S. No. 260, crossing the southern part of the Monument, is in good shape, being one of the best graveled roads in the state.

PUBLIC WORKS PROJECTS.

Work on the trails in the Rainbow and Third Forests has been discontinued due to the exhaustion of funds. The Rainbow Forest trail is oiled and completed, the Third Forest trail is oiled for about half its length, and the

Second Forest trail is complete as to grading and graveling.

The trail to Newspaper Rock provides one of the most interesting views of points of interest in the whole Monument. Starting at the top of a high cliff, stone steps go down through a natural fissure to a talus slope dotted with huge blocks of sandstone. These blocks of sandstone are the canvas upon which the prehistoric people practiced their art. The pictographs, on Newspaper Rock in particular, are so numerous that some of them overlap, and most of them are so clear that they look as though they were carved only a short time ago. The trail winds around down through the blocks to the valley below, crosses a small arroyo, and passes on to the "Origin of Life" cave. Each turn in the trail brings more pictographs to view, and the project opens up what is destined to be one of the most popular side trips in the Forest. The trail, 1,105 feet in length, to date has been staked and cleared, with 23 stone steps and 2 large flagstone landings in place.

In the First Forest, the location for the Eagles Nest Rock road has been surveyed and staked, and 700 feet of assorted sizes of corrugated culvert have been ordered through Field Headquarters. This work has been approved by Assistant Landscape Architect Harry Langley.

The well rig arrived during the latter half of the month, and was set up ready for work at noon on the 24th. One driller, one driller's helper, and one laborer were secured from the Reemployment Office in Navajo County, and the balance of the month was spent in pulling the 634 feet of "frozen" casing in the well, building a shelter over the well site for the cold weather now overdue, and at present, cleaning out the hole to its former level. The well casing from the Indian Service supply at Fort Wingate has been brought down and everything is in readiness to resume operation.

Work on the overpass over the Santa Fe Railroad, under supervision of the Bureau of Public Roads, progressed rapidly, but the contractor was held up by delays in securing materials, particularly structural steel. The piers and abutments have been poured, and at present the contractor is awaiting arrival of the structural steel to complete pouring of the concrete on the top slab. The work is approximately 55% complete.

The bridges over dips, also under the B. P. R., have also been coming along in good shape. The concrete on the most northern bridge is completely poured and is now curing. The next bridge to the south is in the process of completion, while the third bridge under construction has the concrete base poured and curing. This work is approximately 55% complete, and all materials are on hand.

CIVIL WORKS PROGRAM.

On November 9 we were requested by telegraph to notify the office of the Chief Engineer as to the number of men who could be employed on a Civil Works Program between November 15, 1933 and February 15, 1934. It was stated that available equipment must be used or such as could be borrowed from cities, counties, or other agencies. As we had estimated for a road connection between the Painted Desert and Ganado with the idea of a good road between the Petrified Forest and Canyon De Chelly to use 400 men or more, during the next week I contacted various county officials, and the Superintendent of the Western Navajo Agency at Leupp, the Superintendent of the Hopi Agency at Keams Canyon, Superintendent J. G. Hunter of the Southern Navajo Agency, and others for the purpose of locating such available heavy equipment. Enough tent housing equipment and heavy road equipment was promised to carry on the work as estimated should the project have been approved.

TRAVEL.

The travel has continued good, the month being the best November recorded. The total through the Forest proper was 5,200, which was 1,825 more than November, 1932, and 282 more than November, 1929, the best previous November on record. A tabulation of this travel follows:

For the month, Petrified Forest section,	cars,	1,766,	people	5,200
Previously reported.....,	"	2,448,	"	7,269
Total to date.....,	"	4,214,	"	12,469
For the month, Painted Desert section..,	"	2,432,	"	8,835
Previously reported.....,	"	3,388,	"	11,928
Total to date.....,	"	5,820,	"	20,763
Grand total for the month.....,	"	4,198,	"	14,035
Grand total to date.....,	"	10,034,	"	33,232
Grand total same month last year.....,	"	2,690,	"	7,966

Every state with the exception of South Carolina was represented, also the territories of Alaska, the Canal Zone, Hawaii, and the Phillipine Islands. Foreign countries registered were Australia, Canada, China, Denmark, England, Holland, Japan, Korea, and Switzerland.

SPECIAL VISITORS.

Mr. and Mrs. D. C. Kidder and party, from Yosemite, visited the Forest on the 4th. Mr. G. A. Waring, U.S.G.S., also came through on that day. On the 6th, Mr. and Mrs. Eddie Peabody and party, from Riverside, California, were interested visitors and interesting people. Ranger R. R. Williamson, Elsie Pike, and Carol Tylor, all of Grand Canyon, spent a short time here on the 12th. Cay Rogers came down from Santa Fe on the 12th, and after spending three pleasant days as the guest of the Superintendent and wife, left for Phoenix in company with Miss Mabel Brown on the 15th. "Cozy" McSparron and wife, of Chin Lee, also were guests of the Superintendent during the month, arriving on the 9th, and leaving on the 12th. Assistant Architect Harry Langley breezed in on the 22nd, and left on the 26th, spending four days in looking over Public Works and proposed Civil Works projects.

MISCELLANEOUS.

On invitation of the President of the Holbrook Chamber of Commerce, I proceeded to Holbrook on November 30 and met with that body, and others, for the purpose of discussing with Governor B. B. Moeur of Arizona the proposed Painted Desert - Ganado road towards Canyon De Chelly National Monument.

The Governor had been taken over the existing secondary road from Chambers to Ganado by Superintendent Hunter, Southern Navajo Agency, the day before.

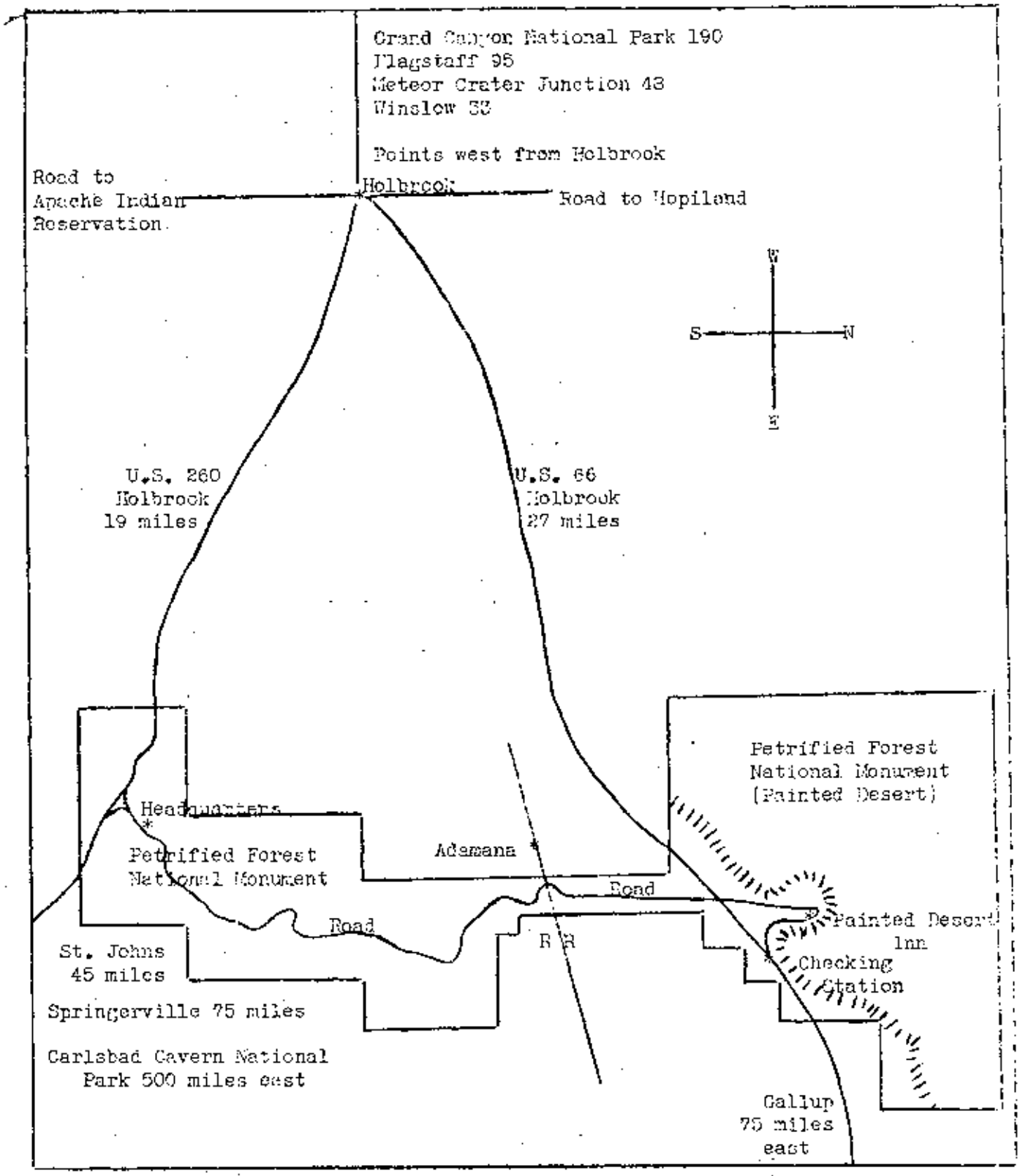
The Governor expressed himself as being 100% in favor of this proposed road and dispatched telegrams to Senator Hayden, Congresswoman Greenway, and others, endorsing the project. I understand that resolutions in favor of it, supported by letters from the Board of Supervisors of Navajo and Apache Counties, and others, went forward by air mail November 29.

Very truly yours,

Chas. J. Smith

Chas. J. Smith, Superintendent.

Sketch map of Petrified Forest National Monument showing the location of roads and trails in the vicinity. Chas. J. Smith, Superintendent.



SUPPLEMENT TO THE
NOVEMBER REPORT OF THE SOUTH-
WESTERN MONUMENTS
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(Dealing with people, "Shop Talk" and news of interest)

First place in this Supplement is given to Leonard Heaton, Acting Custodian of Pipe Spring National Monument. Mr. Heaton has been gathering data on the first telegraph station in Arizona. Pipe Springs became the first telegraph station in the state when the Deseret Telegraph line reached there in December, 1871. This line is still in use as a telephone line running into the town of Kanab, Utah.

Mrs. Eliza Luella Stewart Udall, now residing in Mesa, Arizona, was operator at this station for less than one month. Mr. Heaton wrote her recently regarding the location of the telegraph office in Winsor Castle, the old Fort at Pipe Springs. In reply, Heaton received the following reply from Mrs. Udall:

Mesa, Arizona,
October 21st, 1933.

Mr. Leonard Heaton,
Moccasin Springs, Arizona.

Dear Sir:

"Your letter of the 2nd instant received concerning the telegraph office at Pipe Springs. As it was more than sixty years ago my memory may be faulty. However, I will answer your questions to the best of my ability.

"I think your information concerning the location of the office is correct, the West end of the lower building on the second floor. The small unpainted pine table that the instruments were on was on the north side of the room. The instrument consisted of a key and a little box relay or receiver in natural light wood.

"There was a cot or couch in the room, on which I slept and also a number of chairs, perhaps not more than two. Also my trunk and belongings were here as well as my room as well as the office. Everything was quite orderly.

"There were no Indian troubles or outbreaks while I was there and no important messages. In fact I was there less than a month and everything was so peaceable that Mr. A. P. Winsor who was in charge of the Fort did not think it necessary to keep the office open.

A.

"It was from the Kanab, Utah Office that Major Powell sent his messages and I was operator there for more than seven years before we moved to Arizona in 1880.

"There was just one sign at that time and it read "Deseret Telegraph Office" as it was on the L. D. S. Church line.

"Sup't. Amos Milton Musser came to Kanab and opened that office in Bishop Levi Stewart's residence then took me in his buggy to Pipe Springs, connected the instruments, and sent message to the Deseret News(Salt Lake City) stating that the office was opened with Miss Lucila Stewart, Operator. As I remember, it was the last of December, 1871 or about the first of January, 1872.

"I believe I have answered the questions you asked. If I can be of further service, let me know.

Sincerely yours,

Eliza Lucila Stewart Udall"

Mr. Director, this letter is valuable history and this Supplement, we feel, would be worth its while if it stopped right here. Mrs. Udall, an elderly lady now, lives in Mesa which is about 50 miles from Coolidge. Year by year the old original pioneers pass away sealing up original sources of information forever. We hope Leonard will continue to keep in touch with Mrs. Udall who could give invaluable suggestions on the restoration of the various rooms of the old Fort as it was in the pioneering days. Pages K and L of the September, 1933 Report Supplement contain an historical account of Pipe Springs prepared by Mr. Heaton.

****

Along the subject of history, we have this one from a ranger at Casa Grande who was beginning a tour of the Casa Grande and Compound A. He was mentioning the visits of the early Spanish missionaries and explorers and commenting on the usual fact of the visit of Padre Kino to Casa Grande in 1694.

Lady Visitor interrupts: "Oh yes, Kino ! -(as she brightens up) at the American Legion Convention last year, the Auxiliary did carried little dolls - one of them was Kino - his face was a dried apricot and with his black robe and cape it just looked like a Spanish Monk...etc. etc.---Isn't it interesting !"

****

Under date of November 24 Johnwill Faris of Aztec writes Earl Morris, Box 500, Boulder, Colorado, on the progress of work. For general news, excerpts from the letter follow:

"I am very glad to report, Earl, that we are moving along at a very good pace. Today twenty one men with three teams moved 104 loads of dirt into the field just south of the ruin. As yet we are not finding a great amount of stone of any nature but then we are reaching the point where it is beginning to show up and I would not be at all surprised that tomorrow we will encounter a good supply of rock. To date we have hauled out three hundred nineteen loads. Almost two hundred of these loads went on the road leading from the town road to the house on in the lane. We will have no trouble in getting rid of the earth. The rock that we get from the debris we are leaving more or less in rows and in a few days after we finish I plan to have a man or two go over these piles and locate for us the ones that we find suitable for building. Oscar and I thought this better than trying to pick out the rock as we go and thus get in the way all of the time. We are most certainly open for suggestions and should any occur to you at any time on any line connected with the ruins I wish you would feel free to offer them. I figure that the dirt will run as we are doing it, about seventy five to eighty cents a yard. I might say that we have three teams and six wagons of the dump type you mentioned and while one is being loaded the other is being hauled away and dumped. So much for the dirt. I will try to keep you posted from time to time as to our progress"

****

Futther on in the above letter, Mr. Faris discusses the tests for ground water made about the Aztec Ruins. We quote:

"About the drainage, Mr. Morris, Engineer Hamilton and myself with Oscar sunk three test pits the other day, one North of the Museum steps about fifty feet, another at the west wall about the same distance and out and one in front of the blacksmith shop. We find water about the twelve foot line in nearly every case. One thing is very bad; In a test pit in the roofed Kiva we struck water at three feet and the level of the floor is some three feet lower than the level that we struck water at the north wall. In testing several walls to see about the depth the walls went into the earth we find that in no case does that depth exceed two feet six inches. That being the case, I see

no reason for a drainage to encircle the entire ruin. I imagine to encircle the roofed Kiva with a drain leading it to a lower level and then at a later date when the entire ruin is dug out worry about the other Kivas we are apt to find in the Court. Do you think we should make some provision for a drain around the Great Kiva?: We would appreciate any ideas along these lines.

"Another feature in the drainage line is that of each room. On these tests that I mention where we dug along the wall we find that the damage is not in any sense below the level of the floor but above the floor to a height of about 10 to 16 inches. This might mean different things and I would like to have an expression from you. In every case where we sank a test we find that the foundation is of river boulders and I wonder if we might not dig down not over two courses until we come to that type stone and then drain to the center by sloping the floor. Another thing is that walls are much worse on the high walls than on the lower ones. That might be explained by the fact that the Sun does not ever shine on the first two feet of the north walls and almost every day on the South and East rooms. Just the way to remedy this feature we will fight out and certainly do the best we can. If you have your Aztec Ruins map I might say, for example, that conditions in rooms 78 and 79 are much worse than in rooms 37 and 41. Other tests bear this idea out very much."

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Faris wrote Engineer Hamilton and in this letter quoted from Earl Morris' comments on the drainage problem:

"In regard to the drainage proposition, considering the depth at which you found water in your outside test pits, I do not think there is any necessity of planning a drain around the entire Ruin at present. It is probable that the roofed Kiva is the deepest thing that we shall ever have to cope with. And if a satisfactory drain can be worked out to take care of it, I believe that is all that is necessary at present. I very much doubt if there will be need of drainage for the Great Kiva. I am not clear at the moment as to how high the floor of it lies above that of the roofed structure, but believe it is a distance of several feet. It might be well, however, just as a safeguard, to dig a pit in the floor of the Great Kiva to see just how wet the earth seems to be there. But in judging the matter take into account how much of it is due to recent

rainfall which is the sort of thing that would be guarded effectively against when the building is roofed. It might not be a bad plan, however, to put at an appropriate place in the line which leads away from the roofed kiva a blocked tee so that if the future should dictate a drain for the Great Kiva it could be connected at that point. Of course I presume that you are planning to provide for surface drainage around the structure, presumably leading into the underground line.

"As to the matter of drainage for each room, frankly I am stumped. For years I have been trying to think out some method the use of which would prevent the disintegration of the walls immediately above the floor level, but I have hit upon nothing that appeals to me in the least. Whatever rain and snow falls into the rooms is bound to dampen the earth beneath them to some extent. I have noticed the condition that you report, namely, that there is no appreciable damage to the walls beneath the floor level, but that there is marked crumbling and exfoliation in the lower courses of the masonry immediately above the ground level. It is there that evaporation takes place. The moisture from below seems to soak up into the stone work and out for a distance of a foot or a foot and a half above the floors and of course during winter time frost acts heavily upon this dampened masonry. If the wall stones themselves were sufficiently porous it might be nice to work cement into the joints and obtain an effective result, but since most of the sandstones disintegrate very readily, I am at a loss what to do. I do not think that the placing of drain pipes would help a very great deal toward attaining the desired end. This is a problem which seems to me the government engineers should have some idea how to cope with. One possible suggestion occurs to me. It might be that if one were to remove a few inches of the floor earth and put down a tamped layer of oil-filled material, thus to produce a surface comparable to that of our oiled highways, that the water would not soak through it and thus provide a source for the moisture which works upward into the walls. If something of this sort were done, whether it would be enough to put a gravel-filled sump at the center of each chamber, or whether it would be necessary to lead a drain pipe out of each room, I do not feel competent to decide. However, I would be interested to know the opinion of the government engineers in regard to the possible effectiveness of such procedure. You might ask them also if there is any sort of water-proof material that might be painted upon the bases of the walls that would fill the pores sufficiently to prevent either absorption from the surface, or the working to the surface of interior moisture."

(End Of Quotation from Morris)

E.

Comments: R. H. Rose:

Excerpts of these letters of Messrs. Morris and Faris prove that there is a highly important problem in Ground Water Geology at this Monument. I am prompted here to introduce a few ideas on the principles of Ground Water flow. They may at least suggest the exact cause of certain damage noted in the ruins at Aztec.

Let us consider rain falling on an area the soil of which allows water to migrate downward through the spaces between the grains of sand, gravel and other porous formations. Of the total rainfall on the area, there will be considerable quantity carried away as surface flow. Another portion will represent evaporation and the remainder will seep into the surface of the ground. Of this quantity seeping into the ground, its distribution will be as follows:

1. Part will be retained in the upper soil area by capillary attraction. The amount so held in suspension as it were in the surface area will be greatest immediately after rain and diminishes by evaporation constantly. The amount of water in this zone cannot exceed the quantity capillary attraction can hold against the downward pull of gravity. This is the UPPER CAPILLARY FRINGE, OR BELT OF SOIL MOISTURE
2. Below this belt of SOIL MOISTURE immediately below the surface of the ground, comes what may be termed the AERATED ZONE. Because of irregularities in spaces openings and fissures the movement of the water downward is concentrated along the larger openings and although a great amount of water passes through this zone, it is not saturated.

3. The true water table is below the AERATED ZONE. The idea of the Aerated Zone is reflected in the term VADOSE CIRCULATION which is given to this "wandering water" zone. VADOSE WATER may be applied to this water which wanders downward from the Upper Capillary Fringe along lines of easiest flow.

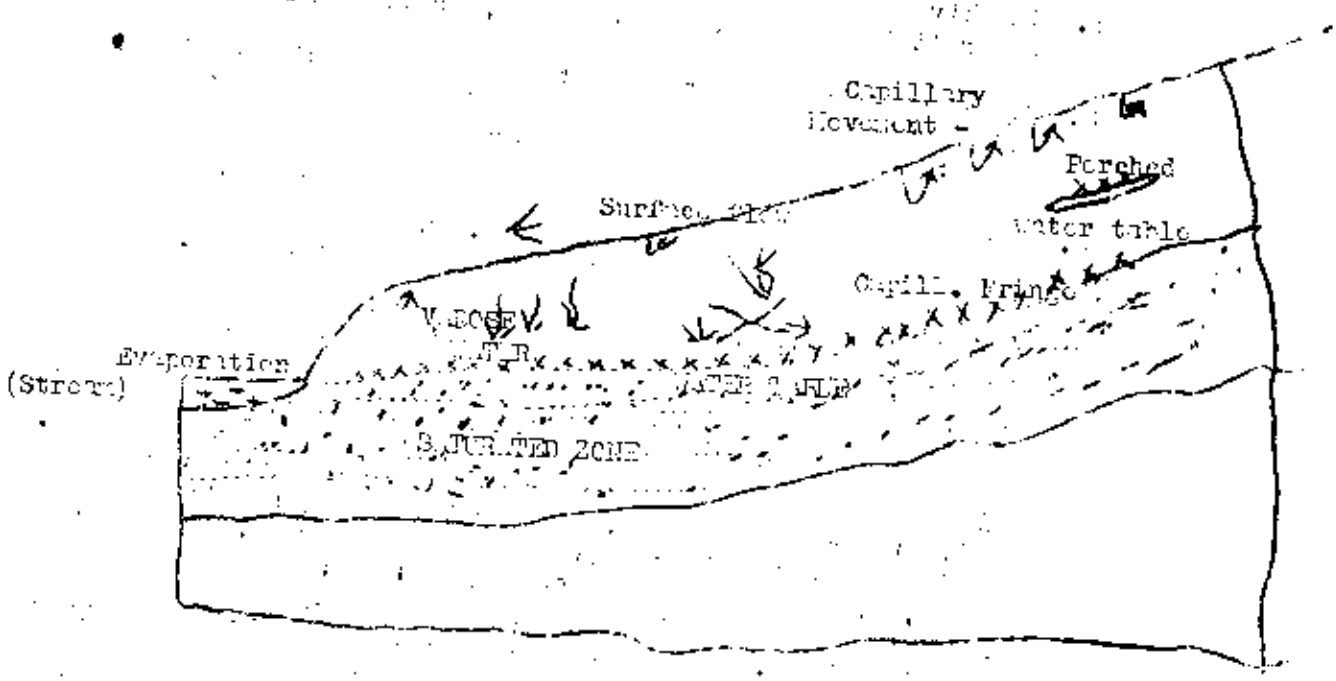
4. Below the Aerated Zone is the SATURATED ZONE. In this zone the spaces between sand grains and gravel are filled to capacity with water. They cannot possibly contain any more. The WATER TABLE is the surface defined by the upper limits of the Saturated Zone.

5. Then there is a capillary fringe above the water table. This may extend as much as 1 to 4 or 5 feet above the the Water Table.
6. The Ground Water Table is a subdued replica of the surface terrain where conditions of soil depth, porosity and other properties are more or less the same throughout.

F.

PRINCIPLES OF GROUND WATER OCCURRENCE

(Vadose movement may be along cracks and joints or along courses of higher sand or gravel porosity, around the grains).



A. The Saturated Zone is a zone of free movement of ground water among the grains and spaces in the sands, gravels and other formations.

B. Where a surface valley intersects the Ground Water Table there may result a stream of some size originating in a seep or spring.

C. The Belt of Soil Moisture is due to capillary attraction which holds some of the percolating waters near the surface of the ground.

D. Vadose or Wandering Water finds its way to the Saturated Zone around grains and along fractures.

E. A moisture zone, the "Water Table Capillary Fringe" extends from a foot to four or five feet above the Water Table.

Relation of Aztec Problem to Ground Waters:

To thoroughly discuss the relation of Aztec's kivas and walls to occurrence of ground water would run into much greater space than is warranted here. However, from the following points the gaps in the discussion can be seen by the reader.

Let us consider the floors of the kivas or of the rooms in the ruins. Here are the possibilities:

1. The kiva may be deep enough that its floor is below the upper limits of the Saturated Zone, or WATER TABLE.

2. The kiva or room floor may not be as deep as the SATURATED ZONE but yet be as deep as the CAPILLARY FRINGE(between a foot and four or five feet of Ground Water table)

3. The bottom of the Kiva may not even extend into the Zone of the Upper Capillary Fringe, but merely extend into the AERATED ZONE or Zone of Vadose Water Circulation.

4. All room floors or all kiva bottoms , unless extremely shallow, extend through the depth of the UPPER CAPILLARY FRINGE or the ZONE OF SOIL MOISTURE. Remember that this upper zone is Not a zone of free flow and is not a zone of water behavior in accordance with laws of capillary movement. Also we must remember that through capillary attraction the soil tenacecusly holds the water in the inter-spaces between grains and very reluctantly gives this water up. In other words, TO EXPECT TO CARRY OFF WATER DUE TO EITHER OF THE TWO CAPILLARY FRINGES BY INSTALLING TILE WILL MEET WITH DISAPPOINTMENT. AS A MATTER OF FACT, IT IS ENTIRELY POSSIBLE THAT A POROUS TILE ITSELF CARRYING WATER WOULD GIVE UP SOME OF ITS FLOW TO THE SOIL THROUGH CAPILLARY ACTION THRU THE TILE ITSELF MERELY MAKING THE MOISTURE CONDITION WORSE RATHER THAN BETTER.

5. Of course, all kivas and other structures penetrate the area of surface flow of water.

Further Interpretation of Above Six Points:

1. As a rule, we are safe in saying that ANY KIVA FLOOR OR OTHER BOTTOMS OF STRUCTURES NOT WATER-TIGHT WILL HAVE STANDING WATER IF THEY ARE ACTUALLY BELOW THE WATER TABLE OR EXTEND INTO THE ZONE OF SATURATION.
   a. When such situation exists, tiling in general can't be resorted to as a solution to the problem for two reasons: (1) Trenching for such tiling would have to be perhaps 8 or 10 feet underground which would be great expense in installation; and (2) unless the tile were some five or six feet below the room floors or the kiva bottoms, such floors and bottoms would still exhibit moisture due to the Water Table Capil. Fringe.

b. Our general conclusion would have to be that tiling for purposes of DEPRESSING THE GROUND WATER TABLE SOME FIVE OR SIX FEET BELOW THE FLOORS OF ROOMS OR KIVAS WHICH THEMSELVES ARE ALREADY SOME TEN OR TWELVE FEET DEEP CANNOT BE SUCCESSFULLY DONE.

c. In cases of where the Ground Water Table is above kiva or room floors, consider the possibility of going to the source of the water percolating into the ground, such as the Canal back of the Aztec Ruin. If this is the water source, then the slope of the water table is from this canal down toward the river. Here, perhaps by placing tile a few feet in depth the Ground Water can be reached. Depressing the Ground Water Table somewhere uphill from where this table pitches beneath the Ruins, will cause a lowering of the whole Water Table Surface by several feet from point of tile to the river. In short, a condition of subdrainage of this sort may be corrected by tiling several hundred yards up the GROUND WATER SLOPE from the kiva or other structure we are desiring to drain.

2. Let us consider point two above-that is, a case of where the kiva or room floor dossn't extend into the Saturated Zone but merely into the Water Table CAPILLARY FRINGE. The floors and walls for a few feet above floor will show moisture by this capillary water though the water table is from one to five or six feet below such floors. NO AMOUNT OF TILING WILL REMEDY THIS FLOW UNLESS SUCH TILING PROPERLY PLACED SOMEWHERE UPSLOPE WILL RESULT IN A DEPRESSION OF THE WATER TABLE SUCH THAT EVEN THE UPPER LIMITS OF THE CAPILLARY FRINGE WILL BE THROWN BELOW THE FLOORS OF THE ROOMS OR KIVAS.

a. Sinking tile into the Capillary Zone only just wont get anyplace. Again, it should be stated that water running thru a porous tile thru a zone of Capillary action or Aeration will likely GIVE UP SOME OF ITS WATER to the earth itself merely making worse the water problem or moisture conditions.

b. Kivas or rooms may even get water in them because the channels, fractures or other avenues of Vadose Circulation lead to the kivas or rooms. Generally, tile around such rooms or kivas cannot correct this condition because each little stream of water is an independent flow and the whole amount of water in the Vadose Zone doesnt obey hydrostatic laws as one unit as does the water in the Saturated Zone.

c. Improving the surface drainage such that there is a SPEEDY RUNOFF giving little or no time for percolation of water into ground will greatly improve kiva or room water due primarily to little streams of Vadose or Wandering water getting in.

d. Correcting against this Vadose Circulation may present the "hardest nut to crack" of all the drainage problems confronted by the Ground Water Geologist. REMEMBER THAT IT MAY BE A LITTLE DIFFICULT TO DETERMINE WHETHER IT IS WATER OF A SATURATED ZONE OR MERELY VADOSE WATER THAT IS CAUSING WATER TO STAND IN THE BOTTOMS OF ROOMS.

3. The third possibility, namely, that of the room floor or kiva bottom extending merely into Vadose or Aerated Zone is discussed in (b), (c) and (d) above.

a. In general, I'll say (1) improving surface drainage, constructing "curtain walls", cementing or paving ground areas, etc. are possibilities in solving kiva or room water due to Vadose Circulation.

b. In general, tile will but little improve water due to anything except complete saturation.

4. Lets consider case 4: that is, all rooms or kivas penetrate the Zone of Soil Moisture or the Upper Capillary Fringe. The walls in rooms and kivas at the Ground Level and below for possibly 2 to 4 feet will show moisture due to Capillarity. The following facts stand out in this connection:

a. Will tile correct this condition ? No , except perhaps immediately after exceedingly heavy rains when for a brief time this upper Fringe may be completely saturated. DON'T EXPECT TO IMPROVE THIS CONDITION BY TILING. IT MIGHT BE MADE WORSE IF A POROUS TILE CARRYING WATER RUNS NEAR RUINS WALLS IN THIS UPPER FRINGE ZONE !

b. This moist condition just below ground level may not be apparent during the Summer because of rapid evaporation but with coming of winter be most apparent. (1) improving surface drainage; (2) construction of curtain walls; (3) protective coatings on walls of ruins themselves- these are some of things that might be resorted to to prevent this moisture of the Soil Moisture Zone.

5. Now for the last: all structures penetrate the surface. This portion of water due to runoff should be made as high as possible, and of course improving surface drainage in usual ways is the answer here.

J.

DIAGRAMS ILLUSTRATING SOME OF POINTS DISCUSSED.

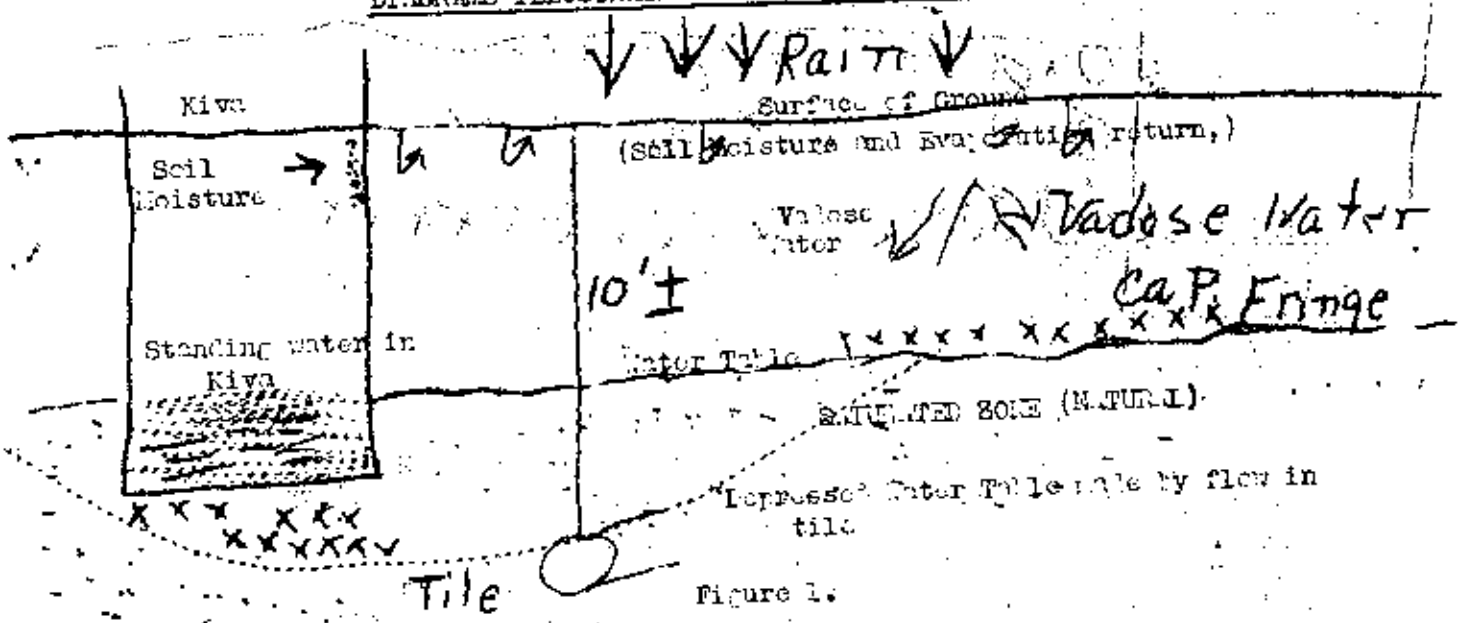


Figure 1.

Showing that tile to depress ground water table by any appreciable amount must be very deep if to do any good. Even with such tile close to ruin, capillary moisture will probably persist on lower walls and floors.

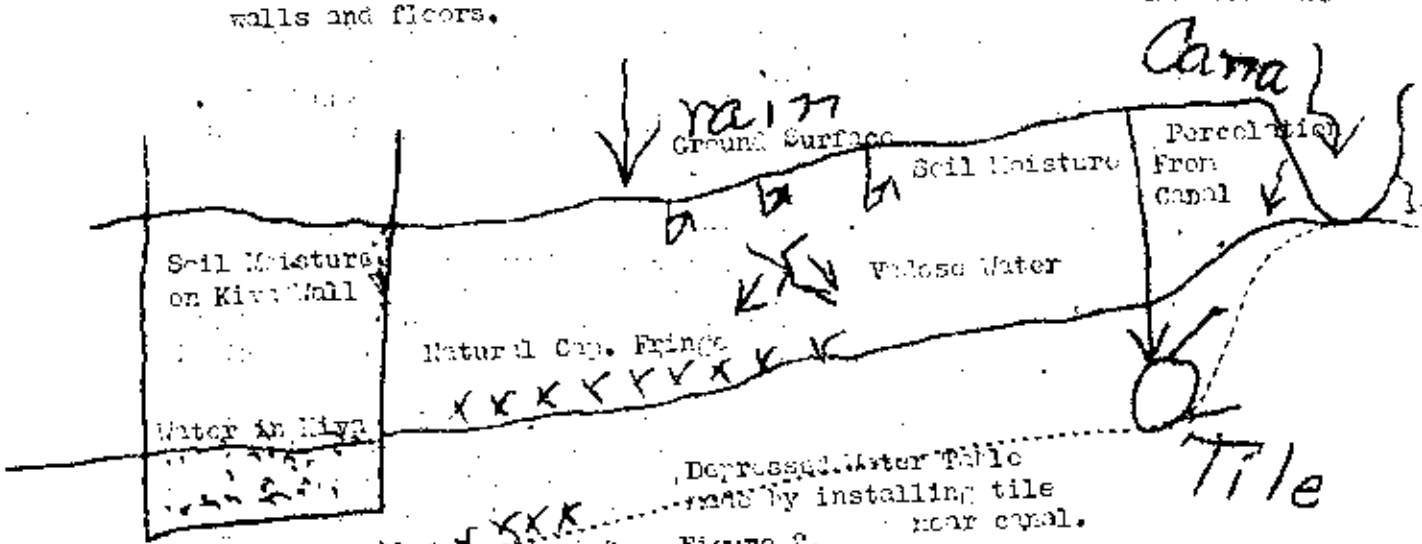


Figure 2.

Illustrating how tile near source of Ground Water percolation may depress ground water table hundreds of yards down slope from where tile is placed. If kiva such tile is installed to protect the floor in saturated zone then tile must be installed so as to get greatest amount of water table depression. This can often be done to depress Water Table Capillary Fringe so low it will come below kiva floor.

FURTHER DIAGRAMS ON TILING

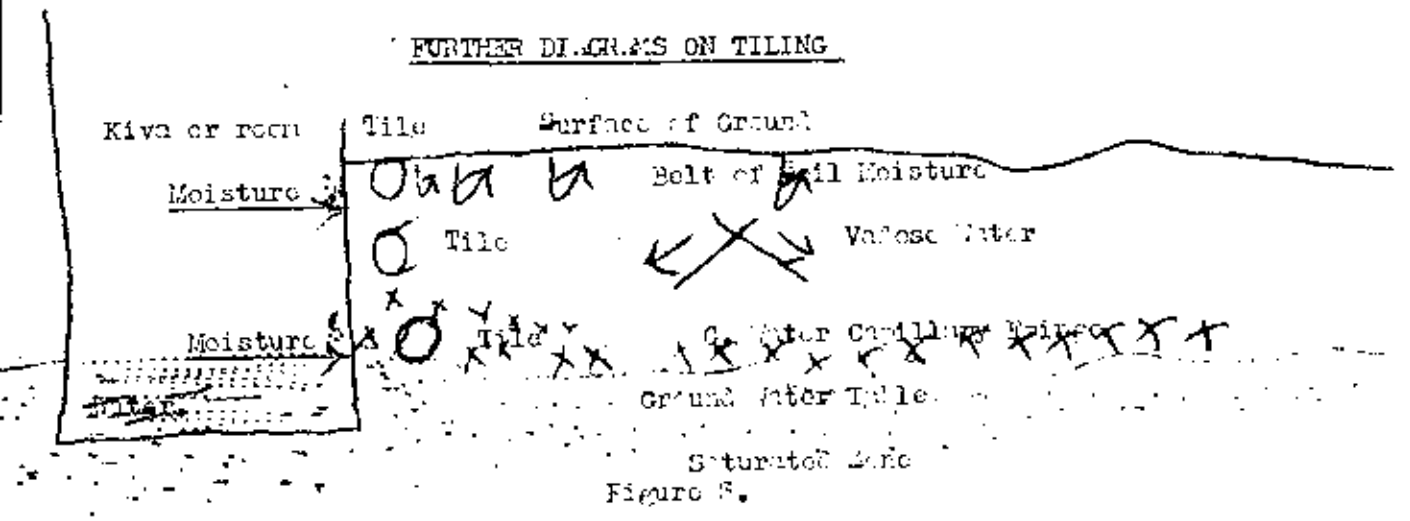


Figure 5.

Diagram showing tiling in (1) Belt of Soil Moisture; (2) Zone of Aeration, or Vadose Circulation; and (3) Ground Water Capillary Fringe. None of these are zones of free flow. Zones (1) and (2) stubbornly cling to their water content and will not give it up to porous tiling. In fact if water flows in porous tile through these two zones, the earth may even rob the porous tile of its water by capillary attraction.

Other Problems:

1. Water-proof curtain walls installed deeper than the Upper Capillary Fringe would largely solve the problem of damage of walls by capillary water immediately above the ground line. It would also solve the problem of moisture on walls of rooms at and just below ground level.

2. Curtain walls wouldn't protect bottoms of walls which extend down into the Ground Water Capillary Fringe Zone. Page K, figure 2 suggests a method of depressing the Ground Water Table so the Water Table and the Capillary Fringe just above it, will drop clear below the bottom of the room or kiva.

3. Endeavor to perfect the surface drainage. The least possible water allowed to percolate into the ground the better it is. Surface stream channels should be as water-tight as can be attained . Too much downward percolation from surface drainage channels might cause a local "HUMP" in the Water Table. If this local rise becomes too high, it might bring the ground water, or at least its Capillary Fringe into the bottom of the rooms or kivas.

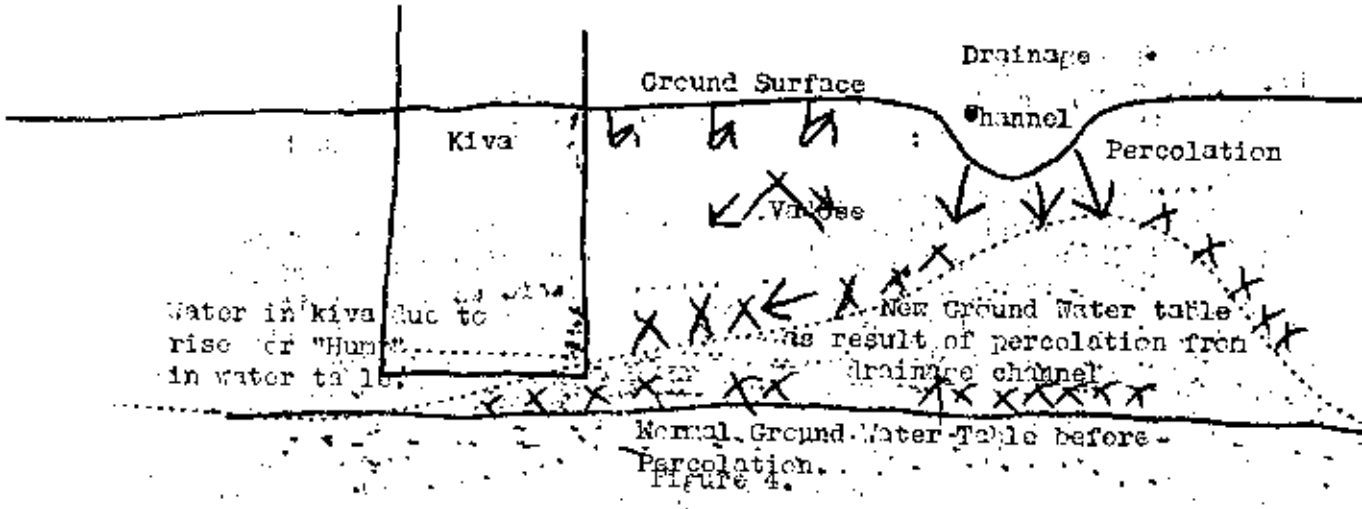


Figure 4.

Percolation must be reduced in surface drainage as low as possible to prevent enough seeping water from reaching Ground Water Table as will build the "HUMP". Water-proof surface channels would be desirable.

Thus, if too much percolation of water occurs from sluggish surface channel, the Ground Water Table might be raised high enough as shown in the illustration for water to seep into the Kiva. Even tho the Saturated zone is raised just a little, the Capillary Fringe might be raised high enough to begin to moisten the Kiva floors and lower wall portions.

(Page L, Figure 3).

It should be mentioned here that the Vadose Zone is not a zone of saturation and it is this water that it is hardest to control if wet blotches here and there on dry walls show its presence. Improvement of surface drainage as perfectly as possible is the first place to start. If curtain walls don't have to go unreasonably deep, some protection against Vadose Water may be thus provided. In cases crushed rock in a trench beside a water proof curtain wall, and loose joinjted, non-porous tile might be a real help.

This discussion is presented here in an attempt to explain the exact cause of certain moisture conditions in ruins in the light of Ground Water principles. The nature of the moisture in each case must be known before the correct remedy can be prescribed. Tile will not extract water from earthen material wet by virtue of Capillary Water only; as a matter of fact, such soil moist by capillary water may, by capillary attraction, even "rob" a porous tile of some of the water flowing through it.

Thus, it appears that Curtain walls(water-proof), tile, rock filled trenches and the like would have to be varied greatly to solve the different moisture conditions arising in kivas and other ruins. Perhaps the discussion above will aid somewhat is suggesting remedial measures for different sets of moisture conditions.

(R.H.R.

Tom Charles sends us a letter which was written to him by Dr. H. L. Kent, President of New Mexico State College. We quote parts of the letter here:

"....Saturday evening late Dr. O. F. Cook of the Office of Crop Adaptations and Acclimatization, was in my office discussing various projects in which he is interested. .....He said he thought it would be a wonderful thing if some provision could be made at White Sands National Monument to use some men during the winter, for a planting of many varieties of cacti and other plants peculiar to the Southwest. His idea is that if this could be done and you could find an area inside of the Sands which is not covered by the sands and into which a road might be constructed, that in this area the government should attempt to make a sort of desert arboretum with cacti and other rather peculiar desert plants planted therein and each species labeled giving its name, its natural habitat and perhaps any other interesting data about it. Of course you can appreciate how much valuable and interesting information might be accumulated about some of these plants. For example, I have known the so-called "Mormon Tea" almost ever since I have been down here. I collected some of it to send to Clarence in England and he told me he did not care to have the material sent as they did not want to use anything except what the students themselves collected. When he came home this summer I talked with him about it and much to my surprise he told me this plant is a gymnosperm. That is, it belongs to the very great group the same as pines, spruces, junipers, etc. Of course that might not mean much to one who had had no botany but even with the little botany I have had that was exceedingly interesting. It is this kind of information which Dr. Cook had in mind when he suggested a desert arboretum as a part of White Sands National Monument.

"I am passing this proposal on to you for whatever it may be worth."

.....

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This suggestion of Dr. Cook's which Dr. Kent has sent to Tom is packed full of interest. You know Tom over there has some little white mice, and certain other peculiar forms of life that have peculiarly adapted themselves to that pure white environment. A question of whether or not introducing an arboretum here and there in the area would disturb this strange condition of animal and plant life arises here. Also there is the problem of introducing some forms of plant life not exactly native of the White Sands locality. This idea carried out with reference to everything that could be considered native to any given locality would be a worthy project. This is a problem for both the Landscape and Naturalists division to consider.

N

The Boss fishes a letter out of the mails coming from Walt Attwell at Bandelier. He asks assistance in solving some domestic problems. Here's his story:

Dear Boss: Mrs. Evelyn Frey of the Frijoles Ranch, P. O. Box 1321 Santa Fe, N. M. has asked me to try to get you to send her a copy of your Southwestern Monuments monthly report..

She has borrowed the Rogers' ever since they have been here and now she has asked for mine. So if you can add one more to your collossal list, I know that the Frey's will appreciate it.

Now dont think that every silver cloud does nothave a dark lining because I have a complaint to make against it. A few weeks ago my mail from home was seriously delayed and Bunnie comes out with an excuse that is water tight for not writing. I am sending you the first page of her letter so you can see how she has neglected me just to do like Mr. Albright used to do and that was "Read the S. W. Report first". So Boss, in the future please send it to her just the day after she writes me instead of the day before." Walt. (In the letter enclosed, Mrs Attwell blames me for her neglect to write Walt on the usual time, and the Report caused it all).

This completes about all the Boss left with notations on to include in this Supplement, and some things he didn't leave.

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Civil Works Programs have been approved. The brief period of work prescribed makes it necessary to push our end of organizing the work with utmost speed.

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Please see Supplement of Report for last Month, last page, for letter Heaton wrote Mrs. Udal to which the letter of Mrs. Udal in this Supplement is an answer. ****

Before another Supplement appears, Christmas will have rolled around. Therefore now is the proper time to both officially and personally extend best Christmas Wishes to our Park Service people both in Washington and in the Southwestern Monuments field. Thanksgiving has passed quietly and from reports coming in, Turkey Soup as a part of the daily menu is beginning to disappear:-a sure sign Christmas is just around the corner !

Cordially,

The Boss

R.H.Rose.
R. H. R

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A last word from the Boss.

Dear Chief:

Hugh and I drove 420 miles yesterday coming in off a field trip, and caught the monthly report still on the press, so I will put in a last word; not that what I have read of the report is not all right, but I just can't pass up the chance to put my oar in.

We have just been over to visit Tom Charles and line up a road and get organized to start work. Chuck Richey and Ruth came down from Platt and Walt and Lyle Bennett came from Bandelier and Hugh and I drove 420 miles Monday and climed over Tom's Gyp outfit Tuesday and drove home yesterday. We all held two long Bull Sessions, which go by the name of conferences in the other Superintendent's reports; Monday night and Tuesday night, covering considerable territory and really clearing a good deal of ground.

We came pretty near having a rain over there Tuesday and I would have given good money if he had, but Tom's gods were kind to him and took the clouds back again after putting up a lot of them.

We found the percentage of error on a couple of our boys too. Hugh looked into a couple of abandoned wells out at the White Sands and reported that night that they were forty feet deep. Tom had told us water was only about five feet deep at that point and when we called him on it, he said those wells weren't but ten feet to water. Next morning when we all went to them and checked up on them we found the water to be at a depth of twenty feet. Walt figured that Hugh was all right, because there were two wells, which would make forty feet! These high-ball Engineers can always make the figures fit the facts; did you ever notice that, Chief? I might add right here, that Tom's error is a fluctuating one; you might think from the above that you would have to multiply all his figures by four, but if you did that on his attendance record, you would have to divide the result by something between nine and fifteen.

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In drifting around, I find that the popular idea in Arizona and New Mexico is to distribute the Civil Works money on the basis that any work that comes out of it, is net profit. I'd like to rise to remark that in our end of the Civil Works expenditures we are expecting pretty close to the usual dollar and a quarter of returns for every dollar invested. I wish every man in the Southwestern Monuments would avoid this 'come easy, go easy' philosophy. When these times pass, as they are sure to pass, make no mistake about that, there is going to be a long dry spell in the construction field among our Monuments and you will be looking back with regret on any dollar you waste now. It is true that in the process of getting an organization which has been expending about $60,000 per year up to an expenditure of nearly $100,000 per month, there is going to be some bad-shake; like Jackson of Montezuma, we have all made one mistake in our lives, another one might be excused, but anything like wilful waste will not be excused, and you'd better not be caught off your base in this matter when the inspectors

come around, and if you think these CWA and ECW expenditures are not going to be aired again and again in the next couple of years, you don't know the past history of the United States.

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Bob left out a most important report which I will incorporate here; Bunnie Attwell really wrote: "I have been delayed answering your letter all on account of the Southwestern Monuments' Monthly Report. You see it arrived yesterday morning and, of course, I had to stop all work until I had read it through, cover to cover, and when I started the letter this morning, I lost another couple of hours reading it again. So you see it is all the fault of the Boss' report. This same report a year ago told about our trip through the Southwestern Monuments when he had that wonderful trip with the Boss, and what memories I have of it! I enjoyed it more than any trip before or since. It surely was one of the happiest experiences of my life and it will always be a delight to think about it."

That's the way we sell a customer on the Southwestern Monuments, Chief, and when we sell them, they stay sold, too.

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This incursion into the realm of fancy, which we call our Monthly Report, is about to reach the deadline as to its subscription list. It is going to be too much of a problem if we let it go over a hundred copies. However, we want to assure Mrs. Frey that she falls within the 100 mark, and will get her copy.

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We are moved to remark that in all this rush and jam of ECW and CWA, there ought to be no let-down in the quality of service which is being delivered to the visitor of the current day. Don't forget that Mr. and Mrs. Doe may never come this way again and, regardless of how mad you may be at something we have or have not written you out of this office, remember that your other Boss, Mr. and Mrs. Doe, are not to suffer because of it; they are entitled to the usual brand of service in unusual times.

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We have increased the headquarters staff by a trifle of 130 pounds, called "Brownie". She is a sister-in-law of the Park Service, being a sister of Mrs. White Mountain Smith, and Hugh says she is going to make good in his office. You will probably hear more and more of her as the work piles up on us, and, since she is the official stenographer and assistant bookkeeper, you Custodians and Landscapers and 'High-ball Walt' can put all mailing errors, both of omission and commission on her head and the rest of us won't mind.

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Chief, the real high spot of the month was a couple of hours visit with Mr. Albright. He dropped in here on his way from Los Angeles to Carlsbad, and it was certainly fine to see him again and gossip about one thing and another,

and I want to pass it on to the fellows who make up the monthly report that he said he always read our Southwestern Monuments Report and that his heart was with us down here on the front line, for we are at about that stage of pioneering that the whole Service was when he came with us in '16. He sent his regards to all the Southwestern folks.

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Which brings us down to the final end of this November report. I wanted to get something in the way of an expression out of the Chief Clerk into this report, but he has three days of work piled up on his desk, and he is likely to woof! if I go in and say anything, so we will let that pass.

Cordially,

Tom Boast

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Maximum hours,
70 per week.

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