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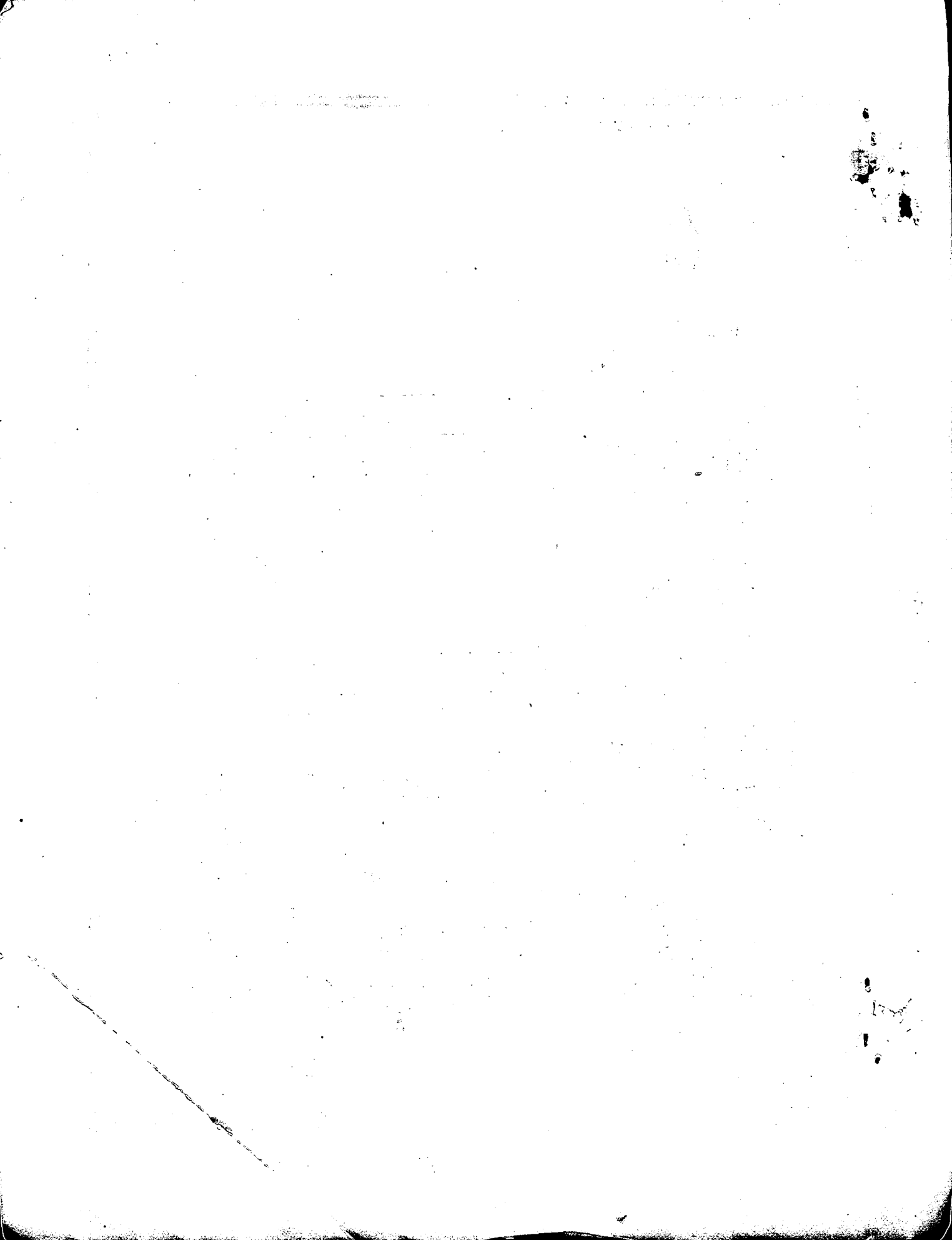
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SOUTHWESTERN MONUMENTS

MONTHLY REPORT
NOVEMBER - 1932

NICKEL



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November--1932

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NOTE:- Following the regular report for the month is a supplement giving personal items, news, acknowledgements and comments.

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

December 1, 1932.

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

Dear Mr. Director:

Consulting our calendars we find thirty good days of November, 1932 have passed all too quickly and once again it is time to review the activities of another month.

Bob Rose says his report looks the most "formidable" so I'll lead off with it.

Activities of the Park Naturalist: By R. H. Rose.

On October 31st I returned from Montezuma's Castle concluding the field trip which was described in detail in the month's report for October. Assistance in editing and publishing of the October reports occupied the spare time of all available hands for the first four or five days of November. This was followed by several days attention to the inevitable accumulation of desk work that had stacked up during an absence of three weeks in the field.

With the assistance of Francis Seagoe who was engaged during my absence from headquarters and during the recent illness of most of the members of our personnel further improvements in the Casa Grande museum were made. Complete cataloguing of the collections is being finished. Exhibit materials have been placed in the new cases which were manufactured some weeks ago. Cases without shelves for the display of Modern Indian baskets and Papago Indian ceremonial materials have been backed with monk's cloth which improves their appearance greatly. Before the installation is considered complete there is a great deal of labeling and graphic illustration to be done.

It seems that the whole Southwest has been visited by an epidemic of la grippe and "flu". Many schools have been closed for more than a week and in some sections all public meetings have been suspended. I was absent from duty with the La grippe from November 18th to the 22nd inclusive and the Superintendent was confined for a somewhat longer period. I'll leave his story for him to relate in his own way.

Mr. and Mrs. A. E. Borell were visitors on the 21st and 22nd. Mr. Borell was formerly ranger naturalist in the Yosemite. Their visit of nearly two days with us was a part of their several weeks tour of national parks and monuments.

On the 16th and 17th Senior Naturalist Hall was in this region. It was a pleasure to have this contact with the Field Educational Headquarters and to discuss with Mr. Hall our achievements for the past year in educational work in the Southwest. We're sorry Mr. Hall's second day here found the Boss and I counted definitely among victims of the "flu".

Getting back to duty on the 23rd, the Boss and Custodian Palmer still being confined, there was a great deal of office work to which I gave attention.

Our situation at Southwestern Monuments is unique in that there is probably greater isolation and separation of members of our organization than is true of any other unit in the National Park Service. For that reason we feel that our month's report forms a very important instrument of business and social contact among the various individual members of our organization and between the field men and our headquarters office. For that reason I am taking the opportunity here to describe some of the methods used in improving the museum at Casa Grande. This account will demonstrate the manner in which we are tackling our problems in a practical way. It may also prove of value to those custodians contemplating museum improvements during the coming winter.

Almost at a glance, in beginning the cataloguing of our museum, we noted that the materials could be classified into certain obvious groups. On this basis we selected certain cataloguing key letters for each group. For example, we gave the letter "G" to our materials that came from the so-called GREW SITE near here. This material was further subdivided into groups as to articles, vessel shapes, etc. We then gave the letters "G-1; G-2;G-8; ---" to the individual members of one subdivision until all had received letters and numbers. The individual members of the next Grew Site subdivision were numbered "...G-14; G-15; ---G-23;etc.". After this was done for all of the subdivisions, index-tapped cards 3"x5" were used on which "GREW SITE" was entered for the whole collection. Then came consecutively the entering of the members of the first group; beginning with a new card the second group was entered, and etc. Accompanying each group descriptive notes as to important dimensions, percent restored, location found, record of excavation dates, etc. were entered.

Examples of other key letters chosen are:

"FOREIGN POTTERY"-----"F-1-M; F-2-M;...." for Foreign No.1, Mimbres; Foreign No.2, Mimbres, etc.
"PLAINWARE"-----"P-1;P-2;....etc.
"POLYCHROME"-----"PC-1;PC-2;....etc.
"NATURAL HISTORY"-----"NH-1;NH-2;....etc.

We found it a good plan to select the first letter, or the first letter of each important syllable, of the word one is most likely to think of in looking at the particular group in the collection. To test the success of the index letters chosen we picked up exhibit pieces at random and noted whether or not to us the letters such as "F-14-KF" suggested that that particular piece was "Foreign to Casa Grande; No. 14 -Kaibab". The better the interpretation of the piece from the letters and figures selected the more successful becomes the cataloguing scheme. Some collections can be catalogued as to donor such as "KIRKWOOD" and sublettered K-FW-1 meaning "Kirkwood collection, black-on-white piece No.1". Follow this with dimensions of each piece, its type name, use, where found, percent restored, etc.

Some remarks on the methods used in designing our museum cases at Casa Grande may prove of interest. Arbitrarily deciding that the shelves shall be 12 inches, or 15 inches, apart will not prove satisfactory. Shelves in the shelf-containing cases should be spaced wide at the bottom decreasing the distance apart for the higher ones. We took care that a person of average height standing in front of the cases at a distance of about three feet would find it easy, without tiptoeing, stooping or otherwise getting into an uncomfortable position, to get an unobstructed view of the total shelf width of every shelf in the case. A common error usually results in placing too many shelves in a given case of, say, six feet overall height. When such error has been made, invariably some of the shelves hide from view from one half to two thirds of the width of the next shelf below destroying all attractiveness of exhibits placed upon them.

Attempt to draw a plan arbitrarily of shelves properly planned. It will not be easy to do without an idea on how to proceed. I found that by taking a plank of the width and height desired (say 12" by 6'), setting it on end, edge toward me and some two to three feet away, and by sighting along nails placed by trial and error until they were such that my line of sight from the front edge position of one shelf reached clear to the back of the case (back edge of board) without being interfered with by the upper surface of the next shelf below- I found in this way the minimum distance apart I could space the shelves for good exhibit effect. In the event tall objects are to be displayed or labels tacked to the back wall of the cases the distances apart should exceed this minimum. "Staggered" distances apart for the shelves look much more artistic and give proper exhibit effect.

We found 72 to 75 inches overall height to be best for upright cases with shelves. A solid base 18 inches high, the top surface of the base being the lowest shelf, looks neat. An overall height for cases without shelves and 10 to 18 inch solid bases, can be increased to some 80 to 86 inches if desired. Cases without shelves

are best suited for exhibit of baskets, examples of weaving cloth, paddles and etc.

After the shelf spacings are determined as described above, the shelf positions can be penciled on the surface of the plank referred to and specifications for the cases taken by measuring the important dimensions from the plank. Determining thus by actual test the shelf spacings will give absolute assurance that the cases will be properly proportioned and that exhibit materials will be clearly seen by visitors standing in front of them—something that is oftentimes not possible in so many "home made" museums.

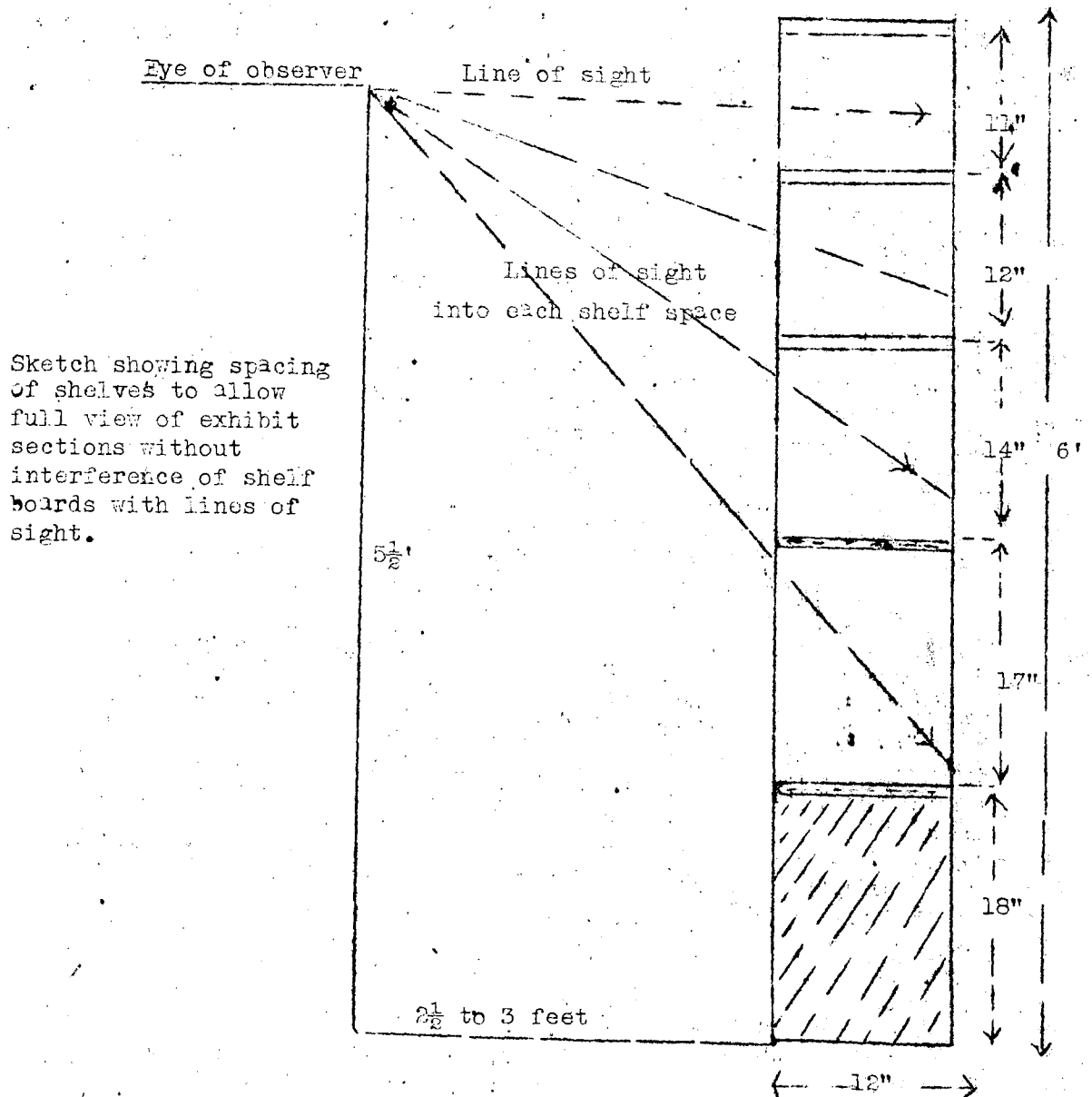
We built neat appearing finished cases by observing the following points:

- (1) We used Douglas Fir, the so-called Oregon Pine of this region. Beautiful graining effects were brought out in the staining process.
- (2) A beautiful golden brown grained effect was obtained by using a staining formula borrowed from Mr. Gladwin at Gila Pueblo. 1-quart linseed oil, 1-pint turpentine, and $\frac{1}{2}$ -pound burnt umber, or equivalent proportions, thoroughly mixed, were used. This was applied with a soft bristled paint brush and rubbed dry with rags. More linseed oil than the formula calls for will make a lighter finish. To avoid almost certain fire by spontaneous combustion these stain-saturated rags should be promptly destroyed.

Finally, it is a very common thing to find "home made", pioneer museums with shelves loaded down with from three to ten times the amount of material they should contain. The best effect can be obtained by selecting the choicest individual pieces from each important group of artifacts and by spacing them generously on the shelves. In this way each piece stands out as something precious, something distinctive, that catches the eye of the visitor as an object with personality and individuality of its own whereas by overcrowding all of this fine, beautiful effect is lost. We find that three to five select pieces on each shelf are far superior to fifteen or twenty pieces crowded and stacked.

Most of our monuments are confronted—or soon will be—with the problem of affecting a complete installation of three or four rooms with only a few scores of dollars to do it with. I feel that this business of pioneering in museum installation with only a limited sum of money at our disposal is a science. Of course our ultimate aim is to obtain fine, factory-built, bug and dust proof cases. However, to guarantee that we will know how to solve our installation problems should we wake up suddenly and find a few thousand dollars at our disposal, I believe it all-important that we understand and be able to solve our economical "home made" museum installation problems.

I have outlined some of the methods we have used in our recent installation work (1) thinking they might be of interest to your office in showing how we are trying to tackle our problems in a practical way; and (2) to present them for what they might be worth to individual monuments in solving installation problems that may arise during the coming winter. I shall be glad to hear from custodians on problems that arise which are not covered in the outline above.



Sketch showing spacing of shelves to allow full view of exhibit sections without interference of shelf boards with lines of sight.

REPORTS FROM INDIVIDUAL MONUMENTS

Aztec Ruins National Monument:

We have the following report from Mr. Paris:

"Dear Boss:

"Visitors for the month total 327. This is not so bad for November in general, but yet not as good perhaps as we should really have under present weather conditions. All of the passes are still open with but little mud, and the valley roads are reported to be in fine shape.

"There seems to be quite a siege of colds or flu in this region. Dorothy, of course, since it seemed popular to have it, was down for several days. So far I have been able to miss it and hope I shall be able to run along without it this time.

"Upon the suggestion of Earl Morris some old timbers which had been left more or less as they were found were gathered up and stored under cover for future use in ring growth data and studies. Several pieces were sent to Mr. Mustang at Santa Fe for his use there in the Laboratory of Anthropology.

"You will of course, Boss, remember the little deer or pig image that we had in the glass case? Mr. Stone, the owner, asked for its return the other day. He promised it to us for only a short time but when the time came we sure did hate to lose it. He assured us that his desire for its return was not the result of any action or lack of action on our part but that it was a case of his being able to get something out of it.

"It is my pleasure to now own one of the new rain coats of National Park Service regulation and I want to say for the producers that I for one sure like them. Perhaps if I had not made the big show for the rain coat I might even have gotten two pairs of pants and thus be on a par with Hamilton.

"J. B. Hamilton of Field Headquarters was here for a few days the early part of the month and spent several days going over the problems with us. I want to say that he was very thorough and as a result I feel that our repair problem is well in hand. I also want to express our appreciation of Field Headquarters and the cooperation they are giving us particularly in their sending us men like Richey and Hamilton who are so considerate and thorough in their operations and cooperation. Mrs. Hamilton was with J.B. We enjoyed their visit very much and we want them to feel welcome to drop in on us any time they are in this section of the country.

"Paul Fassel says that he is not getting his monthly report and that he misses it very much. If you have an extra copy I'm sure he would appreciate getting it. If you can allow me extras they should run 1. Aztec Publishing Co., Aztec, New Mexico; 2. Tommy Thompson, Aztec, New Mexico; 3. The Farmington Times-Hustler, Farmington, New Mexico. Perhaps Julian would like to put the last name on his list. I think it would be better that he have it. Also add 4. Paul Fassel, Aztec, New Mexico.

"I received Martin's check on my accounts and it is just what I

"Both Dorothy and myself wish the entire personnel of the National Park Service, and particularly that of the Southwestern Monuments, A Very Merry Christmas and a Most Prosperous and Happy 1933".

Capulin Mountain National Monument:

"Dear Mr. Pinkley:

"I have the following report to make for the month of November: We have had approximately 250 visitors to the Old Volcano this month.

"Weather conditions have been excellent for this time of year. The roads to and over the Volcano have been in fine condition all through the month.

"I have been doing some much needed work on the cabin this month replacing doors and windows and calking the ventilation under the eaves to protect from outside snow filling the cabin during the winter. It appears that more recently the visitors have made use of the cabin and fireplace and have gotten more benefit from them than ever before.

"With kindest personal regards to Mr. Pinkley and the rest of the force, I am Very Respectfully, Homer J. Farr".

Chaco Canyon National Monument:

Mr. Julian in closing the season reports for the month up to Nov. 19th as follows:

"Dear Boss: This is the last monthly report that will be submitted from the Chaco Canyon National Monument until next year. The 225 people who visited this monument for the month were from eleven states and Washington, D. C. On Nov. 16th Dr. Fairclough of Stanford; Prof. and Mrs. Kluckholm of the Department of Anthropology of the University of New Mexico; and Paul Reiter of the School of American Research, were at this monument. On Nov. 18th Mr. Bruce Bryan of Southwest Museum, Los Angeles, was here. Had Mrs. Paris not taken the "flu" she and Johnwill would have been down here on the 17th. It has been a very busy month and I have been trying to get the visitors to let me alone long enough to allow me to get everything ready to leave here!

"The weather has been ideal with the roads in their usual condition. The work is caught up to the point where it can be left until next year. Much as I hate to leave it, it will be turned over to the neighbors on the twenty third of this month. I could hardly leave if it weren't for the fact that I am going to Casa Grande for the winter.

"Both of us have been in bed with the "flu" for most of the week. The Griffin girls and Mr. Pierre Allbritten took the visitors while we were laid up, Mr. Griffin cut the wood and looked after the water; and all of the other neighbors took turn at cooking and nursing. While I would not recommend the disease to anyone, if they must have it Chaco is by far the best place to be stricken with it; the neighbors give one so much care.

"All the residents of the Chaco met at the lodge for a Halloween party. It was one of the social events of the season.

"Mr. Griffin is hauling rock for an addition to the Lodge. It was full on Nov. 4th and some of the guests were compelled to share their beds with late comers. How can one close a season up here if that is going to happen?"

In another communication under date of November 19th Mr. Julian reports the results of some work he performed on counting the number of stones per square yard for the various types of masonry exhibited in Chaco's ruins. He states that "the method used was to square up a yard of wall by using strings tied to nails. Every other stone which crossed the line of the string was included in the count. That was to leave half of them out of the count."

This report includes the averages of several counts on each type. Two types of TYPE ONE masonry were counted. Type I-A is the rubble type photographed by Mr. Judd and used in his masonry classification of the National Geographic.

Type I-A-----	201 stones per Sq. Yd.	
Type I-B-----	337 stones per Sq. Yd.	Type I-B
Type 2-----	612 stones per Sq. Yd.	
Type 3-----	441 stones per Sq. Yd.	
Type 4-----	252 stones per Sq. Yd.	

Report from Chaco Canyon for Travel Season: (Julian).

Mr. Julian, before leaving the Chaco, was asked to prepare a seasonal report and working plan for the future for that monument. His account follows: "Accomplishment for the Travel Season!

"It is with hesitation that I try to enumerate the things that have been accomplished this year because so few of the things that I would prefer to have done have been actually finished. This is, according to my alibi, due to the fact that there is very little time for plus effort when one man must handle all of the visitors. The visitors of the type that usually frequent the Chaco keep one more or less ignorant young fellow pretty busy finding acceptable answers to the questions which occur to the Collegiate Anthropologist. While I have not performed so much in the nature of improvements, I have "dog-eared" copies of the texts of Kroeber, Wallis, Finney, Kilpatrick, Lowie, and various Bulletins of the Bureau of American Ethnology and the School of American Research answering questions put to me from the educators of dozens of colleges and Universities which have had their faculties in the field during the summer. Now that I know many of the answers I do not expect to have to do the amount of studying next summer that I have been compelled to resort to during the past summer.

"Among other accomplishments for the summer I would mention that there has been a buttress built on the north wall which protects one of the most valuable bits of masonry in Bonito. The best,

and practically the only, bit of fourth floor masonry has been indefinitely preserved by the building of this bit of reconstructed wall from the ground up to the weak point in the fourth floor wall.

"Various other bits of patchwork have also been completed. Walls were restored in such a manner that two original ceilings in Bonito could be protected with a board and tar paper roof. The best and largest original ceilings in Pueblo del Arroyo were also covered in the same manner.

"A cess pool was built and is in use at the residence. The plumbing was done between parties of visitors, and the house modernized.

"The fences around both Bonito and del Arroyo have been worked over and have been protected by a strand of barbed wire at the top. The Bonito enclosure has been arranged so that visitors must enter the compound at an entrance which is in full view of the residence.

"Unless there has been a great miscalculation the roof of the residence will not leak this winter. Tar paper has been laid in hot tar over the top of the old roofing.

"A plan has been worked out and the necessary agreement obtained from the owners of alienated land to run a pipe line from del Arroyo to the Administrative site. At last we are near the realization of our hopes of having an adequate water supply. A wall of stone and brush one hundred eighty feet long and six feet high has been completed for the protection of the one site which we own upon which permanent water can be developed.

"The approaches to the Chaco bridge have been replaced and drained in a manner which I hope will obviate the necessity of further attention. It is hoped that the road will not be blocked by a washout as has been the annual occurrence for the past several years.

"The repair and restoration work which has been done by the School of American Research at Chetro Kettle has been unqualifiedly approved by Associate Engineer Attwell and by Assistant Engineer Hamilton. This achievement I take no credit for. Aside from several minor suggestions Engineer Reginald Fisher (School of American Research) did practically all the work.

"Under studies and investigations the most important thing has been the discovery of the holes in the cliff where the dwellers of the talus slope houses placed their corn, beans, wood carvings, weapons and baskets in safe keeping for those of us who came along a thousand years later. This discovery has been written up in more detail in Southwestern Monuments monthly report for September. The discovery, of minor importance perhaps, was made that the "willows" used in the roof of one of the rooms at Bonito were found to be one of the Ericaceae, probably *Arctostaphylos* sp., Manzanita.

"The water system discovered by Engineer Hamilton is of more importance and it, too, was recorded in detail in the regular report dealing with the activities of the month of October, 1932.

Handling of Visitors:-Chaco, 1932:

"It has been my opinion for some time that we have been boring a great many of our visitors with a more or less technical explanation of features of our ruins. I came to the Chaco with the intention of avoiding this if possible. The opinion was formed at other monuments by mingling with the visitors while someone else was doing the talking. With some of our visitors our talks of an hour or more in length are merely politely and patiently tolerated. The success with which John Will Paris has worked with his snappy twenty minute talks was an inspiration. The praises of the service at Aztec National Monument influenced my manner of handling visitors to a great extent.

"I decided to try to give my visitor exactly what he wanted. If a party of visitors drove up and said; "Can we see Pueblo Bonito in ten minutes? We simply must get to Bla-Bla Town before dark!" My reply was; "Certainly, I will do my best to show you the most important features of Pueblo Bonito in ten minutes." If at the end of ten minutes these people had satisfied their interest in Chaco they were dismissed with my well wishes. If they showed an inclination to stay longer they were entertained to the best of my ability until such time as they did show an inclination to travel on to their sunset destination. Many of these parties ran into hours; some of them lasted ten minutes, and apparently everybody was satisfied.

"When a party of visitors drives up to the gate, I first inquire about their immediate and pressing needs. If it is lunch time I direct them to the camp ground if they have lunch with them, and to the lodge if not. We visit awhile during which time I try to classify them as to intellectual interests which "sizing up" is developed by most people who handle the public. What they do, their interests, and why they came to Chaco are often determined without asking a single question. It offers something to work on. If they are interested chiefly in government I tell all that is known about the manner in which the Pueblos of a thousand years ago were governed. If they are engineers I tell them about the supporting wall and the retaining wall which have held the "Threatening Rock" of one hundred thousand tons (Dr. Judd's estimate) for nearly a thousand years, and so on through all of the professions represented. It would take several days to tell a party of visitors all that is known about the Chaco ruins. For that reason I find it convenient to take the visitors by classification as to professional interest. When, as it often happens, we get a few members of the faculties of some university who are interested in spending several days with us, we start into everything in detail. A two or three day party is started into which all others enter into and drop out of at will. Visitors spend from ten minutes to ten hours with our long time parties and then go on their way.

"The handling of eccentrics presents the greatest difficulty. Unless there is another party present at the same time with an actual

interest in archeology and anthropology, I let them more or less have their own way. I have stood for hours and listened to someone tell me about what he saw in Egypt or Spain. It can be readily seen that such a "loose" system as this would be attended with difficulties. The success depends entirely upon how correctly the visitor has been classified as to professional and intellectual interest. I must admit that I have made some regrettable mistakes, not mistakes of intent but of classification, but I do not think any of my visitors were distressingly bored.

"Fortunately, our visitors are few enough and of sufficient gentility and appreciativeness that most of those who found the Lodge overcrowded could be treated as house guests. Particularly in bad weather the camp grounds were moved into our big living room. Some of the most delightful people which it has been my pleasure to meet were campers who were invited to camp with us in our house. We've had as many as forty in our house at one time!

"I know, and in a sense regret, that this informal way of doing things is possible only because we are more or less unknown as a monument. In another two or three years our visitors will number so many that we too will be compelled to herd them more impersonally. At present we go and do whatever the inclination and the interest of our parties dictate. Schedules and regulations will come only too soon.

"As to what the visitors are told about a particular controversial subject, I have been employing a very definite method. It runs something like this: "Dr. Judd tells us that this and that are true because of the following points of evidence..... However, Morris advances the following explanation because he interprets the points of evidence somewhat differently.... On the other hand, we find that Pepper has a still different explanation on account of the following observations.... Dr. Hewett has expressed himself on the problem in the following manner.....Our Boss, Mr. Pinkley has given the problem considerable thought and advances ideas in the following fashion....Out of the various opinions expressed on the problem I think we can find the following points on which there is a semblance of agreement. Doubtless some years will elapse before a general agreement will be reached on all phases of the problem.

"This manner of presentation is not only scientifically accurate, particularly when dealing with controversial subjects, but it is playing safe as well.

"All of this brings me to the third and last part of this report.; What would I do if I were given an assistant? My reply is presented in the form of a work plan for an estimated period of about three years. Possibly the first thing I would do, in reality, if I did have a ranger to help me would be to take a day off, go to town-see a moving picture show. Much as the work approaches stimulating recreation, this day-off business would work to

the advantage of our Service. This, I consider, is one of the pressing needs of a one-man monument.

"I had hoped to accomplish some of the work here presented by attending to them during the autumn months. Apparently, as far as visitors are concerned, this could not be. While November has witnessed a decided decrease in the number of visitors, there are days when they arrived in a steady stream. Ten intelligent visitors can work a man easily ten hours at Chaco.

"I have never seen much of the monument. It should be explored and investigated; it should be at least policed. There are ruins on this monument which rank in size and importance with any in the United States, and some of them I could not find if it became necessary very suddenly to do so. If I had an assistant, a monthly trip of exploration, investigation and inspection in the interests of protection could be very profitably made.

"There have been a great many requests for speakers on archeological and anthropological subjects from clubs, conventions, Chambers of Commerce, high schools and other groups which I have been compelled to reject, first, because I did not have the time; and secondly, because to advertise the Chaco even in neighboring towns would bring in many more visitors than one man could attend. As it is, my wife must help me a lot, along with the Griffin girls who have assisted time and again without pay. With one assistant, attendance could be built up very soon to where two assistants would be required.

"It is my opinion that the greatest damage which is now being done to the ruins on the monument is being done by the sheep and the sheep herders. If it were possible for me to leave my headquarters area I would roughly survey all the monument boundaries and place a white post about every one thousand feet along the boundary line. On this post would be placed a courteous but firm request that no sheep be driven into the monument area. In inclement weather our ruins make excellent camping places for the herders. They also make admirable bed grounds for the sheep. WALLS WILL NOT LAST LONG if sheep and goats are permitted to clamber over them at will. In the winter time Mr. Griffin has been able to keep the sheep out of the major ruins in the bottom of the canyon and near his home. He does this out of his interest and cooperation with our Service, and gets no pay for it.

"Regardless of whether or not I get an assistant I hope to make it possible to prevent even one more flood from taking more of the Colorado Kiva at del Arroyo. With a few hundred dollars and a lot of labor I think this will be possible. A rock-brush wall is contemplated in order to turn the force of the current away from the ruin.

"One summer could be profitably spent in further investigation of the holes of the talus slope houses. All I need is a lull in visitors to get this done. With an assistant available, this

investigative work would proceed in an orderly manner.

"Unless assistance is arranged it will be impossible to enforce the recent order prohibiting the sawing of original timbers for growth rings. In this respect an occasional inspection would be valuable.

"A matter which has to do with the work plan exclusively is the problem of what to do about the "Threatening Rock" (so aptly named by Engineer Hamilton). My plan is to keep the matter alive by frequently referring to it, for without the laws of Nature are unduly suspended in our favor that rock is GOING TO FALL. It is the inevitable habit of all cliff faces to eventually yield to the attacking forces of erosion. In this particular case it may be an extreme of a thousand years before the rock falls. On the other hand it might well happen in the next ten minutes demolishing a large section of the greatest ruin in the United States.

"A sort of measured drawing-one consistent with my poor ability as an artist- of the Great Sanctuary has been sent to Field Headquarters for Mr. Vint who is interested in seeing this sanctuary roofed. The roof would serve the double purpose of protecting the Kiva and of providing us a museum. I want to either stir up enough interest to realize the consummation of the plan, or else to develop a better one to replace it.

"At the present rate of progress it will be another year before the "literature"- what Naturalist Bob Rose so flatteringly characterized what I should prepare- will be completed. If two men were here this work would be pushed to completion.

"I do not believe there is a place in the Southwest where more beautiful flowers can be found than right here in our back yard. Regardless of the assistant, I hope to get at least a start toward a herbarium for this monument for next year. It will necessitate a review of the old college botany but if you remember Chaco wild flowers you'll readily appreciate the fact that it will be worth the effort.

"A Mr. Palmer of Farmington has one of the best archeological collections in this region. It represents a lifetime of effort on his part. He has not promised to loan us this collection but I believe that it will be possible to get him to do so. Next year I plan to convert our present tool room into museum space for collections. If we could acquire this collection we would possibly stand second to Aztec and Casa Grande in regard to museum collections.

"Further museum development on my part is pretty well dependent upon the proposed assistance. You will notice that our present collection which you liked so well was assembled largely by my wife, the neighbor's wife, daughters, sons and cousins. I hope to expand the archeological phases into the interesting anthropological sidelines that present themselves.

"Following is a tentative plan for charts which will supplement and illustrate the museum materials:

"I. Relationship of the Human Races:

This chart will be prepared using large circles to represent the greater racial divisions, like Caucasian, Mongoloids, Negroid, and smaller circles to represent the subdivisions Nordic and Alpine of the Caucasian; Polynesian and the less closely related Ainu of Japan, etc. of the Mongoloids. American Indians and the true Asiatic Mongolian will be inside the Mongoloid circle. The Negroid circle will contain the independent African and Oceanic Negroes, each represented by circle, and the Negritos and Bushmen in overlapping circles within the Negroid circle. Between the great Race Circles must be drawn properly positioned circles to show the types related to two or more great racial types.

"II. Tentative Family Tree of the Human Race:

This will begin with a single line branching to Pithecanthropus Erectus; the next Neandertalensis, both minor stems taking from the main stem. The Negroids, Caucasians and their Prototypes will be shown in proper stem relationship.

"III. Circumpolar Map of Primary Race Distribution:

This would enter the geographical positions of the above types on a circumpolar map.

"IV. Systems of Division of Time:

This would correlate the anthropological, the geological and the zoological systems. It would give greater meaning to the terms "Paleolithic, Neolithic, etc. for laymen.

"V. Descent of Man in Relation to Geological Time Table:

This chart would consist of a family tree of primitive Man superimposed upon the Tertiary Division of the Geological Time Table. An estimate of the thousands or the millions of years duration of each Epoch of the Tertiary and the principal geologic events such as Rise of the Sierra Nevada range, great era of vulcanism in the Cascades, and the Great Ice Age could be woven into this chart in an interesting way..

"VI. Anatomical Evidence on Evolutionary Rank:

This chart would dwell upon the anatomical peculiarities and similarities of the various races. Nasal Index, hair classification, lip classification, and other points of comparison would be illustrated.

"VII. A Metric Expression of Human Evolution:

This chart would contain graphic illustration of the method of taking the various indices used in anatomical comparisons and would provide interesting comparisons between modern and primitive man.

"Comparative Mandibles: VIII.

This is simply a chart on Jaw bone comparisons of Heidelberg Man, Modern Man, Negro, Orange Utan and Gorilla.

"IX. Cephalic Index:

No one can travel in the Southwest long before being confronted with "Cephalic Index", Brachycephalic, Dolichocephalic, and other jaw-breaking terms. Reduced to simple terms with short explanations these names will have some meaning to the

tourist who will inquire as to their meaning for he is almost certain to come into contact with these terms.

"Before the charts are finished I expect several others can be outlined. There is no limit to the interesting things that can be shown by graphic illustration. This room with the elaborate chart development would not necessarily have to be accessible to the complete run of visitors. It could be limited to those showing unusual interest and appreciation.

"Last summer an old Navajo gave me some seeds of a plant which he said was used as a food plant by the Navajos in the early days. It would be interesting to plant these small grains, selecting the largest each time for replanting. Some interesting things might be revealed in these experiments.

Casa Grande National Monument:

Mr. Palmer having been ill for about two weeks the Casa Grande report represents the efforts of several of the force, but principally of Frank Fish who keeps all of the travel, weather and other statistics. Mr. Fish Reports: "Dear Boss: I have the following to report on the Casa Grande National Monument for November:

"Weather has been unusually mild for the month with no precipitation. On only two nights did the thermometer register below freezing. Neighboring cotton fields are still green so evidently the cold was variable over the region. Cotton is considered very sensitive and would readily register the effects of sub-freezing weather.

"Our record shows the following tabulation:

Maximum-----85 degrees on Nov. 6th and 7th.
Mean Maximum-----80.6

Minimum-----31 degrees on 17th and 23rd.
Mean minimum-----38.3 degrees.

"The record of visitors shows 2058 people visited this monument in November 1932 as against 1556 for the same period of the year 1931, or a gain over last year of 502 or 24%. Although this doesn't equal the high of 2895 for November 1930, it is at least a significant gain in the right direction.

"The 2058 visitors for November came in 632 cars. Of this number, 750 visitors in 256 cars, or 36% of the total number of visitors were from out of state.

"Due to an epidemic of grippe the schools of Coolidge, Phoenix, Casa Grande and Florence were closed for approximately a week. This tended to keep local folk away but this slump in local travel was offset by an increase of out of state people caused largely by the fine publicity we received in the Los

Los Angeles Times. On several occasions our friend Harry Carr referred to his visit to the Casa Grande as being one of the red letter days of his life. This reference was made in his "Lancer" column. In the Out-of-Doors Section appeared a lengthy article by Harry accompanied by interesting illustrations by Staff Artist Charles H. Owens. Taking November 25th as an example, of our 75 visitors on that day 38 came from California and the majority of the 38 remarked that they had read about what Harry Carr had written and that they wanted to come by and see Casa Grande for themselves. When people came asking: "Where is the room the babies were born in?" "I would like to see the crystal that the High Priest held in the path of the Sun's rays". - (The first and third questions deal with Montezuma Castle and not the Casa Grande) - we knew they had read Mr. Carr's account of his Southwestern trip. People visiting us get the idea Southwestern Monuments are a matter of a few hours drive apart and don't realize they are scattered widely over four states.

The Florence Rotary Club visited the ruins on the 16th. At the noon hour Associate Engineer Edward A. Nickel gave the group a talk on the History and Construction of the Casa Grande Ruins Shelter.

An account of the experiments by the Air Spray Company on ruins will protection will be found in Engineer Nickel's report found here.

On the 10th of November we had the pleasure of a visit by Sup't. and Mrs. White Mountain Smith of the Petrified Forest National Monument.

Dr. Alex A. Whetmore, another Park Service Booster, Secretary of the Smithsonian Institution visited us on the 6th.

Mr. and Mrs. A. E. Borell of Yosemite were here on the 21st and 22nd.

Hon. Wm. J. Stratten, Secretary of State of Illinois dropped in on the 25th.

We also note on the register the name of Mr. and Mrs. C.R. Buell, Sierra National Forest, Big Creek, California.

We're sorry to report the illness of Custodian Palmer who became a victim of the grippe the latter part of the month. At this writing considerable improvement is in evidence.

Mr. Julian, Winifred, and Police Dog pup "Pancho" arrived on the 29th to be at the Casa Grande during the winter. They have been at Chaco Canyon National Monument during the travel season.

The following progress report on the Casa Grande Ruins Shelter erection has been submitted by Associate Structural Engineer Edward A. Nickel. We're glad to have his account of the history of the whole project which is valuable as a

as a record.

Casa Grande Ruin Shelter:-(Nickel).

"One of the most interesting as well as unique construction projects in the Southwestern Monuments is fast nearing completion and is expected to be finished by December 10, 1932. This project is the new shelter for the Casa Grande Ruin located at the Casa Grande National Monument

"In 1902, due to the efforts of Superintendent Pinkley, Congress appropriated \$2000.00 for the protection of the Casa Grande Ruin. With this money a covering consisting of sixteen 10" X 10" redwood posts and a wood frame, supporting a corrugated iron roof, was built. This roof for the past 30 years has served its purpose well. This can be noted from a comparison of photographs taken some 40 years ago with those taken a few weeks ago. The wall profiles in both instances are the same with very few minor exceptions.

"The old covering had reached a stage where replacement became necessary. The wood frame was pretty far gone, especially the portions of the posts below the ground surface as well as the corrugated iron roof in which there was but little useful life remaining.

"In 1931 Congress made an appropriation for the new permanent protective covering. It was feared for awhile that the money would be definitely lost due to the demand for funds for forest fire suppression in some of the other parks. On April 28, 1932 this fear was removed when a telegram from the Washington Office was received by the San Francisco Field Headquarters with the information that funds were expected to be available and to proceed with the preparation of plans and specifications. In the short time that was left between April 28th and the end of the fiscal year the plans and specifications were completed and the contract for the work awarded.

"The general type of design was suggested by Mr. F. L. Olmsted, one of the foremost Landscape Architects in the United States, who has been associated with the National Park Service in an advisory capacity.

"This type was developed by the Landscape Division in sketch plans to the general proportions that appear in the final structure. The final working drawings and specifications, as well as the supervision of the construction, have been done by the Office of the Chief Engineer of the National Park Service.

"Many different types and shapes of shelters were considered in the design. The one finally selected and now being constructed consists of a steel frame composed of trusses, rafters and purlin supported by four steel columns. These four columns are each anchored to as many massive concrete footings.

"The roof covering consists of corrugated transite, a very durable material made from asbestos and cement. These sections of transite are securely bolted to the channel purlins.

"The entire structure has been designed to resist a wind pressure of 45 pounds to the square foot of vertical projection. This is equivalent to the vertical pressure attending a 100 mile per hour hurricane.

"At the ridge of the roof there is a louvered ventilator approximately two feet high, ten feet wide and thirty-two feet long. The purpose of this opening in the roof is relieve this part of the structure of upward thrust caused by upward wind pressure.

"There are four corrugated wire skylights in the roof, one on each side. Their chief purpose is to provide some direct sunlight on the ruin walls during seasons of the year when the Sun's apparent path across the sky is far enough to the north to allow sunlight to shine down through them and onto the walls.

"Around the eaves of the roof is an 8" X 10" copper gutter. These form a cornice and are connected to two copper downspouts on the west side.

"One of the interesting features of the design is the lightning protection. At the center of the ridge is placed an eight foot steel hollow pole to which is screwed a two foot section of bakelite tubing. This is surmounted by an 8" monel metal ball. The bakelite insulates the steel pole and structure from the monel metal ball. The lightning conductor consists of a 3/8" insulated copper cable connected to the monel metal ball and carried through the steel frame to a copper plate ground one yard square placed fifteen feet below the ground surface. In addition to the one main lightning conductor for the building, each steel column is provided with a 3/8" copper ground connected in a similar manner to a copper plate ground.

"A total of 114 tons of steel were used in the structure. Each column weighs six tons and the largest trusses each weigh approximately six tons. Each of the four concrete footings weigh 68 tons, being 6' x 6' at the top, 12' x 12' at the base and ten feet deep.

"The overall dimensions of the roof are 98 feet by 82 feet. Since the ruin is only 58 feet by 42 feet this should give ample protection. The copper gutter eave or cornice is 46 feet from the ground.

"The entire steel portion of the shelter is painted a sage green which harmonizes with the surrounding mountains and vegetation and which also gives sufficient contrast with the ruin walls showing them off to the best advantage. The roof covering is not painted being left in the natural gray which blends nicely with the surrounding country.

"The construction of the structure may be divided into three phases: (1) the building of a strong temporary covering over the ruin; (2) the construction of the permanent shelter; and (3) the removal of the temporary protective covering.

"Due to the poor condition of the old roof it was necessary to build a stronger protection of new materials to guarantee against damage to the ruin during the steel erection. This temporary structure was made entirely of heavy wood members. Going to the expense of this precaution has been justified many times during the construction.

"The erection of the steel has been very interesting and has been executed in a very efficient and rapid manner. The raising of the steel required only seven days and the riveting seven days. The entire construction under contract will have been completed in approximately two and one half months.

"The removal of the protective covering is to begin Monday December 5th and should require about one week. This will terminate the work and leave the Casa Grande Ruin with a new permanent shelter high enough to allow the public for the first time in thirty years an unobstructed view of the outlines of the entire ruin.

Construction Report Section (Mr. Nickel) : Casa Grande Shelter.

"During the month of November excellent progress has been made by Allen Bros. Inc., of Los Angeles, on the new shelter for the Casa Grande.

"As reported in the October issue the raising of the steel started October 26th and was completed in seven days on Thursday November 3rd. The following day a crew began the riveting completing the driving of approximately 5,000 rivets on Monday November 14th.

"At this writing, December 1, 1932, the structure is nearly completed. Several days work remain for the completion of placing the transite and two corrugated wire skylights. Three to four days more will be required to finish the painting. The steel frame is complete; the copper louver, copper gutter and downspouts are in place; the lightning arrester and grounds are installed; all of the concrete and excavation work is completed with the exception of one ditch for the 8" drain pipe; one 92' length of 8" drain pipe has been laid; all of the round casings have been placed on the columns; and these casings have been welded and the welded connections ground down smooth.

"Considerable grading work has been done this month around the ruin walls and new concrete footings. This was done in order to provide good drainage and to make the approaches to the ruin more pleasing from the landscaping point of view.

"The contractor has begun the dismantling of his derrick and hoisting equipment preparatory to shipping them by truck to Los Angeles. He intends to return the compressor in a day or two since it has now served its purpose on the job.

"The contractor expects to complete the entire work by December 10th including the removal of the temporary protective covering.

Air-Spray Service Co. Experiments: (Nickel)

"Mr. Walker, the representative of the Air Spray Service Co. of Washington, D. C., spent a week with us at the Casa Grande Ruins applying two test applications of his material to the ruin walls in Compound A. He provided for us 18 small samples of treated wall material. He did his work very conscientiously. His material, at this time, appears to have considerable merit exhibiting good binding ability on the surface. The material appears to have penetrated the wall giving it greater strength and waterproofing. Of course it will be necessary to allow a period of time to thoroughly test the materials under variable conditions of extremes of heat and cold, and of dryness and wetness."

El Morro National Monument:

Mr. Vogt of El Morro writes as follows: (11/21/32 date of letter).

"Dear Frank: This is the first anniversary of the terrible snow storm which caused this region so much loss of property. As I sit here in my coupe in my lamb camp to write my monthly report I marvel at the great-very great- difference in the weather compared with the same time last year. Now it is sunny and warm and our herd of 1600 lambs awaiting shipment fill up very well on the variety of grama and chamiso hediondo just off the hill west of Camerco Mine.

"Good roads have resulted from the open weather. The travel has been light but steady to El Morro. The weather has been so ideal that I regret that I did not go ahead and get Engineer Hamilton down from the Mesa Verde and do that surveying of our lines. Perhaps I could have gotten the fence work out of the way during what looks like the beginning of an open winter.

"During my recent visit to Los Angeles I spent several hours with Dr. F.W. Hodge, Head of the Southwest Museum. He told me about the diary of John Udell which he had recently gotten hold of. John Udell carved his name with others on the south face of El Morro and carved "First Immigrant Train, 1857" under his name. I promised Dr. Hodge I would send him a list of other names of the same date which must have belonged to the same party.

"In flying over the Painted Desert, El Morro, Petrified Forest, Grand Canyon, Bryce, Zion, and other national parks and monuments it occurred to me what a fine thing it would be to have these interesting places so marked that air travellers would be

able to read in large letters "Bryce Canyon Nat. Park, Utah" thus giving the National Park Service some advertising as well as a service to those in the air who wonder just where they are. I'm going to cover this suggestion in a letter to the Director.

"I have re-read your October report and enjoyed every bit of it. The account of your trip was fine. Bob Rose's account convinces me that I am missing a lot in not knowing him better. I hope that sometime we shall be able to make a longer contact than we did recently at the Gallup Harvey House.

"The Shalako Dance of the Zunis will be held early in December. The exact date will be made known shortly. I shall be glad to inform anyone interested in it. Regards, E.Z.V."

Gran Quivira National Monument:

I have the following report from Custodian W.H. Smith written under date of November 20th:

"My record for the past month shows 211 visitors in 69 cars entered the monument. Compared with last month travel has dropped considerably. The weather has been fine and the roads in fair condition.

"The treasure seekers are still laboring diligently. According to Mr. Ellis, their Engineer, they have found the mouth of a tunnel at the forty foot level. Mr. Ellis informs me that they have installed their first set of timbers in the entrance to the tunnel. He also reports the finding of some old timbers that were originally in the tunnel. They say they have been into the tunnel a distance of 43 feet already and that soon they hope to have it opened further. They find that at forty feet the main shaft offsets into another shaft in the north east corner which goes on downward. They have removed about five feet of the debris out of this second shaft. They intend to take this up again as soon as they have cleaned out the tunnel and explored the lower levels of that shaft.

"We have been working on the approach road for the last few days. We have made the changes that were suggested and have the new portion in shape for travel. Of course, it is not so good, but I guess it is as good as can be expected considering the funds spent and the material used. We have also installed the temporary cattle guard and done some work on the old roadbed toward the top of the grade."

In a separate communication of November 22nd Mr. Smith states: "Yesterday afternoon, November 21st, Senator Wheeler and a committee from Washington were here investigating the workings of the treasure seekers and from what was said the operations are considered a very interesting proposition."

Under date of November 14th Mr. Smith wrote briefly enclosing a statement by Mr. Ellis, Engineer for the treasure diggers. I quote here Mr. Ellis' statement in full:

"No. 1 shaft down 40 feet. It offsets into No. 2 in northeast corner. Have not had time to explore No. 2 as yet. Large

tunnel leading to west at 40-foot level. Can see 70 or 80 feet west in tunnel but at present have not explored same as it will have to be cleaned out and timbered. Everything progressing (but) can't tell much about formation until we explore tunnel." Signed, Mr. Hanna by J.H. Ellis."

Mr. Smith states in this same letter: "In reply to your letter of the tenth I wish to say that I truly thank you for the chairs, desk, stove and all other equipment that has been sent in to this monument. At the first opportunity I will get the andirons and other fireplace equipment mentioned.".....

Montezuma Castle National Monument:

Mr. Jackson writes on November 25th as follows:

"Dear Pink: Although weather and road conditions have remained good during the month of November our number of visitors dropped down to 651 with 16 states and one foreign country represented. Travel from Arizona was highest with California as the only other state running a close second.

"Among visitors this month were: Harry Carr, feature writer for the Los Angeles Times, and Staff artist Charles H. Owens, who paid us quite an extended visit and were evidently quite sold on the monument. I heard today that a very fine article appeared in last Sunday's Times on the Castle but I have not yet seen it. We did enjoy the visit of Messrs. Carr and Owens and we hope they call again. Ranger Irwin and wife and daughter of Yosemite National Park spent a few pleasant moments with us the first of the week.

"Engineer Attwell has been with us several days during the past month and has staked out all proposed improvements. He is standing by awaiting word to begin work.

"Our electric plant was installed during the month and the ranger's quarters and museum were wired for lights. The plant seems to be O.K. Ranger Gandy and wife have received the linoleum for the kitchen floor in their quarters and the paint for the inside woodwork. That makes it easy to figure where Hugh will be found on his "day off" in the future.

"My boy is back from the University of Arizona where he is taking a course in Physical Anthropology. He has been taking some measurements on the skulls here in the museum. Six adult skulls were measured and he found that they were all quite brachycephalic, or broad-headed with an average cephalic index of $92\frac{1}{4}$. I had hoped that one low-faced specimen might turn out to be hypsisthodolichocephalic (high, narrow, low) (with apologies to Mr. Julian) but such was not the case. These skulls have all been flattened somewhat from use of the cratic board and that fact is partially accountable for the extreme broad headedness.

"To all appearances we are preparing for the first real storm of the month which will probably result in snow on the mountain roads."

Natural Bridges National Monument:

I have the following report, dated Nov. 25th from Zeke:

"Dear Frank: I have finally pulled down my old tent, piled up the benches, and said "goodbye" for the winter. The weather has been ideal here all this month. However, only three cars of people have come out. I suppose the weather has been a little too chilly for them.

"We have been on the trail job every day except election day. I have worked up all of my allotment but one dollar-that is if I have to pay for the two signs and the two days work by Mr. Rogers on the road survey. Should I not have to pay that, I will have \$1200 (twelve dollars) to my credit. Please let me know where I stand on this matter.

"I am very proud of the work done and feel that now I have a foundation for some very good trails, at least the one that is the most travelled most from Edwin to Augusta Bridges. The country across there is very ditchy with many small hollows. There is still ample room for cutting down ridges and filling up the hollows. This would make travel far easier. However, Spring will find us with time enough to do that when the ground is more wet.

"Well, Frank, I am determined to have some cabins put up out at the monument this next Spring. I have traded one of my mules for lumber enough for two cabins. Talking to Paul Black, manager of the Blanding Service Station, about it he said: "Zeke, if you will put up your accommodations out there I will deliver, free of charge at the Bridges, 1,000 feet of lumber and make you a present of the whole thing for I am tired of having people ask me if there are accommodations out there and have to tell them, "No", then see them turn around and leave the country. So, I told him I would hold him to the promise and he'll meet it you can be sure. I have a lot of furniture and bedding, enough for several rooms. I also have two range stoves and could build and equip several cabins-enough for the present at least. I feel that the time has come when something ought to be done. I think there will be travel enough to justify the arrangement. I am very tired of being there alone and Mrs. Johnson is tired of being alone all summer. I think that we could sell enough meals and beds to finally pay for our trouble at least.

"Now in the event I put up some cabins would you be able to find some money to fix me up a little house to live

in- just some two or three rooms. Lumber and freight are very cheap now. Or, rock is plentiful and logs on the mountains which could even be used. I must have something in the way of a residence and feel that I am entitled to it.

"The first thing in the Spring I want to shoot out a cistern from the solid rocks for there is a patch of slick rock close to my camp which would afford ample catchment space for plenty of water. This could be ditched or piped into the cistern. I have measured the distance from the top of the point above the big hole of water and wonder if you could give me some idea as to the cost of an engine big enough to hoist water up-it is 76 feet straight up and 256 feet at about 50% grade, so it would take 332 feet of pipe. Do you think it could be done? I have never had any experience of that kind.

"Will you please think the proposition over and let me hear from you as I am very anxious to do something out there next Spring? But-please- don't think I'm tired of pioneering for there is still a lot of that to do yet! If I had a little home out there I could soon have a real collection or a little museum. A lot of good stuff could soon be collected.

"I hope you have had a real Thanksgiving and that all is well with you. Yours very truly, Zeke".

Navajo National Monument:

Hosteen John Wetherill from Kayenta way writes on 11/29 as follows: "Dear Frank: I have done nothing on the trail because the work will last longer if it is done in the Spring. I hope we shall be able to get more money so that we can do the work right. Mr. Albright suggested making the Monument Valley and Navajo Mountain into national monuments. I wish when you see him you would talk further of it. The doctor here received \$8500 to work the roads. He has about finished the road through Marsh Pass. We expect quite an increase in the travel for the coming year. I hope you can get an increase in the \$200. With best wishes from Doc----John Wetherill".

Petrified Forest National National Monument:

Superintendent Smith's report is submitted to the Washington Office directly. However, it is always of interest to all of our Southwestern personnel and is therefore included here:

"Dear Mr. Director: Narrative report on activities in Petrified Forest National Monument for the period October 28-November 27, 1932 follows:

GENERAL: With the addition of 53,300 acres of the Painted Desert to the Petrified Forest National Monument September 23, 1932, it was naturally assumed that this act carried with it the mandate to protect, administer, and give as adequate service to the people who visit this section as our facilities will consistently permit,

at the same time not neglecting any other equally important part of the monument. Much thought was given to this. Consequently, on October 2 a Greeting Station was established at the rim of the Painted Desert on U.S. Highway No. 66.

"Neat signs were erected requesting all cars to stop and register. To date not one party has made the slightest objection to this, but all recognize the measure as an additional service to the people. In a day or so all local or through traffic plying between Arizona and New Mexico towns learned to keep right on with the wave of the hand or sound of the horn. These contacts have been so numerous that it has taken the services of two rangers most of the time throughout the month. However, from now, on through the winter, it is planned to station one ranger at this point.

"The rangers are instructed to cordially invite all parties to visit the Petrified Forest or the Painted Desert section, or both. No undue persuasion has been used to induce people to pass through the Forest at the expense of parties on U.S. 66. However, this service has resulted in increasing travel through the Forest proper, has caused a great many people to view the Painted Desert from various points who would not otherwise have done so, and has given us a new and valuable contact with the travelling public. This service will be hard to maintain through the winter with our limited force, but so sure are we that it is right, it will be maintained at all costs.

CONSTRUCTION: The employees quarters (2-room) and comfort station (two built on rear of Administration Building), total cost \$3,475.00; were completed about the middle of the month, and the few extras having been installed, the residence is ready for occupancy. It is not contemplated to use the comfort stations until an adequate supply of water is obtained.

"A report on well drilling operations was made last month. It was found to be impossible to shut off the salt water with the equipment at hand and as the money was running low operations have ceased. A separate report covering this has been made.

WEATHER: The weather for the month has been ideal. There has been no precipitation. Temperatures, maximum 70 on October 28th, and minimum 16 on the 12th. However, the maximum temperatures have been over 60 on 21 days, and the nights have been a little below freezing on all except five.

N. P. S. VISITORS: On the 22nd Assistant Landscape Architect Langley, Senior B. P. R. Rodman Birdno, and the Superintendent made a thorough study of the Painted Desert rim

in connection with future road development. Mr. Langley remained in the monument until the 24th, and on the 23rd and 24th many problems of the monument were discussed in detail with the Superintendent.

"EQUIPMENT: We failed to mention last month that a fine and adequate supply of desks and other office furniture were purchased for this monument by Superintendent Pinkley and were received and installed last month. It is truly a pleasure to have this sort of equipment.

"SURVEYS: A small survey party under the Bureau of Public Roads has been completing surveys in the Monument. At this writing they have gone for a few days to help out elsewhere.

"A publicity circular was mimeographed on a machine, secured from Superintendent Pinkley, and was distributed locally. This has a sketch map showing connecting roads and nearby towns with informative matter on the reverse side. Copies are inclosed herewith. The matter was subsequently published in several papers in nearby cities and towns.

"The road has been well maintained as well as the connecting road with U. S. Highway No. 66.

"As there was not sufficient radiation in the Administration Building at headquarters, following out a plan of the Landscape Division and estimated by the Chief Engineer's Office, two of the radiators in the Exhibition Room were replaced by two larger ones and these in turn were installed in the two rooms in the west wing of the building. This has been a very satisfactory change.

"As a Federal Aid project, approximately 15 miles of U. S. Highway No. 66 are being rebuilt east of Holbrook, Arizona.

"Due to falling off in travel and other reasons the Caravan service has been discontinued.

"Several small bands of antelope have been seen both to the east and the west of the Monument boundary on U. S. 260.

"Our protection consists mostly of education and contact. Each car is contacted both upon entering and leaving the Monument and we find that much more satisfactory than the old spy system. No arrests have been made.

"A shipment of uniform signs has been received and they will be erected just as soon as the posts arrive. Metal posts have been ordered.

"The Superintendent was away from the Monument on official business from November 8th to the 11th, to Phoenix and the Casa Grande National Monument, and November 27th to the 29th to Santa Fe, New Mexico. The former trip has been reported separately, and the latter one will be detailed in the near future.

"TRAVEL: Every state in the Union was represented in the travel through the Petrified Forest except Delaware. Mention has been made of the registration at Painted Desert. Only the cars actually contacted are counted, and those included in the total have not been registered elsewhere.

	cars	people
"By private automobile.....	1,197.....	3,375
Previously reported.....	1,730.....	4,999
Total to date.....	2,927.....	8,374

Painted Desert Section.....	1,493.....	4,591
Grand total for month.....	2,690.....	7,966

Grand total to date.....	4,480.....	12,665
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"Represented in this travel were: Canada, China, England, India, Switzerland, Canal Zone, and Hawaii.

"Among the visitors were: Mr. and Mrs. W. W. Eaton, Wolf, Wyoming; Mr. and Mrs. Jack Thornburg, Grand Canyon, Arizona; Ranger Carl Cox of the Grand Canyon; Mr. and Mrs. A. E. Borell, Yosemite National Park; and Mr. and Mrs. Dousette of the Arizona Republic, Phoenix, Arizona."

Pipe Springs National Monument:

Mr. Heaton, under date of November 24, submits the following:

"If this report reaches you late it will be because of my having had to attend court for the past few days and a local community gathering and dinner today. My day today was spent at Moccasin enjoying myself with about 80 others in one big "feed". To make the day complete we topped it off with a game of basket ball.

"In a court case being held in Fredonia dealing with Homestead problems I was called in as one of the witnesses and was away on the 21st, 22nd, 23rd while on Nov. 16th I attended the funeral services of one of my cousins at Alton, Utah.

"The weather so far this Fall has been ideal with just enough frost of nights to make the mornings crisp and the days fine and warm. What a contrast with last year when we were almost completely snowed in during Thanksgiving time! The country is getting very dry and is in need of a storm to settle the dust along the roads and to help the grass and

the range.

"Travel for the most part this month has consisted of local people. The total has been about 165. I still have the homesteaders who come in about once a week to get water.

"I have been doing considerable work including placing the cattle guard, and cleaning up of the buildings and grounds. Things are up in pretty good shape though leaves keep falling and littering up the grounds. However, the wind comes along on some days, sweeps them away taking care of them. Then the wind brings them all back so in the end I have to move about as many leaves as if there were no wind to assist."

Tumacacori National Monument:

The following report has been received from Mr. Boundey:

"Visitors for the month total 652. We cannot look for any increase until the highway now under construction is completed.

"A museum collection has been arranged in the old school-house but owing to the poor condition of the building things of much value should not be displayed there.

"I have spent some time this month, with the help of old settlers in this vicinity, locating some of the old landmarks. Mr. Casanaga who was deputy sheriff of Calabazas when it had a population of eight hundred not only gave me considerable interesting data on the town but also helped locate the foundation of an old brick hotel which, excepting San Francisco, was the finest hotel west of the Mississippi River. Dr. Lockwood of the University of Arizona has led many interesting parties to the old Fort Mason. From some of the local people we have proved that the real site is more than a half mile from the site which is signed and pointed out to visitors.

"This is one of the most beautiful seasons at Tumacacori. We have had one light frost and the mountains on all sides of us are in full autumn color. The immense cotton woods along the river are especially beautiful."

THE SUPERINTENDENT'S MONTH:

"The first five days of the month were employed in getting out the monthly report and in getting it into the mail.

"The week of the 6th to the 12th was pretty well taken up in cleaning off a well filled desk and getting things up to the current day.

"From the 13th to the 16th I was busy with the '35 preliminary estimates which are beginning to take shape.

"On the 17th I went to bed with the Lagrippe and remained there until the 29th.

"On the 30th I came back to the office to find another well filled desk awaiting the start of the new month.

"No field trips were necessary on the part of myself or the Park Naturalist during the month.

"Mr. Julian closed the Chaco Canyon National Monument for the season the last week of November and he and Mrs. Julian arrived at Casa Grande a few days later where he is now on duty for the winter.

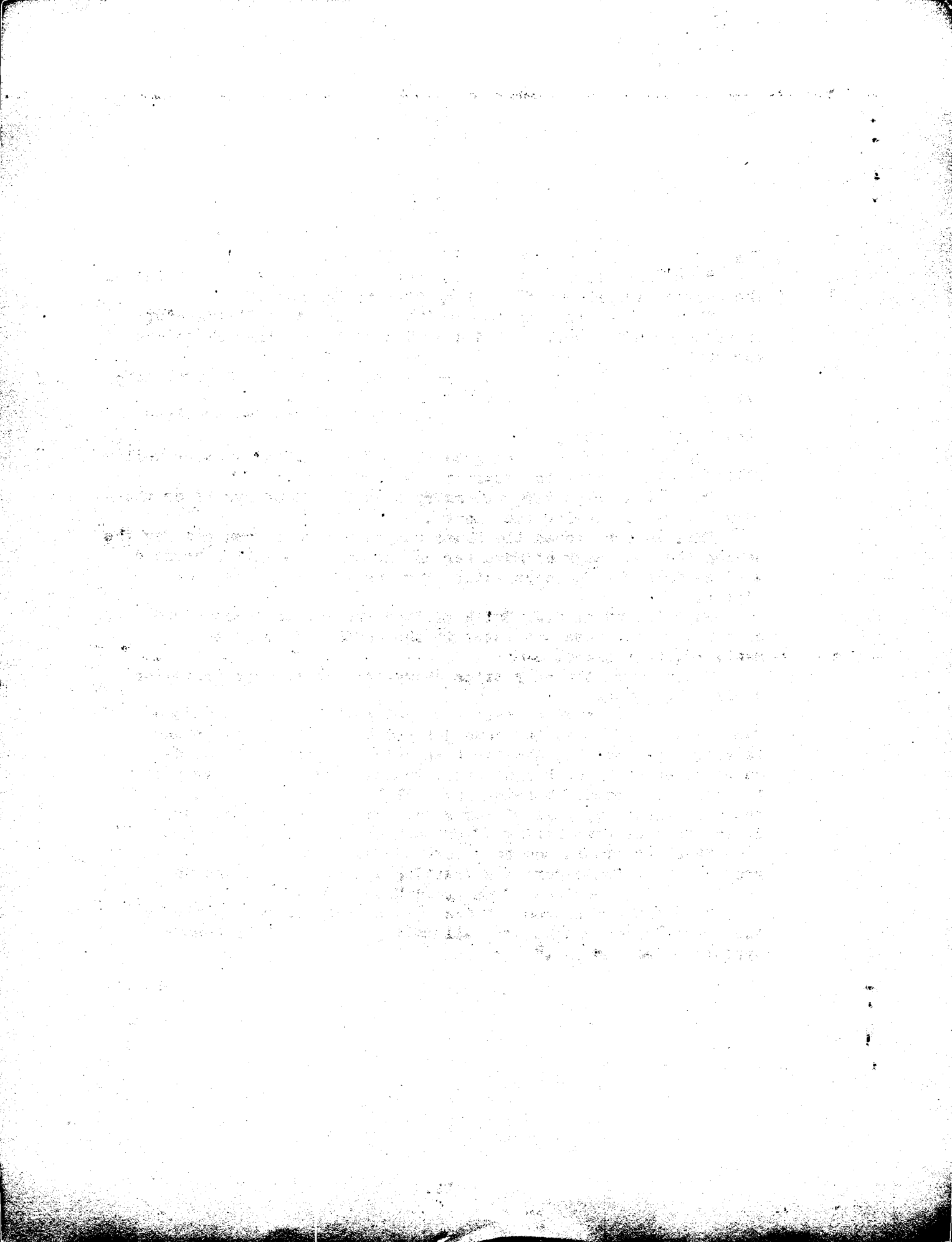
Superintendent C.J. Smith visited Phoenix and Casa Grande on official business and later in the month had to go to Santa Fe, New Mexico.

"These were the only trips chargeable to our appropriation during the month.

"We have been very anxious to get going on the Montezuma Castle parking ground and road job but have no approved plans as yet. Mr. Attwell, who has been detailed from Field Headquarters on that job has utilized the time to make a survey of the Bandelier road extension and will have the complete data on that job worked up this winter ready for any action you may decide to take next Spring after the snow goes off up there.

"Parking ground and road work at Casa Grande and a parking ground job at Tumacacori are awaiting approved plans and the detailing of an engineer from Field Headquarters.

"The protecting roof at Casa Grande has progressed nicely during the month and we are all well pleased with the general appearance of the job."



The Supplement
for the
November Monthly Report

So many nice letters have come into this office about "my" monthly reports that I just laid off a couple of weeks of November with the flu and then took things so easy when I did come back that the boys got out this November report themselves and all I am doing is just rooting from the side lines.

As you will see from the signature, Ed Nickel, of the Engineering Division, donated the front cover to us for which he has the thanks of the entire force. If that cover doesn't make every one who looks at it want to read the rest of the report, I miss my guess. The mountain to the right is the front of the Superstition Range as seen from our headquarters and the horizontal ledge showing pretty well up on the face of it is, according to the Pima Indian story, where the receding flood left its foam line when this part of the world was submerged with water. You will find the story in that excellent monograph on the Pima Indians written by Frank Russell in the Bureau of Ethnology Reports.

Bob Rose has a mighty sensible chapter on the construction of a good looking, low cost museum case. The new cases at Casa Grande, where he worked out his data, are proving mighty satisfactory in use.

There is also a lot of meat in what he says on page 4 about over-crowding a museum. We have overcrowded them and we know; but on the other hand let us see that we don't get off on the other side of the line and simply try to decorate our museum rooms with specimens; that causes us to run some talkative material back into the storage room. It has always seemed to me that these monument museums are laboratories where we use certain reagents in the way of specimens to get certain reactions on our visitors. An artistic effect in a laboratory is to be desired but it is much more to the point that the laboratory be equipped with all the necessary tools to do the work regardless of their looks.

Simmered down, this all means that I would pick over my museum shelves and retire to the store room a lot of stuff which duplicates a story told by some other piece. Then I would go out into the store room and see if there was a single specimen which told something not told by any specimen in the museum. That piece belongs out on the shelves regardless of its size, color, artistic effect, or anything else.

Don't overlook Mr. Julian's 'stone count' on Chaco Canyon walls which is given on page 8. Try to realize that in the Type 2 count the stones average about one and a half inches of wall face each way; then think of building a two or three story house with such small stones.

Let the Educational Division look well over page 11 and see if

they agree with us, because the method explained there is the one we are trying to use at all of our pre-historic monuments where we deliver service.

Chief Clerk Martin Evenstad stopped a gap on Sunday, the 20th, by acting as ranger and helping to handle the crowd.

Here is a letter that is too good to bury in the files; it is from George Grant, Park Service Photographer:

"I left Grand Canyon on October 15th. The 16th was spent at Walnut Canyon and along the Little Colorado, winding up at Petrified Forest National Monument, where I went hoping to get in touch with you. The 17th was spent there, a very windy day, but I got some pictographs near the Adamana entrance. On the 18th Mrs. Smith took me up to Polacca and Walpi, she driving her own car. I left there at 4 P.M. and took that upper road over to Chinle, where I arrived at 11:30 P.M. after much difficulty and with the help of a Navajo guide. I had completely lost my way. We had to get Cozy out of bed. I went up Canyon de Chelly on the 19th, going up a little above the window. A dip, too short, and deep, stopped me there. After getting that far I felt none too confident about getting back, for the car was too heavy and its tires were too small. I think a Ford runabout with real fat tires could do it easy, but it was an off day for me. I made 28 exposures however and the negatives look good, but I was working blindly, having had no previous information about the Canyon and no one with me. I must have been hopelessly stuck over a dozen times and was always helped out by the Navajos. How are we going to keep those wonderful people from being spoiled like their brethren along the Santa Fe trail by the influx of dudes? They are the interesting feature of this monument to me, the Canyon merely a setting. It's the most colorful and romantic place I think I've ever been in. If dudes are permitted to travel up this Canyon they will cause the Service a lot of grief. I don't see how a permanent road could be built, nor why it should be. And if large numbers of dudes go up there the Navajos will probably move out and that would be a mistake. It is too rich a sight to see them travelling up and down the Canyon on their ponies.

"The following day, the 20th, it rained and I was afraid to tackle it. The next day, when I slid all the way to Gallup, making the 97 miles in 14 hours, it was still raining. So I failed to get up Canyon del Muerto, a great disappointment; but I say enough to convince me that we have something fine here, and something different. God!

What a region this is; and nothing has been said of the country to the North! I think you will agree that it takes a real country to get a rise like that out of a case-hardened photographer like George; and no one knows better than you do how true it is!

On November second Chuck Richey, of the Landscape Division, and Miss Ruth Alexander, of Seattle, Washington, were united in marriage. They have the good wishes of all our Southwestern Monument folks and we hope landscape business picks up enough to demand the presence of Chuck and the Mrs. down here among us.

Mr. W. Lee Chambers, Business Manager of the Cooper Ornithological Club, writes: "Today was the first chance I had to examine the monthly report dated October 1st which you sent me some little time ago. As is well stated in the last paragraph, I was very much interested and read the thing through completely before stopping.

"I was especially interested in the part telling about the Gran Quivira National Monument. This section, on account of the early Spanish history is very interesting and I am wondering if they will find anything in the excavations now going on. If it is not too much trouble I would like to have you drop me a note telling me about the findings when the excavations are completed."

Miss Jean Griffin writes: "Dear Nah-tan-ne: (Navajo for 'Boss'):
"Just a friendly note to acknowledge the receipt of the monthly report. I enjoyed perusing every page and appreciate your putting me on the mailing list. I shall look forward to receiving the next one; it is a report anyone would like to read."

Mrs. A. W. Burney, the San Francisco agent of the Indian Christmas Company, reports \$75 worth of orders up to November 24, and business just opening up good. A note from Mrs. White Mountain Smith says she was ready to go to Gallup to make up the last pre-Christmas shipment to Miss Story of the Washington Office and that business was booming. I also notice that the Southwest Tourist News, of Gallup, New Mexico, has taken up the idea of an Indian Christmas and the Indians are reaping good benefits through the sale of their handiwork.

A short report from Mr. J. B. Hamilton, of the Engineering Division: "Left Mesa Verde November 2nd at 12:05 p.m. in the Park Ford pickup. Arrived Aztec at 5:00 p.m. and stopped overnight at the American Hotel. The rest of the time Mrs. Hamilton and myself were the guests of the Parisers. I now know why chicken gravey is mentioned in the official reports.

"All of Thursday and Friday forenoon I spent with Mr. Paris going over the Monument and in studying the maps and taking pictures. The deterioration of the ruins of course occupied most of the time. I had expected to spend considerable time measuring up the areas of the rooms to be covered and the lengths of the walls to be capped. However I found this information could be obtained from the excellent map made by Mr. Fetter.

"We left the Monument at 1:45 and were back at Mesa Verde at 5:35 p.m."

The following has been received from the Washington Office:
"I have just finished reading your October monthly report of

the Southwestern Monuments and have found it of absorbing interest. I took it to New York with me and read it on the train, finding it one of the finest and most worth while reports I have read.

"I congratulate you on its preparation."

Thanks, Chief for the compliments, though I didn't do anything but sort of put the report together, - the other fellows did the work.

I want to here quote an extract from that letter received by you from Mrs. Mabel Walker Willebrandt, former Assistant Attorney General. This is, of course, for the benefit of our other readers, and it is written about Bandelier National Monument:

"We are in the most heavenly spot. Left our car at the top of the cliff, telephoned for a horse to get Mama down and Papa and I hiked down. We're both, Papa and I, intensely interested in Archeology and geology and really this place tops them all - only if there were just one of your splendid rangers to give us a lecture about what the old prehistoric lions mean, the ruins of the pueblo and all the significance of the hyroglyphics on the cliff dwellings.

"We're perfectly delighted with the place and I'm told that you and Mr. Toll and Mr. Edwards got it put into the Park Service. But I'm not surprised. Seems like all the lovely spots are under you."

It is too bad that we had to move Ed Rogers and the Honorary Custodian Without Pay out of Bandelier about a week before she came or her wish would have been granted. Maybe next year we can have a year round position established there - let us hope so.

Ed. Nickel, of the Engineers, visited Mr. Boundey in October and got no mention of it in Mr. Boundey's report. Now Ed compliments us by saying he is afraid the Comptroller may hold up the expense voucher and point to the fact that he didn't see any mention of that trip in our monthly report. We insert this item so the Comptroller will know it is all right.

Another one from the Washington Office! "The other night I got hold of a copy of your October Monthly Report and in a misguided moment took it home with me. That evening I had a choice of the newspapers and the Liberty magazine and I found myself getting deeper and deeper into your monthly report with the result that I spent the evening reading about Southwestern Monuments. It seems to me this is the best testimonial I can give as to the value and interest of your monthly reports. I have to read all of the monthly reports and I always look forward to reading yours."

About four hundred superintendent's reports per year break across your desk, Mr. Demaray, and you can still get a kick out of one! That certainly is a compliment that I want to pass on to the fellows who wrote the October Report.

The President of a Boston Bank takes the time to remark as follows on his southwestern trip:

"At Mesa Verde I had an opportunity to see how efficient the

ranger service was. At the Carlisbad Caverns it is equally good. At the Aztec Ruins I spent part of the day with Mr. Faris, Custodian. He is very intelligent and thoroughly interested in his work. There are a number of ruins which eventually should be excavated. There is a very large kiva which has been unearthed but nothing has been done to take care of it. Mr. Faris told me that it was disintegrating at a rate of about 10% a year. I should judge it would not take over \$300 or \$400 to complete the excavation, replace the stones which have fallen out of place and cement it in such a way that it would be kept in a permanent and safe condition. This is one of the largest kivas that I have seen and ought to be protected.

"At Pueblo Bonito the Custodian is intensely interested in his work and even though a large part of the excavations have been completed there are other pre-historic ruins in that section which ought to be attended to. Miss Griffin, the assistant custodian, has lived many years in her home which adjoins the Pueblo Bonito ruins. She has done a great deal of excellent work in investigating the types of masonry and also in reproducing the pictographs. This is one of the most interesting and significant of all of the ruins.".....

In Southwestern Monuments we recognize the value of a viewpoint presented by some outsider. Such viewpoint, or first impression, may present a fresh outlook on our problems, an outlook which may be very valuable and new to our personnel because our duties have become so customary as everyday matters and our minds lose some of their original keenness for quickly seeing points on which improvements can be made. The above letter contains some of that valuable quality of interest to us.

Mr. Palmer at this writing is still confined to his home and is gaining day by day. His illness reached a very critical point for one or two days but with some very careful attention during this stage by the doctor, nurse and others he finally pulled past the danger point.

Mr. Kittredge writes us about the October Report and in a fine way states some of those intangible things that help make the wheels go 'round in our Service:

"Your October report was again a delight to read, and I want to thank you and all of your assistants for those many very kind remarks in connection with the engineers. Attached is copy of my letter of appreciation to Hilding Palmer.

"I am circulating this report to those in the office, and I can't tell you how much we all appreciate your comments, and how they spur us on to renewed cooperation".

Dr. Bryant in a recent communication through me to Park Naturalist Bob Rose writes of our October monthly report. His letter contains some especially fine statements on aims and ideals of educational service which I am going to pass on for the benefit and pleasure of the others of you who will read these columns:

"The October monthly report of Southwestern Monuments contains many suggestions relative to educational developments.

"The emphasis upon the different kind of mission which park museums have to fulfill is exactly right. In fact, we hope our whole educational program, in that it has to fulfill such different requirements, will be a distinctive one. Whereas so many natural history museums finally become mere depositories of dust-covered exhibits, we are anxious that our museums should be growing educational centers actively engaged in helping the public.

"We like also the stress placed upon making museums for the benefit of visitors rather than having them fulfilling some pet scheme.

"A fine vision of the whole educational project, a full appreciation of important needs, and careful planning for the future form the fundamental background needed by each park naturalist. You have indicated an appreciation of these fundamentals in your reports. Keep up the good work."

Associate Structural Engineer Nickel who has been Engineer in Charge in the new Casa Grande Shelter construction has made a report on the experiments on ruins wall protection which were carried on by the Air Spray Service Co. of Washington, D.C. These details should be made a matter of record and the history of the experiments made known especially to our Southwestern personnel where the results are awaited with interest: "Memorandum to Mr. Pinkley:

"I wish to submit the following report on the observations and recent applications of a spray protective treatment on a section of ruin wall. Mr. Walker, representative of the Air*Spray Service Co. of Washington, D. C. arrived Friday November 18, 1932 and after looking over the various possible sections of wall suitable for treatment, put on a light spray coat of preservative material.

"Two sections of wall were selected each consisting of approximately 25 square feet of wall. We will designate one section as the East and West wall and the other as the North and South wall. They have been staked out and marked for identification.

"The N.S. wall was given six spray applications of preservative material and two coats of waterproofing material sprayed on. Each coat was put on 24 hours apart with the exception of two. On two hot days Mr. Wilker put on two preservative coats.

"The E.W. Wall was given five applications of preservative material and two coats of waterproofing material.

"The purpose of the number of treatments and the time between coats was to allow sufficient time for complete penetration. Mr. Walker believed that the best results will be obtained by having the preservative material soak into the wall material until saturated or until it ceases to readily absorb additional material. Then the two coats of waterproofing is intended to seal the surface keeping out moisture.

"The initial color of the wall after the first application was dark brown and remained about the same color for the remaining spray coats. The two waterproofing coats turned the wall a darker brown. The wall is drying out slowly and is beginning to show a lighter color here and there.

"There is a noticeable gloss on the top of the wall and especially on the individual pebbles. It will be interesting to observe the length of time this gloss will remain on the wall and whether it will disappear in time.

"I would like to state here that this material and treatment seems to me to have some very good qualities and is worthy of consideration. There is a definite surface tension developed which even binds the pebbles to the surface. The material also seems to penetrate into the wall binding the caliche particles not only at the surface but for a variable depth. This should give a resistive surface against the elements thereby prolonging the life of any ruins walls receiving such treatment.

"In addition to the wall treatments eighteen small samples were treated for testing and observations. There are three sets of samples as follows:

Six samples including:-One coat of preservative and two of waterproofing:

Two "	"	"	"	"	"
Three	"	"	"	"	"
Four	"	"	"	"	"
Five	"	"	"	"	"
Six	"	"	"	"	"

"These samples are all tagged and labeled for identification. One set has been placed in a carton and is for your use and observation. The other two sets will be taken by me to Field Headquarters for test and if advisable one set forwarded to Washington.

"These small samples show that treatments add greatly to the strength and binds the surface materials together making a much stronger surface than the untreated surface.

"The color on the wall treatments is somewhat darker than the untreated wall. Also the gloss is noticeable on the treated surfaces.

"I have been watching the treated walls and samples since they were made and find that the dark color is turning lighter slowly. There is no definite indication yet that the gloss is disappearing. Time will show this."

Here's an idea on the museum of the future at Chaco, and should be given consideration along with the other ideas offered. These excerpts are from Mr. Julian's letter of 11/5/32:

"As per your request, I am sending under separate cover, the drawing of the Great Sanctuary at Pueblo Bonito. It is nothing to be proud of, but it is the best that I could do with my limited knowledge and lack of aptitude.

"According to Dr. Hewett, the central portion of the kiva- that part within the rectangle formed by the roof supports- (indicated on the drawing by circles with crosses in them) was probably open to the sky. Dr. Hewett bases his opinion on the fact that no roof debris was found in the center of the Great Sanctuary at Chetro Ketl. I have no other opinions from any of the archeologists who have worked here. Perhaps Dr. Judd would tell us differently. If we are reasonably correct in this assumption, and it is decided to use the kiva as a museum, this could be glassed in.

b "The floor could be laid in flags of local stone. The fire vaults and pit in the center could be used as display cases. The ceremonial cysts would be used to display articles of special importance, and the banquettes would make admirable places to display the articles which the visitor may handle and examine.

"The idea was suggested by the number of visitors that came here from Aztec in high enthusiasm about the method of display in use at that Monument. In comparison with the cost of a regular museum, the cost of fitting out the kiva would be negligible, and to my opinion, more effective than a fifty thousand dollar building...."

In considering the above proposition we should endeavor to answer the questions: "Would there be adequate space?" "Would there be a problem of humidity and dampness with which to contend?" "Would the lighting effects be desirable?" "Would the construction features of the kiva in addition to additional display space available be well suited to the purpose?" "What are some of the problems in handling large groups in such a place?"

Custodian Palmer and Park Naturalist Bob Rose attended a lecture on "Tree Rings" by Dr. A. E. Douglas of the University of Arizona. Dr. Douglass gave this lecture in the Junior High School Auditorium in Phoenix. On the evening of December 14th Dr. Shantz, President of the University of Arizona, will talk on "A Naturalist in Arizona". Next month a brief resume of each of these talks will be included in the Supplement by the Park Naturalist.

H

Superintendent Smith of the Petrified Forest National Monument has prepared a report on the well drilling operations at that place. Specific information on difficulties and geologic conditions that might be encountered in well drilling in this region is meagre. For that reason it is very worth while to have Mr. Smith's report before us all;

"On August 10, 1932, Tony Leone, Proprietor of Leone Well Drilling Company arrived at this monument, set up his rig, and commenced drilling.

"A 10" hole was completed to a depth of 160' and cased with second hand 8" casing secured locally. An 8" hole was completed to a depth of 501' and cased with 6-5/8" casing purchased by the Field Division and shipped from Oakland, California. The hole was then completed to a depth of 634-3/4' with a diameter of 6-5/8".

"The 8' casing was cemented off according to contract but failed to effect a shut off of a small flow of salt water which was encountered at a depth of 104'. The 6-5/8" casing was pointed with a steel shoe and was driven into a soft sandstone at the depth of 501' and a perfect shut off was secured at this point. The 6-5/8" hole was then continued and a very strong flow of salt water was encountered at 609'. This flow was so strong that the water came within 75 feet of the top. It was thought by ranger-naturalist Gunnell that in a comparatively few feet the Coconino Sandstone would be reached and the logical thing to do was to drill to the top of this formation, effect a shut off there, and then drill into the Coconino until the flow of good water was reached. This was done and in the meantime a contract was let for the purchase of 650' of extra heavy 4 1/2" casing. (second run).

"The Coconino Sandstone was reached at a depth of 634' and the casing was run in and cemented off. After the necessary time had elapsed the drillers resumed operations but the cement had not effected a shut off. It is not known whether the minerals in the water prevented this or whether there was agitation in the water which kept the cement from setting. Then the contractor went to Gallup and secured a pump designed especially for the purpose of shutting off wells.

"We secured about three cubic yards of shale which was especially good. The casing was then raised about 40', the shale was mixed in hot water, and poured into the top of the casing. Then fresh water was forced through the pump into the casing under a pressure of 3,000 pounds which forced the mixed shale to the bottom. Then the casing was driven down solidly on the Coconino.

"After the casing was cleaned out it was thought at first that the shut off had been effected, but soon reddish brown water began to come in and it was presently nearly as high as before.

"It is the opinion of Mr. Gunnell in which I agree that earth materials were washed out of the joints existing between the lower salt water stratum and the Coconino sandstone, permitting a migration of the salt water into the Coconino. This probably began during the time that the unconsolidated cement was in the bottom of the hole. It is likely that the continual flow of salt water down the joint planes into the Coconino along the margins of the hole widened the joints to such dimensions that the mud injected into the hole was not of sufficient strength to prevent the downward migration of the salt water. It appears impossible to prevent this migration with the equipment at hand. It seems that the salt water gets into the casing through the Coconino Sandstone.

"As the Coconino Sandstone is rather uniform in texture from top to bottom it would appear impossible to effect a shut off within this formation. However, local well drillers have encountered three distinct flows of water within the Coconino. This indicates that there are impervious layers within the Coconino. The uppermost impervious layer is known to occur at the base of the uppermost water stratum. This probably consists of firmly cemented sandstone.

"We are pulling the 4 $\frac{1}{2}$ " casing preparatory to stacking it at the site of the well, then present operations will be abandoned. This leaves a cased 6-5/8 hole 501 feet deep and 133'-8" of 6-5/8" hole partly full of mud with salt water in inexhaustible quantities to within 75 feet of the top. Present funds are practically exhausted. "

During the well drilling operations Ranger Naturalist Gunnell has kept a very careful log. This should add some valuable information on the character and origin of the formations in the vicinity of the Petrified Forest.

The Park Naturalist, Bob Rose, gave a talk Tues. Dec. 6th before the Junior High School at Gilbert, attendance more than 200. School pupils enjoy national parks subjects evidently for the Superintendent stated that the children were the quietest and most attentive he'd ever seen. A talk on national parks and monuments was given at Casa Grande before a community gathering of about 300 attendance. This was in connection with a community song service which is an annual occurrence there.

Mr. Attwell was asked to visit Gran Quivira National Monument and report on the treasure digging at that place. He reports the following:

"Leaving Bandelier National Monument at 8 on the morning of December 1 I reached Gran Quivira at 3 P.M. Custodian W. H. Smith accompanied me on my inspection of the treasure diggers. I completed this field inspection shortly after 6 P.M. and left for Montezuma Castle National Monument. The following is a report of my findings:

"Spectators and curious persons were not in evidence. From the surface there was nothing to indicate that treasure seekers were operating. A "Warning-Danger" sign is near the scene of operation to prevent spectators who do visit the shaft, from standing too near.

"Mr. Yesserro, the treasure hunter, claims that 15 years ago he excavated 40 feet deep inside of a 5 foot by 5 foot shaft with vertical side walls and that he used no powder but only had to remove the debris and backfill from a previously filled shaft. Custodian W.H. Smith informed me that many old-timers had told him that they had heard blasting while Mr. Yesserro was excavating the previous shaft and that he himself had found several pieces of powder near the shaft. If this discrepancy was cleared up as to whether or not the shaft opened up by Mr. Yesserro 15 years ago was in solid rock or in backfilled shaft, a different light might be thrown on the possibility or probability of a subterranean chamber under the mission. The shaft had been completely refilled by the Custodian about 5 years ago. At present this backfill has been entirely removed and the old excavation carried down to the 42 foot level. At this point the shaft, according to the crew, terminated in solid rock floor showing that man had not been lower.

"The material from the shaft had been deposited about 30 feet southeast of the excavation. It contained 39 cubic yards of material. This material was of the same nature as was gathered upon the surface at the time the shaft was filled. During the excavation several old timbers were removed. These were badly decayed on account of moisture. Rumors have it that these timbers were originally placed at the time the mission was constructed. Close examination showed that these timbers were 8" by 8" pine lagging and that the ends had been sawed. One pine board was also found 1" thick, 12" wide and 5' long. This board had been sawed on all sides as lumber is manufactured today. The life of green pine in this damp shaft could not be many years. Mr. Yesserro claims that he himself placed these timbers and boards in the shaft 15 years ago. They were all found between the 30 and the 40 foot level which is in the area previously excavated by him. This material is in such decomposed condition that growth ring borings would be of little value. Custodian W.H. Smith is, however, carefully saving these pieces awaiting your instructions.

"The whole shaft is lined with light sheathing 1" by 4" and 2" by 4" studs. This is all new material. It was not placed to support the rock walls but to prevent raveling and crumbling. This lining completely conceals the structure of the shaft walls. A safe, substantial ladder spans the south wall. The decking over the shaft is none too safe. It is composed mostly of old 2" plank, 6" to 12" wide. The sills under the decking are not properly placed and some of the plank overhang four feet causing them to tip when stepped upon. No banisters are provided to prevent people from falling into the shaft while work is under progress.

"The home-made hoist to raise the material from the shaft and tunnel to the surface is crude but safe. It is composed of a 10" wood axle mounted on two vertical posts. This axle is 7 feet long with a wagon wheel bolted to each end. A Mexican on each wheel hand-powers the spokes of the wheels, thus making a two man-power hoist similar to the old water well type. A 45 foot rope $1\frac{1}{2}$ " in diameter, attached to a 2 cubic foot bucket with a fool-proof hook, makes a safe hoist.

"A tunnel leads westerly directly toward the New Church from the foot of the shaft. This tunnel is six feet high and five feet wide at its connection with the shaft. This tunnel is 23 feet long. Twenty cubic yards of excavated material have been removed from it to date. The back end of the tunnel is four feet square. The first three feet of the tunnel are not lined as the walls are of solid material. The next ten feet are lined with 8" by 8" ties. The last ten feet are lined with cedar poles ranging in diameter from 2" to 6". This last lagging is placed more haphazardly than nearer the entrance. Both the shaft and the tunnel are safe.

"The walls of the tunnel at the adit are in solid rock. A few feet into the tunnel the material changes to resemble that of a side wall in a cavern, like Colossal Cave or sections in Carlsbad. Farther in the tunnel the loose material between the lagging and the side walls conceals the walls from view.

"The material being removed is loose rock about a quarter of one cubic foot in size. There is no dirt nor small pieces of stone intermixed with the rock. No picking is required to load this material into the bucket to be elevated. One man loads all of the material with his hands and neither pick nor shovel is in evidence. Mr. Yesserro refers to this passage as a tunnel and the expected cavities as rooms, chambers or tunnels. Custodian W.H. Smith always refers to the same ones as caves and fissures or crevices. This tunnel appears to be a crevice about five feet wide. The height cannot be determined by just entering the tunnel as the lagging on the ceiling is against the loose rock.

"The ceiling, but not the side walls, is smoke covered. Mr. Yesserro told me that his timbers burned up in the shaft while he was excavating at the 30 foot level 15 years ago. This was 10 feet above the tunnel which was filled with material.