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SOUTHWESTERN MONUMENTS

MONTHLY REPORT
MARCH - 1933

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NATIONAL MONUMENTS SERVICE
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RAINBOW BRIDGE NAT. MON.

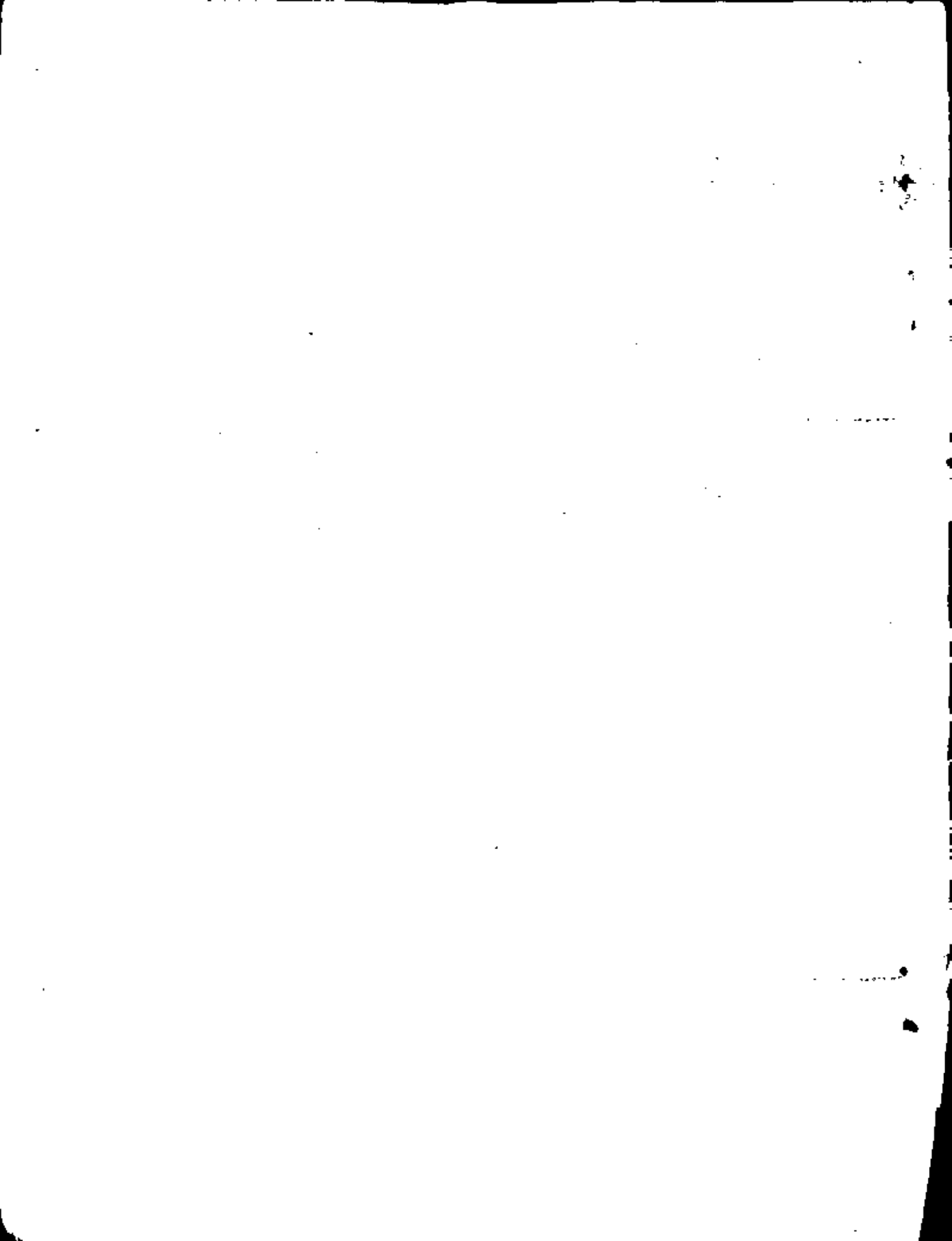


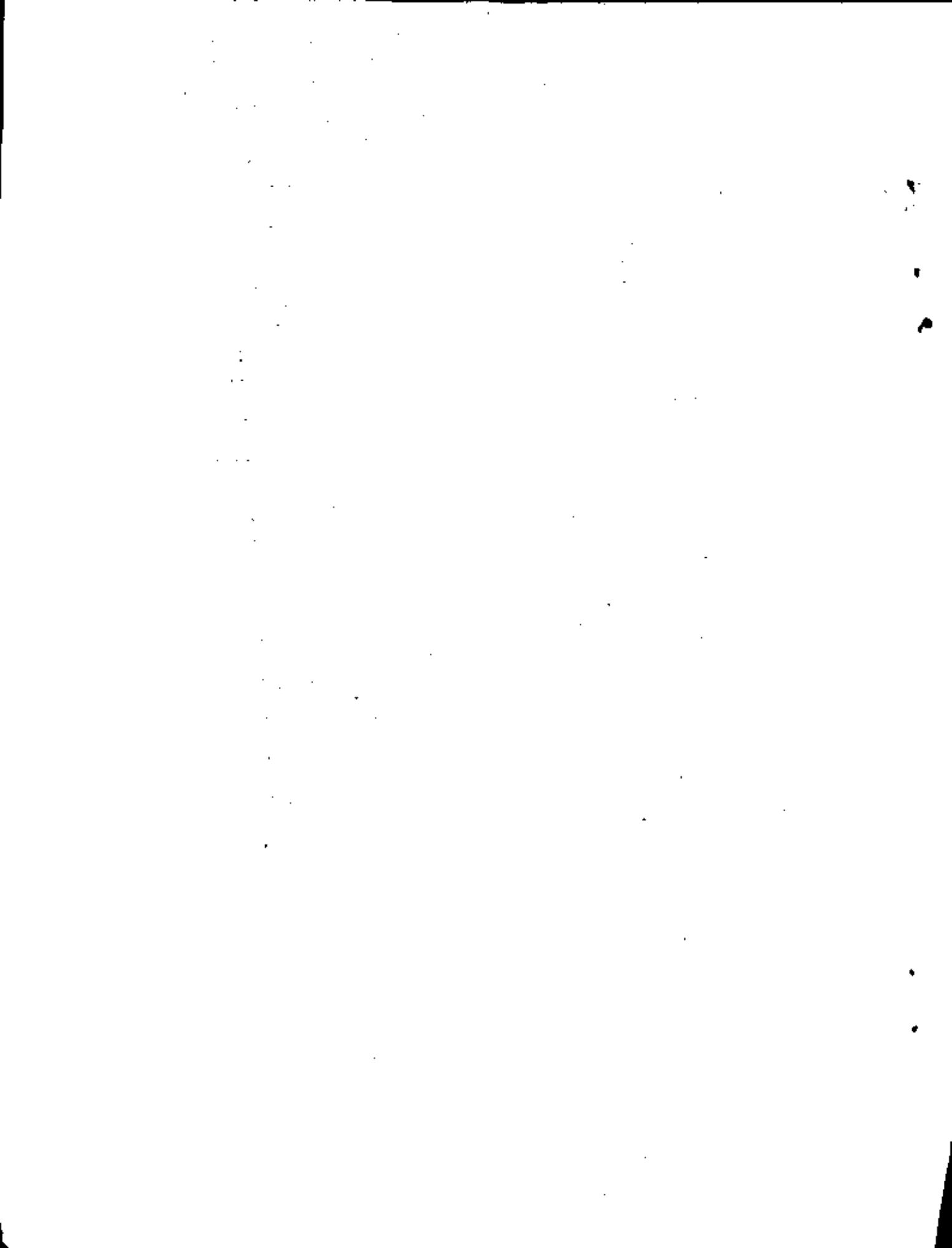
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The front cover and the illustrations are the
work of Ed Rogers.

Stencil cutting by Bob, Hilding and the Boss.
Micrographing by Frank Fish.

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UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
SOUTHWESTERN MONUMENTS
COOLIDGE, ARIZONA.

April 1, 1933.

Dear Mr. Director:

In formally and officially relegating the activities of March, 1933 to the shelves of memories and accomplishments, I have the following report to make:

From Berkeley, California, where he has been participating in the preparation of exhibits for the Century of Progress Exposition, Bob Rose sends in the following report:

Activities of the Park Naturalist: Leaving Coolidge February 27th, I arrived at Field Educational Headquarters, Berkeley, on the afternoon of March 1st. I have spent the entire month in the National Park Service laboratories in the preparation of various exhibits under way for the Century of Progress Exposition which is to be held in Chicago between June 1st and November 1st of this year. Since the Southwest is well represented in the Park Service display, a description of the exhibits as they have been prepared will be of interest. I also wish to discuss the various opportunities that exist in Southwestern Monuments for using this type of exhibit in our educational scheme.

Exhibits preparation consisted chiefly in the manufacture of eight large scenic models of national parks and national monuments. The amount of money available for this work was merely sufficient to purchase the materials and certain very special services such as background paintings. This being the financial situation, it was necessary to call upon the various national parks and Southwestern Monuments for the assistance of their park naturalists and others in this work.

The scenic models are of the diorama style in which foregrounds are modeled with a special form of plaster while backgrounds are paintings done by Mr. Gunnar Widforss, famous Swedish water-color artist. By carefully studying elements of perspective, lighting and arrangement, the models give the observer the feeling of standing in the very presence of the scene itself. These dioramas have been constructed in large cases approximately 8½ feet long by 4 feet wide by 6 feet high. Electric wiring, paintings on linoleum background, especially modeled foregrounds—all are contained in these large boxes while attractive windows about 3 feet long by 2½ feet high are constructed such that the scenes can be observed to best advantage.

The following National Park Service units are represented in these dioramas:

Rainbow Bridge, Utah	Carlsbad Caverns, New Mex.
Grand Canyon, Arizona	Mesa Verde, Colorado
Ice Caves, Rainier	Grand Teton, Wyoming
Petrified Forest, Arizona	Kilauea Volcano, Hawaii

These subjects have been chosen such that they exemplify some of the outstanding features of the National Park Service units. They also lend themselves nicely to the diorama type of reproduction. Most of the subjects have been chosen to fit in with the general theme "Earth Science as Exemplified in the National Parks and National Monuments". Accompanying the models are carefully worded labels while transparencies which can be illuminated at will by the observer accompany the Grand Canyon and the Ice Caves dioramas. The ideas conveyed by each exhibit are briefed below:

1. Rainbow Bridge, Utah:- An outstanding example of an arch eroded by the combined action of a down cutting stream and chemical and mechanical processes of weathering.
2. Grand Canyon, Arizona:-Grand Canyon is the most spectacular chasm in the world, formed primarily by the downcutting of the Colorado River supplemented by mechanical and chemical processes of weathering. The story of life on the Earth down through the ages, and of landscapes in past geologic time, is recorded vividly in the formations laid bare by the erosion of the Canyon.
3. Ice Caves, Rainier:-This model takes us right within the ice mass of the snout of a glacier where we stand looking out of an ice-encircled aperture to the light of day. The milky waters of a subglacial stream, made white by "rock flour" held in suspension, and the debris held fast in the bottom and sides of the ice mass, testify to the mighty power of ice as a sculptor of landscapes. Transparencies accompany this exhibit showing examples of modifications ultimately resulting from glaciation. Properly lighted, this exhibit is wonderfully informative.
4. Petrified Forest, Arizona:- The Petrified Forest of Arizona is the outstanding thing of its kind in the world. Here, logs of wood of a kind not living today but related to the Monkey Puzzle and Norfolk Island Pines, have been changed into semi-precious forms of Chalcedony which include Jasper, Agate, Carnelian and Onyx. Warm climate must have

prevailed over this lowlying, swampy, frequently flooded region of Upper Triassic time. The manner in which the processes of erosion are uncovering the logs is an important lesson illustrated in this exhibit.

5. Carlsbad Caverns, New Mex.:- The Carlsbad Caverns is the world's greatest and most spectacular example of the work of underground water. This feature affords a wonderful opportunity to show the power and magnitude of chemical work of underground waters.
6. Mesa Verde, Colorado:- Mechanical and chemical processes of rock disintegration have produced recesses in the cliff walls which have been selected as village sites by prehistoric peoples. The model is a diorama of Balcony House and a scene in the Canyon in which it is situated.
7. Grand Teton, Wyoming:- A fine example of ~~erosion following~~ crustal displacement is obtained in the Tetons. A block of the earth's crust seems to have tilted resulting in one edge of the block being raised while the other was depressed. Stream and glacial erosion has given the spectacular character to the Tetons.
8. Kilauea Volcano, Hawaii:- In no other place may the characteristics of molten lava be studied so advantageously as the crater of Kilauea. The molten material can be studied while still within the volcano itself. In this exhibit a mechanism has been constructed which simulates the volcano with its splashing, surging lake of fire.

My activities were confined chiefly to construction of the Petrified Forest diorama. However, due to personnel shortage, I assisted in mounting transparencies, revising label text, modeling and painting of several of the other models.

The completed dioramas were moved to Giannini Hall for Preview Exhibit through March 27th, 28th and 29th. Large crowds were attracted to see them through the generous publicity of Bay Region papers and posters placed over the Campus and in Berkeley by the University of California. Of special note was the large numbers of off-Campus people who came to view the displays. Observing the reactions of the visitors, it seems that these exhibits are getting their story across in a very effective manner.

There seems to be no question but that the diorama type of exhibit is a very effective instrument of visual education. Great opportunities present themselves for this type of thing. However, extensive application of the method should not be made without a thorough study of the whole problem. In Southwestern Monuments, I believe the diorama type of exhibit can be best applied to reconstruction scenes of prehistoric pueblo and cliff dwellings, and of the activities connected with the daily life of these ancient peoples. Pottery and basket making, religious ceremonies, and tilling of fields with implements of wood and stone are some of the subjects that might be drawn upon.

The greatest opportunity for advantageous use of transparencies, I feel, is found in using scenes from the various monuments in the museums of individual monuments. These scenes, along with maps showing connecting routes, would draw more people to the individual monuments. For some time I have felt the need for instilling into the mind of the visitor the feeling that each individual monument is related to the others of the system (Southwest) and that his Southwest visit should include as many of them as possible. For example, I believe transparencies of the other Southwestern Monuments, installed at Casa Grande, would serve to attract visitors to our other monuments.

Before going too far into the problem of construction of life size figures in the rooms of ruins themselves, I believe careful thought should be given to the possibilities of dioramas telling the story as effectively, if not more so. Just now, without having weighed the problem as much as I'd like, I would say the use of both schemes might work hand in hand.

One of the fundamental weaknesses in our lectures and field trips is the necessity of leaving too much to people's imaginations. Nothing is more fascinating to human beings than the stories of the trials and activities of human beings of the past. However, we have only the ruins, the tools, weapons, and other things on which to base the story. Even as things are, the story of prehistoric peoples in the Southwest is powerfully appealing to most of our visitors. It occurs to me that a carefully thought out installation of dioramas, transparencies, maps and pictures, and other features of visual education, would contribute a most valuable element to our present exhibit scheme. I might add that the present museum installations at Casa Grande and Petrified Forest have included maps, diagrams and pictures in connection with the stories to be told.

During the month of March the following miscellaneous contacts were made:

Berkeley, California Business Men's Luncheon:-lecture 3/27/33
entitled "Exploring the American Southwest"---attendance-----40

Berkeley Hi-Y boys, lecture, same subject as above, Att.----50
Date 3/28/33.

San Francisco-Everett Junior High School, illustrated lecture
on same subject as above-----Attendance-----1800
Date 3/29/33.

Berkeley, California Commons Club:- Illustrated Lecture
on the Southwest, subject "Pueblo and Cliff Dwellings
of the American Southwest"----Attendance-----100
Date 3/31/33.

TOTAL MISC. CONTACTS FOR MARCH, 1933---1990.

While enroute Berkeley March 1st, I stopped in San Jose for about two hours to confer with Dr. Lyman Daugherty, Instructor in San Jose State College, regarding a new species of petrified wood he has described from the Petrified Forest National Monument. Dr. Daugherty has the support of some of the leading paleobotanists of the country in his work. He is affiliated at times with the Carnegie Institution and is very active in this phase of Paleobotany. There seems very good reason for believing what Daugherty has described as *Skilderia adamanica* is not only a new species but a new genus as well. Its anatomical relation to the tree groups generally is not even known.

Aside from having had the privilege and pleasure of participating in some most interesting undertakings in connection with the Exposition exhibits, which in itself was most valuable experience, I have had an opportunity to familiarize myself with the laboratory and library facilities of Field Educational Headquarters. There is also remaining, the fact that the Petrified Forest and Rainbow Bridge dioramas will be of permanent and lasting value to our Southwestern district. Just what disposition of these models will be made is not decided upon but they will find a place where they will probably be of most valuable illustrating interest in the Southwest.

AZTEC RUINS NATIONAL MONUMENT

Custodian Faris reports as follows:

Visitors for the month total 235. Not as good as I had hoped or expected. Sundays have been disagreeable however and at this season Sundays are our big days.

The Cedar Hill highway will be completed before our regular season begins and we are hopeful of that being an aid.

Both rest rooms have received a spring coat of paint and in a few days will be opened up to the public with an even stronger reason for comment.

Paul Fassel has decided to move away and has left for Las Vegas Nevada. We will all miss him as he seemed almost a part of the Monument.

I have managed very well for an old "gunner" (Johnwill has had his teeth removed) Was to get an impression this morning but a slight infection will delay it several days. Dorothy is managing with visitors very well, in fact I fear almost too well from comments on her work. We Custodians will have to watch our H.W.C.P. or we will find ourselves here janitors sure enough. I hope Julian, Rogers etc take this serious. I speak from comments direct from their quarters; so beware.

CAPULIN MOUNTAIN NATIONAL MONUMENT

Custodian Farr reports as follows:

The weather for the month has been the same as all of the past winter, very dry and windy.

A great many more visitors have come to the Volcano than any March before this one, the total being between four and five hundred for the month.

The road to the top of the crater has been open practically all the month and in fair condition although some places along the road have had to be repaired by the Custodian on account of slides caused by the extremely dry and windy weather. The Custodian expects to go up tomorrow with a couple of hands and remove the fallen rock.

The recent falling meteor caused many eyes to be turned toward old Capulin Volcano and many people thought that the old Volcano was coming into action again. However, the meteor passed by and all now is calm.

CASA GRANDE NATIONAL MONUMENT

Custodian Palmer sends in the following:

For the month of March I have the following to report for the Casa Grande National Monument:

The total number of visitors decreased this month from 3149 for March 1932 to 2564, a loss of 585 or over 18%. This loss is directly traceable, however, to the bank holiday and the main entrance road being closed for several days during construction, requiring a detour to reach the Headquarters. The statistics show a decided drop in attendance during these two periods. The attendance during the rest of the month was normal. These 2564 visitors came in 750 cars from 42 states, Washington D.C., Hawaii, and 12 foreign countries. 42% of the total number came from out of state with California furnishing 13% of the total number; Illinois was third with 98, New York fourth with 86 and Texas fifth with 55. These visitors were served on 283 trips through the ruins and 249 museum tours. Each visitor was personally contacted by some member of the personnel and given a full explanation of the ruins and museum.

General and Mrs. Harbord were two of our visitors on the 15th, Gene Tunney and party on the 8th, Superintendent Tillotson of Grand Canyon on the 17th, Dr. William Beebe, a noted Naturalist, on the 25th, Mr. and Mrs. Chris Jorgenson, formerly managers of the curio shop on Yosemite, now from Piedmont California, on the 26th, G. Souvleski from Yosemite on the 15th, Chief Ranger Lehnert, of Carlsbad Caverns, and his father and mother from Phoenix on the 6th, T.W. McDonough, of Jasper National Park, on the 5th, temporary Ranger Graves, of Carlsbad Caverns, on the 4th and 5th, Mrs. Keresaw Mountain Landis on the 10th and Mrs. E.S. Schantacker, Most Worthy Grand Matron of the Order of Eastern Star on the 18th.

A semi-annual statistical table of travel to this Monument, showing the geographical distribution of visitors is attached. This table shows some interesting data. 3553 cars entered the Monument carrying 12244 visitors, an average of 3.4 people per car. The total number was 520 less than for the same 6 months last year, a decrease of 4%. 59 % of the total were from Arizona and 41 % from out of State. California furnished 14 % and Illinois was third and the balance came from every State in the Union, Washington D.C., Hawaii, Alaska, and 13 foreign countries. In the 6 month period covered by the table 1435 guided trips were conducted through the ruins of Compound A and 1311 lectures were given in the museum. The average ruin party would be composed of 9 people.

The weather has been seasonal and very dry, no rain falling through the entire month. The mean maximum temperature was 79 - mean minimum 36 - mean 57. The maximum temperature was 87 on the 10th and 27th, the minimum 28 on the 6th, the greatest daily range 53 on the 27th. There were 25 clear, 4 partly cloudy and 2 cloudy days.

Casa Grande continued

In my February report I neglected to mention that Mr. Orin E. Taft of Chicago Illinois, a former resident of Arizona, donated to our museum a section of one of the original timbers which he removed from the Casa Grande in 1888. We were very glad to get this additional timber for museum display and Mr. Taft has our sincere thanks for his contribution.

On Sunday March 26th four Indians from the Industrial Department of the Indian Service came to the Monument with a supply of rugs and Navajo jewelry for sale to visitors. These four are engaged in welfare work amongst the various tribes and the money obtained from the sale of the articles is returned practically 100% to the Indians making it, only enough being retained from the sale price to pay for the expense of handling it. The party was composed of two Oneidas, one Cherokee and one Pima. They do the work under the supervision of the Guidance and Placement officer of the Indian Service. On their next visit they were requested to also include Pima and Papago baskets which are products of the local Indians. About \$12.00 worth were sold on this first Sunday.

Our road work is completed with the exception of the removal of the surplus of fine rock that was left on the surface to protect the road until the asphalt had set thoroughly. This surplus rock will be used to surface the shoulders.

This road work was done under an \$8000.00 appropriation, half of which was regular and half emergency appropriation. The entrance road and parking area received an armor coat of asphalt and the service road was surfaced with Lay-Kold, an asphaltic concrete. The armor coat was laid by the penetration method and the Lay-Kold was premixed and spread in place. The Bitumuls Co. who manufacture Lay-Kold sent their own inspector onto the job, both during the premixing by a Phoenix firm and the laying to assure that the work was done properly as this short section was put in to test it's suitability for general use in the National Park Service. He also stayed long enough to inspect most of the work of laying the penetration pavement on the entrance road and parking area. Mr. T. R. Goodwin, Road Oil Expert of the Engineering Department was in charge of the work for the Park Service.

About one-half mile of paths leading from the Administration Building to the ruins in Compound A and to the residential area were also put in using the penetration method of laying. Casa Grande has now been taken out of the mud (if and when any) and dust.

The work was of distinct benefit to the community and helped considerably in relieving the unemployment situation in this region. Only heads of families who were permanent residents were hired; each crew was given six days work; it was impractical to use the five day week six hour day principle because equipment had to be rented on an 8 hour day basis; a few key men were kept on for the duration of the work; 35 different men were used a total of 268 man

Case Grande continued

DAYS or an average of $7\frac{1}{2}$ days each; the total amount spent for labor was \$1287.40; the subcontractor furnishing the rock and premixed material used 10 men about 7 days each on this end of the job and purchased gasoline and oil locally for his trucks. \$153.77 was spent locally for supplies \$4943.52 was spent in Phoenix for rock and premixed material; the emulsion was purchased through the Engineering Department and shipped by freight from the coast and cost delivered about \$1500.00. Although the appropriation was not a large one it did a great amount of good in relieving distress in this vicinity.

Special mention should be made of one incident; it was necessary to rent a pressure oil distributor and only one such piece of equipment was available in this section of the country and the bidder thinking we were powerless and would have to pay his price bid \$10.00 per hour rental; Mr. Goodwin advised that the award be held up a couple of days pending telegraphic communication with Colonel Thompson, Superintendent of Yosemite, as to whether he would be willing to send his distributor here with his own operators at Park rental rates, we to pay the men enroute and expenses which would have figured a rate of about \$7.50 per hour. Colonel Thompson agreed but in the meantime the bidder had seen the light and realized that the hair he had shold of was not as short as he thought it was and reduced his price to \$7.50 per hour and also reduced his bid a dollar an hour on the roller necessary on which he was also the low bidder and the only owner in the district. Although it was unnecessary to accept Colonel Thompson's offer we certainly appreciated his willingness to cooperate with us to the extent of loaning us a very valuable piece of equipment.

This is also a fitting place and time to express my appreciation of Special Disbursing Officer Evenstad's cooperation in issuing checks whenever called upon to do so to help workmen tide over the time till pay day; changing crews frequently made it necessary to pay frequently and several times it was necessary to issue two checks to some man during his six day period of work so that he could get a few groceries. Spreading work out amongst as many men as possible makes more work for everyone concerned in the handling of the job than when a crew is put on to work straight through the job but everyone assumed his extra share of work with a smile so as to be of as much assistance as possible in relieving conditions. Mr. Goodwin was also inconvenienced greatly in changing crews so often but performed the work in creditable shape. He arranged the work so as to do as much as possible by hand when it could be so done without increasing the cost. He has given us a mighty fine road and some good walks as cheaply as it could possibly be done and kept up a high standard. Our road program is now completed but there are still trails to be built.

Such cooperation and efficiency as was demonstrated in this road work is one of the reasons why it is a pleasure to be connected with the Park Service organization.

Casa Grande continued

Ed Rogers temporarily stationed at this Monument and who was so absorbed in mazes last month got off onto another subject this month and specialized on sun holes. His report accompanied by illustrations is being submitted separately and will be found mighty interesting. When Ed is told anything he doesn't believe it until he has proven it to his own satisfaction. His observations on both mazes and sun holes have been mighty illuminating and have brought forth many new angles that must be studied.

The material applied as a protective coating to the walls of one of the buildings in Compound A by the Air Spray Co. of Washington D.C. is turning out badly. It is checking, cracking and peeling off and has turned a very objectionable grayish color.

The Truscon Co. is planning a test next month but it will be carried on in an outlying ruin where if it turns out badly no damage will be done to main walls. The test will be applied by the laboratory expert of the Truscon Co. who has already made laboratory tests on material furnished him.

Assistant Architect Langley made a brief visit to the Monument on March 20th to inspect our road and trail work.

Some minor repairs have been made to buildings during the month.

Ranger Frank L. Fish made two new charts for our museum during the month. One shows the length of time of habitation of the various ruins and modern pueblos with dates as furnished by Dr. Douglass' tree ring method of dating. The other shows the location of the various National Parks and Monuments in Arizona, New Mexico, Utah and Colorado. Frank has demonstrated his ability in this line of work and probably will get plenty more of it from new ones.

Our picnic grounds are becoming increasingly popular. Each week ~~finds~~ finds it used more and more. The Monument has become a meeting place for friends in various cities of the State who bring their out of State visitors with them, have a picnic dinner and see the ruins together.

The Monument has had much favorable publicity recently both in the local press of the State and in Science Service and other publications. The Arizona Automobile Association had a fine article in it's monthly publication which has been widely copied. Several articles have appeared in magazines about ~~the~~ the new cover for the Casa Grande. All of this publicity is valuable advertising and brings us many additional visitors.

The month has been a satisfactory one from every angle. April will be the beginning of our slack season and visitors will fall off from now on until September because of the hot weather in this section during these months.

STATE	NO. CARS	NO. VISITORS	STATE	NO. CARS	NO. VISITORS
Alabama	2	9	Ohio	45	183
Arizona	2089	7298	Oklahoma	24	110
Arkansas	3	19	Oregon	15	59
California	662	1755	Pennsylvania	21	120
Colorado	65	186	Rhode Island	6	21
Connecticut	7	20	South Carolina	1	4
Delaware	2	5	South Dakota	4	17
Florida	2	10	Tennessee	5	28
Georgia	4	12	Texas	87	289
Idaho	5	33	Utah	17	69
Illinois	74	331	Vermont	0	1
Indiana	20	116	Virginia	2	20
Iowa	20	80	Washington	32	104
Kansas	22	63	West Virginia	3	17
Kentucky	0	14	Wisconsin	25	104
Louisiana	2	9	Wyoming	9	28
Maine	3	11	Dist. of Columbia	8	34
Maryland	4	19	Canada	7	45
Massachusetts	13	78	Mexico	4	16
Michigan	41	149	Alaska		6
Minnesota	18	72	Ireland		2
Mississippi	1	6	England		1
Missouri	33	131	Japan		1
Montana	2	17	Hawaii		1
Nebraska	23	78	Chile		3
Nevada	4	13	Italy		1
New Hampshire	1	4	Scotland		1
New Jersey	10	39	Luxemburg		1
New Mexico	45	108	Germany		1
New York	53	252	France		3
North Carolina	4	9	China		1
North Dakota	2	4	Guatemala		1

TOTALS * 3553 cars 12244 visitors
1455 tours of the ruins
1311 museum lectures

TRAVEL STATISTICS FOR FIRST HALF OF 1933 TRAVEL YEAR CASA GRANDE NATIONAL MON.

EL MORRO NATIONAL MONUMENT.

I have the following letter from Mr. Vogt under date of March

25:

"This is written at our ranch at Atarque where I have been busy on the job of tanking. You will know, though some who read this may not, that tanking is building dirt reservoirs to catch the run-off snow water or rain water for stock watering purposes. I have completed three dams now but have worked myself sick, so I am going home to go to bed for several days to break this terrible deep chest cold.

"Before I go home I have to move my camp, men, teams, etc., about five miles to a new site where we have found a favorable location between hills where a rock spillway can easily be made. The names of the lakes we have provided for are Shoesti Lake, named after our jovial and efficient Zuni Indian cook, La Gallina or Chicken Lake, named after a white hen one of the Mexican drivers brought to the camp one night after a baile in the village 15 miles away. We ate the hen, though I have suspected it was a stolen fowl. At any rate it named the lake. The one just finished we call Chile Lake since at this camp so much chile was used that we had to leave in the interest of our innards.

"Last Sunday I took to El Morro a descendent of Cabeza de Baca, Miss Emilia Baca, of Santa Fe, whose mother is Secretary of State. - She wanted to see the rock to see if any record of her distinguished ancestor had been left there. In her family there is a belief that he came through this region rather than further south when he got away from the Texas Indians. She found no record of Cabeza de Baca and, strange to say, not a single name of Baca on the rock any place.

"The green feed is pushing up nicely out there and everything was very lovely. We ate our lunch at the first place on the south face under the pines. Though it was a cold day it was nice and warm there before the fire.

"C. W. Cotton, of Gallup, headed up a party that visited the Rock on March 8th but there has not been much travel.

"The weather the last few days has been frightfully cold and windy. Bitter winds have kept up all day and sometimes all night, a most unusual thing. One night it brought on a light two inch snow.

"Live stock holds up well despite the wind, though of course the cold retards the growth of green feed.

"Farmers are busy getting their plowing done, buying seed, talking crops, etc. Everyone feels very much encouraged since the President has taken the bull by the horns and tail and gone ahead in such a firm and confident fashion. Wool and losses are up and everyone is full of hope. Even the songs of the birds seem to promise better times.

"I replied to Director Albright's letter about unemployment, listing about fifty persons who need employment in this region."

Those singing birds that E. Z. speaks of reminds me of that Indian who, hearing an owl hoot, said it was a sign of rain, that the owls knew when it was coming. A few days later, having his attention called to the fact that it hadn't rained, he remarked that it must have been a "Heap young owl!" Let us hope E. Z.'s birds are adults.

GRAN QUIVIRA NATIONAL MONUMENT.

Mr. Smith of the Gran Quivira National Monument says:

"For the month ending March 20, 1933, we have had 92 visitors in 24 cars entering the monument. It has been a poor month of travel, due to the financial strain which has affected all travel, and we had about as good a month as we had a right to expect.

"Weather conditions for the past month have been favorable, warm, but rather windy, which isn't uncommon for this part of the country during the month of March.

"Mr. K. A. Huey, who has the well drilling contract, has practically all of his equipment on the ground, but has not yet begun drilling.

"Our treasure seekers are expected to return to their diggings in the near future according to their report. They are to begin operations soon after the first of April."

MONTEZUMA CASTLE NATIONAL MONUMENT.

It will be remembered that Mr. Jackson had the Engineers with him last month making a new parking ground. They are still there. Mr. Jackson reports as follows:

"As my last attempt at writing a monthly report has been accepted, I feel encouraged to try again.

"Our number of visitors rather exceeded our expectation for the past month, climbing up to 1006 by actual count. Heretofore, as you know, the number of visitors has been based on the number of names in the register book multiplied by two, for we figured that fifty per cent of the visitors climb the ladders to the Castle and registered in the book up there. This actual count rather bears me out that not fifty percent of them do climb the ladders as our book for the month only shows 303 names. I will of course have to check against the book for a longer period before I can give you anything definite.

"Among the visitors for the month were Martin Evenstad, wife and daughter, from the Casa Grande Ruins, Lee Mighell, and James Curry and wife. James Curry is a brother of Hugh Curry, Park Ranger here at the Castle, while Mighell is a cousin.

"Landscape Engineer, Langley, also spent a few minutes here on the 23rd.

"The telephone company installed a toll telephone box in the store during the month, which means that you can talk as much as you like if you have the money to pay for it! But even so we are glad to get it and will save the old Ford many miles and, as you know, the Park Service does not furnish a car, or any gas or oil for this monument.

"In my February report I mentioned that Forest Supervisor, E. G. Miller from Flagstaff had paid us a visit, but I failed to state that he told us at the time that there was an outline of a very interesting prehistoric building on the flat to the south of us on the land that Davis now claims. Mr. Miller says that he saw them the first time in 1920 while surveying a line through the flat and that on returning to his office he recommended that the land be included in the Monument and was under the impression that it had been, but has since notified me by letter that it was not included, but

he is still strongly of the opinion that it should be. Engineer Attwell and Ranger Curry have since looked the site over and will probably have something to report on it.

Engineer Attwell gave an illustrated lecture before the Kiwanis Club at Clarkdale on the 22nd. It must have been well received as he has since been requested to give the same lecture at the High School.

Attwell and crew are still with us and as you said in your last report, "When Walt gets on the job, the dirt begins to fly." To which I agree and he is getting a lot of work done. However in this particular case I think he is working himself, his men, and teams too hard and we have had several clashes on the subject.

Walt agrees with me on one thing and that is that our local Apache Indians are good workers and you can back us up in that as we are working several of the boys that you are acquainted with and who have given us good service in years past."

Sincerely, Jackson."

I have the following report from Mr. Attwell on the engineering progress at Montezuma Castle for the month.

"The close of this month finds the construction work at the Montezuma Castle Road and Parking Area within two weeks of completion.

"The new road has been completed with all drainage structures in place. The parking area has been graded and rounded into shape. The rubble masonry walls will add much to the appearance of the project. They are neat and well built. They are made of malpai stone which blends well with the permanent structures and helps to lessen the white glare of the limestone cliffs. The curb has been placed around the central island planting there is in progress. The red sandstone flags add much to the appearance of the walks. Materials have been reasonable, the weather excellent and laborers have worked efficiently, all of which helps to make the unit costs fair.

"The crews have been selected from the destitute bread lines. Men from Camp Verde and the locality near the Castle were good laborers. The men sent over from Cottonwood and Cornville (30 miles) were, on the whole, the poorest that I have ever used. The County's dola system has taught the destitute that the man who works receives the same pay as the man who goes fishing or the man who looks for bee trees.

"We are using a few Indians from Camp Verde who have proven themselves to be the best laborers we have had. They work hard, do their work well and spread no radical propaganda. I was told that I was supposed to work no one locally but all men from Cottonwood, 30 miles away, and bar all local men which would exclude Indians. I have used at least one Indian all the time. At present I am using four Indians and 20 white men.

"During the excavation of the parking area one prehistoric stone was found. There were six inches of ashes and charcoal immediately over it which was overburdened with 30 inches of decomposed limestone. This stone was rectangular in shape being 18" by 20" and 4" thick, with a four inch round hole through the center. It was dressed on all sides.

Ranger Curry believes that it was used as a cover for a subterranean chamber in one of the living rooms where corn or trinkets might have been cached. Other theories are based on the assumption that this stone might have made the entrance to shipapu.

"Ranger Curry and I visited the area which is locally referred to as a prehistoric grave yard for the people of Montezuma Castle. This area is due south of the Castle a distance of 1/4 mile in the Coconino National Forest. It is in the center of the land formerly cultivated by the inhabitants of the Castle. The area is bounded by a prehistoric walk five feet wide with a dry stone coping on each side. The area contains about two acres and is oval in shape. In it there are many small mounds of small rocks resembling graves. Dozens of these mounds have been recently excavated but the material shows no signs of bones. It is easier to believe that this could have been some kind of an offering to the gods than the cemetery idea.

"On March 22, accompanied by Ranger Curry, I gave an illustrated lecture on "Our National Parks and Monuments" to a small group of Kiwanis Club members at their regular meeting in Clarkdale, Arizona.

"So endeth my report for the month of March, 1933."

Walter G. Attwell.

NAVAJO NATIONAL MONUMENT.

I have the following short letter from John Wetherill:

"Dear Frank:

I want to get to work on the trails in the Navajo Monument as soon as I can get my horses up from their winter pasture.

"The first party left here for the Ruins today, and they expected to walk a part of the way.

"We are looking for a lot of travel through here this summer as the roads are much improved and the Government is keeping a crew busy most of the time. We have a grader and cat at work and a crew putting in bridges.

"The Piute Strip was made Indian reservation the first of March.

"I am, sincerely,

John Wetherill.

"P.S. Mrs. Wetherill read this letter and made me add this P.S. with her best regards to yourself, children and your Mother, and she tells me not to forget your rangers."

PIPE SPRINGS NATIONAL MONUMENT.

Mr. Henton writes toward the end of March that spring has come at last and he has seen several flowers and a lot of weeds are coming up, the trees are beginning to show buds and a little green.

He says the Utah Pioneer's Trail Association is making plans to put up their marker at Pipe Spring some time in May and wants to know where we think the best place would be for it. He says some want to put it on the old fort. This will have to be put up to the Division of Design.

PETRIFIED FOREST NATIONAL MONUMENT.

Following is Mr. Smith's usual good report of the doings at the Petrified Forest for the past month:

"Dear Mr. Director:

"The following narrative report for the monthly period including March 27, 1933, is submitted.

"In general, conditions are good in the Petrified Forest National Monument. Travel is picking up and the Bank Holiday seemed to have very little effect in the number of people visiting us. The Southern California earthquake caused a slight swelling in east bound travel for a time.

"The weather has continued mild, ordinary spring weather with cold nights. The highest temperature recorded was 71, and the lowest was 21. There were 19 clear days, 6 part cloudy and 4 cloudy.

"Associate Highway Engineer, W. R. F. Wallace, of the Bureau of Public Roads, was here on the 20th and all roads were inspected with the Superintendent. Some protection work will be necessary on the island above the Rio Puerco Bridge and recommendations for this work were made by Mr. Wallace. Assistant Architect Harry Langley arrived on March 24 and much was accomplished on that afternoon. On March 25 Mr. Langley, Mr. J. H. Brannan, Associate Highway Engineer, B.P.R., and myself spent the whole day in consideration of the various problems connected with the proposed projects. The proposed line change north of the A.T. & S.F. R.R. was studied and the change approved, borrow pit locations were selected for the grading of the proposed north connecting road with U.S. Highway 66 and further study was made of the proposed rim road in the Painted Desert Section.

"Mr. Hurst R. Julian, Custodian of Chaco Canyon National Monument arrived March 16th with his party and spent the next day at the Monument leaving for Chaco Canyon on the 20th.

"Mr. A. H. Womack, who has been in charge of water development for the Indian Service in the southwest for many years, and Dr. H. E. Neuffer, Supervising Engineer, Fifth Irrigation District, Indian Service, Albuquerque, New Mexico, came in on the 11th to confer regarding the possible loan of a well drilling rig with crew for the completion of our water well here. This matter has been communicated to your office and proper action is being taken which should result in great benefit to the Service.

"An informational road log was prepared and mimeographed which should be of great value to the public in pointing out interesting places within the monument.

"On invitation of the Rotary Club of Holbrook, the Superintendent made a few remarks to the gathering on March 3. The subject was WHAT BENEFIT ARE NATIONAL PARKS AND MONUMENTS TO ADJACENT COMMUNITIES AND VICE VERSA?

"Our roads have been kept in first class condition throughout the month. Considerable work was necessary to fill up the shoulders where they had been washed out by the rains and melting snows last month.

"In cooperation with the A.T. & S.F. R.R. the farm grade crossing just inside our west boundary was opened up to the tourist and other travel.

Old rails were loaned by the railroad and cattle guards were installed. This is a much better crossing than at Adamana as the visibility is much better and it is a great convenience to the public as the distance to the Painted Desert Section is shortened by more than a mile and a half. Also there was a bad mudhole north of the tracks and west of our boundary in which several cars had been mired so deeply that they had to be pulled out. Then too a sign had been erected north of the tracks and east of Adamana which warned travellers that passing over was prohibited.

Complaints were received from the Pickwick stages and others who were using the Painted Desert Rim Road from U.S. 66 around the Painted Desert Inn as to the condition of this road. Consequently by cooperation with the owners of the Painted Desert Inn this road was repaired and a few changes made. The proprietor of the Inn furnished three Navajo Indians and one white man for this work while we furnished a truck and driver for eighteen days. In this manner the road was put in first class shape for the spring and summer travel. Such minor changes as were made were approved in advance by Assistant Architect Langley last fall.

"From the eleventh to the fifteenth a crew of three men were employed in the erection of the standard metal signs which were purchased last fall. These are a great improvement and a benefit to the public.

"The State, as a federal aid project, has just finished grading and gravelling 33 miles of U.S. Highway 66 east and west of Holbrook, Ariz. With the oiling of these in the near future, and the finishing of one more link to the east, and the work being completed west of Williams, U.S. 66 will be in fine shape all the way to the coast.

"A small band of antelope, consisting of about ten, is seen daily about a mile west of our boundary on U.S. 260.

"The Museum is kept open daily from early to late. This is the only special educational service we are able to present at this time.

"As stated, there seems to be a steady increase in the travel through the Monument on account of the Rio Puerco Bridge and our connection with U.S. 66. Including the travel contacted at the Checking Station in the Painted Desert Section, there is more than double travel over last year. The actual increase to date of those passing through the Petrified Forest Section is 37%. The increase in the grand total, including the Painted Desert Section to date is 132%. A tabulation of this travel follows:

For the month, Petrified Forest Section,	Cars	970,	people	2,844
Previously reported	"	"	"	"
Total to date	"	"	"	"
For the month, Painted Desert Section	"	1,383	"	4,542
Previously reported	"	"	"	"
Total to date	"	"	"	"
Grand Total for March 193	"	2,353	"	7,386
Grand Total to date	"	11,414	"	35,330
Last year, same date	"		"	15,161

Each state, the District of Columbia, and seven foreign countries were represented in this travel. On the last day which is included in

this report, two states, Maine and New Hampshire remained unrepresented. However a car drove up which showed a Maine license with two men as passengers. On registering, one of these men was found to hail from Maine while the other was from New Hampshire. Thus these two states were saved to make our list complete. Two cars have camped in the camp ground overnight during the month.

"Noted visitors include: Major General and Mrs. J. G. Harbord, U.S.A. Miss Margaret Kubel and party, of Washington, D. C., Mrs. Mildred Schaubacker, Most Worthy Grand Matron of the Order of the Eastern Star., Mrs. B.E. Marks, Phoenix, Arizona, Worthy Grand Matron, O.E.S., Arizona.

"Foreign Countries represented were: Canada, Mexico, England, India, Denmark, South Africa, Germany, Norway and Russia.

"No official trips have been made outside the Monuments.

Very Respectfully,

Chas. J. Smith, Superintendent."

PIPE SPRING NATIONAL MONUMENT.

I have the following report from Mr. Heaton, covering the month before March 24th.

"The spring weather is here and brings as usual the spring fever of causing everybody to clean up around their farms and get their spring plowing and seeding done. It seems that something is missing this year on account of having given the water to the Indians and not having the fields to plow and prepare for some kind of crops.

"I am cleaning out the ponds and fixing up the grounds in general. I am rebuilding some of the rock walls around the ponds that have started to fall because of weather conditions.

"Dr. Farrow, of the Indian Reservation, with Mr. Lindquist, an inspector for the reservation, was here two weeks ago and we talked some about the water. The impression I get from them is that there will be no water for the meadow and the trees, but, as I wrote you on the 20th, I will try to get them to use the ponds here to store the water, and also to concede to the Monument four days out of every twelve days for the purpose of watering the meadow and trees.

"The travel has been on the increase this month. An average of five cars each day, some stopping, others going by as if in a hurry.

"I am looking forward to an interesting time when you and Bob Rose get up here for there are many questions I want to discuss with you; your visit cannot be any too soon to suit me."

TUBACACORI NATIONAL MONUMENT.

Mr. Roundy sends in the following report:

"Our visitors for the month totalled 783.

"A number of artists were painting at the Mission during the month.

"Among those who registered were General Harbord and wife, Col. Knox and Luck Fershing. General Fershing was a Lieutenant around here during the Geronimo campaigns.

"Mr. Goodwin, of the Engineering Division, has the new parking place well under way. We are employing only heads of families and the most needy.

"As all the people in this vicinity are receiving help from the Nogales charities, the money we are spending here is very much appreciated in Nogales.

"For March there has been very little wind and if it had't been for the gasoline engine at the windmill we would have been badly handicapped with the cement work.

"For the eleventh year that I know of, a Say Phoebe is nesting in the same nest in the sacristy at the Mission this year. She made a number of repairs to the nest. Last year she raised two broods instead of the customary three.

"Mr. Langley, of the Landscape Division, inspected the work here last week."

George L. Boundey,
Custodian."

IN GENERAL.

The reports for the month would indicate that weather conditions were as good as usual at this time of year and that we are having about the same flow of traffic that we had last year at the same time.

At Casa Grande we have noted the reduction of Texas and southern states cars which ought to be on the road at this time and it may be that two months from now the same lack will be noted at the Petrified Forest. At least I am willing to guess it will show up there.

We have received orders that all '34 construction money is impounded, which didn't affect us very much as our '34 construction money was pretty much of a microscopic affair.

We were very happy to find that we had a new Custodian job at Bandelier National Monument after July 1, and a new Junior Park Naturalist job to be filled at the same time. These we do need the worst way and we certainly thank the Bureau of the Budget, the Appropriation Committee, and especially the Washington Office for defending these positions and getting them through. We will still be undermanned but there will only be two or three monuments where the conditions will be critical.

Mr. Julian has gone back into the Chaco Canyon National Monument and is prepared to receive visitors there for the summer months.

Mr. Rogers will go back to Bandelier during the month of April.

In general, things are going well among the Southwestern Monuments.

Cordially,

Frank Pinkley
Superintendent.



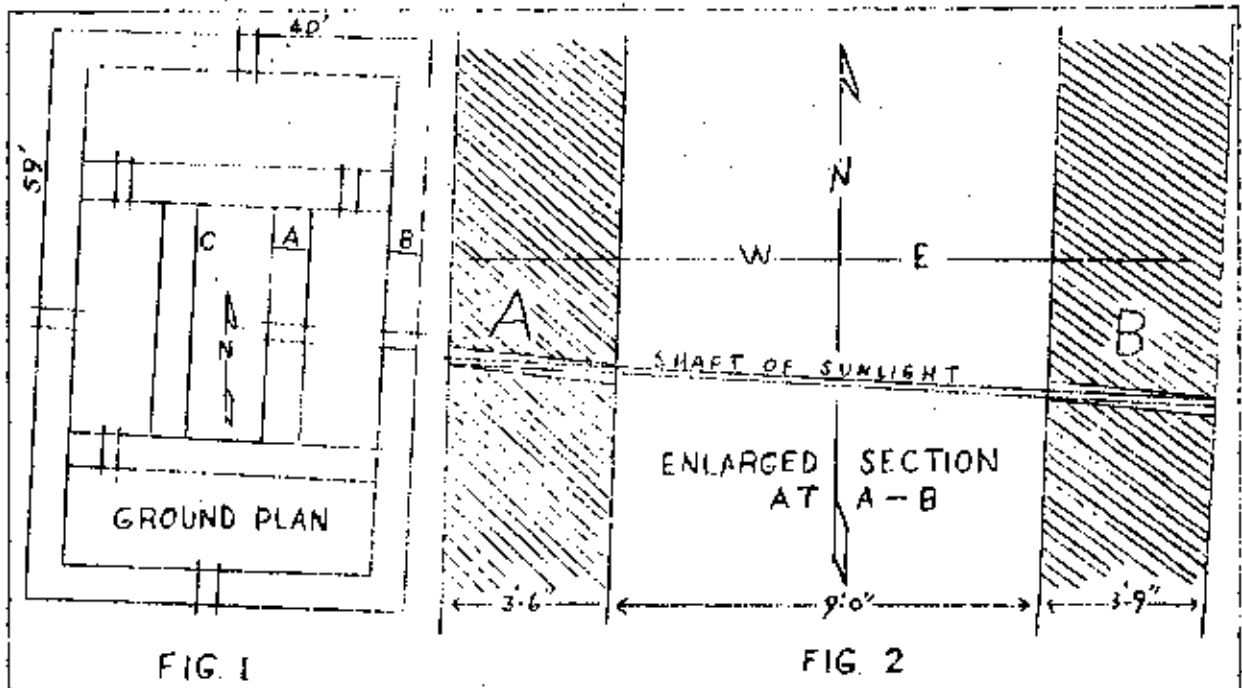
The
February Supplement
to the
Monthly Report

Interesting things which don't quite
fit into the regular report.

THE CASA GRANDE SUN-HOLES.

We have long known that there were two holes in the eastern walls of the Casa Grande Ruin so aligned that, it is probable, in the ancient days the rising sun shone through them putting a spot of light on the back wall of the center room for some two or three minutes at sunrise on about the seventh of March and the seventh of October each year.

Ed Rogers, who has been on a special detail at Casa Grande during the month, became interested in these holes and carried out much the most careful observations which have ever been made of them. His observations began on February 28th and ended on March 15th.



The Casa Grande is a prehistoric structure approximately 40 by 59 feet having the five room plan shown above and the two sun-holes are placed at A and B as shown in figure 1. The theory is that the sun in rising on about the seventh of March in the spring and the seventh of October in the fall would rise at the proper point on the horizon, which would be about south 88 degrees east, to shine through the hole B, across the room and through the hole A, casting a spot of sunlight on the back wall of the middle room of the ruin at the point C.

At the eastern end of the hole A the plaster and wall are broken back several inches, so by means of a wooden frame Ed erected a sheet of cross section paper in the plane of the original plaster surface. He then went into the middle room and, from the west end of the hole A, projected the hole on the back of his sheet of cross section paper in the plane of the original plaster surface, and cut that disc out of his paper. The hole in the paper sheet then represented, with an error of not over 1/10 of an inch, the original end of the hole in the plaster at the east end of the hole A.

We come now to an explanation of Figure 2, which is an enlarged section of the holes A and B shown in Figure 1.

It will be noted that the holes A and B in the ground plan of Figure 2 do not line up precisely, the drawing purposely showing a distortion of this effect in order to make it plain.

Ed is of the opinion that this is an accident of construction; that without instruments of precision they would have not been able to bore the holes in a precise line.

It will be noted that the effect of this distortion of the holes is to produce a smaller sun-spot at the point C, Figure 1, on the back wall of the center room.

The hole B is approximately three feet nine inches long and 1.7 inches in diameter. It is thus of sufficient size to allow the sun in its northern journey along the eastern horizon to shine through this outer hole B from the 27th of February to the 15th of March. This would have been too long a run of days to give a precise dating, and this is taken to be the reason for the second hole A, for as the sun travelled from south to north along the eastern horizon morning after morning, it would shine through the hole B first casting its spot to the north of the hole A and then, morning after morning, coming closer and closer, until about the 6th or 7th of March it would fall through the hole A and make a sun spot at C on the back wall of the middle room.

It was this effect which Ed set out to study.

We come now to a description of Figure 3, which is a reproduction in full size of that portion of Ed's chart of the sun's rising, with certain corrections, which are directly connected with the study. This chart was set, it will be remembered, over the east end of the hole A in the plane of the original plaster.

The chart was divided into inch squares. The east end of the hole A is represented by the circle XY, of which the cross hatched portion, Y, represents the actual field of the sunlight which was thus reduced from the full field by the distortion of the holes from a true line as explained in Figure 2.

It will be noted that on March 4th the sun, rising to the south of the hole B, shown through that hole and cast the spot of light underneath and to the right of the circle XY as shown in Figure 3 under March 4th. Unfortunately this was a cloudy morning and the clouds did not clear back and allow a bright spot of sun light to show until several minutes after sun-up. Thus the record of this morning was not of much value.

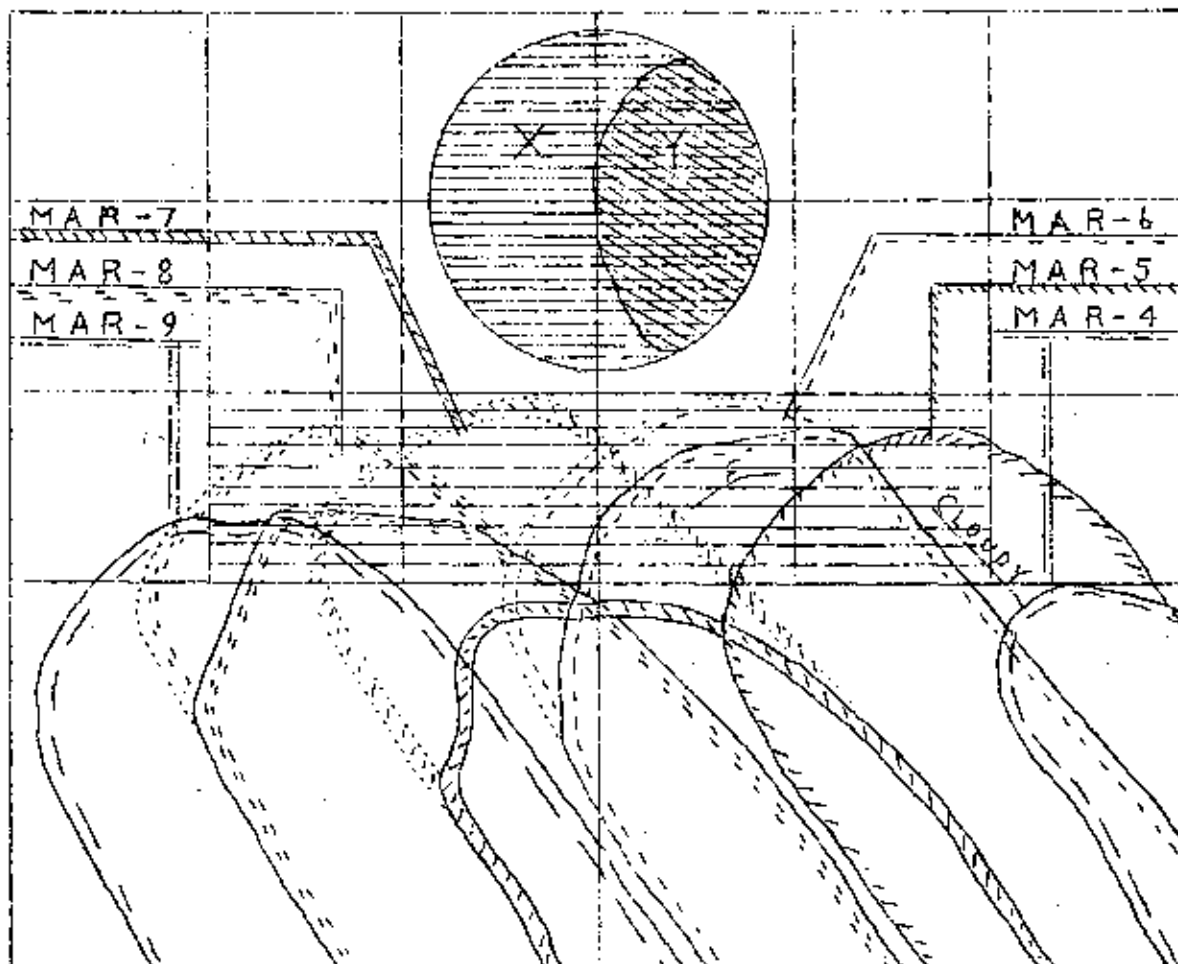


FIG 3

March 5 was clear and the spot fell at the point shown under that date and went downward and to the right.

It was here that Ed discovered that he had an interference of the Chief Clerk's residence to the east of the Casa Grande. That house had been built in the line of these holes and the top of the chimney formed an artificial horizon just that far above the true horizon over which the sun came up behind them.

The method of making allowance for this error and projecting the sun-spot upward to where it should have appeared if the residence had not interfered, was as follows: I stood to the south far enough to sight past the residence and see the true horizon and, at the moment of actual sun-rise, called the time to Ed. He, watching the chart, circled the sun-spot thereon as soon as it actually appeared and again checked his time. He then figured the elapsed time and let the sun-spot sink to the right and downward that same number of minutes, when he checked its upper limit at the point F. It was then a simple matter to project the line where the sun would have appeared as far above the line where it did appear as the

~~point F was below that line and thus we get the dotted and dashed line~~

point F was below that line and thus we get the dotted and dashed line above the solid and dashed line of March 6th. On March 7th he found further interference which dropped the actual sun-spot down to the point shown, but a similar method of projection brought it up nearly, but not quite, on a level with the spot of the 6th.

The spot of the 8th was projected in the same manner but fell a tenth below that of the 7th and far to the left of the circle XY.

The spot of the 9th was so far to the left as not to enter his problem, so it was not projected upward.

A study of Figure 3 will show that the sun-spot fell equally distant from the circle XY on the 6th and 7th but, at its nearest point as shown by its upward projection, failed by some two or three tenths to reach

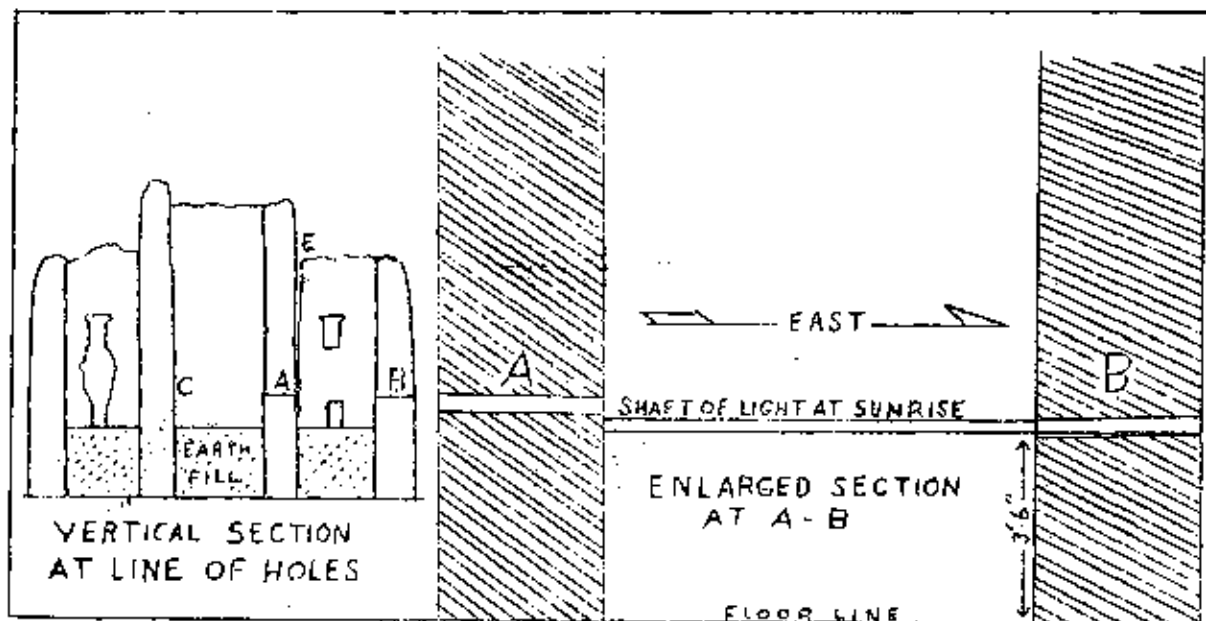


FIG. 4

FIG. 5

the circle XY. For an explanation of this failure we must study Figures 4 and 5. Figure 4 is a vertical section of the Casa Grande through the holes A and B, showing their relative position in the building on a vertical plane. It will be noted that the first story of the ruins was filled with earth at the time of construction, so the holes A and B are about three feet six inches above the floor level of the second story, or some eleven feet above the ground outside. Figure 5 is an enlarged section of the holes A and B of Figure 4 on the vertical plane just as Figure 2 is an enlargement of the holes of Figure 1 on the horizontal plane.

In the vertical plane of Figure 5 it is seen that the holes A and B are not in line in this plane any more than they were in line on the horizontal plane. This distortion is due in part to the fact that the holes were probably never drilled in a precise line and, in part at least, to the fact that the wall containing hole B has settled outward as is proven by a crack, marked E, Figure 4; at the junction of the cross wall between A and B

where this cross wall joins the wall containing the hole A. This crack is about an inch wide at the top of the wall and is reduced to nothing at the bottom. This means that the top of wall B has settled outward about an inch and downward about three quarters of an inch and the hole B has changed its original location to the same extent.

If the wall B were raised the distance which it has settled, then the light falling through the hole A on the morning of the 6th and 7th of March as shown in Figure 3 would have fallen about eight tenths of an inch higher which would have made it fall on the circle XY.

Due to the fact that the warping of the holes in the horizontal plane as explained under Figure 2, leaves that portion of the circle marked X and lined horizontally, in the dark, it can be seen that the sun-spot of the 7th would not have shown through the hole A and across the middle room to the point C if the wall B were raised to its original position.

On the other hand, the sun-spot of the 6th, if the wall-B were raised to its original position, would strike on the cross-hatched portion of the circle XY marked Y and would have shown through to the back wall of the middle room, and this would have happened on that morning only in the northern journey of the sun.

From these facts the conclusion would appear that the second hole A must have been drilled to cut the sixteen or seventeen days on which the sun would shine through the outer hole B to the one definite day on which it would shine through the inner hole A and put a spot on the back wall of the middle room.

From this event a calendar might have been dated which would have given the inhabitants a precise civil year for they would have, in effect, hung their civil year on their solar year and the sun would have checked both.

Further observations of this detailed character will be made next October and a report at that time will be rendered on the full repetition of this event.

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The bound copies of the Superintendent's reports for the months of last October and November reached our desk about a week ago, coming in just 24 hours apart, one set having caught up with the other some place along the way. Well, it made a sort of deluge of reports, all the news of course being somewhat out of date. Four of us around the headquarters here read them and got them out in two or three days and then were talking about the impressions sixty or more reports at one sitting left on our otherwise blank minds.

My own impression was that you could have run a fine meshed seine through that ocean of reports and you wouldn't have brought up a handful of facts about visitors. An archaeologist five hundred years from now getting hold of those reports would guess that the Park Service was in the contracting business but he would never suspect that the main line of work was handling visitors and sending them away with as full knowledge as possible of the place they had come to visit.

In our own minds we have decided to try to correct this latter in our own reports in the future.

Bob Rose says that one of the highlights of his trip to Berkeley was his visit to the San Francisco Office of the National Park Service. The visit was very pleasant and instructive. The Division of Plans and Design was in the midst of the preparation of Master Plans most of which were gone over together at that time. All who had worked at one time or another in the Southwest asked to be especially remembered to our Southwestern personnel. Among these were:

H. A. Kreinkamp, Architect, and Bob says on several occasions he did justice to dinner engagements with the Kreinkamps.

Chuck Richey, Architect, who, with Mrs. Chuck, who is still new to us in the Southwest, visited the preview of exhibits in Giannini Hall.

J. P. Hamilton, Engineer, the "Two pants Jim" with whom the Paris and Julian families have worked out the engineering problems of their monuments.

Francis P. Farquhar, Editor of the Sierra Club Bulletin, asked to be especially remembered to the Boss.

Mr. and Mrs. Adrey Borell visited with Bob at the laboratory on several occasions. It will be recalled that the Borells were Southwestern Monument visitors last summer.

We haven't been able to get out into our own bailiwick this month and gather the personal items of our own organization, but it won't be long until we will be going hither and yon and finding out how everybody survived the winter and the Bank Holiday and the 15% shave, and whether there are going to be visitors enough this summer to go round and still keep us all busy.

Cordially,

The Boss