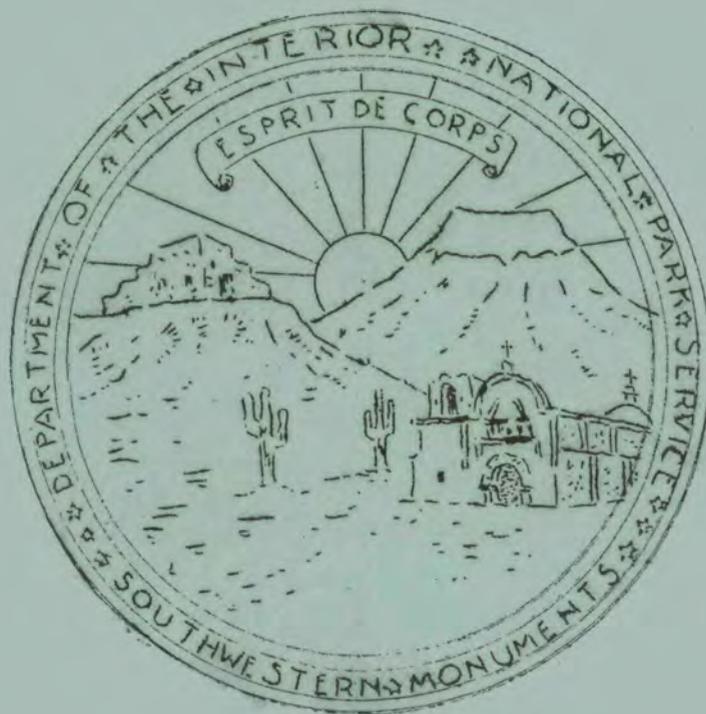


SOUTHWESTERN MONUMENTS MONTHLY REPORT

MARCH
1937



DEPARTMENT OF THE INTERIOR
NATIONAL PARK
SERVICE

INDEX

CONDENSED GENERAL REPORT

| | | | |
|------------------------------|-----|---------------------------------|-----|
| Travel ----- | 143 | Maintenance, Improvements, New | |
| General ----- | 143 | Construction ----- | 144 |
| Administrative ----- | 144 | Activities of Other Agencies in | |
| Protection ----- | 145 | the Monuments ----- | 145 |
| Activities in Archeology and | | Miscellaneous ----- | 146 |
| History ----- | 146 | | |

REPORTS FROM THE MEN IN THE FIELD

| | | | |
|--------------------------|-----|------------------------|-----|
| Aztec ----- | 147 | Gran Quivira ----- | 162 |
| Bandelier ----- | 149 | Montezuma Castle ----- | 163 |
| Bandelier ECW ----- | 152 | Montezuma Birds ----- | 165 |
| Bandelier Forestry ----- | 153 | Natural Bridges ----- | 167 |
| Canyon de Chelly ----- | 153 | Pipe Spring ----- | 167 |
| Casa Grande ----- | 154 | Saguaro ----- | 168 |
| Capulin ----- | 156 | Tonto ----- | 169 |
| Chaco Canyon ----- | 157 | Tumacacori ----- | 169 |
| Chiricahua ----- | 158 | Walnut Canyon ----- | 167 |
| Chiricahua ECW ----- | 160 | White Sands ----- | 173 |
| El Morro ----- | 160 | Wupatki ----- | 174 |

HEADQUARTERS STUFF

| | |
|---------------------------|-----|
| Branch of Education ----- | 175 |
| Closing ----- | 177 |

THE SUPPLEMENT

| | |
|---|-----|
| Excavations at Tumacacori, 1934, by Paul Beaubien ----- | 183 |
|---|-----|

SOUTHWESTERN MONUMENTS

PERSONNEL

HEADQUARTERS, Southwestern Monuments, Coolidge, Arizona: Frank Pinkley, Superintendent; Hugh M. Miller, Assistant Superintendent; James Luther, Chief Clerk; J. H. Tovrea, Assistant Engineer; Dale S. King and Charlie R. Steen, Junior Park Naturalists; Millard Singerman, Clerk-Stenographer; Luis Gastelum and W. H. Sharpe, ECW Clerks.

FIELD STATIONS

1. Arches - Moab, Utah. J. M. Turnbow, Custodian.
 2. Aztec Ruins - Aztec, New Mexico. Thomas C. Miller, Custodian.
 3. Bandelier - Santa Fe, New Mexico. Clinton G. Harkins, Custodian; Jerome W. Hendron, Guide.
 4. Canyon de Chelly - Chin Lee, Arizona. Johnwill Faris, Custodian.
 5. Capulin Mountain - Capulin, New Mexico. Homer J. Farr, Custodian.
 6. Casa Grande - Coolidge, Arizona. Albert T. Bicknell, Custodian; J. Donald Erskine, Ranger
J. W. Brewer, Jr., Guide
 7. Chaco Canyon - Crownpoint, New Mexico. Lewis T. McKinney, Custodian.
 8. Chiricahua - Willcox, Arizona. Frank L. Fish, Custodian; Homer Bennett and Bronson Harris, CCC guides.
 9. El Morro - Ramah, New Mexico. Robert R. Budlong, Custodian.
 10. Gila Cliff Dwellings - Cliff, New Mexico. No Custodian.
 11. Gran Quivira - Gran Quivira, New Mexico. Geo. L. Boundey, Custodian.
 12. Hovenweep - Cortez, Colorado. No Custodian.
 13. Montezuma Castle - Camp Verde, Arizona. Earl Jackson, Custodian; Russell Farmer, Ranger.
 14. Natural Bridges - Blanding, Utah. Zeke Johnson, Custodian.
 15. Navajo-Kayenta, Arizona. John Wetherill, Custodian.
 16. Pipe Spring - Moccasin, Arizona. Leonard Heaton, Acting Custodian.
 17. Rainbow Bridge - Rainbow Lodge, Arizona. No Custodian.
 18. Saguaro - Tucson, Arizona. Paul Beaubien, Park Ranger.
 19. Sunset Crater - Flagstaff, Arizona. No Custodian.
 20. Tonto - Roosevelt, Arizona. Thomas B. Onstott, Park Ranger.
 21. Tumacacori - Box 2225, Tucson, Arizona. Louis R. Caywood, Custodian; James Felton, Park Ranger.
 22. Walnut Canyon - Flagstaff, Arizona. Winston H. Carrington, Ranger.
 23. White Sands - Alamogordo, New Mexico. Tom Charles, Custodian.
 24. Wupatki - Flagstaff, Arizona. Milton Wetherill, In Charge.
 25. Yucca House - Cortez, Colorado. No Custodian
-

CONDENSED REPORT

IN WHICH IS GIVEN THE HIGHLIGHTS OF THE MONTH

Coolidge, Arizona
April 1, 1937.

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

Dear Mr. Director:

The Condensed Report on Southwestern Monuments activities for March:

| <u>TRAVEL</u> | <u>March, 1937</u> | <u>March, 1936</u> | <u>March, 1935</u> |
|------------------|--------------------|--------------------|--------------------|
| Aztec Ruins | 551 | 602 | 282 |
| Bandelier | 320 | 429 | 427 |
| Capulin Mountain | 800 | 400 | 611 |
| Casa Grande | 3,912 | 2,705 | 3,335 |
| Chaco Canyon | 309 | 453 | 308 |
| Canyon de Chelly | --- | 25 | --- |
| Chiricahua | 488 | 350 | --- |
| El Morro | --- | 16 | 4 |
| Gran Quivira | 156 | 152 | 293 |
| Montezuma Castle | 655 | 590 | 597 |
| Pipe Spring | 11 | 119 | 195 |
| Saguaro | 1,545 | 2,000 | --- |
| Tonto | 900 | 816 | 749 |
| Tumacacori | 2,188 | 1,573 | 1,837 |
| Walnut Canyon | 34 | 360 | --- |
| White Sands | 7,386 | 4,685 | --- |
| Wupatki | 90 | 104 | 33 |
| Actual reported | | | |
| Registration | 19,345 | 15,515 | 8,728 |

000 GENERAL

020 GENERAL WEATHER CONDITIONS.

Much precipitation has fallen in the Southwest during the past month. El Morro and Canyon de Chelly, in addition to several monuments at which no custodians are stationed, are still snowed in with no immediate prospects for relief. The southern Monuments have experienced, for the most part, cool weather with some rain. Approach roads to the monuments are in generally poor condition.

CONDENSED REPORT (CONT.)

100 ADMINISTRATIVE

123 INSPECTIONS BY NATIONAL PARK OFFICERS

Aztec Ruins - J. B. Hamilton
Bandelier - A. E. Underhill; Ward P. Webber; J. B. Hamilton; Hugh
M. Miller; Charlie R. Steen.
Capulin - J. B. Hamilton
Casa Grande - Clinton Rose; H. B. Chase
Chaco Canyon - J. B. Hamilton; Erik Reed.
Chiricahua - J. B. Hamilton; Clinton Rose; W. H. Sharpe; John H.
Diehl; Dr. Charles N. Gould.
Montezuma Castle - J. B. Hamilton.
Pipe Spring - Alfred C. Kuehl.
Tumacacori - Ansel F. Hall.
White Sands - Hugh M. Miller, Charlie R. Steen; John H. Diehl;
Dr. Charles N. Gould; J. B. Hamilton.

170 PLANS, MAPS, SURVEYS

Capulin - Engineer Clark's survey crew finished their mapping at
Capulin Mountain early in the month and departed for Platt National
Park.

200 MAINTENANCE, IMPROVEMENTS, NEW CONSTRUCTION

220 IMPROVEMENTS

Aztec Ruins - Trail from Museum to the Ruins was barred by a cable
with a sign "No Admittance Without Ranger". This is being done
in an effort to curb unescorted visitors from climbing over the
ruins walls.

Bandelier - The entrance road to the Monument was improved during
the month when two bridges were replaced in the detached section.
The State of New Mexico furnished the materials and Kersey and Sons,
Contractors, the labor.

Casa Grande - Resurfacing of the residential parking area completed.
New sewage disposal system completed on the 29th.

NEW CONSTRUCTION 230

Chiricahua ECW - Slides on the Bonita Canyon road have been opened
so that traffic may pass but it will be several weeks before the
road is in good shape.
880 yards of rock cuts on the Bonita Canyon road have been sloped.
The rock removed has been used to obliterate borrow pits and in
widening fill sections.

CONDENSED REPORT FOR MARCH (CONT.)

230 NEW CONSTRUCTION

Chiricahua ECW (Cont.)

Sara Deming-Balanced Rock horse trail advanced 800 feet
Equipment Shed floor poured. Project 100% complete
Headquarters-Portal telephone line completed
Materials purchased and construction of incinerator under way.
300 trees planted to obliterate old road near headquarters.

Bandelier ECW

The retaining wall enclosing the back side of the Utility Area is 100% complete.

The dining room of Unit #1 of the hotel development is completed to lintel height. Two feet of wall has also been completed around the kitchen and lunch room of this unit.

All cabinet work of the museum cases completed. The cases in the first two rooms of the museum are now being painted.

Construction of three tables being carried on by the carpenter crew. Fire Ladder project completed during the month with the erection of the last ladder on Corral Hill.

A rock quarry crew was kept busy during the month.

Lintels and vigas for hotel unit hewn by the forestry crew.

300 ACTIVITIES OF OTHER AGENCIES IN THE MONUMENTS

320 COOPERATING GOVERNMENTAL AGENCIES

Bandelier - Work of the USGS party which is making a topographic survey of the Monument has continued during the month.

Chaco Canyon - The Soil Conservation Service has had a crew of 20 men working in the Canyon since the 15th.

Pipe Spring - The Division of Grazing camp which is located on the Monument gave about 14 man-days of labor. This was used in general clean-up about the fort.

330 COOPERATING NON-GOVERNMENTAL AGENCIES

Chaco Canyon - School of American Research has completed the last of six hogans which are to be used as homes for staff members during the summer sessions, and are now constructing the principal building of their projected group.

600 PROTECTION

630 ACCIDENTS

Bandelier - On March 19 Mr. Kersey and his son, contractors, on the Bandelier road job, were injured when the personal car which they were driving collided with a gravel truck in Guaje Canyon. Mr. Kersey, the elder, suffered several broken ribs and a bruised leg

CONDENSED REPORT (CONT.)

630 ACCIDENTS (Cont.)

Bandelier (Cont.)

while his son received treatment for severe head injuries and shock. Park Service Engineer A. E. Underhill, who was in the car with the Kerseys, was not injured.

700 ACTIVITIES IN ARCHAEOLOGY AND HISTORY

Chaco Canyon - The ruins stabilization crew has about thirty percent of the plug of debris removed from the back side of Threatening Rock.

MISCELLANEOUS

MAIL COUNT:

| | | |
|-----------------|-------|-------|
| Incoming: | | |
| Government | 1,802 | |
| Personal | 915 | |
| Total incoming | | 2,717 |
| Outgoing: | | |
| Government only | 2,047 | 2,047 |
| Total Mail | | 4,764 |
| Telegrams: | | |
| Incoming | 36 | |
| Outgoing | 42 | |
| Total telegrams | | 78 |
| Grand Total | | 4,842 |

Very truly yours,

Frank Pinkley
Frank Pinkley,
Superintendent

FIELD REPORTS

FROM THE MEN ON THE JOB

AZTEC RUINS

By Thomas C. Miller, Custodian

General

March arrived with much changeable weather. We have experienced much snow, rain and wind along with a few bright sunny days. The roads have been bad all the month with the exception of a few days that the roads were dry enough to travel with comfort. Considering the wet weather for the month of March travel has been exceptionally good both in quantity and quality. Because of so much wet weather and mud during this month it was necessary to build a temporary trail across the entire court in the ruins. The trail is made of two-inch boards. This type of trail does not blend so well with the general appearance of things, but it was the best we could do under the circumstances. 551 visitors crossed the court on these boards and apparently were well pleased with the lumber trail after they would try stepping off into the mud once or twice.

Weather Statistics

Maximum temperature, 69, on March 22; Minimum temperature, 6, Feb. 27; precipitation 1.88 inches rain and melted snow was recorded for the month. The greatest amount recorded in 24 hours was .38 inch on March 13.

| | |
|---|----|
| Cloudy days | 13 |
| Partly cloudy days | 4 |
| Clear days | 11 |
| Number of days precipitation was recorded | 12 |

TRAVEL

551 visitors entered the Monument in 153 automobiles coming from 24 states, Havana, Cuba, and Canada. Number of field trips 109. Number of Museum trips 116 .

IMPROVEMENTS

The trails leading to and from the museum and administration building were fenced off during the month. The type of fence built was 2/0 steel chain and steel posts, then signs were made and tied to the chain. These signs read: NO ADMITTANCE WITHOUT RANGER. My reason for this chain fence is obvious. When both guides are in the ruins with parties this leaves the museum unattended until the first guide returns. Visitors will look

AZTEC (CONT.)

around for a very few minutes then enter the ruins, climb over the walls, then join the first party that comes along and miss about half of the trip. They also run the risk of getting hurt or tearing down a good prehistoric wall. What we are trying to do is organize these trips in the museum and run on schedule as near as possible. So far this method has worked out very satisfactorily. However, I can see that when heavy travel season opens we are going to be undermanned. If a visitor is contacted when he first arrives, gets the complete trip through the ruins and museum, he leaves the Monument not only a booster for the service but he has learned something about the ruins and that is the type of service we are trying to put out here in this Monument.

Special Visitors

Mr. Harold Hunter, State Parks, Woodward, Oklahoma, was an interested visitor March 1. Mr. Ward Charles, ECW, and Son of Tom Charles, was a Monument visitor March 4. Dr. Edgar L. Hewett, Director of the School of American Research, was a business visitor also on March 4. A few days after Dr. Hewett paid us a visit, I received through the mail an autographed copy of his new book, "Chaco Canyon and Its Monuments." I find the book to be a valuable source of information and it makes a valuable addition to our library. Many thanks to Dr. Hewett.

National Park Service Officer

On March 10 we received a telegram from Associate Engineer Hamilton regarding roads into Chaco Canyon and asked me to meet him there March 13. I wired Jim that the roads were fine to come on. The roads were good that day, but the day he arrived in Chaco to inspect the work being carried on in connection with the Threatening Rock we faced the hardest snow storm of the month from Chaco to Aztec that night. Jim inspected our ruins repair work here at Aztec on the 14th and departed for Mesa Verde, returning to Aztec on the 17th, and departed for Santa Fe on the 18th.

Personnel

Two laborers were employed on ruins repair for the most part of the month. One guide was employed the entire month. In connection with our ruins repair the Government pickup was used in hauling all of the rock, sand and cement. We find this pickup to be the most useful piece of equipment that we have.

Monument Inspections

I made two trips to Chaco Canyon during the month to inspect work being carried on in removing the plug of debris behind Threatening Rock. The first trip was March 8. The next trip was to go over the work with

AZTEC (CONT.)

Associate Engineer Hamilton on the 13th mentioned elsewhere in this report. Mr. McKinney is surely getting the dirt and rock moved in good shape. At that time the job was about 30% complete.

On March 22 I inspected Yucca House National Monument. The snow has melted around Yucca House and the grass is getting green. However, the roads are not too dry yet. I left my car seven-tenths mile this side of the Monument and walked in. Everything seemed to have wintered in good shape. I noticed that the wall of the ruin on the north side has begun to disintegrate in one place quite badly. It is the place where some vandal dug the hole several years ago. I plan to fill that hole up one of these days. It can be done at small expense. The Ismay family were at home and seemed to be in the best of health after hibernating there all winter.

*****OO*****

BANDELIER

By Clinton G. Harkins, Custodian

Visitors

Our total travel for the month numbered 320 people, being 60 over last month's total. They arrived in 114 cars from 28 states, and three foreign countries.

The six highest states by order of visitor count were: New Mexico, 136; Colorado, 23; Illinois, 19; Pennsylvania, 15; New York, 14; Texas, 12. Twenty-four people visited us from three foreign countries including Germany, Switzerland and France. Return visitors numbered 72, three were given short lectures, and three parties made use of the camp grounds for picnic lunches.

Fifty-five parties, consisting of 212 people made trips through the ruins averaging 71 minutes to the party and an average of three and a fraction to the trip.

Weather and Roads

| | |
|--------------------------|------------------------------|
| Mean Maximum ----- | 56 |
| Mean Minimum ----- | 26 |
| Mean ----- | 41 |
| Range ----- | 25 |
| Days Clear ----- | 6 |
| Days Cloudy ----- | 4 |
| Days Partly Cloudy ----- | 18 |
| Precipitation ----- | 62 against .72 for February. |
| Dust Storms ----- | 8 |
| Snow Squalls ----- | 26 February |

BANDELIER (CONT.)

Our weather has been typical of March, windy and cold, one day, but nice and sunny the next.

The roads have been good the entire month, except for one day, the 14th, when they were sloppy but the wind and sun soon dried them out.

Special Visitors

Mr. Bursey, Director of the New Mexico State Tourist Bureau, was in February 28 securing pictures, to be used in advertising New Mexico's points of interest.

Mr. Fred Graff, Jr., section chief of the Rocky Mountain section for the U. S. Geological Survey, stationed at Denver, Colorado, and Mr. Clarence Beyer, member of the Ross Engineering Office in Albuquerque, New Mexico, were in conferring with Mr. T. T. Ranny, regarding the topographical map now being prepared for Bandelier National Monument; Mr. Ranny by the way is head of the party working in Frijoles Canyon.

Mr. and Mrs. W. G. Lauton, of Cleveland, Ohio, paid a return visit, having been here ten years ago. They were very complimentary in their praises of the Park Service in the work being done towards preservation of the ruins.

National Park Service Visitors

Mr. A. E. Underhill, Park Service Roadoiling Expert of San Francisco, California, arrived March 5 to supervise the surfacing of our entrance road.

Mr. Ward P. Webber, Park Service engineer from the San Francisco Office, and Mr. J. B. Hamilton, Associate Engineer, Santa Fe, New Mexico, were in March 7. I was very sorry to have missed these gentlemen, especially Mr. Webber, as my former associations with him back in 1928 and 1929 at Crater Lake National Park were very beneficial, and I would have enjoyed renewing the friendship.

Hugh Miller and Charlie Steen made their stay all too short. We were glad to have them here and hope they find it possible to return soon.

Mr. Ray Newbury, Park Ranger, Petrified Forest, spent a few days visiting the custodian.

General

Kersey and Sons, Contractors, of Alamogordo, New Mexico, moved in to the Culebra Hill gravel pit March 2 and started setting up their crusher, preparatory to surfacing the plaza and entrance road and also

BANDELIER (CONT.)

to stock pile 2,500 yards of gravel to be used for oil surfacing. They have been having some trouble getting lined out but at the present writing seem to have everything going in good shape; barring unforeseen trouble, the surfacing of the entrance road should be well along by the middle of April.

Due to the repairing of two bridges in the Detached Section, traffic on State Highway 4 was held up a few hours on March 11. The Service profited by the delay, getting two dangerous bridges put in good repair; the State furnished the material and Kersey and Sons supplied the labor.

An unfortunate accident happened in Guaje Canyon on March 19, involving Mr. Kersey and his Son, also Mr. Underhill who was riding with them in their car. The Kersey car collided with a gravel truck belonging to Mr. Haas, who is doing the gravel hauling for Kersey, and just about demolished the car, a new Chevrolet coach. Mr. Kersey and his son were taken to the hospital, while Mr. Underhill took stock of himself; decided he wasn't in such bad shape and assumed the duties of crusher foreman for the balance of the day. These engineers are plenty tough! After an examination at the hospital Mr. Kersey was found to have several broken ribs and a badly bruised leg. Mr. Kersey's son received severe head injuries in addition to shock and minor bruises. Mr. Underhill was shaken up quite a bit, but nothing serious, as he is still on the job and shows no ill effects.

Nature Notes

On a recent visit to the lower falls in Frijoles Canyon, beaver signs were very noticeable. A more thorough investigation showed they have been doing a great deal of work there, such as cutting and peeling willows and building dams. The amount of activity going on there would indicate quite a colony. As Mr. Jackson stated in a former report "He went to fetch himself a wife"; well, from indications, he got her all right, and I think she brought all her relations with her. There work is confined to the area below the upper falls, however, and there is no immediate danger liable to come from them. Should they get into the vicinity of the camp ground, they would have to be removed.

One large flock of over a hundred geese were seen winging their way northward on March 14. Since that time five smaller flocks were noted.

Wild currants and pussywillow buds are opening. The deciduous trees in the camp ground are also showing signs of life.

Museum

Mr. Hendron expects to start arranging the display cases in the museum the last of this week, as the carpenter and painting crews will be through there by the 24th or 25th.

BANDELIER (CONT.)

Mr. Turken, sculptor under WPA project, has three Bandelier type Indian heads ready for shipment to Berkeley, for the final painting to be put on there. When our museum is finished and all the cases completed, we expect it to rate along with the finest in the Southwest.

Lieut. Harry Cooper, Company Commander, 815 CCC, presented the Service with a small case of artifacts, gathered and arranged by the enrollees stationed here the last three years. The case consisted of a number of potsherds, obsidian, arrowheads, one old cap and ball pistol found near here, also one large piece of pottery, supposedly used for cooking. The potsherds and the old pistol will be taken to the Museum of New Mexico in Santa Fe for identification and later placed in our museum.

*****OO*****

BANDELIER ECW

By H. B. Chase, Project Superintendent.

The Retaining Wall enclosing the back side of the Utility Area in the Hotel Development is completed. The completion of this project involves approximately 325 cubic yards of rock masonry. In connection with this project a considerable yardage of bank sloping has been carried on under our project Excavation Channels and Ditches, this being still in progress.

The dining room of Unit No. 1 in the Hotel Development is now completed to lintel height. The two feet of wall has been completed around the kitchen and lunch rooms of this unit also.

All cabinet work in connection with the museum cases was completed the 15th of this month and at this time the cases in the first two rooms are receiving their final coats of paint and stain.

The construction of three tables under design submitted by the Branch of Plans and Design has been started by the carpenter crew. It is intended to carry on further work in connection with the furniture project by the construction of beds, chairs, etc.

The Fire Ladders Project has been completed during the past month by the erection of the final ladder on a point known as Corral Hill.

A large quantity of stone required for the construction of the retaining wall has necessitated a large crew in the rock quarry, the crew being occupied all month quarrying and shaping building stone for both the wall and building projects.

*****OO*****

BANDELIER FORESTRY

By James Fulton, Forestry Foreman

During the first part of the month I had a crew of men hewing lintels and shaping vigas for the hotel dining room and kitchen. In all a total of 520 feet of various size lintels were hewed. Also a total of 87 vigas were shaped for this building. For the ceiling we split and peeled 25,000 feet of aspen material. This great amount of timber which was prepared was necessary on account of the long portals.

On March 16 the second fire ladder was put up on Corral Hill. This ladder was the last of the two ladders which were included in this project.

For the past two weeks I have had a crew of three men helping me to paint the museum. On Friday the 26th the museum will be completed.

*****OO*****

CANYON DE CHELLY

By Johnwill Faris, Custodian

De Chelly has established a record for the rest of the boys to shoot at. Two months have passed and not a single complaint from a visitor, and if the roads keep as bottomless as they are at the present time I may be able to make the two, three.

This will not be a report at all, Boss, but more of a note to inform you that I am still holding down the Fort to the best of my ability. A few more days like one or two just past and I will be Custodian of the painted desert with all the paint blown off and Mesa Verde will have my Monument, but then it is an ill wind that does not blow some good, and just think how Mesa Verde will puff up if they find they have even a remote portion of de Chelly.

The weather has been typical of spring and the roads almost entirely impassable, especially from the standpoint of a visitor. One trip was made to Gallup and that only under the most trying conditions. I am praying for some passable roads before long, for we are on our last barrel of fuel oil and unless we get some more, I fear for the fate of your Custodian. The fireplace comes about as near heating the large room as a candle would the State Capitol. We will get along though, Boss, even if we run out of oil. Don't worry about de Chelly. Conditions are never so bad but that we can look all around and see worse.

Inventory has been checked and all our equipment stored away for safe-keeping, at least the best we have. A tent is not very satisfactory for storing equipment and expecting it to be safe, but I do honestly feel that it is as safe here in a tent as it would be anywhere in the country.

Several hours have been spent trying to get the Monument in shape for any tourist should one happen out this way. My grader and a borrowed

CANYON DE CHELLY (CONT.)

drag have our roads as passable as the weather will permit.

My major problem, Boss, this month is that of our sewer. I shall take that up under separate cover and trust that some remedy might be forthcoming. Jim has requested that I inform him when he could come in with any degree of safety and I shall as soon as I possibly can because several things need his attention badly.

Well, Boss, I do hope that some of the other boys are having more visitors than I am, and I wish that I might relieve some of your boys in the Southern Monuments, but then my day is coming so I will continue to get ready for them when they do come.

*****OO*****

CASA GRANDE

By Albert T. Bicknell, Custodian

Weather

| | |
|---------------------|----------------------------|
| Days clear | 15 |
| Days cloudy | 8 |
| Days partly cloudy | 5 |
| Maximum temperature | 86 on March 8, 10, and 11. |
| Minimum temperature | 26 on February 28. |
| Precipitation | 1.23 inches. |
| High wind on | March 13, 16, 18, and 22. |

On five nights the temperature dropped to 32 degrees or lower.

General

The travel figures this month are especially high when it is considered that there were three less days in the report period due to February having only 28 days. Days when it rained or when there was a high wind seemed to have very little effect on our volume of visitors as they came just the same. On the windy days the trip through the Casa Grande was very unpleasant on account of the thick dust. On March 22 the wind and dust were so bad in this section that several accidents were reported on the highway just south of the Monument due to poor visibility. Even with the shorter month the travel this month exceeded that of last month by 67 visitors. And in comparison with the same period last year this month shows an increase of over 1,200 visitors. It certainly indicates more people travelling as our visitors came from every state in the Union except New Hampshire, Mississippi, Nevada, and South Carolina. Several parties each came from Alaska, Hawaii and Canal Zone. This month seems to show a large number of foreign visitors with 13 different countries represented: Canada, Mexico, France, England, British West Indies, Algeria, Switzerland, Denmark, Scotland, Japan, China, Poland and Australia.

CASA GRANDE (CONT.)

Use of Monument Facilities by the Public

Total travel: 1937 --- 3,912; 1936 --- 2,705; 1935 --- 3,335.

Of the 3,912 visitors, 3,686 were contacted in guided trips through the Ruins or the Museum. 12,026 minutes were spent guiding 376 parties through the Ruins and 5,559 minutes were spent guiding 301 parties through the Museum. The rest of the total travel count consisted of those using the picnic grounds or simply driving up to the curb and viewing the ruins from their car.

Newsworthy Visitors

National Park Service visitors were Clinton Rose, Resident Landscape Architect, and Hub and Ruby Chase from Bandelier National Monument; others worthy of mention were: Senator J. H. Bankhead of Alabama; Dr. A. E. Douglas; Admiral Reeves, U. S. Navy, retired; R. L. Deering of the San Francisco Office of the U. S. Forest Service; A. C. McCain, recently retired supervisor of the Teton National Forest, now camping on the Monument for a few weeks; D. D. Welch, president of University of Dubuque (Iowa); Mr. and Mrs. Sydney Moseley of the Royal Automobile Club, London, England; Emil Haury from Gila Pueblo, Globe, Arizona; and Mr. Schuyler Jones of the Teitzel-Jones Boot Company, bringing samples of new boots.

Several large parties visited the Monument, among them being a group of 44 Boy Scouts from Phoenix and a group of 38 high school students from Pima, Arizona.

Improvements

The resurfacing of the residential parking area was completed with the paint coat being applied. Most of the work is in good shape, but we are sorry to have to report one or two places that are still soft and in poor condition.

More work was done on the new sewer system, and it is practically completed. All equipment is here and the change-over from the old to the new system merely awaits the Indian Service's work on the electrical part of the job.

Nature Notes

Birds:

Last month we reported a Say Phoebe building a nest in the East Room of the Casa Grande. The nest was completed but the past week seems to have been abandoned. What Mrs. Phoebe's future plans now are we are unable to say. The owl nesting in the big house also seems to have given up trying to hatch the one egg she layed. The cold weather may be responsible for her failure. On March 21 a Cedar Waxwing was seen in a mesquite

CASA GRANDE (CONT.)

tree along the path to the Casa Grande. This is the first record of one of these birds here.

Reptiles

On March 21 the first snake of the year, a $3\frac{1}{2}$ foot Arizona Gopher Snake, was seen in a hole in the East wall of Compound A. Later he came out and showed himself. A live Gila Monster was brought in by some farmers on March 14. It had been collected a short distance from the Monument. The animal was released on the Monument.

Flora

The Ocatillo on the Monument are now all in leaf and the buds started forming about March 15. Buds appeared on the Staghorn Cactus about the same time. Many small flowering plants are putting in their appearance on the desert now, so in a few more weeks the desert should be at its best.

*****OO*****

CAPULIN MOUNTAIN

By Homer J. Farr, Custodian

In reporting happenings in and around Capulin Mountain National Monument, I estimate 800 visitors this month. Most of the visitors have walked up the Mountain due to the fact that the road is in bad condition. I intend to do just a few dollars' worth of work on the road this next week and this will clean the road of rocks and rubbish which will be temporary relief for a few weeks until we can get some real permanent work done.

Andy Clark and his assistants, Schmidt and Leavitt, were here the forepart of the month and left about two weeks ago for Platt National Park in Oklahoma. Mr. J. B. Hamilton was here for a couple of days about the fifteenth. Clark's crew and Mr. Hamilton were all mighty genial fellows and mapped out for this Monument some mighty interesting work and something that will be in the estimation of the Custodian just what we have been needing for lo these many moons, a retaining wall for the sloughing cinders in the road.

Weather! Well it has not been what it might have been. Last month was a beauty and this month a beast. We have had most of our winter during this month, but very little precipitation, I would say not over .60 of an inch. Word comes from Dallas that we may expect an increased amount of tourists this summer and possibly earlier too for with closed cars, car heaters and anti-freeze even a small snowstorm does not make much discomfort for travelers during early spring.

According to the calendar and the wildlife of this Monument one might believe that good old Spring is just around the corner. We have noted Robins, Blue birds, Meadow Larks, Blue Jays or Piñoneros, and in

CAPULIN MOUNTAIN (CONT.)

fact everything but Spring itself. We have had no warm weather. Temperature today has been around 20 most of the day.

No guided parties or lectures this month.

*****oo*****

CHACO CANYON

By Lewis T. McKinney, Custodian

General

March has been a fair month with us over here in Chaco. Roads have been pretty decent, quite a few visitors from both directions, some west wind which gave us a good sand finish while working behind Threatening Rock and some rain which helped settle some of the dust that the west winds stirred up.

Visitors

309 people entered the Monument in 104 automobiles, from the following 9 states: New Mexico, Arizona, Texas, Colorado, Utah, Kansas, Wyoming, California and Oklahoma. Dr. Hewett and Dr. Fisher with the University of New Mexico and the School of American Research spent the day in the Canyon Saturday, March 20. Erik Reed, Regional Archeologist, spent one day and a half in the Monument this month, arriving on the 18th and departing on the 19th.

Weather

| | |
|---------------------|------------------|
| Maximum temperature | 70 degrees above |
| Minimum temperature | 14 degrees above |
| Precipitation | .46 inch |

Soil Conservation Service

Started a crew of 20 men to work on the 15th of the month. They plan to bring out a drag line and pile-driver soon and really do something to this wash near Pueblo del Arroyo and the bad arroyo in Hungo Pavi Canyon. I expect a study group out any day now to study the soil conditions, etc., here in the Chaco.

School of American Research

The School is still working on its main building across the Wash from headquarters. It has built three rooms about half way up to ceiling height since last report. All six of the hogans which the School plans to build are complete.

CHACO CANYON (CONT.)

Threatening Rock

We have cleaned out about 250 cubic yards of rock, etc., since we started working on it the 23rd of February. The Rock has moved outward at the west end $1\frac{1}{2}$ " , the center $1\frac{1}{4}$ " , the east end 1" since the gauges were placed on the Rock.

Ruin Repair

Where the concrete capping is on the walls of Bonito must have some attention soon if we hope to protect this ruin. We can build good roads, new houses for custodians, water systems, etc., fifty years from now, but can we build another ruin like some that are in need of repair like Bonito?

*****OO*****

CHIRICAHUA

By Frank L. Fish, Custodian

Weather

A seven-inch snow on the 4th and 5th melted quickly at low elevations, but blocked the Massai Point road above Bonita Park for the week end of the 6th and 7th.

A heavy rain occurred on the 16th and a trace of snow fell on the morning of the 23rd.

The rest of the month was pleasant with the exception of a few days of strong winds accompanied with a mixture of California and Arizona real estate.

Roads

Approach roads have been open and in fair condition all during the month. Paving of the Bisbee-Elfrida stretch has progressed a little more than a mile. The County has a PWA crew working between Dos Cabezas and Willcox. To date, a concrete bridge has been completed across Dos Cabezas Creek and a realignment of approximately two miles through the foot-hills is about 90% complete.

The United States Forest Service opened the Pinery-Cave Creek road during the middle of the month. They have had a crew of 30 enrollees on detached service to the local camp building bridges on this section all winter.

Monument roads were open to travel all during the month with the exception of the days mentioned under weather. Excellent progress is being made on the backsloping along the Bonita Canyon road. It has been

CHIRICAHUA (CONT.)

quite a relief to see some of the dangerous overhangs removed.

Visitors

An increase in visitors can be shown this month over the corresponding period for last year. This month, 130 cars - 488 people; last year, 80 cars - 350 people. 185 or 38% came from 36 states and China; the rest were from Arizona.

Two large parties were in during the month: (1) The Arizona Sunshine School came in their own bus on the 13th. (2) The General Motors Century of Progress Caravan, 62 people, 23 commercial and 19 passenger cars, were here the 14th. They played Indian amongst the rocks, hiked and rode horseback, besides pulling a few new stunts as reported, by Ed Riggs like riding a horse at a gallop through a cattle guard. I understand from an eyewitness that Ed muttered "That's a new one on me in this ranch business."

Carlton Groat, representative of Universal Pictures, made about 1600' of moving views of the "Wonderland of Rocks" to be described by Lowell Thomas as "The Land of the Stone Gods". Mr. Groat appeared quite enthusiastic over the scenes in the Monument, especially what he termed as composition shots. He has been making a Tombstone story also.

Park Service Officials

Mr. and Mrs. Jim Hamilton were in on the 3rd.

Mr. Clinton Rose came the 16th and left the 17th.

Mr. and Mrs. Bill Sharpe from the Coolidge Office arrived the 21st to remain here a couple of days. Bill brought some of the Coolidge office customs with him such as working all night and most of the day. I believe he takes time out to eat.

Jack Diehl and Dr. Gould arrived the 23rd and at present are looking over things with William Stevenson.

General

Road signs have been made during the month and placed at road intersections to the Monument. These signs have been made from boards and logs with the letters burned and varnished.

Mr. Neil Erickson of the Faraway Ranch has been in the Douglas Hospital seriously ill with a heart ailment. The latest report considers him improving but still a very sick man.

*****00*****

CHIRICAHUA ECW

By Wm. Stevenson, Project Superintendent

The many slides which occurred on the Bonita Highway during last month have been opened sufficiently to allow traffic through, although it will be some time before the road will be in first-class condition.

In the rock cut sections between Massai Point and Bonita Park 500 square yards of bank were sloped and an additional 300 square yards were sloped between Bonita Park and the Spring Area. Excess materials have been utilized in the obliteration of borrow pits and in widening fill sections of the highway.

Highway maintenance has been heavy throughout the month. Removal of slides and cleaning ditches provided work for a large maintenance crew.

Sara Deming-Balanced Rock horse trail progressed 800 feet. Several large walls were constructed. The trail is now complete to the "Heart of Rocks".

The equipment shed floor was poured and the project is now 100% complete. Two stalls in this shed are being utilized for the storage of cement and hay and the ramshackle tent houses formerly used have been removed.

The Headquarters-Portal Telephone Line was completed this month.

All materials have been purchased for the incinerator and construction is under way.

Three hundred trees have been planted this month in areas near headquarters where old roads have been obliterated.

EL MORRO

*****00*****

By Robert R. Budlong, Custodian

This will be rather a short report. Rains and snows during the month have prevented travel to this Monument; nothing eventful has occurred, and consequently there is little to report.

Travel

There were no visitors to this National Monument during the month of March. We had expected that our first visitors of the season would arrive this month, but condition of roads made travel virtually impossible.

Weather

Smiling skies one day, with every promise of beautiful weather, and

EL MORRO (CONT.)

next morning would find two inches of snow on the ground. When it didn't snow, it rained. Roads gently sank from sight, and have not come to the surface for air at this writing.

General

The good news of the month is that the new truck has at last arrived in Gallup. The sad part of it is that we have been unable to reach Gallup to get it, and we are slowly going frantic because of the unavoidable delay. Immediately upon receiving word that the truck was in town, I planned to get a ride to town with the mailman on the following mail day. Promptly we had a week of steady rain. The mailman could not come from Ramah by car; due to bottomless roads, so came by horse. This morning he arrived by car, but reported that the mail from Gallup to Ramah (46 miles) had to be brought by a roundabout route of some 140 miles each way; could not reach Ramah, so had to be met nine miles out, by wagon; from Ramah the mail has been brought to El Morro by horse, with the exception of today. It is expected that the coming mailday may find the roads in condition to permit car travel to Gallup, however, and if that proves to be the case, I'll be able to get the truck then.

Increasing warm weather is bringing back the birds, and everywhere bits of green grass may be seen. The last of the winter's accumulation of ice on the water pool melted last week, and shortly we expect to start the syphon operating again. Range is in good condition, the melting snow having thoroughly soaked into the ground. Snow remains on the ground in shady spots (it is over a foot deep on the north side of the rock by the inscriptions) and one week from today will make just six months that snow has been constantly on the ground here - it has never entirely gone since the snowfall of September 28.

Careful inspection of the soil erosion dams in the arroyos has convinced me that there is no use in spending money in repairing them. They were improperly constructed; the water accumulating behind them cut around the sides, undermined the banks, which collapsed, and resulted in the arroyos becoming two or three times as wide at those points as they had been prior to the construction of the dams. There is, however, acute need of effective soil-erosion prevention.

The bridge over the arroyo at the northeast point of the rock will either have to be strengthened or entirely rebuilt as soon as roads become firm enough to permit logs to be hauled for this work.

The trails have survived the winter much better than had been expected. The stone steps, however, as reported last month, need immediate replacement by concrete steps.

There has been no apparent damage to inscriptions. There are almost daily falls of rock from the cliff, but no damage seems to have resulted.

EL MORRO (CONT.)

While I was working at the base of the cliff today, two large rocks, each over a foot in diameter, fell from the top of the cliff above me, and politely missed me by considerably less than ten feet. I promptly jumped considerably more than ten feet, and spent the remainder of the day working on the grounds around the cabin.

We do have one serious problem on our hands: gophers are becoming so plentiful that they are doing noticeable damage. They have so honey-combed the earth fill where the great arroyo used to be that they will have to be exterminated as soon as possible. We are trapping them in gopher traps, but it is slow work. Drainage into the burrows seems to be responsible for much of the settling of the ground, the earth rapidly washing away.

There seems to be no more news, but we hope that next month we may be able to report the resumption of visitor travel, and the beginning of a busy season.

*****OO*****

GRAN QUIVIRA

By George L. Boundey, Custodian

Visitors for March, 156.

We have had more w intry weather in March than in all the rest of the winter put together. Several snows and a rain or two have put moisture in the ground to a depth of three feet. The farmers are all rejoicing for this is the best indication of a good crop that they have had in several years.

The road between Carrizoso and Gran Quivira got away to a good start in February. Quite a section of the road has been graded and a couple of new bridges well under way, when lo and behold somebody started circulating a petition to have this section of Socorro County annexed to Lincoln County and all work was stopped at once and things look dubious as to any further work being done on it.

The New Mexico Legislature failed to appropriate any money for the Coronado Quarto Centennial which was to take place in 1940 and everyone is much worried over the situation. It is possible an extra session will be called to consider this matter.

One of the few remaining bad stretches of road on Highway 60, between Mountainair and Willard is being paved much to the satisfaction of the entire community.

*****OO*****

MONTEZUMA CASTLE

By Earl Jackson, Custodian

Follows the Monthly report for Montezuma Castle National Monument:

Statistical:

| | |
|-----------------------|---------------------------------------|
| Visitors ----- | 655; March, 1936, 590; increase, 11%. |
| Arizona visitors----- | 439 % of Total, 67 |
| California Visitors-- | 100 |
| Colorado Visitors --- | 14 |

Conveyance

| | |
|--------------------|-----|
| Cars ----- | 186 |
| Horses ----- | 9 |
| Arizona Cars ----- | 121 |

Contacts - all visitors contacted and registered.

| | |
|---------------------------------|---------------|
| Trips ----- | 115 |
| Attendance ----- | 400 |
| Those who climbed ladders ----- | 80.5% |
| Average trip time ----- | 32.63 minutes |
| Museum Lectures ----- | 103 |
| Attendance ----- | 385 |
| Average Museum Time ----- | 19.62 |

Weather

| | |
|--------------------------|---|
| Days Cloudy ----- | 8 |
| Days Partly Cloudy ----- | 2 |
| Days Clear ----- | 21 |
| Rain ---- | February 25, 26, March 12, 13, 15, 16, 17 and 18. |

Visitors

Despite ten days of disagreeable weather, travel shows an encouraging increase. Guided trip and museum lecture time shows a drop from last month, but with an increased percentage of local people, this is expected. In fact, we expect the time spent with each visitor to drop until the middle of the summer, as it is an indisputable fact that the average summer visitor is not as interested as the average winter visitor.

Weather and Roads

Weather was normal for this season of the year, with much wind, frequent cold snaps, flurries of snow on the mountains, and alternations of summer and winter within the course of one day. Incoming roads are corrugated and disagreeable. The highway via Jerome to Prescott is good save for a four mile stretch under construction. The Flagstaff road via the lakes is still closed. The Black Canyon road from Phoenix is reputed to be passable but rough. The Apache Trail via Pine and Payson to Roosevelt is passable but has several bad washouts on it.

MONTEZUMA (CONT.)

Special Visitors

Park Service

February 26 - J. B. Hamilton, District Engineer, accompanied by his wife, spent a few hours in the vicinity. Mr. Hamilton checked flood damage to the revetment wall with Ranger Farmer in the Custodian's absence.

Other

February 28 - Mr. and Mrs. J. B. Bristol, of Nogales, Arizona, picnicked here. Mr. Bristol was the first custodian of Tumacacori National Monument. His visit was much enjoyed.

March 4 - Mr. and Mrs. F. W. Stephenson, of San Francisco, were very interested visitors. Mr. Stephenson accompanied the first party to climb the Enchanted Mesa, near Acoma, New Mexico, after the initial climb by members of the Smithsonian Institution party.

March 5 - 30 Camp Verde High School students picnicked on the Castle grounds and took pictures for their high school annual.

March 8 - 29 guests of Rimrock Ranch, eight miles away, picnicked on the Castle grounds, and part of their number climbed the ladders. Among these people was Mr. Charles English, Chairman of the Pennsylvania State Board of Bar Examiners.

"Big Bill" and Mrs. Eaton were in charge of the picnic party. Mr. Eaton is the son of the original "Big Bill" Eaton who was the pioneer in Wyoming dude ranching.

March 15 - Mr. and Mrs. John C. Reid, of Cedar Rapids, Iowa, were very interested visitors. Mr. Reid is Vice President and General Manager of the National Oats Company.

March 20 - 25 students of Reedley Junior College and High School, Reedley, California, were in. They were under charge of Harold M. Weaver, instructor in Geology at the school.

March 23 - Dr. C. M. Tarzwell, an assistant range examiner working under ECW for the Forest Service, was in. Dr. Tarzwell launched public stream development in the United States by a masters thesis which he wrote on the subject. He is by profession an ichthyologist.

Nature Notes

There is little in animal life to comment upon this month. For the bird report see "Birds of Montezuma Castle," by Betty Jackson, appended to this report.

MONTEZUMA CASTLE (CONT.)

The rock squirrels have come out of winter hiding, and may frequently be seen shinnying along the cliff.

At least three varieties of lizards have already been seen this month, and my wife reports seeing the first frog of the season yesterday.

A skunk visited the Monument recently. He was neither seen nor heard, but evidence was conclusive.

General

With little of unusual interest transpiring, it can be said this Monument is faring well as it prepares for a heavy summer tourist season. It is easy to predict, however, that unless we get a temporary ranger this summer it will be impossible to give fully satisfactory service to all visitors.

The visit of Dr. Tarswell, the ichthyologist, left much interest in its wake. He is in this state for the purpose of making studies of our little known piscatorial inhabitants. He says that nobody knows much about the native fishes of Arizona and New Mexico. The famous railroad survey which crossed the two territories in 1853, the report of which was published in nine thick volumes, brought to light about all the knowledge on native fish we have. One of the volumes of that report gave considerable fish information.

Learning of the penchant my wife and I have for fishing, and hearing our desire to get scientific information on the watery denizens of Beaver Creek, which runs through the Monument, Mr. Tarswell gave us a supply of formalin and two large jars. Between now and next June we will collect all the different species of fish inhabiting the district, (unless fisherman's luck overtakes us) and place the specimens in formalin. When Dr. Tarswell returns in June he will take the fish, get them identified, leave duplicate specimens for the Montezuma Castle Museum, and, when he gets all necessary data, make it available to this unit of the Park Service.

Sure, I know all you fellows will envy us. Having all the fun of going fishing on our days off, and still getting valuable scientific information at the same time. Well, such is life! We can't all be ichthyologists' helpers.

*****OO*****

BIRD BANDING AT MONTEZUMA CASTLE

By Betty Jackson

The bird-banding activities have been extremely slow this month. I think this rain has brought on green buds and small bugs which are more appetizing than the grain I offer them. Up to the seventh of

MONTEZUMA BIRDS (CONT.)

this month there were repeats enough to keep me very busy, but since then I've handled hardly any birds.

The new birds banded were:

| | |
|--------------------------|---|
| Oregon Junco | 1 |
| Western Chipping Sparrow | 1 |
| Gambel Quail | 4 |

Also there were three returns - Quail that Norman had banded a year or so ago.

The quail were taken in a Government sparrow trap, with the wires spread further apart than normal. I found that Mr. Jackson's habit of talking to the Quail when he fed them made them easy for me to calm down. I talked to them constantly while approaching and taking them out, and it seemed to soothe them. None of them were hurt.

I had three in the trap one day, with a Gambel Sparrow. The Sparrow kept dodging underneath the quail to avoid my hand, so I had to take the Quail out first. When I finally got the Sparrow he had been so trampled on that half of his back feathers were loose, his head was cut, and he looked ready for the grave. Next day he was in again, as peppy as ever, but not very sleek.

I thought the Juncos had left us, but there are fifteen or twenty of them around this morning.

There is a pair of Say Phoebes, apparently intending to nest under our roof this year as they did last. The Black Phoebe is getting very noisy down by the creek, cheerily emitting his sharp "chick" as he flits from branch to branch, and swoops for an insect, clacking his beak in satisfaction on the way back.

The Cardinal and his wife are becoming quite friendly with the Farmers, down by their tent. Harriet says she sees them every day now.

On February 26 we saw a flock of Robbins at Clear Creek. They didn't arrive at the Castle until a few days ago.

Some Townsend Solitaires paid us a short visit from the seventh till about a week ago. I haven't seen them for that long, anyhow.

Norman identified a female Ash Ruby Crowned Kinglet on the 14th, and we have seen lots of them since, hopping about in the sycamores. The bright red patch on the head of the male is a great surprise in such an otherwise dull colored bird.

On the 13th, on the road to Camp Verde, I saw a flock of four

MONTEZUMA BIRDS (CONT.)

female and one male cardinal. They flock that way only when travelling, though they never go very far.

On the 16th we saw the first Vermilion Flycatcher. Norman says that that is about a week later than usual.

I saw our Bald Eagle again on the 19th, flying southeast of the Castle.

A Red-shafted Flicker daily looks over the terrain, perhaps in search of a nest. I hope so.

Several House Finches have been singing their hearts out for about a week, sitting in the tops of the trees. They start at sunrise, and continue till ten o'clock or so, and start again late in the afternoon with diminished fervor. They are as irrepressible as canaries.

*****oo*****

NATURAL BRIDGES

By Zeke Johnson, Custodian

I have given four lectures this month on the Natural Bridges and the scenic wonders of southeastern Utah, to very interesting groups of people in the following places:

February 28 - 8th Ward Mormon Chapel - 209 people - 60 minutes

March 2 - 198 people - 45 minute talk

March 8 - To a class of 64 - 50 minutes

March 21 - South Cottonwood Ward Chapel - 289 people - 55 minutes

In addition to the above talks I have contacted an additional 95 people for about 224 minutes. I feel pretty good about my month's activities.

Several groups of scouts are planning trips to the Bridges this summer and nearly every day I meet people who plan to spend their vacation there so I am sure that I will have a very busy season and I don't care how soon it starts because I love to be down there on the job.

*****oo*****

PIPE SPRING

By Leonard Heaton, Acting Custodian

Our visitors this month total 11; they were principally from the CCC camp and were boys who had not been through the Fort and wished to do so before going home. Local travel has been very light because of the poor condition of the road.

The weather during the past few weeks has been very bad for the

PIPE SPRING (CONT.)

roads. The rains, in addition to the snow which has been on the ground all winter, have made the ground very soft. We have had seven stormy days during the month: February 26, 9 inches of snow; March 12 and 13, almost continuous rain; 16, 17, 18, rain and snow in showers about every two hours; and the 19th with rain, snow and sleet and low temperatures. Several days have been as pleasant as one could wish for but for the most part the weather has been cold, and spring has not yet arrived. Some say that nearly all the fruit blossoms of this district have been winter killed but I doubt it.

ECW Notes

Seven men have worked about two weeks on the Monument this month. We have been cleaning up the grounds of weeds and trash so that the grass seed can be planted when it gets here. This week and for about two more weeks I will have only three men. On March 21 all but 37 boys were discharged and until the camp is refilled there will be very little work done on the Monument.

Al Kuehl came in on the 17th for a three or four hour visit during which we went over plans for the projects for the next period.

Bird Notes

I have done no banding this month. As soon as the snow melted the Juncos went north and as yet very few birds have arrived from the south - there have been several days during which I saw no birds on the Monument with the exception of the English Sparrow. A few flocks of Western Robins - from 100 to 300 in a flock - have passed by here but did not stay long.

I have seen a few lizards on the sunny slopes the last few days but it is so cold that they cannot get around very fast yet.

*****OO*****

SAGUARO

By Paul Beaubien, Park Ranger

1,545 visitors were checked at the Speedway entrance to Monument, by CCC boys working part time. 365 were contacted at the ranger station, either by Edward McKinney or myself. I was away some time during the month on vacation, and Mr. McKinney, a CCC boy from Camp SP-11-A, contacted visitors during my absence.

Some of the changes noticed since my return are: fewer visitors are arriving; many winter annuals are in bloom; some birds are nesting; the ocatillas are pretty well leafed out; most of the hedgehogs are budded; the grass is turning green; and I've seen one saguaro with buds.

SAGUARO (CONT.)

Dr. A. E. Douglass was here the 23rd with Dr. and Mrs. Henry D. Russel of Princeton. Am sorry I missed Jim Felton who registered during my vacation.

*****OO*****

TONTO

By Thomas B. Onstott, Park Ranger

As near as I can tell by the previous reports, this month hit a new high in visitor tally. This is quite surprising as the weather has not been all it could have been. There have been six cloudy, seven partly cloudy, and three dusty days. It will certainly be a good thing for the Monument if the road can be repaired soon as the rains have really done their bit towards moving it off the mountain-side.

The figures for this month are as follows:

| | |
|---|--------------|
| Total visitors ----- | 900 |
| Total number of field trips ----- | 634 |
| Total parties on field trips ----- | 159 |
| Total time guiding field trips----- | 7235 minutes |
| Average number in party to ruins ----- | 4 |
| Total visitors guided in museum ----- | 315 |
| Total parties guided in museum ----- | 82 |
| Total time guiding in museum ----- | 1155 minutes |
| Average number in party in museum ----- | 3.8 " |
| Average time per party in museum ----- | 13.4 " |
| Average time per party to ruins ----- | 45.5 " |
| Total precipitation ----- | 2.6 inches |

There is an increase of 9% over last year's report of the same time in the number of visitors.

The flowers are beginning to come out now, and much of my time, whenever any shows up, is spent finding out which is which. With all the rain that has fallen, this should be a very colorful spring.

On the eleventh, "Gyser" Bill Ankrom, a Yellowstone character, stopped in and after a long visit very kindly donated a very good colored enlarged photo of Cliff Palace, Mesa Verde, to the collection of pictures which I am going to hang in the museum.

*****OO*****

TUMACACORI

By Louis R. Caywood, Custodian

Visitor registration for the month shows a considerable drop from last month, but has kept us busy none the less. Conducted trips through

TUMACACORI (CONT.)

the Mission give us 1,844 visitors while an additional 344 looked from the parking area or used the facilities making a total of 2,188.

Weather conditions have been good and a much needed rain was enjoyed all day March 16. Over an inch rainfall was reported in the vicinity. This rain, however, did not keep the visitors away for they straggled in all day.

Noteworthy visitors this month included General and Mrs. Charles G. Dawes and party on March 8. Mr. and Mrs. Ansel F. Hall were here on March 10. It was Mrs. Hall's first visit to Tumacacori. Father Stoner paid his monthly call on March 4 at which time he and the Custodian mapped and photographed old Calabasas Mission located 8 miles south of Tumacacori Mission. Mr. and Mrs. M. J. Henning and Mr. and Mrs. James Brewer were overnight guests on March 14. March 15 brought Mr. and Mrs. William Stevenson and son Dick, from Chiricahua National Monument. We were very pleased to welcome the Stevensons on their first visit to the Mission. Mr. and Mrs. John Fast and Mrs. Nena Sharrard, temporarily of Coolidge, were with us March 19 and 20. Mr. Fast, needless to say, spent practically all his time observing and trapping the many birds on the Monument.

The Custodian visited Headquarters on March 10 and 11. Must say I enjoyed a grand visit with the Boss and was glad to see him looking so good and feeling much better.

On March 4 the Government pickup, No. 1813, assigned to this Monument was taken to Chiricahua National Monument for repairs at the camp shop. It was returned on March 15 in very good running order. It has passed 69,000 miles now and is in its second childhood.

The peach trees on the Monument are practically through blooming now and we have almost sat up nights wondering whether or not they would suffer a freeze. One night we kept coal oil lanterns burning all night under the trees with canvas draped over the top trying to keep them from being nipped. We now hope the worst is over and that they will bear a few peaches so that the birds and the June bugs may have their annual fight over the fruit.

Birds banded this month and some previously not reported are as follows:

| | |
|------------------------------|---|
| Cardinal, Arizona ----- | 9 |
| Cowbird ----- | 1 |
| Cowbird, Red-eyed ----- | 3 |
| Dove, Inca ----- | 7 |
| Dove, Western Mourning ----- | 2 |
| Finch, House ----- | 6 |
| Crosbeak, Arizona ----- | 2 |
| Crosbeak, Black-Headed ----- | 2 |

TUMACACORI (CONT.)

| | |
|------------------------------|----|
| Jay, Arizona ----- | 1 |
| Mockingbird, Western ----- | 52 |
| Oriole, Arizona Hooded ----- | 4 |
| Oriole, Bullock ----- | 2 |
| Phainopepla ----- | 2 |
| Phoebe, Say ----- | 6 |
| Pyrrhuloxia, Arizona ----- | 14 |
| Quail, Gambel ----- | 15 |
| Roadrunner ----- | 1 |
| Shrike ----- | 1 |
| Sparrow, Gambel ----- | 30 |
| Sparrow, Lincoln ----- | 11 |
| Towhee, Canyon ----- | 11 |
| Towhee, Green-tailed ----- | 1 |
| Thrasher, Bendire ----- | 2 |
| Thrasher, Crissal ----- | 1 |
| Thrasher, Palmer ----- | 4 |
| Woodpecker, Gila ----- | 3 |
| Wren, Cactus ----- | 1 |
| Verdine ----- | 1 |

Total 195

With the close of this report I am turning the Monument over to Ranger Felton while the H.C.W.P. and myself take some annual leave.

*****OO*****

WALNUT CANYON

By W. H. Carrington, Park Ranger

Weather has maintained itself as the most important topic of conversation for the past month at Walnut Canyon National Monument. "Every man a Weather Bureau" would be more popular around here than "Every man a King." One reason for this is the condition of the County highway #66. In freezing weather the dirt road is passable though rough, while a thaw or rain renders it a quagmire practically impassable. Since my arrival on March 8, there have been three snowstorms, two rains, and a blizzard. There were also several snowstorms before my arrival, as Milton Wetherill can well testify.

Due to the conditions mentioned, travel to the Monument was light. Only 34 brave souls were counted for the month, the home states besides Arizona being California, Texas, Arkansas, and Colorado. One travelling salesman from Arkansas announced proudly that he was the person who "told the Ranger about the Flute-Players being at the bottom of the Canyon." (The "Flute-Players", a petroglyph on the lower wall of Walnut Canyon, were discovered long before this gentleman ever saw this place, as I afterwards determined.) The jolting of his recent ride may have caused the statement.

WALNUT CANYON (CONT.)

Judging from remarks heard in Flagstaff and conversations with the proprietor of a local filling station, numbers of people are eager to see Walnut Canyon now. The main highway, #66, carries thousands of tourists within three miles of the place. However, the remainder of the way is practically blockaded, as it will be for some time yet.

Much of my time has been spent in familiarizing myself with the area. Milton Wetherill spent several days in going over the ruins, also in pointing out the flora and fauna most outstanding. Among other things of interest, we saw that pot-hunters had not quite taken all of the loose materials from the dwellings. Numerous small objects remain on and in the floors, as nuts, vegetable hulls, and wads of loose cotton. Several small animal bones and a small work-stick were also picked up.

Walnut Creek started flowing on March 14, and by the morning of the 15th, it was a muddy torrent. It reached a crest about the 21st which I do not think it has equalled since. Backwater from the Rio de Flag began dropping into the Bottomless Pit (a sink-hole between here and Flagstaff), about the same time. Which reminds me that another interesting topic for conversation in these parts is, "Where does all the water that goes into the Bottomless Pit come out?"

On March 17 Paul Beaubien came over for a few hours' visit, en route to Saguaro National Monument. We had a couple of nice trips to and from town; ask Paul about it. By the way, I am about to christen the Dodge truck "Basket-Maker I", since it is the oldest known in this section.

Among other activities at Walnut Canyon, Ranger Wetherill repaired the telephone line, so that it is now functioning. We cut and removed a large pinon pine which had blocked the Observation Point Road. Small drainage ditches were dug and holes filled in this road, which by the way, is the only part passable under nearly all conditions. This is probably due to the fact that our part of the road is laid close to bed-rock, so that wheels cannot sink far into the surface.

This rambling report is concluded with a list of birds and animals noted. (Milton Wetherill is responsible for calling my attention to many of the birds)

Birds

| | | |
|------------------------|------------------|--------------------------|
| Pygmy Nuthatch | Western Robin | White-crested Woodpecker |
| Shufelt Junco | Western Bluebird | Rocky Mountain Bluebird |
| Chestnut-back Bluebird | Long-crested Jay | Red-shafted Flicker |
| Meadow Lark | Sparrow Hawk | Red-tail Hawk |
| Townsend Solitaire | | |

Animals

Mule Deer, Coyote, Abert Squirrel

WHITE SANDS

By Tom Charles, Custodian

Flowers are beginning to bloom at the Great White Sands.

On March 13 the State Highway Department let the contract for construction of 12.4 miles of highway on Federal Highway No. 70 between Alamogordo and the Monument. This road is to be 28 feet wide with 3 foot shoulders and blacktopped. It is the realization of a dream of some 10 years standing.

Another bit of good news is the fact that El Paso is establishing a winter resort at Cloudcroft in the Lincoln National Forest. Saturday nights and Sundays the El Paso people flock to this area to enjoy the snow and the winter sports, and on Sunday afternoon most of them return home by way of the Sands. Think of the variation in climate; Sunday morning in the snow and ice under the tall pines of the Sacramentos and Sunday evening in their bathing suits, rolling and digging in the Great White Sands with scarcely an hour's drive between them.

A popular sport which is developing at the White Sands is flying kites. A. V. Skinner of the Globe Mills, El Paso, seems to have established the elevation record for a cheap kite at 1500 feet. "It is an ideal place", says Mr. Skinner, "no telephone lines, no trees, no trouble."

The month has been a busy one. The Custodian has been called upon to make two speeches (each speech is equal to a week's work), one to the Matron's Club of 35 members, on the Origin of the Sands, and the other to some 40 teachers of Otero County. This last one was preparatory to the Annual White Sands Playday which is sponsored by the Alamogordo Chamber of Commerce and in honor of 3,500 children of the County. In addition to the work for the coming playday we are now preparing for the Easter Sunrise Service. Last year we had some 400 people at our Sunrise Service and 3,600 at the annual playday. Another thing that has kept us busy is the increasing crowds at the Sands. On Sunday, March 14, there were 43 carloads of people who took their noon day lunch at the picnic ground. In five hours, from 11 a.m. to 4 p.m. there were 115 cars at the Turn-Around, that is between 500 and 600 people from nearly every state in the Union. It took a lot of explaining to try to tell them why we offered only three little homemade fire-places and three little rough board tables for their comfort and accommodation. Certainly by no stretch of the imagination can we feel that this equipment is an appeal to the crowd. The crowd is here; it seems to me that it is due time to look after it with a little better equipment and a few more accommodations.

Last Sunday about 40 of the young people of The Church of Christ had their lunch and their evening service in one of the crystal bowls of the Sands. Attention was called to the pure and spotless setting for the young people's religious service.

WHITE SANDS (CONT.)

Traffic has increased about 65% this month over the February count. On the basis of 14% registration we had 7,386 visitors. There were 40 states and 6 foreign countries represented. Texas led with 453; Illinois, 42; California, 28; Oklahoma, 30; Colorado, 21; Minnesota, 16; Michigan, 17; Ohio, 24; Pennsylvania, 11; Massachusetts, 9; Iowa, 23.

Among the Park Service visitors the past month were: Mr. and Mrs. A. E. Borell; Hugh Miller, Charlie R. Steen, Jr.; Mr. and Mrs. Hub Chase; Jack Diehl, accompanied by Doctor Gould and Jim Hamilton. We also note from the registration book that W. S. Michaelis, "Garden Supervisor of the Yosemite", thought this place is one of "Nature's Marvels" and "Jiggs" Hildreth, Ranger from the Carlsbad Caverns, says, "It's unbelievable."

***** **00*****

WUPATKI

By Milton Wetherill, In Charge

I will be unable to turn in the report for Sunset Crater National Monument until this storm is over. I attempted to get into the Monument from Highway 89 and from the back way. A mile was as close as I could make it, with the snow filling in my tracks as fast as I could break through.

Not much to report from Walnut Canyon as the weather and roads prevented many from leaving the highway. Spent several days showing Mr. Carrington around the country and canyon, so that he did not feel like a total stranger.

Had to lay over in Flagstaff Saturday, March 13, as there was a storm, which would have made nice going with a load.

Not much to report from Wupatki as I have not made much showing around, the weather being such as to prevent travel. We have had rain, snow and heavy spring winds. Made a trip after wood and did some work on the trails that needed repairing.

Birds observed at or near Wupatki:

Pink-side Junco
Mountain Bluebird
White-rump Shrike
Horned Lark Spc.?
Sage Thrasher
Purple Finch
Vesper Sparrow

March seems to be the in between season for the birds.

HEADQUARTERS STUFF

By Charlie R. Steen, Jr. Park Naturalist

During March I made one field trip to White Sands and Bandelier National Monuments and a short one to Tumacacori. The visit to the New Mexico monuments was for the purpose of digging up some information for the exhibits for the new museum at White Sands and to inspect preparation of exhibits at Bandelier.

I discussed exhibits on geology, history and archaeology for White Sands with Custodian Charles, Dr. Lansing Bloom, Dr. H. P. Mera, Mr. Stanley Stubbs, and District Geologist Vandiver. These talks resulted in several changes in the setup for the museum which I prepared two months ago. There is no necessity for a large museum at White Sands and as half a dozen cases will display all that is needed we are not in favor of the additional wing which is being proposed for the building.

At Bandelier preparation of exhibit materials seems to have progressed in a satisfactory manner and installation was being held up pending completion of construction of cases and shipment of some material which is being prepared in Berkeley. Since returning to headquarters word has been received that case construction in two rooms was completed on March 25. Installation of material in these two rooms, all that is planned for this year, should be completed before June 1.

Easter week-end I spent at Tumacacori National Monument observing the Easter ceremony which was held there.

Bird Banding

Birds were banded at Montezuma Castle, Tumacacori and Casa Grande National Monuments during March. Practically all the birds banded at Casa Grande were trapped by Mr. John E. Fast who spent a couple of weeks at Vah-ki Inn. The birds banded are shown on the accompanying chart.

This is the place to admit being a very embarrassed man. Last month, in this report, I mentioned some crosses between Gambel and English Sparrows which I had been catching in the traps. The replies to that statement ranged from "I don't believe you are right but let's have some skins so that we can check you" to "You're crazy as a loon, there ain't no such animal." Finally I was shown that the bird I had called a hybrid was an immature Gambel Sparrow whose adult plumage was just beginning to show. My apologies to all those who were excited by my brash and incorrect ornithological note.

SOUTHWESTERN BIRD BANDING TOTALS

| SPECIE | Casa Grande | | Pipe Spring | | Tumacacori | | Walnut Canyon | | Montezuma Castle | |
|----------------------|-------------|-------|-------------|-------|------------|-------|---------------|-------|------------------|-------|
| | Prior | March | Prior | March | Prior | March | Prior | March | Prior | March |
| Blackbird, Redwing | | | 15 | | | | | | | |
| Bluebird, Ch'nt b'k | | | | | | | 294 | | | |
| Bluebird, Mountain | | | | | | 1 | | | | |
| Bunting, Lazuli | | | | | 1 | | | | | |
| Cardinal, Arizona | | | | | 9 | 9 | | | 1 | |
| Chickadee, Mt. | | | | | | | 1 | | | |
| Cowbird | | | | | 1 | 1 | | | | |
| Cowbird, Red-eyed | | | | | | 3 | | | | |
| Crossbill | | | | | | | 57 | | | |
| Dove, Inca | | 2 | | | 1 | | | | | |
| Dove, West. Mourning | | 1 | | | | 2 | | 1 | | |
| Flicker, Red sh'ed | | | | | | | | 5 | | |
| Flycatcher, Ar. Cr. | | | | 5 | | | | | | |
| Goldfinch, Grn' bkd | | | | | | | | 2 | | |
| Grosbeak, Ariz. blue | | | | | | 2 | | | | |
| Grosbeak, RM Blkd | | | | | | 2 | | 1 | | |
| Grosbeak, RM Evng | | | | | | | | 5 | | |
| House Finch | 37 | 1 | 3 | | 8 | 6 | | | | |
| Hawk, Sparrow | | | | | 1 | | | | | |
| Jay, Arizona | | | 104 | | | 1 | | | | |
| Juncos | | | | | | | | 47 | 24 | 1 |
| Mockingbird, West. | | | | | | | | | | |
| Nuthatch, Pigmy | | | | | 2 | 52 | | | | |
| Nuthatch, R.M. | | | | | | | | 51 | | |
| Oriole, Ariz. Hooded | | | | | | | | 6 | | |
| | | | | | | 4 | | | | |

| SPECIE | Casa Grande | Pipe Spring | Tumacacori | Walnut Canyon, | Montezuma |
|-----------------------|-------------|-------------|------------|----------------|-----------|
| Oriole, Bullocks | | | 2 | | |
| Phainopepla | | | 2 | | |
| Phoebe, Say | | | 6 | | |
| Phyruloxia | | | 15 | | |
| Quail, Gambel | 4 | | 56 | | 4 |
| Road runner | | | 1 | | 1 |
| Robin, Western | | | | 17 | |
| Sapsucker, rednaped | | | | 10 | |
| Shrike, Northern | | 2 | | | |
| Shrike, White rump | | | 1 | | |
| Siskin, Pine | | | | 79 | |
| Solitaire, Townsend | | | | 2 | |
| Sparrow, Gambel | 9 | 125 | 48 | 30 | 2 |
| Sparrow, Lincoln | 1 | | 11 | | |
| Sparrow, R.M. Song | | 14 | | | |
| Sparrow, West. Chip. | | | | 19 | 1 |
| Tanager, Western | | | | 5 | |
| Thrasher, Palmer | | | 2 | 4 | |
| Towhee, Canyon | | | 11 | 11 | |
| Towhee, Green tail | | | | 1 | |
| Thrasher, Bendire | | | | 2 | |
| Thrasher, Crissal | | | 1 | | |
| Woodpecker, Mearns | | | | 1 | |
| Woodpecker, Wh. brst. | | | | 1 | |
| Woodpecker, Gila | | | 1 | | |
| Wren, Cactus | 1 | | 1 | | |
| Wren, Canyon | | 2 | | | |
| Wren, Rock | | | 1 | | |
| Verdin | | | 1 | | |
| TOTALS | 53 | 270 | 158 | 195 | 34 |
| | | | | 607 | 6 |

CLOSING

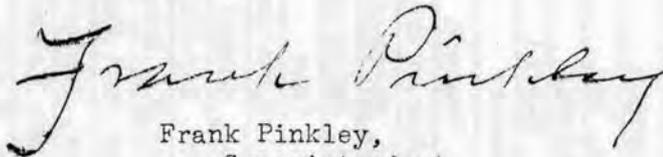
Chief, I am back on the job, I hope to stay, and it looks like there is going to be plenty of work for everybody down here in the Southwestern Monuments this summer.

I got back into the office just in time to take the credit for this month's report and do nothing except sign it. Luis, Charlie and Jimmie, stencil cutter, editor and press man, respectively, turned it out.

Just as one gains the best impression of the speed with which a train moves by stepping off and watching it from the side lines, so I am impressed with the work which this organization of ours is doing since I stepped off a couple of months ago on sick leave and now return to duty and try to catch up with what has been done in my absence. At that, I was only completely out for a couple of weeks, after which we could talk over plans, some personnel matters, financial highlights, and so on. Now it is going to take me another week or two to get abreast of things again, and I have no doubt that for three months some little point will turn up now and again dealing with that blank space of two weeks. The thing that makes me marvel is that all these infinite details connected with the operation of these twenty-five monuments scattered over four states can come snowing in here in a literal storm of white papers for two months and now I can turn up and check over the yellows, asking for the outcome of this, that and the other, look over the balances, read the monthly reports like this one which we are here forwarding you from the men in the field, and be all ready to pick up the threads and go on with my share of the work.

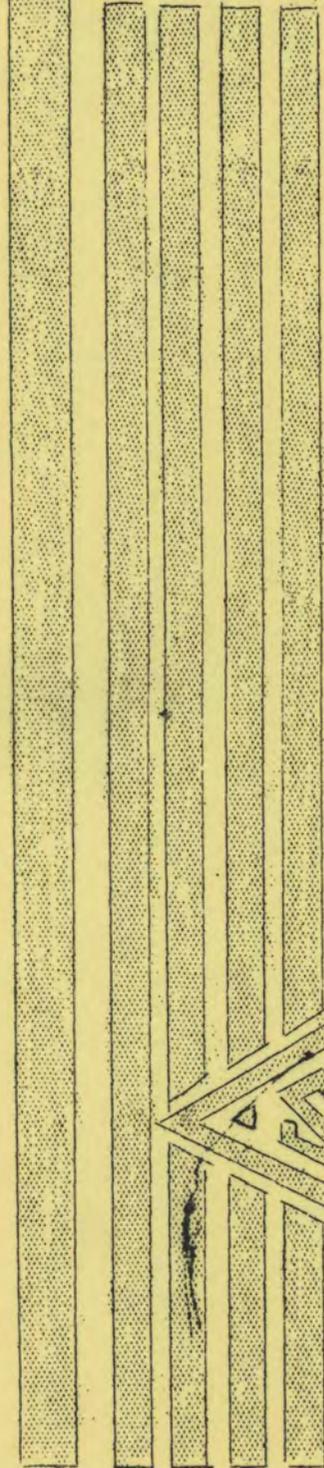
Thus, upon my return, I am at first startled with the bulk of business that has been transacted in the fairly short time I have been away, I am next surprised and pleased to see I can get a general bird's eye view of all that has taken place so quickly and easily upon my return. Let us be prepared to discount some of this crew of "Government red tape." At any rate, I am impressed with the fact that it seems to work.

Cordially,

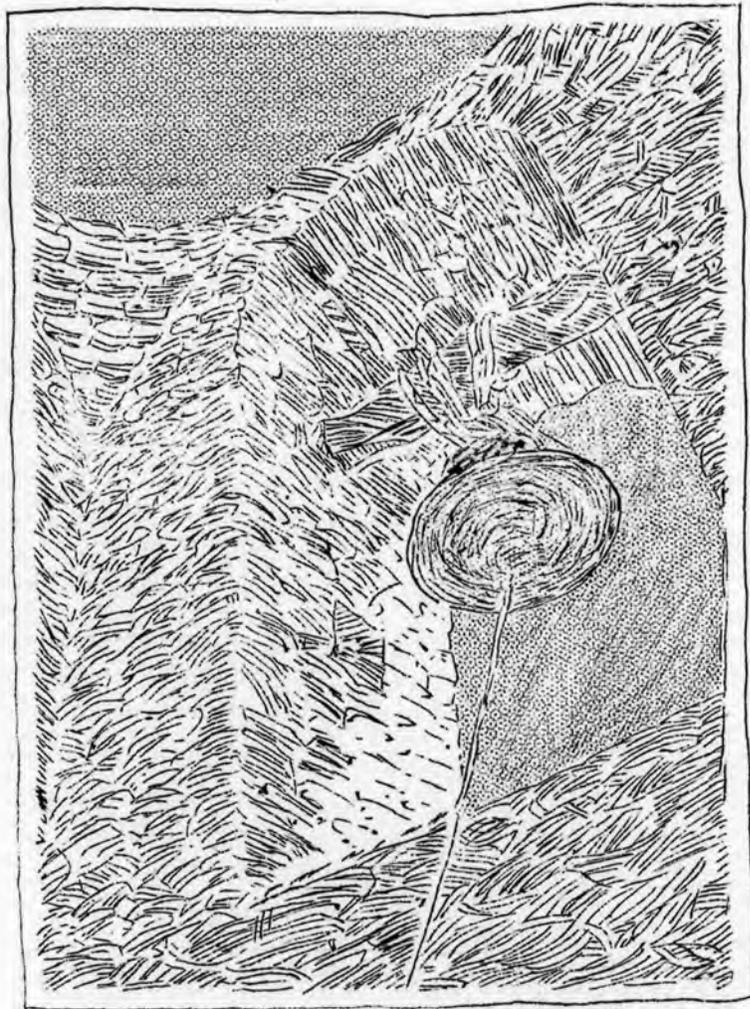


Frank Pinkley,
Superintendent.

THE Supplement



S·M MONTHLY REPORT



San Jose de Tumacacoti

INDEX

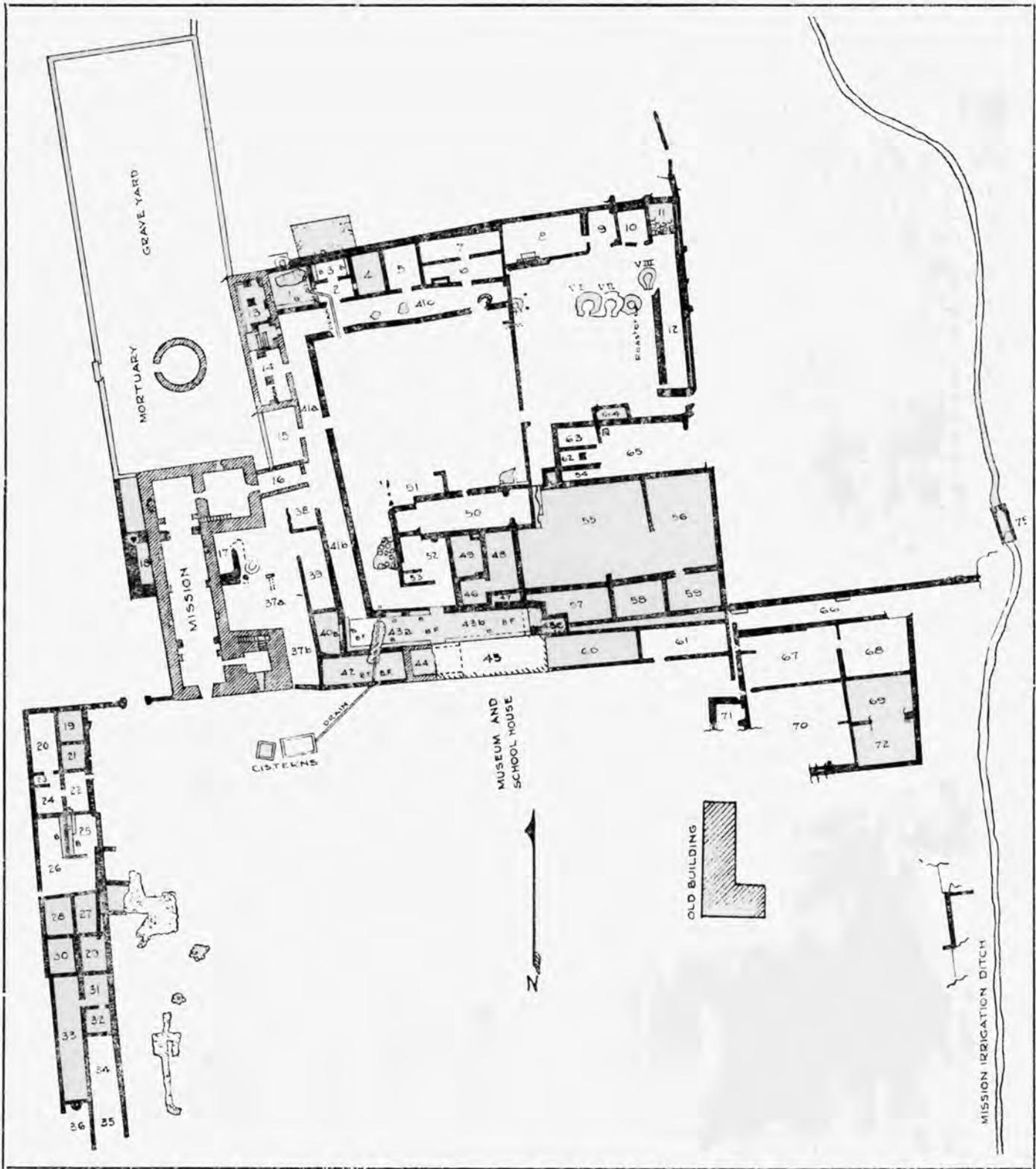
| | |
|---|-----|
| Frontispiece from George Collins | |
| Vicinity Map | |
| Plate I, Index Map of Tumacacori Excavations | |
| Introduction ----- | 187 |
| Method of Excavation ----- | 186 |
| Excavation about the Present Mission ----- | 187 |
| Room 18 ----- | 188 |
| Room 17 ----- | 189 |
| Nave ----- | 189 |
| Sanctuary ----- | 190 |
| Sacristy ----- | 191 |
| Patio ----- | 192 |
| Room 13 ----- | 192 |
| Room 14 ----- | 192 |
| Plate II, Bake Oven, opposite 194. | |
| Room 1 ----- | 195 |
| Room 2 ----- | 196 |
| Room 3 ----- | 197 |
| Room 4 ----- | 197 |
| Room 5 ----- | 197 |
| Room 6 ----- | 198 |
| Room 7 ----- | 198 |
| Room 15 ----- | 199 |
| Room 16 ----- | 200 |
| Room 38-39-40 ----- | 200 |
| Room 42-43 ----- | 201 |
| Rooms 43b and 43c ----- | 203 |
| Area 41 ----- | 203 |
| Room 50 ----- | 205 |
| Plate III - Facing Page 205 | |
| Room 51 ----- | 207 |
| Room 52 ----- | 208 |
| Room 53 ----- | 208 |
| Rooms 49, 46 and 48 ----- | 208 |
| Rooms 47 and 8 ----- | 209 |
| Rooms 9, 10 and 11 ----- | 210 |
| Area 12 ----- | 211 |
| Areas 54, 62, 63, 64 and 65 ----- | 212 |
| Plate of detail of Roaster, facing page 212 | |
| Areas 55, 56, 57, 58 and 59 ----- | 213 |
| Rooms 60 and 61 ----- | 214 |
| Plate of problematical Structure, opposite Page 215 | |
| Areas 66, 67, 68, 69, 70, 71, 72, and 74 ----- | 215 |
| Area 75 ----- | 215 |
| Rooms 19 to 36 ----- | 215 |
| Room 79 ----- | 216 |
| Areas 80 and 37 ----- | 217 |
| Conclusion ----- | 219 |

INDEX OF AREA NUMBERS BY PAGES

| | | | | | |
|----|-------|-----|----|-------|-----|
| 1 | ----- | 195 | 39 | ----- | 200 |
| 2 | ----- | 196 | 40 | ----- | 200 |
| 3 | ----- | 197 | 41 | ----- | 203 |
| 4 | ----- | 197 | 42 | ----- | 201 |
| 5 | ----- | 197 | 43 | ----- | 201 |
| 6 | ----- | 198 | 45 | ----- | 203 |
| 7 | ----- | 198 | 46 | ----- | 207 |
| 8 | ----- | 209 | 47 | ----- | 209 |
| 9 | ----- | 210 | 48 | ----- | 208 |
| 10 | ----- | 210 | 49 | ----- | 207 |
| 11 | ----- | 210 | 50 | ----- | 205 |
| 12 | ----- | 211 | 51 | ----- | 207 |
| 13 | ----- | 192 | 52 | ----- | 207 |
| 14 | ----- | 192 | 53 | ----- | 207 |
| 15 | ----- | 199 | 54 | ----- | 212 |
| 16 | ----- | 200 | 55 | ----- | 213 |
| 17 | ----- | 189 | 56 | ----- | 213 |
| 18 | ----- | 188 | 57 | ----- | 213 |
| 19 | ----- | 215 | 58 | ----- | 213 |
| 20 | ----- | 215 | 59 | ----- | 213 |
| 21 | ----- | 215 | 60 | ----- | 214 |
| 22 | ----- | 215 | 61 | ----- | 214 |
| 23 | ----- | 215 | 62 | ----- | 212 |
| 24 | ----- | 215 | 63 | ----- | 212 |
| 25 | ----- | 215 | 64 | ----- | 212 |
| 26 | ----- | 215 | 65 | ----- | 212 |
| 27 | ----- | 215 | 66 | ----- | 215 |
| 28 | ----- | 215 | 67 | ----- | 215 |
| 29 | ----- | 215 | 68 | ----- | 215 |
| 30 | ----- | 215 | 69 | ----- | 215 |
| 31 | ----- | 215 | 70 | ----- | 215 |
| 32 | ----- | 215 | 71 | ----- | 215 |
| 33 | ----- | 215 | 72 | ----- | 215 |
| 34 | ----- | 215 | 73 | ----- | |
| 35 | ----- | 215 | 74 | ----- | 215 |
| 36 | ----- | 215 | 75 | ----- | 215 |
| 37 | ----- | 217 | 79 | ----- | 216 |
| 38 | ----- | 200 | 80 | ----- | 217 |



VICINITY MAP



GROUND PLAN OF
 TUMACACORI MISSION
 1934

EXCAVATIONS AT TUMACACORI-1934

By Paul Beaubien

(Ed. Note: Father Victor R. Stoner, an authority on the Kino Chain of Missions, has checked this report and made some date corrections. Some of the dates reported by Beaubien in quoting Rensch conflict with those that Father Stoner has found on his research work, and where such conflict occurs Father Stoner's corrections will be shown in parenthesis.)

INTRODUCTION

On December 15, 1934, I arrived at Tumacacori National Monument, Arizona, to take charge of an FERA project instituted to uncover certain ruined buildings adjacent to the present mission. The walls and special features such as benches, furnaces, etc., were to be mapped by National Park Service engineers, after which the soil was to be replaced as found. Such maps would be of significance in the formulation of possible future landscaping or partial restoration plans. Moreover, it was hoped that some of the blurred chapters of Tumacacori's history would become more legible.

Men from the immediate vicinity were detailed to the project by Mr. J. R. Collie, project manager of the welfare board, Santa Cruz County. Mr. Collie cooperated with me to the fullest extent within his power, but due to the varying number of people in need of relief and the unpredictable amount of money available for any definite period, there was great variation in the number of workers reporting for the usual work period of three days. The number of men per shift varied from two to thirty-five, while the days per month varied from one to ten. Altogether 919 man-days were employed in excavation and backfilling before the men were taken from my charge on March 27, 1935.

Several dozen rooms were partially excavated, and the field notes, plus photographs, form the major portion of this report. The maps, produced by the engineers, are the most valuable contribution to the knowledge of the site.

This report has to do only with my work at Tumacacori and no attempt is being made to write the complete story of the mission. However, a brief summary of the known history, gleaned from "Chronology for Tumacacori National Monument" by H. E. Rensch, will be given by way of introduction.

Tumacacori was the place name of a Sobaipuri (a Pima-speaking group) Indian village, situated in the Santa Cruz valley during pre-historic times. The Santa Cruz flows northward near the eastern edge of Pimeria Alta (the land of the Upper Pimas). Broadly speaking, Pimeria Alta was bounded on the north by the Gila River, on the west by the Gulf of California and the Colorado River, on the south by the

REPORT ON TUMACACORI EXCAVATION (CONT.)

Altar River, and on the east by the San Pedro River. Tumacacori entered the pages of history when a delegation of headmen from the Santa Cruz valley intercepted two Jesuit Fathers, Kino and Salvatierra, at Tucubabia and persuaded them to visit their villages, January, 1691. The headmen hoped the Fathers would establish missions among their people.

1691 - The two Fathers visited the Santa Cruz Valley, and the first Christian services to be held in what is now southern Arizona, took place at Tumacacori in January. (There had been missions among the Hopi Indians of northern Arizona from 1629 to 1680. B.A.E. Bull. 30, Vol. I, page 561.)

1695 - A ranch was established at Tumacacori (now San Cayetano de Tumacacori) with the livestock from Caborca where an Indian uprising had resulted in the death of a priest.

1701 - "On the night of April 11th, Kino and Mange slept in the adobe house at Tumacacori, which had been erected for the missionary that the natives were awaiting to come to live among them." (Evidently there was no building of Spanish origin there in the 17th Century). Later in the summer, a newly arrived missionary, Father Juan de San Martin, took charge of Tumacacori, Guebavi and Bacoancos. A house and a church were erected at Guebavi (the central rancharia), and the two visitas, Tumacacori and Bacoancos, received periodic visits from the Father. A building was begun at Tumacacori.

1702 - Father San Martin departed, and that part of Pimeria Alta now known as Arizona was without a resident missionary for thirty years.

1732 - Another missionary arrived to take charge of Guebavi and its visitas, but died within a year.

1736 to 1767 - In 1736 (Bancroft says 1737, Arizona and New Mexico, Page 12 - V.R.S.), a very rich silver mine, Bolas de Plata, was discovered to the southwest of Tumacacori and many miners, followed by settlers, entered that part of Pimeria Alta. One record suggests that some seventy Spanish settlements were established during the next decade. By 1750, another priest was at Guebavi. Then, except for short periods during Indian trouble, there seems to have been a resident priest at Guebavi who made periodic trips to Tumacacori, until the Spanish monarch ordered all Jesuits from his possessions in 1767.

(From the Jesuit records reported by Rensch, there was never a resident priest at Tumacacori. The only mention of a Spanish building was that one was begun in 1701, just one year before the abandonment of all Arizona missions for thirty years.) (Not true; Kino did not die until 1711. This was during his busiest time. V.R.S.)

1768 to 1784 - After the expulsion of the Jesuits there was a short

REPORT ON TUMACACORI EXCAVATIONS (CONT.)

period of neglect*, but thirteen Franciscan Fathers arrived in Pimeria Alta, 1768. One took charge of Guebavi and its visitas, including San Jose de Tumacacori. (With the advent of the Franciscans, San Cayetano de Tumacacori became San Jose de Tumacacori.) (* Not true; Franciscans came as Jesuits left.V.R.S.)

The early years of the Franciscans were years of trouble with the Apaches to the north, and the Seris to the west. One record states the Church was burned at Tumacacori in 1769. (Probably there had been a Jesuit church there.)

1784 to 1822 - "By 1784, the Indians seemed largely to have abandoned Guebavi, the prey of so many Apache attacks. The mission was moved to Tumacacori." (The period of Tumacacori's real importance dates from 1784.)

Eventually, the Apaches were checked and most of the missions began to flourish. One historian calls the period from 1785 to 1815 the golden period of missions and settlement in Pimeria Alta. "Certainly the Apaches were kept in better control than the period before or after, Settlement was encouraged. Commerce thrived and mining revived. It seems that most of the extant missions date from this period."

1821 and 1822 - Mexico was declared a republic, and Spain withdrew all financial support to the missions. One record states that Tumacacori was burned by the Apaches at this time, and no attempt was made to rehabilitate it.

1827 - The last of the Spanish missionaries left Arizona (from San Xavier). After the departure of the Fathers there were always a few natives in the vicinity. And soon the history of Tumacacori is reported by American travelers.

1849 - Thousands of gold seekers passed by Tumacacori, and a few have left diaries mentioning the site. From 1851 to 1855, the United States Boundary Commission visited the region and described Tubac, Tumacacori, etc., in their reports.

1852 - A French colony from San Francisco settled in the Santa Cruz valley.

1856 - There were more than 500 inhabitants (largely Mexicans) at Tubac, brought there because of revived mining activities. There were 150 silver mines within a radius of 25 miles.

1857 - Emory reports a small settlement of Germans at Tumacacori .

1861 - With the outbreak of the Civil War the Army abandoned Arizona and the Apaches were free to go on the rampage. Tubac and the various

REPORT ON TUMACACORI EXCAVATIONS (CONT.)

American ranches along the Santa Cruz were abandoned for the most part.

1862 and 1863 - The California Volunteers arrived and brought about a semblance of order.

The above outline was abstracted from Mr. Rensch's paper. Of course there have been many changes since 1864. Native families have occupied some of the buildings up to, and after, the time the mission was set aside as a national monument. Papago Indians consider it sacred ground and have buried their dead there within recent years. A few individuals have restored portions of the ruins. Others, believing the Jesuits left buried treasure, have vandalized the place. Every room excavated exhibited the results of vicious pot-hunting.

Some of the destruction was of recent origin. Not once, but time after time, tin cans with labels unrotted, celluloid combs, and other modern artifacts were found in the deepest part of the excavation. And if any artifacts were found in undisturbed soil, I was not aware of it. In fact, only a few objects of material culture interesting enough to be placed in a museum were found and because of the disturbed condition of the soil, none could be used to classify a room as to use, or suggest a period of occupation. This absence of worth while artifacts is another testimonial of the thoroughness of the pot-hunter.

In addition to rumors of buried treasure another cause of vandalism was the amount of building material available to the surrounding farmers. I was told by the laborers that there were few buildings in the vicinity, constructed before the arrival of a permanent custodian, which did not contain some burned brick from Tumacacori.

METHOD OF EXCAVATION

The outline of work demanded some deviation from principles usually employed in work of this nature. First, the dirt from the excavations was to be replaced as soon as the uncovered structures were surveyed by the engineers. As the engineers could come only irregularly, the disposal of dirt was a major problem. Usually when the dirt piled too high, the scene of activity was shifted to another portion of the ruin. Thus, the excavation for any group of rooms progressed at sporadic intervals, presenting a chaotic appearance to some five thousand visitors.

Because of the visitors' interest, special paths were constructed through the "dig" for their benefit.

Normally, when excavating rooms, a two or three foot trench, width being dependent on depth, was cut along each side of a wall, leaving an "island" of undisturbed soil in the center of each room. This arrangement did not lend itself to the taking of comprehensive photographs but it did lessen the amount of earth to be moved twice. Also, the "island"

REPORT ON TUMACACORI EXCAVATION (CONT.)

of undisturbed soil in the center of each room. This arrangement did not lend itself to the taking of comprehensive photographs but it did lessen the amount of earth to be moved twice. Also, the "island" served as a witness that no cross walls, floor levels, or fallen ceilings were overlooked. In some instances, a room was entirely cleaned when special conditions, such as unusual type of floor, abundance of artifacts, etc., indicated that a complete clearance might prove profitable.

A limiting factor was that no remnant of wall or floor was to be damaged. Thus, the only chance to exploit undisturbed stratification was eliminated. Some floors were pierced by treasure hunting holes but always these floors had already been undermined as far as possible from the hole.

EXCAVATION ABOUT THE PRESENT MISSION

Because the present mission is the central structure from which all others must be located, it seems advisable to begin a description of the excavation there. At the outset, no work inside was contemplated but a series of unforeseen factors developed which led to some investigation. First, the Franciscan Order wished to have the bodies of two priests exhumed from the sancturary for removal to San Xavier; second, walls of Rooms 17 and 18 were encountered outside the mission and, possibly, could have continued under it; and theird, rainy days dictated a choice either of working under a roof or sending the men home with wages unearned.

The two fathers to be removed were Fathers Belthazar Carrillo and Narciso Gutierrez. In 1784, Carrillo was in charge at Guebavi, and moved with the mission to Tumacacori. He died in 1795. Gutierrez, who succeeded him, died December 13, 1821. Mr. Frank Pinkley has a copy of a burial record which states the bodies of the two priests were taken from an old church and buried in a new, December 13, 1822.

On December 31, 1934, a party from the headquarters of the Southwestern Monuments, with Father Vincent of San Xavier, arrived to move the bodies again. On their arrival, I sent for one of the FERA laborers, Augustine Cardial, who has witnessed some of the vandalism at the Monument. According to Cardial, a party, headed by the superintendent of a mine in Mexico, had dug a treasure hunting hole, fifteen feet deep, where Carrillo and Gutierrez were said to have been buried. The party had found the bones of two adults. When refilling, all the bones were tossed back into the hole, except one skull kept for a souvenir. Cardial's story was supported by all evidence unearthed.

In Father Vincent's presence, a six-foot hole was dug and no bones were found, but another try was made a few days later. At a depth of seven and a half feet, the jumbled parts of two adult skeletons were found, associated with pieces of plaster, bricks, and other debris typical of treasure hunting holes. I removed the four femurs, three of

REPORT ON TUMACACORI EXCAVATION (CONT.)

which were the only long bones unbroken, the fragments of one skull, and about half the smaller bones. Then having something else to do, I let two laborers remove the other bones. No pieces of coffin or cloth were found. Of course, the treasure hunters would have taken any beads, crucifix, or coffin ornaments.

The bones were darker in color and much more fragile than any others found in the church. Also large mastoidian processes on the one skull indicated it was a male. I sincerely believe they were the bones of the two Fathers thrown back in a treasure hunting hole.

The bones were reburied at San Xavier, February, 1935.

ROOM 18

Inside dimensions: 18' 9" long, 5' 6" wide at north end, and 5' 9" wide at south end. Average width of wall: 5' 11". Had been coated, both inside and out, with a thick layer of lime plaster in which were imbedded handfuls of red crushed brick at irregular intervals. The horizontal intervals varied in the bottom row from 8" to 3", but 1' 3" was common. Two, three, and sometimes four horizontal rows of spots were still visible.

However, enough was present clearly to distinguish it from the later type to be seen on the mission and graveyard walls. In this latter type, the spots are imbedded at regular intervals closer together, besides being composed of a different colored material. The spots on the later walls are composed of crushed, over-fired bricks, mostly black and brown in color. The addition of darker colors presents more contrast in a white wall.

The top of the south, west and north walls approach the present ground level. No adobe bricks remained in place; the wall or foundation being composed of large river boulders set in adobe mud. This foundation averages five feet in height, and is found under all walls of the mission except the baptistry and two gaps along the nave which were the entrances to Rooms 17 and 18.

No constructed floor was present but the lower edge of plaster inside indicated the approximate level.

The entrance to Room 18 was indicated by two vertical, non-bonded cracks on the inside of the mission, extending about 8' 6" above floor level. The adobe wall between these cracks did not rest on a heavy stone foundation as did the walls on either side. It is impossible to say whether this opening was once surmounted by an adobe arch or by a wooden lintel.

Just north of Room 18 is an enclosure, the west wall of which is marked only by a light foundation from 1' 9" to 2' 0" wide. When first

REPORT ON TUMACACORI EXCAVATION (CONT.)

discovered, I believed this foundation marked where the graveyard wall once extended to Room 18 before Room 18 was abandoned. However, inclusions of broken, burned brick and chunks of lime plaster may indicate more recent construction. Foundations containing such debris, elsewhere on the Monument, seemed to date since abandonment by the Spaniards. The south end of this foundation was butted against the corner of Room 18 after Room 18 had been plastered.

(Note: Frank Pinkley and J. H. Tovrea, in the monthly report of the Southwestern Monuments, August, 1936, page 123, state the following in regard to the foundation of Room 18: "One startling thing about this foundation, which developed on examination, (when excavated at an earlier time by Geo. Boundey) was that there were a few inches of the adobe wall still standing above the rock foundation and these few inches of the adobe wall CARRIED THE ORIGINAL STUCCO PLASTER WITH THE CHARACTERISTIC RED AND BLACK DECORATION SUCH AS THE WHOLE LOWER SECTION OF THE CHURCH ONCE CARRIED." I saw no black decoration, nor were the decorative spots arranged on Room 18 as they are on the mission proper. However, at the time of the later excavation there was no adobe wall present on the five foot stone foundation which served as the lower part of the wall.)

ROOM 17

Almost a counterpart of Room 18, but slightly larger. The north end of the east wall had been destroyed, either by treasure hunters or by the recent repair work to the mission proper, but I believe the south wall of the sacristy was the north wall of this room. The east wall and especially the southeast corner were damaged greatly by metallurgical operations since the room was abandoned.

Here and there a few square inches of plaster hung to the inner surfaces of the south and east walls, but no red spots were seen. Considering the limited amount of plaster remaining, the absence of spots was not surprising even if this room had been plastered in a similar fashion to Room 18.

The entrance to this room was similar to that of Room 18.

NAVE OF MISSION

Found four lime plaster-river boulder structures which may have been altar or pilaster foundations. The northwest one had been disturbed somewhat. The boulders of the northeast one were found loose in the soil with fragments of lime plaster still adhering to their surfaces. The tops of the south pair were flush with the latest constructed floor, and all four had been about two feet in depth.

REPORT ON TUMACACORI EXCAVATION (CONT.)

The purpose of these foundations is unknown, but I do not believe they were fragments of old walls (J. H. Tovrea, Monthly Report of the Southwestern Monuments, January, 1935). No wall foundations set in lime plaster were found at Tumacacori. Also, it would be an unusual coincidence to have similar sections of two walls exhibit missing segments of equal length at the same relative position. Further, the only other wall of approximate width was the south wall of Room 12 more than 200 feet away. Again, the north pair had been disturbed somewhat by treasure hunters, but the south pair were symmetrically rectangular.

A purpose for the south pair (as supports for a choir loft) is logically presented by Frank Pinkley and J. H. Tovrea in the monthly report of the Southwestern Monuments, May, 1936, pages 375 to 379.

A burial of a young girl was found between the restored altar and the southwest foundation. The grave had been lined with burned brick and boulders, presumably from nearby. Two or three of the brick carried lime putty (I use the word putty instead of plaster to denote the absence of sand). One of these bricks exhibited grooved decoration, and may indicate the character of the original surface of the side altars.

An unusual feature, of unsuspected significance at time of finding, was discovered at the northeast corner of nave. Here the foundation projected into the room about eight inches, just below the old floor level. Later it was found that this offset carried from the disturbed boulder-lime plaster structure to the northeast corner of the sanctuary, while in the sacristy, the thick adobe wall overhung the foundation a corresponding distance. Evidently, the adobe wall was laid about eight inches too far east for the foundation.

SANCTUARY

The specialized plaster as on Room 18 was found low down on the west wall, and the west half of the north wall. In the southwest corner, this plaster ran behind the pilaster which supports the west half of the arch between sanctuary and nave. It is certain that this pilaster was erected after the wall had once been plastered. The lower edge of this plaster was 3.3 feet below the latest constructed floor level of the sanctuary, and 0.4 feet below the lower plaster line of Room 18. The latest floor level of the sanctuary was 2.8 feet above the latest floor level of nave.

A semi-cone-shaped lump of lime putty reenforced with brick was found underneath the statue niche of the west wall. The surface bore some red and green paint, and was modeled with a curvilinear design. I believe it to be the ledge which projected from the niche. As it carried a more elaborate design than the ledges of the nave, it was a welcome find. It could be restored to place with dowels and plaster of paris.

In the northeast corner, two pieces of lime putty decoration were

REPORT ON TUMACACORI EXCAVATION (CONT.)

found. Their surface had been painted brown and then covered with some sort of gilt. Their original part in the decorative scheme can only be guessed.

SACRISTY

Because of many rumors of an underground passage leading from this room, more dirt was moved than was really practical. The north two-fifths was excavated to a depth of ten feet without finding any trace of a tunnel. The top eight or nine feet had been disturbed by treasure hunters but the test hole extended at least a foot into undisturbed gravel. Here again the specialized plaster of Rooms 18 and 19 was found below the present floor level. Only a thin strip remained on the north wall at the old floor line, but there were two red spots of crushed brick in the west half and two to the east.

One of my first theories in regard to this plaster was that the crushed brick was inserted in a first coat of plaster to hold a second layer. I abandoned this theory for several reasons. The nave, sanctuary, and sacristy have had two coats of thick lime plaster and, with large areas of the under coat exposed, there is no crushed brick in evidence. Another point is that the imbedded pieces of brick are troweled smooth with the surface instead of projecting slightly as would be desired were they to serve as structural features. Again, the pieces are arranged in groups instead of being scattered to do the most good as a tie. To my mind the red brick insertions can be classified only as ornamentation -- the forerunner of the later type of brown and black decoration to be seen in the walls of the present mission.

The finding of the same specialized plaster in Room 18, the sanctuary, and the sacristy indicates they were in use at the same time. That Rooms 18 and 17 were plastered seems proof enough that they were completed and in use.

It now seems the present mission has been remodeled; Rooms 17 and 18 abandoned, and the floor of the sanctuary raised 2.8 feet. The plaster behind the pilaster in the sanctuary indicates the present dome was not built at first because the pilaster supports the arch which in turn supports the south side of dome. So the roof was changed also. Perhaps it was raised because the floor below was raised. As no plaster is to be seen behind the pilasters higher on the walls and as none of the specialized plaster is to be found except at floor level, it appears the remodeling took place after a period of neglect when rainy weather had an opportunity to remove it. A long period of neglect with some wall erosion would explain why the upper margins of the entrances to the side rooms are not in evidence, since, here and there, the walls would have to be resurfaced, especially around an opening. It is doubtful that such a thick wall would have been supported by a wooden lintel for a distance of 13', but it is possible. If by any chance the lintel was burned, all

REPORT ON TUMACACORI EXCAVATION (CONT.)

the wall between the door jambs would have to be rebuilt from the ground up.

According to a burial record, Father Gutierrez, who died in (December 13, R.R.S.) 1821, was taken from an old church and reburied in a new one, (Frank Pinkley, Mission of San Jose de Tumacacori, Page 7, (December 13, R.R.S.) 1822. This would allow two years for the completion and subsequent rebuilding of the present mission.

PATIO

Just east of the mission was a patio with the walls of some of the surrounding rooms still above ground. This area was termed a hollow square in 1860 by Prof. W. Wrightson, whose description follows:

"The church is an adobe building plastered with cement and coped with burnt brick..... Adjacent to the church, in the form of a hollow square, were the residences of the priests, containing spacious and airy rooms, with every evidence of comfort and refinement, while surrounding these in the interior, was an arched colonnade, forming a shady walk around the whole inclosure. To the east of this square of sumptuous residences was an oblong building, where the metallurgical operations were carried on. Here are still the remains of furnaces and quantities of slag, attesting the purpose for which this was formerly used; and further still to the east was the garden, including about five acres and surrounded by a cahone wall. The acequia passed through this, and here are the remains of a bathing place and a washing vat. There are also fruit trees and vines still growing..... To the south of the mission building, and fronting the church, was laid out a large plaza, which was surrounded by peon houses, thus forming a respectable village."

To the best of my knowledge, the above is the most accurate of any early description.

ROOMS 13 AND 14

At the northwest corner of the patio are the walls of a one-time two story building. The ground floor was divided into two rooms by a stairway, but there is no evidence of a partition in the upper story. The west wall of this building, which serves in part for the east boundary of the graveyard, is withstanding erosion better than the other walls because of the plaster covering on the west surface.

The floor level of the upper story is well marked by the holes which held the supporting beams. Except for a few large beams near the stairway, whose part in the original structure must be guessed, the beams averaged

REPORT ON TUMACACORI EXCAVATION (CONT.)

6 $\frac{1}{2}$ " in diameter, while varying from 5" to 8". The horizontal distance from center to center of beams averaged 15-9/10". One large beam projecting from south wall along the east side was probably inserted after the building was finished, to give additional support to the east end of the floor beams. The north end of this log is missing.

The stairway was of adobe bricks, with stone capped treads. Some of the large flat stones, 2" to 5" thick and sometimes 3' long, were topped with lime plaster about one inch thick. I believe the whole stairway had once been plastered.

At the foot of the stairway was a small vestibule with a doorway, 4' 3" wide, leading to the patio. Possibly this was the only doorway when the structure was first completed. Laborers on the project said they could remember when two families inhabited this building. Undoubtedly some changes may be attributed to these later occupants. Speaking in general, an inclosure at Tumacacori rarely had more doors than were absolutely necessary. The entrance midway in the east wall of Room 14 was unnecessary until the room was separated from the central doorway by the short length of walls between the two pilasters at the foot of the stairway. This light wall of unplastered adobe bricks exhibits a different character than other walls of building. It is laid on a plaster floor and butts against plastered pilasters. The adobes are lighter in color and, quite noticeably, contain few pebbles. The location of the doorway in question would weaken the wall where the second story beams were supported and apparently there was something heavy to support with nine (one was omitted from the map) pilasters and two heavy pillars on the ground floor.

An old description by Powell, 1849, (recopied from Rensch's "Chronology for Tumacacori National Monument") refers to this building: "...East of the church there was a large square yard, on the west side of which, passing under some solid arches, we came to a flight of steps leading to a granary, etc. It is a very large establishment and the monks and priests had every accommodation to make life comfortable....." As the stairway here was the only flight of steps encountered outside the mission, and the solid arches could refer to a cloister (the arched colonnade of Prof. Wrightson) along the west side of patio, it seems that Powell thought the second story to be a granary. On what characteristics he based his opinion, I do not know. Perhaps, if he had visited the place in 1820, he might have identified it as something else.

The pillar of Room 14 proved interesting. Observing some plaster on one of the inner adobe bricks, I removed the top layer of adobes and decided they had been appropriated from at least three old walls on the Monument. Three types of plaster were represented on inner surfaces of bricks of the top two courses; one type, 3/4 inch thick, which had been applied with a trowel; a thin white wash on another; and a white wash

REPORT ON TUMACACORI EXCAVATION (CONT.)

topped with red stain on a third.

On the floor between this pillar and the pilaster to the south was a streak, 1' 2" wide, of roughened plaster, indicating a former wall. There is no evidence of a wall butting against the pilasters, however. The pilaster at the south end of Room 14 leans to the side several degrees but was plastered the same time as the wall.

An interesting feature of Room 13 was the bench along the east side. The bench was 1' 5" high, 2' 2" wide at south end and 2' 5" wide at north end. On top the bench in front of the north pilaster, was a circular depression, about 3" deep, which would serve very well for holding an olla upright. The bench was in a fair state of preservation with much of the plaster covering intact.

The batter along the west wall of this building was 8" wide at the north end of Room 13, and decreased in width gradually until it disappeared just short of the south wall of Room 14. From the floor it rose vertically 1.2 feet then sloped into wall 2.2 feet above floor level. Where small areas of plaster were missing, the batter was composed of small boulders set in adobe mud. At a few other places on the Monument this sort of construction was resorted to in order to save a wall weathering away at ground level. Whether the inside of this building was ever in need of such repair is doubtful.

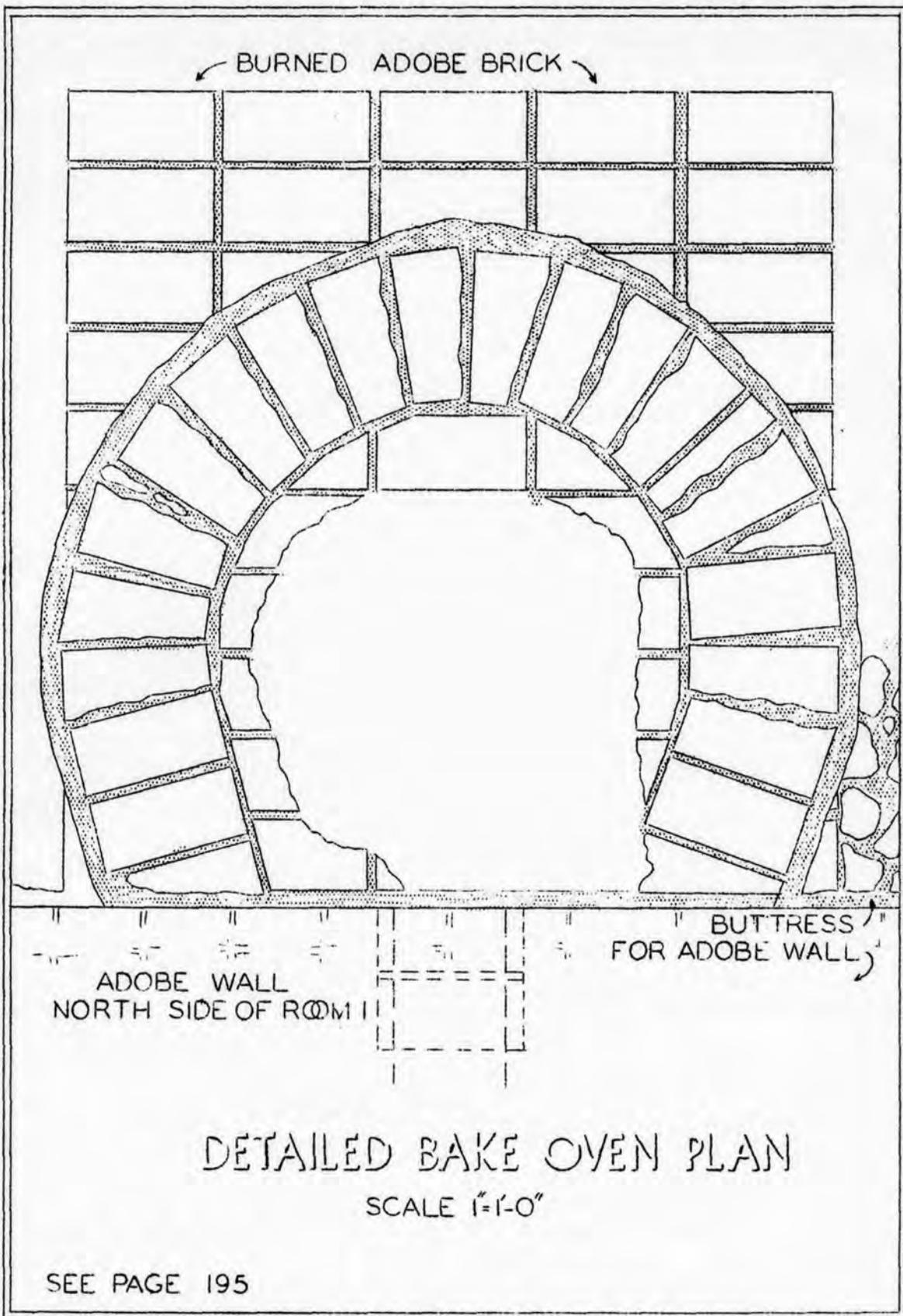
There were two small apertures in the west wall of this building. They were rectangular in shape, and about twice as large inside as out. I do not have their measurements but they could easily be measured now from the graveyard side of wall.

The short length of wall between the two pilasters just north of stairway was indicated only by one course of fired brick lying loosely on the plaster floor. It is doubtful that a true wall was ever there.

A distinctive feature of this building was the character of the adobe brick employed in the walls. They were light gray in color, and contained more small pebbles than any others thought to be of Spanish origin. However, the plaster on the outside of west wall is undoubtedly of Spanish date.

The inside plaster of this building was crudely applied - was much more uneven than any other plaster I found. This suggests that these rooms were replastered since the early quarter of the 19th Century.

The difference of adobe aided in distinguishing the east wall of Room 13 from the west wall of Room 1.



REPORT ON TUMACACORI EXCAVATION (CONT.)

ROOM 1

In the west wall were two recesses; marks at their margins indicated their use as cupboards. Both were 3' square, 1' deep, and 4' 5" above floor level. However, the north one had once reached to floor level, and had been filled in afterward. It is quite probable that the north one was a door and the south one a window before Room 13 was constructed.

In the north wall were two openings lined with fired bricks. The west one led to a bake oven, and was 9" wide and 10" high. I do not know the exact height of this opening above floor level but it was approximately 2' 9". The other opening was $3\frac{1}{2}$ " high, $5\frac{1}{2}$ " wide, 1' 9" above floor level, and 1' 1" west of east wall of room. It extended at a downward angle through the 2' adobe wall, but was blocked by the later 1' 9" boulder wall. Perhaps at one time this opening had been part of a drainage system for waste water.

The east wall was sadly vandalized. Also it had been undermined from the large treasure hunting hole.

Along the south wall had been a bench (bench table) with only an adobe core remaining. A plaster line in floor, 6" in front of core, indicated the original width to have been 1' 9". Three broken brick at west end, but apparently in place, indicated there had been two courses of burned brick on top, giving a height of 2' 3". Along the north wall there was evidence of a bench constructed entirely of burned brick. The remains never exceeded two courses in height but the plaster line above indicated a height of 1' 4", or four courses of brick with the plaster between and on top. The bricks used were $3" \times 12\frac{1}{2}" \times 12\frac{1}{2}"$ (there were no two bricks of the same size at Tumacacori. Whenever a brick size is given in this report, it is the average of several measurements). There was a $3\frac{1}{2}"$ plaster fill back of the bricks, giving 1' 4" as the width of bench.

In the northwest corner of Room 1 was a large quantity of burned brick with lime plaster adhering to their surfaces. A few were smoke-blackened. Their occurrence suggested, at first, the possibility of an inside bake oven destroyed by the treasure hunters.

A large treasure hunting hole had been dug through the floor. In the east portion of room, the floor had been of fire brick, while the west portion of floor was of well laid stone flagging. Both materials had been set in lime plaster. The brick, $2\text{-}3/4" \times 6" \times 12\frac{1}{2}"$, were laid in a herring-bone pattern as in Rooms 2 and 3. An unusual feature of the room was the plaster lined conduit or drain leading in from the patio, through Room 2. It ended in the treasure hunting hole.

There was little wall plaster present, except on the north wall over bench. The west wall had been plastered in part with adobe mud, sometimes

REPORT ON TUMACACORI EXCAVATION (CONT.)

two inches thick. I believe this wall had been exposed to erosion for a time and then smoothed over with adobe mud before a final application of lime plaster. This would indicate a period of time with roof gone. All lime plaster was approximately $3/4$ inch thick. From the plaster line in floor along the whole length of room in front of south bench it was evident that the present floor had been laid after the bench was plastered.

At the northeast corner of treasure hunting hole, 6" from east wall and 1' 5" from north wall, was what first appeared to be the corner of an underground room. This plastered corner extended downward 1' 9", and terminated where the walls had been undermined from the treasure hunting hole. From the corner, the plaster faces extended about 2' west, and 1' 6" south, before ending in the treasure hunter hole. The north face corresponded rather closely to the front of bench while the east face appeared to be in line with the east edge of conduit. The significance of this structure is lost in the treasure hunting hole. Perhaps the conduit led to a cistern in this corner of the room, and was mistaken for a treasure vault by the treasure hunters. The loose brick in the northwest corner of room could have been from a cistern.

The central portion of this room lying over much of the treasure hunting hole was not excavated.

ROOM 2

The west wall was broken by the doorway to Room 1. A very little plaster on the sides at floor level gave the exact width of door. A large gap in the south wall prevented the exact location of the door which was certainly there. The doorway to Room 4 was closed crudely with courses of different sized burned brick and adobe mud. The thin wall between Rooms 2 and 3 had been vandalized considerably and the exact location of doorway was not ascertained. The floor bricks butted against this partition but the few bricks which would have located the doorway were missing.

The floor of burned brick, laid in a herringbone pattern, was fairly well preserved. However, the pattern was broken by two rows of brick side by side, with bricks laid end to end, which extended from the south doorway to the north doorway. Investigation under this break in pattern (where bricks were already missing) disclosed nothing, and I have no theory about this unusual feature.

A few small holes in floor may indicate storage places for small objects. I found a portion of a small jar in one such hole, while later in Room 7 a large olla was found under the floor. I suspect the storage of small articles in this manner is less typical of the Spaniards than of the natives who occupied these buildings after 1827. The plaster-lined conduit crossing a corner of the room was under one thickness of brick, $2\ 3/4$ ".

REPORT ON TUMACACORI EXCAVATION (CONT.)

ROOM 3

The only interesting features of this room were the two benches (wall tables) and the floor. Some bricks were missing from each but compared to other structures at Tumacacori; they were well preserved. The west bench, with two rows of brick laid end to end along the back wall and a third row in front with brick laid side by side, was slightly wider than the east one. On these brick in a few places was a $\frac{1}{2}$ " layer of white plaster, unlike the red-topped benches of the south side of patio.

North of Room 3 was a solidly built floor of river boulders (stone paved terrace). From east to west this floor was level but the north edge was about 0.8 of a foot lower than the south side. The east and west edges had an abrupt straightedge appearance while the north edge was ragged. The south edge merged with the stone reenforcing wall which protected the north wall of Rooms 1, 3, 4, 5, and 7. Some lime plaster remained on the north face of the boulder reenforcing wall; the lower plaster line being 1' 10" above the boulder floor. Evidently, almost 2' of fill had accumulated over the boulder floor before the wall was plastered. The top of the reenforcing wall sloped downward from the inner wall so I do not believe it ever supported an adobe wall.

ROOM 4

There was no constructed floor present; the floor level given on Plan is that of a hard uneven earth floor on which occurred more or less loose soil. The wall carried quite a bit of plaster, $\frac{3}{4}$ " to 1" thick, but there was no definite lower edge to establish a floor level.

A test pit, about 6' square and 5' below adjacent floor levels, was excavated without finding anything of importance.

The only entrance to Room 4 was the filled-in doorway leading to Room 2. Evidently, Rooms 1, 2, 3, and 4 formed a separate unit in the original structure.

ROOM 5

This room contained more plaster than any other on the north side of patio. The walls carried the usual white plaster, $\frac{3}{4}$ " to 1" thick, while the surface of the plaster floor was rather dark in color. I believe the dark color was due to use instead of stain.

A small cache of lead ore (?) was found under the floor, 1' from west wall and 6' from south wall.

A mortar was found just inside doorway, 10" above floor level.

REPORT ON TUMACACORI EXCAVATION (CONT.)

ROOMS 6 AND 7

Room 6 had been floored with plaster laid over large boulders, but much of the plaster is now gone. Construction here suggests that boulder floors elsewhere were once topped with plaster. A trench around the walls of Room 7 uncovered only a boulder floor but, as suggested above, the room had probably been floored with plaster.

Two holes in the floor of Room 7 were noteworthy. One, with center 1' from south wall and 6' 3" from east wall, contained a large olla. The olla, containing only a few minute fragments of egg shell beside earth, was found upright with mouth about one inch below floor level, had the boulder floor been covered with plaster. Under the floor and almost touching olla, were two other artifacts; a small jar, and a crude candle-stick (?) fashioned from a portion of a fired brick.

The other hole, figure-eight-shaped, had contained two wooden posts, side by side. The contents of this hole were so well rotted that the type of wood or the exact size, about 5" and 6", could not be determined. This hole was at base of south wall, 5' 6" east of west wall.

The three light walls of the storage bin were of unplastered adobe bricks laid on the plastered floor, and butted against the plastered south wall of room. I suspect it dates since 1827.

The most perplexing problem in regard to Rooms 6 and 7 concerned the types and amount of plaster in the room fill. Three types were abundant. The top two to four feet of fill were composed of fallen walls carrying the usual room plaster, 3/4" to 1" thick. Between these fallen walls and the floor was a layer of loose fill, from 6" to 2' 6" thick, which contained large fragments of two other type plasters. One type was from 3" to 4 1/2" thick, contained a core of broken brick, and had one polished red surface. This type exactly resembles the remnants of floor to be seen in the mission. Isolated chunks of this plaster had also been found in Rooms 1, 2, 3, 4, and 5. The third type was plain white in color, and varied from 1 3/4" to 3" in thickness. One side appeared to have been laid on smooth earth while the other surface was very smooth, or, it could be said, polished. Except for the excessive smoothness, this latter type suggested a plaster roof.

The last two types were mixed indiscriminately in the loose fill. Pieces of both were found inside and on top the storage bin. From the top, I removed a section of an island left by trenching around the walls, and nothing developed from which I could form an opinion. Sometimes one type was on top; sometimes the other. Sometimes the smooth surfaces were up; sometimes they were down; and, sometimes they were on edge. In regard to quantity and distribution, I estimated there was about half enough of each type to cover each room, and they were evenly distributed over both rooms.

REPORT ON TUMACACORI EXCAVATION (CONT.)

The red flooring suggested a second story but were that the case, I believe supporting evidence of some sort would have been discovered. If the white type had not been found above the red so often, I could have been sure it was the missing plaster from the boulder floor. I believe now that the broken pieces of red flooring had been introduced after the rooms were abandoned and that the whole fill had been churned by treasure hunters.

Except for the east one, all walls of these rooms were of the double adobe type characteristic of this side of the patio. The bricks measured $2\frac{3}{4}$ " to 3" x $11\frac{1}{2}$ " x 24". The east wall was of the single adobe type, but it may not have always been so. Possibly the adobe bricks of the eastern half have been removed in the last hundred years. The foundation which would have supported this tier of adobes was not noted, but the south wall of Room 8 lacked an even foot of reaching the east wall of Room 6.

No evidence of a door was found in the east wall of Room 6; the gap shown, on Plan, seemed to have resulted from vandalism. However, the extra width of the east end of this room would permit an opening through the east wall in front of Room 8 at the expense of having a curved south wall.

ROOM 15

A special feature of this room was a floor of burned brick, $1\frac{1}{2}$ " to 2" x $10\frac{1}{2}$ " x $10\frac{1}{2}$ ". The bricks were laid checkerboard fashion instead of the herringbone manner so common about the patio. Much of the floor had been destroyed by vandals, but several courses were uncovered along the west wall near the north end. Between the two western courses was a row of spalls. Evidently the floor had been laid from the east and when the last row of bricks did not fill the final space, some small pieces of brick were used to bring the last row against the west wall.

The plaster of this room was unusual also. A white wash had been applied to the walls on the south, east and north. On the west wall a thin layer of ash colored plaster had been troweled before a final application of white wash; while in the doorway on both sides was found the white wash topped with red stain, which is believed to be associated with the oldest buildings on the Monument. The plaster on the west wall, unlike any other on Monument but akin to the plaster of Room 38, may be seen where this wall extends through the north wall of Room 16.

The north end of the east wall butts against the corner of Room 14, and the upper part of the west wall has been restored by Mr. Frank Pinkley.

The artifacts of this room consisted principally of tin cans.

REPORT ON TUMACACORI EXCAVATION (CONT.)

ROOM 16

The walls of this room are still standing several feet above ground level. Probably, much of them are recent. Local people speak of Room 16 as Pedro Calistro's room. Calistro, an Opata Indian who died recently, was known as the "Keeper of the Mission" and lived nearby for many years. (See article "Indian Holy Week at Tumacacori", Southwestern Monuments Monthly Report for August, 1935).

The east wall contains pieces of fired bricks, a piece of modern glass, and a recently sawed timber. Both ends of the wall butt against a thick layer of plaster which suggest that part of the side walls are of Spanish origin. Several wooden boxes of modern date are built into the south wall. The north wall is divided into two parts by the west wall of Room 15. The age of the western portion is important, for, possibly, there was once an entrance to the graveyard here. Now, visitors reach the graveyard via the sacristy window, and one would not expect to find only the one entrance, on the west, to the graveyard. However, nothing was learned about the age of this segment of wall from excavation inside, and I did not dig outside.

The west two-thirds of this room have been deeply excavated by treasure hunters and I could not learn if the west wall of Room 15 once passed underneath. There were several square feet of plaster flooring along the north wall near the east end. Perhaps, this floor, about 2' 6" below present ground level, belonged to Room 38 before the south wall of Room 16 was constructed.

ROOM 38

Due to vandalism not much of these walls remained. A portion of the south wall carried some unusual plaster: a brown sandy application, 1" to 1½" thick, topped with white wash. Some adobes of west and east walls had been reutilized as they carried a white wash topped with red stain on surface inside wall.

ROOM 39

Another room sadly vandalized. Several adobe bricks of the east wall carried white wash topped with red stain on surfaces inside wall.

ROOM 40

A few floor brick, laid in a herringbone pattern, were found along east wall, but rest of floor had been destroyed by vandals. A large amorphous mass of bricks and plaster was found in a treasure hunting hole under floor level in north part of room.

REPORT ON TUMACACORI EXCAVATION (CONT.)

Four or five square feet of plaster on the east wall near the north end proved interesting. A thick, 1", layer of white plaster had been troweled on a covering of white wash topped with red stain. If there were two building periods at Tumacacori, one in which lime was scarce and applied only with a bruck, and another when lime was more plentiful and applied thickly by trowel, here is positive proof of their relative ages.

A short bench was found on east wall. As this left a very thin wall between Rooms 40 and 43a, this bench may have been a wall niche topped with a wooden lintel or an arch of adobe bricks. The bricks forming the bench top were missing, but their impressions remained in a layer of plaster.

ROOM 42

The north, west and south walls are of an earlier period than the east wall which butts against the side walls and contains more pebbles than the others. Evidently the entrance has been blocked by the more recent wall. The gap in the north wall, dug by some fool seeking treasure in a drain, would not be wide enough for a doorway with sides at right angles to the wall.

Except for the treasure hunting hole, the floor was in good condition. A 3" layer of wood ash was found in the northwest corner where the square corner had been rounded out and a few brick inserted into the walls to form a small crude fireplace. Adjacent walls evince signs of heat and smoke. Undoubtedly, this room has been occupied since 1827.

The wall plaster, where it remained, varied from $\frac{1}{2}$ " to 1" in thickness.

An interesting feature was the drain passing under the floor. It began at the restored tanks in front of mission and emerged into the patio through a large hole in the north wall of Room 43a. It should be noted that the drain of Rooms 1 and 2 fell about .1 of a foot in 25 feet. The floor level of Room 43a, about 140' from south end of drain, of the latter drain was 0.5' higher than the floor level of Room 1. Possibly, there was once a continuous drain from the tanks in front of mission to Room 1. The drain of Room 42 was $2\frac{1}{2}$ " high and $7\frac{1}{2}$ " wide.

ROOM 43

43 was the number given to the south portion of cloister that once surrounded the patio on the south, west and north. Apparently the principal entrance to the patio was through the south side, and it is marked by a filled-in arch in the south wall of Room 43. 43a is the part of this enclosure west of the arch, and 43b is the part between this entrance and a deep treasure hunting hole at the east end. 43c is the treasure

REPORT ON TUMACACCRI EXCAVATION (CONT.)

hunting hole, and is bounded on the west by an underfloor wall. This wall is a continuance of the east wall of Rooms 47 and 48.

Directly in front of the arch mentioned above, the floor has been destroyed by vandals, but Mr. Boundey, then custodian of Tumacacori National Monument, assured me the driveway had once been paved with bricks in which were worn deep ruts by cart wheels. Two and a half bricks were found in place in driveway and indicated the floor pattern differed from the herringbone pattern to either side.

There was a bench extending along the west side and most of the south side. It terminated with a ragged end in the treasure hunter hole of 43c. It was missing in the driveway, while the plaster line in floor indicated it had once ended flush with each side of arch. In several places this bench gave evidence of having been topped with a thin layer of plaster stained red. This red stained plaster was much thicker than the white wash topped with red stain to be seen on older walls. The wall plaster, $3/4$ " to 1" thick, was plain white in color.

One short bench and part of another were found in the western portion of the north wall, while not enough remained of the eastern portion of wall to indicate the occurrence of others. The eastern portion of the easternmost bench had been destroyed so its exact length could not be determined. The westernmost bench was in fair condition and perhaps its length indicates the distance between the pillars of the colonnade mentioned by Professor Wrightson, 1860. However, I discovered on proof of a colonnade or arcade anywhere. The two short benches had thin back-walls whose original height I do not know.

The drain which entered Room 42 from the south had been entirely destroyed in Room 43a. However, its passage through the north wall was marked by a large stone lined hole.

There was a large treasure hunter hole through the floor of Room 43b. From this one, like most others, the adjacent floors had been undermined. After settling, the floors always sloped toward the holes. I was never able to reach the sides of these holes without damaging structures above; so was never able to examine the strata pierced by the treasure hunters. There were many rumors of underground passages or tunnels at Tumacacori, and I suspect that most had their birth with vandals who had dug through the floors of Rooms 43 and 45 to find the floors and walls of older buildings on the same level as Rooms 46, 47 and 49.

All of 43c had been excavated to a depth of about 7' below floor level by treasure hunters. The fill was typical of all treasure hunter holes except it contained more large boulders. There was a large shapeless mass of boulders set in adobe mud, in the southwest corner of the room. Probably, boulders had been loosened from this mass to supply

REPORT ON TUMACACORI EXCAVATION (CONT.)

the loose boulders of the fill. The floor of Room 43, on the wall between 43b and 43c, was interesting. Above the adobe wall bricks was a $\frac{1}{2}$ " layer of lime plaster; above this plaster was a 5" layer of adobe mud; and, above the solid adobe was a 3" layer of plaster in which were set the floor brick.

On the outside of the north wall, 43c, was the bottom end of a wall drain similar to the drains on the walls of the mission. Below, and to the east, of the drain was a lump of plaster and brick whose part in the original scheme could not be guessed. Just above this object was a layer of loose soil and pieces of brick in the wall. Evidently the wall had been rebuilt at one time. The drain appeared to belong to the older wall but quite possibly it could have been constructed at the time of rebuilding and just had its lower end seated in the older wall. The layer of loose soil and broken bricks could be seen in the wall from the drain east of the corner, along the east wall, and west to the corner of Room 45. The level of this layer corresponded to the floor level of Room 43. The eastern part of the south wall butted against the corner of Room 45.

An unusual feature of construction about 43c was the depth of walls below floor level. There was no floor present but the bench height at southwest corner indicates a floor level similar to 43b. Probably, the walls were begun at ground level and then filled with earth to support a brick floor at the proper height.

AREA 41

41 was the number given to the area which I supposed to be the west and north portions of the cloister. 41a designates the part in front of Rooms 14, 15 and 16; 41b lies south of 41a; while 41c applies to the section in front of Rooms 2, 4, 5 and 6.

The west wall of 41a was marked by a stone foundation on which, in a few places, was found one course of adobe bricks, $3\frac{1}{2}$ " x $11\frac{1}{2}$ " x 24". In front of the entrance to Room 15 was a 5' gap in the adobe bricks, which I think marks a doorway between the patio and cloister. I did not dig in the gap to see if a boulder foundation was present.

Six adobe bricks, $3\frac{1}{2}$ " x 12" x 24", seemed to be in place against the east wall of Room 14. The group was laid three courses high and two bricks long. Possibly they marked the site of a bench.

Just north of these adobes and south of the east entrance to Room 14 a test pit was begun. A boulder floor was encountered on a level about 2' below the east wall of Room 41a. About five square feet of this floor was uncovered without reaching an edge, when refilling became a necessity because it appeared the FERA project was about to end. Previously, I had suspected the light colored, pebbly adobes of Room 14 of having been laid on foundations or walls of earlier date.

REPORT ON TUMACACORI EXCAVATION (CONT.)

In this test pit against the side of Room 14, all courses of adobes seemed to be the same.

The original west wall of 41a exactly in front of Room 16 had been destroyed and then rebuilt with a mixture of adobe and fired bricks.

The the present ground level, one course of small boulders extended foundation-like about 6' northeast from the corner of Room 16. This is shown as a stone wall on an earlier map of Tumacacori. It may have marked a recent wall but it had no part in the original construction.

Much of the east wall of 41b was traced by trenching along each side of the foundation, and it was never uncovered from the top. Perhaps, another door as in front of Room 15 would have been found had it been uncovered properly.

The south wall of 41c was marked by a stone foundation without any adobe bricks. A break near the west end gave passage way for the drain. A much longer gap near the east end may be attributed to vandalism. Near the latter break was a problematical structure which the laborers identified as a foundation of a primitive flour mill. On this foundation could have been placed a nether stone with spindle. On the nether stone and pierced by the spindle would have been the upper millstone attached to which would have been a pole projecting horizontally. A burro hitched to the pole and walking in a short circle would furnish power for the operation of the mill. The grain would be introduced around the spindle, and the flour would be collected at the edges of the stones. To support the theory of the laborers, there was a hard-packed adobe floor from 5' to 8' in all directions from the foundation. The floor, yellowish in color, could be distinguished both in color and in density. As this floor was above the south foundation of 41c, the milling operations were subsequent to the destruction of the wall.

Immediately in front of Room 4 and perhaps a part of the south wall foundation was a short length of stone foundation whose original purpose is doubtful.

About three feet in front of the foundation, and on the same level, were found together a small milling stone, a small mortar, and the major portion of a metate.

The east wall of 41c continued southward to form the east boundary of the patio. This was only a rock foundation with the south end terminating in a modern drain ditch. About 9' south of 41c this foundation was pierced by a plaster lined drain. Both ends of drain ended in treasure hunting holes. No fired bricks were used in the construction of this drain, in contrast to the brick drains of Rooms 1 and 42.

REPORT ON TUMACACORI EXCAVATION (CONT.)

ROOM 50

Possibly these foundations mark the site of an early mission. Facts in support of this belief are: the large size; appropriate proportion of length to width; foundation stones correctly placed to support the pilasters of a choir loft; the absence of any knowledge of other foundations which might locate one of the early missions supposed to be at Tumacacori; and, stone foundations high enough to carry plaster, unlike any other building on monument except the present mission. The constricted sanctuary is not uncommon in early Southwestern missions.

The objection voiced to Room 50 being a mission is because of the weakness exhibited at the offsets in the side walls near the west end. To some (J. H. Tovrea, Monthly Report for Southwestern Monuments, Jan., 1936, page 44) these offsets have suggested the possibility of two buildings of two different periods. As the foundations on either side of offsets are similar in character and on the same level, I see no reason for speaking of different periods. Possibly, they are two rooms of the same building with the partition removed. However, if there was a partition there at one time, the foundation stones have not been molested by treasure hunters as the soil had not been disturbed in modern times. There is a possibility of the stones having been removed to be used elsewhere, a practice noted frequently with adobe bricks. However, it seems improbable that the foundation would be removed in its entirety without taking any stone from the adjoining walls. In line with the latter statement, it would be just as probable that the foundations once overlapped a short distance and that someone had removed the overlapping sections.

Again, the weakness at these offsets is none too important if they occurred inside a building and were not exposed to weathering and rodents. For, if Room 50 be considered as a mission, I believe the side rooms, 51, 52, and 53, would have been under the same roof.

The two offsets had been uncovered when I reached Tumacacori, but they were further cleaned after my arrival. I found the north one to have been disturbed by a trench at some previous time. Probably, the trench for the pipe line ending at hydrant just short of offset had been dug a greater distance than necessary. But the south offset did not evince signs of having been disturbed. After all the darker soil had been brushed from the foundation, the offset was still unexplained. A thin wall could have been curved around the corner and still remained on the foundation. But this would have been an unusual construction feature not to be expected.

On the side walls near the east end, a few adobe bricks, 3" x 12" x 25", remained in place on the foundations. The brick at the north-east corner, several courses high, were laid across the wall or side by side, instead of end to end as was the usual procedure at Tumacacori. Disregarding any lime plaster that may have covered the outside surface,

REPORT ON TUMACACORI EXCAVATION (CONT.)

this gives a wall thickness of only 25". The foundation ranged from 30" to 36" in width, but wherever it remained the wall above was only 25".

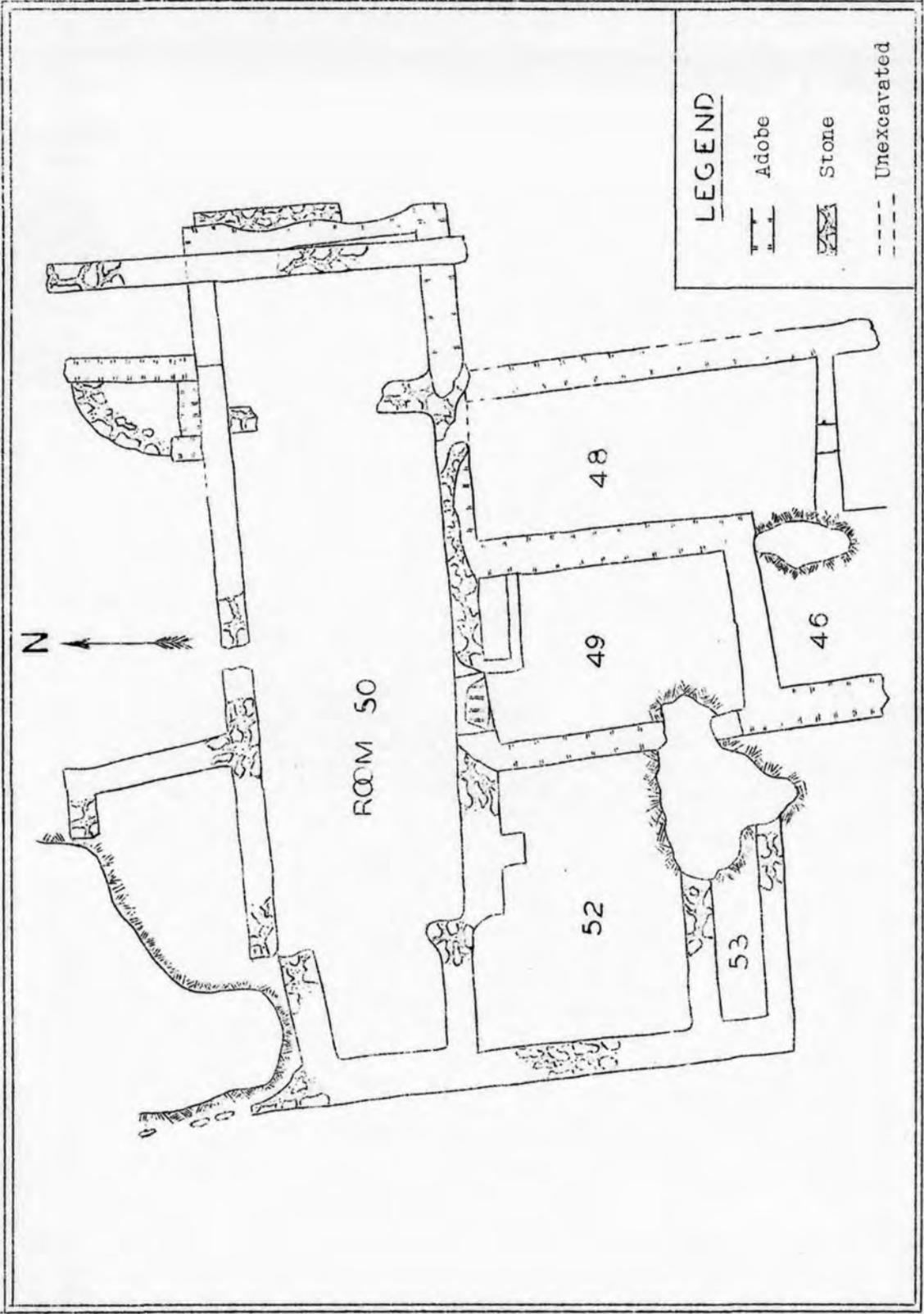
Here and there a bit of white wash topped with red stain remained on the inner surface of the walls, both on the stone foundations above floor level and on the adobes. On some spots of plaster here, as well as in Room 46, there was a thin film of lime over the red, which could be rubbed off very easily. Whether this was a coat of white wash or a deposit of lime from the soil, I do not know. It seemed to be on some of the wall surface where the white wash topped with red stain was missing.

Along the south wall near the east end, a little blotch of plaster lay on the hard packed, but sloping, adobe floor. This bit of plaster, a mixture of red and white, resembled stains left on a floor near a wall newly calcimined by an awkward workman. I do not believe this bit of plaster marks the floor level but, I do believe it marks the level on which a constructed floor could have been laid. However, no evidence of a constructed floor was discovered. The elevation of this bit of plaster is several inches under the top of the foundation of Room 50.

In the eastern portion, a short length of foundation projected inward from each side wall. These could have been foundations on which were built pilasters to support a choir loft. Also, they could have been ends of a vandalized partition foundation. However, their tops were flush with the floor instead of being equal in height to the side wall foundations. The north one was the smaller but it was as large as the foundations of the pilasters supporting the choir loft of the present mission. Just a few feet west of the south one, a trench for a modern pipe line had been dug through the wall of Room 50.

Midway along the top of the south wall, an interesting construction feature was encountered. The stone foundation had been covered with a layer of plaster for a distance of about 4'. In the plaster, a row of brick had been laid flat, side by side. At each end of the row, one brick had been set on edge with top slightly above the row of flat brick. The two end bricks of the flat series had been broken to a triangular shape, 6" wide at base, and laid with the pointed ends northward. This caused the edgewise bricks to have their south ends farther apart, approximately 12", than their north ends. Also, the edgewise bricks sloped gently to the south. Although this structure was a foot above floor level, I believe it to mark a doorway.

At the east end where a doorway was to be expected if Room 50 was a mission, I did not find one. Of the two walls encountered there, the inner one was the foundation of the east wall of patio, and was about 18" above the foundations of Room 50. The position of the patio wall prevented the uncovering of the inner surface of room wall.



LEGEND

Adobe

Stone

Unexcavated

ROOM 50

48

49

46

52

53

N

REPORT ON TUMACACORI EXCAVATION (CONT.)

The uncovering of the outer surface was begun by one of the most intelligent and careful workers on the project. Later he was suspected of tendencies toward practical joking so I do not know positively whether the design, depicted on plan, was carved into the top course of this wall by him or by the early builders. Shortly after the top course was uncovered, the east edge was caved off by careless visitors. Just below the top course, the wall was straight faced, and evidently 25" in width.

There was a step-like projection of the foundation about 10' 7" long at the north end of the wall. Whether it once extended the whole length of wall can not be known. Its level was similar to the probable floor level inside, but it was approximately 2' below the top of the adobe wall. Because no doorway was found here, I am in doubt about Room 50 being a mission. There was no supporting evidence of a later wall having been built on an old foundation here, or that the mission was entered over a threshold 2' high. Perhaps, if it were permissible to remove the foundation of the patio wall and uncover the east wall of Room 50 properly, more evidence would be obtained.

Butting against the north wall of Room 50, on the outside, was part of a small room structure. The walls were constructed of adobe bricks, $2\frac{1}{2}$ " x $7\frac{1}{2}$ " x 16". The floor was of hard packed adobe mud laid over a layer of small boulders. Some of the laborers spoke of social gatherings, on the order of Fourth of July picnics, that had taken place at Tumacacori some thirty years ago. Meast was barbecued; pumpkins roasted; etc. One laborer said he remembered carrying some pumpkins from a small granary on the site of this room structure, to the bake ovens nearer the Santa Cruz. He said the granary had been constructed by families living at Tumacacori long after the abandonment by the Spaniards. I consider his explanation as good as any.

ROOM 51

Only stone foundations found here. A tree prevented a thorough exploration of the eastern part while a large treasure hunter hole, 7' 6" below foundation level, had been dug in the west and north portions of room. If the stub north wall once extended to the damaged west wall, it would have been directly in the treasure hunter's path. The west boundary of the loose fill lay along the inner line of west wall. "Cave-ins" along the edge of the hole would account for the missing portions of the west foundation. The foundations of the east, west, and north walls were not as wide or as deep as the south foundation.

A thick piece of lime plaster had been built into the western end of the north foundation. It may have marked the side of a doorway or the bottom of a wall drain, but there was not enough of the structure present to be accurately identified.

REPORT ON TUMACACORI EXCAVATION (CONT.)

ROOMS 52 AND 53

Except for a few adobe bricks, laid side by side, on the east wall foundation, only stone foundations remained. The side walls of Room 53 ended at the edge of a treasure hunter hole which extended into Room 49. The north wall of Room 53 did not end in as ragged a fashion as did the south wall, so the rim of the treasure hunter hole may have coincided with the side of a doorway or the end of the wall.

Some fifteen square feet of hard level adobe floor remained in the northeast corner of the room. Here and there, but always within a foot of the wall, a bit of white wash plaster seemed to be in place on the floor. To me, it seems improbable that an earth floor would be white washed, but I do not know. The plaster, while thin, was much more substantial than the thin white film noted in Room 50 which I thought could have been deposited by ground water. The walls adjacent to this floor carried some white wash topped with red stain.

The stone foundation, 2' 2" x 1' 9", was found against the north foundation with top flush with floor. I always identified such structures as pilaster foundations, but the purpose of any one is unknown.

The western portion of Room 52 had been disturbed to a shallow depth by vandals. Just west of Rooms 50 and 52 was found what first appeared to be a floor of small boulders, two or three inches below foundation level. From one to seven feet away, the boulders thinned rapidly, presenting a very ragged margin. Perhaps the boulders had been placed there to protect the walls from running water after rains.

ROOM 49

There was nothing here to indicate a floor level, and there was no plaster present. The only evidence of a doorway was the one between this room and Room 50, but at one time there could have been a door to either Rooms 46 or 49 without being found now. A thin stone foundation inclosed, on the south and west sides, a pit in the northeast corner of room. The pit was excavated to a depth of about four feet before a firm and smooth earth floor was found.

ROOM 46

Little of this room was excavated because of a big tree. No plaster was seen, and there was no floor at the north side.

ROOM 48

This room was in a fair state of preservation, with a plaster floor and some wall plaster. The wall plaster was of white wash topped with red stain, plus a thin film of soft lime. The white film

REPORT ON TUMACACORI EXCAVATION (CONT.)

could be brushed easily from the red under-plaster.

The floor was covered with a thin layer of lime plaster (my notes do not give the exact thickness), which was dark in color on the surface. I believe the color was due to use and not to any stain. The most important character of the floor plaster was that it contained small pieces of slag, evidently as reinforcement. The presence of slag indicates smelters were operated at Tumacacori at an early date. On the other hand, it indicates that this series of rooms, Nos. 46 to 53, were constructed after 1736 when the discovery of the Bolas de Plata silver mine brought mining men to Pimeria Alta.

The sides of the west entrance were excavated a bit but a tree prevented the clearance of the door. Another doorway was found midway in south wall. This door, 3' wide, had been neatly filled with adobe bricks. There was a little white wash on the filled-in door but no red stain. The south wall was unusual in another respect, being 1' wide at the east end and 1' 9" wide at the west.

This room had been excavated before, as a bucket coated with cement and a celluloid comb were found on the floor.

ROOM 47

No plaster remained in this room. The adobe floor was 6" below the plaster floor of Room 48. All walls were well made of close set adobe bricks except for a vertical crack at the east end of the west one-fourth of the south wall. This suggested another room just south of the eastern three-fourths of Room 47; one that I could not reach without destroying the floor of Room 43b. The floor of Room 43b was constructed about 2' 9" above the floor of Room 47 and, without digging on the south side of the north wall of Room 43b, little can be said of Room 47. I have no explanation for the thin section of the Room 43b wall near the west end of Room 47.

The east wall of Rooms 47 and 48 continued south, under the floor of Room 43. Non-bonded joints showing in the wall between Rooms 43 and 45 indicate that the underfloor wall was once much higher. The plaster on the exposed portion above present ground level is the only plaster nearby.

ROOM 8

Room 8 differed in appearance from the rooms to the west. The adobe bricks of the north wall were laid unevenly on loose soil. In fact, a layer of slag lay under the eastern part of this wall. The double wall between Rooms 8 and 9 was well constructed, but there was no stone foundation under the south wall.

REPORT ON TUMACACORI EXCAVATION (CONT.)

At the base of the south wall was a problematical structure (see plan) of fired brick covered with lime plaster. A 5" layer of wood ash covered this platform and extended into the room some five feet while gradually decreasing in thickness. Just outside the room at this point was a reenforcing wall of stone. Perhaps the problematical structure inside was the floor of a fireplace while the reenforcing wall was necessary to uphold or protect a heavy chimney.

Near the center of the room was found a large millstone. The hole, bushed with lead, extended only half way through the stone; evidently, it was a nether stone. It was found in loose soil above floor level, with the working face at an angle of about 30 degrees from the horizontal.

Several large mesquite trees, growing within the room, prohibited a thorough exploration. One grew just inside doorway so only the tops of nearby walls were outlined. A test pit, 6' below floor level, disclosed nothing but a few river boulders scattered through the soil. Possibly, a boulder floor has been vandalized here.

The poorly laid north wall, over a layer of slag, suggests to me that at least some of this room was built or rebuilt after abandonment by the Spaniards.

ROOM 9

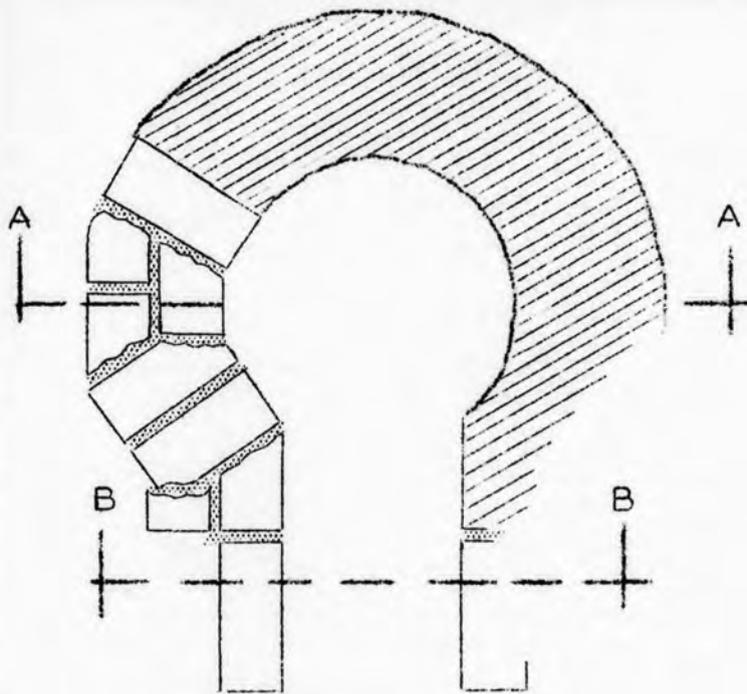
The north, east, and south walls were laid on loose dirt. I am unable to explain the filled-in corners of the east side. The north wall, near the west end, carried about one square foot of plaster which had been applied with a trowel. The plaster lay over several adjoining bricks, so was in place; that is, plastered bricks from other walls had not been assembled into the wall here.

ROOM 10

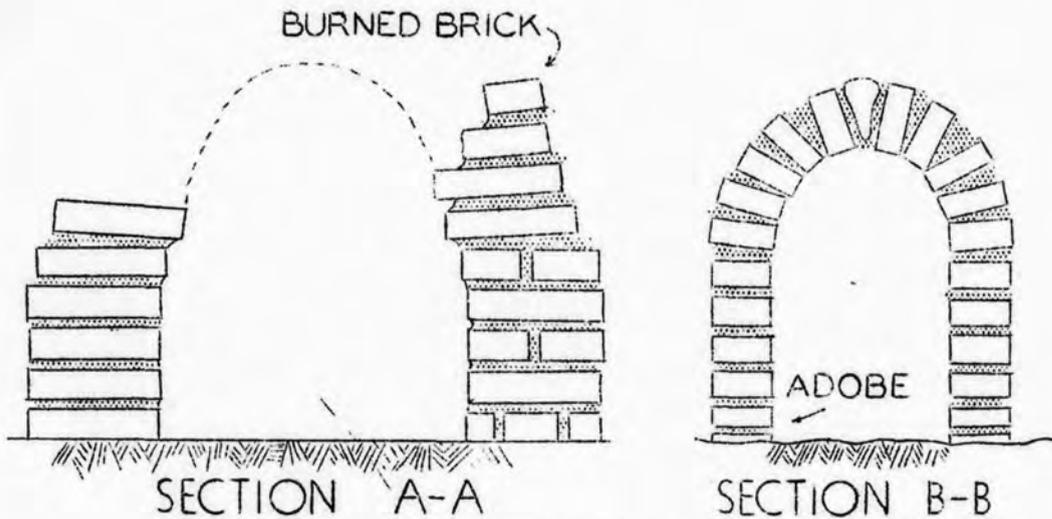
The south and west walls were laid without stone foundations. The outer north wall was of adobe bricks, 3" to 4" by 12" by 24", without a foundation. Most of the adobes of this latter wall carried some whitewash plaster stained red, either on one edge or an end. Evidently they had been removed from another building. The inner north wall was of boulders laid in mud. The east wall was well laid on a stone foundation.

ROOM 11

This room had a well-made boulder floor but contained no plaster. There were no adobe bricks on the east wall and only three at the west end of the north wall. The foundation stones of the west, north and east walls were slightly higher than the floor, but there was no trace of a south wall. Against the west wall, near the south edge of floor,



PLAN OF VASO III



SECTION A-A

SECTION B-B

DETAILS OF VASO III

SEE PAGE 212

SCALE $\frac{1}{2}'' = 1'-0''$

REPORT ON TUMACACORI EXCAVATION (CONT.)

were found about two pounds of copper sheeting from which small discs had been stamped. Possibly the discs had been used either for medals or coins.

The north portion of the west wall of orchard began at the northeast corner of Room 11.

AREA 12

Not a room, but an area partially inclosed by boulder foundations. Excepting the present mission, the south and west walls were the heaviest and best made foundations found on the monument. The inner portion of the east wall, 1' 7" wide and one course of small boulders deep, probably served as a foundation for a light wall at one time. The eastern part of this wall, is composed of small boulders loosely scattered in the soil. They did not have the appearance of a wall foundation; but rather, suggested a batter of boulders and mud which had weathered away. No floor level was apparent.

In the northern portion of the inclosure were found about 200 pounds of animal bones; mostly sheep and cows, but with a few horse and pig bones. Two mandibles of domestic pig and one of peccary were noted.

Between A 12 and the east wall of the patio were five problematical structures (see plan). When they were being surveyed I suggested to the engineers that three could probably be vasos (primitive smelters), and that another could have been an ore roaster. The problematical structure by the patio wall was identified by two or three laborers as a place where several families could cook food. However, I am unable to identify any of these structures without comparative material.

Vaso I or V I had been partially uncovered by the time of my arrival. Part of a broken pot had been found in the arched entrance. Some lime plaster, one inch thick, was still clinging to the inner surface of the arch. This plaster was smoke blackened but gave no indication of intense heat. Except for a six inch lining of dried mud and charcoal, the bowl part of structure was filled with broken brick, slag, earth and pieces of lime plaster.

I was unable to determine whether the charcoal and adobe mixture was an integral part of the structure, or whether the bowl had once filled with charcoal and mud before a test hole had been excavated by some treasure hunter. This lining was not found in V I or V II.

V II differed from V I by having a conduit through the north wall, besides being of adobe brick. The floor of the conduit sloped into the bowl. Possibly this was a smoke flue but all evidence of the super-

REPORT ON TUMACACORI EXCAVATION (CONT.)

structure had been demolished long ago.

V I, V II and V III all possessed a smaller diameter some two to three feet above the earth floors, but whether the missing tops were dome or bottle shaped could not be determined from the remaining evidence. Possibly they had been hourglass shaped as the adjoining structure.

One of the laborers, none too reliable on other bits of information, spoke of recently seeing such structure in use in Mexico. According to this information, the complete structure should have an inverted bowl shape. Fuel and copper ore could be introduced through a small hole at the rear, near the top. A large bellows playing into the arched entrance would create a small blast furnace. The molten material would pour out the entrance where a large pot would be buried with the rim flush with floor. The slag would escape over the pot, depositing the heavier copper below. If the ore carried sulphur, it would have to be roasted before the smelting operation.

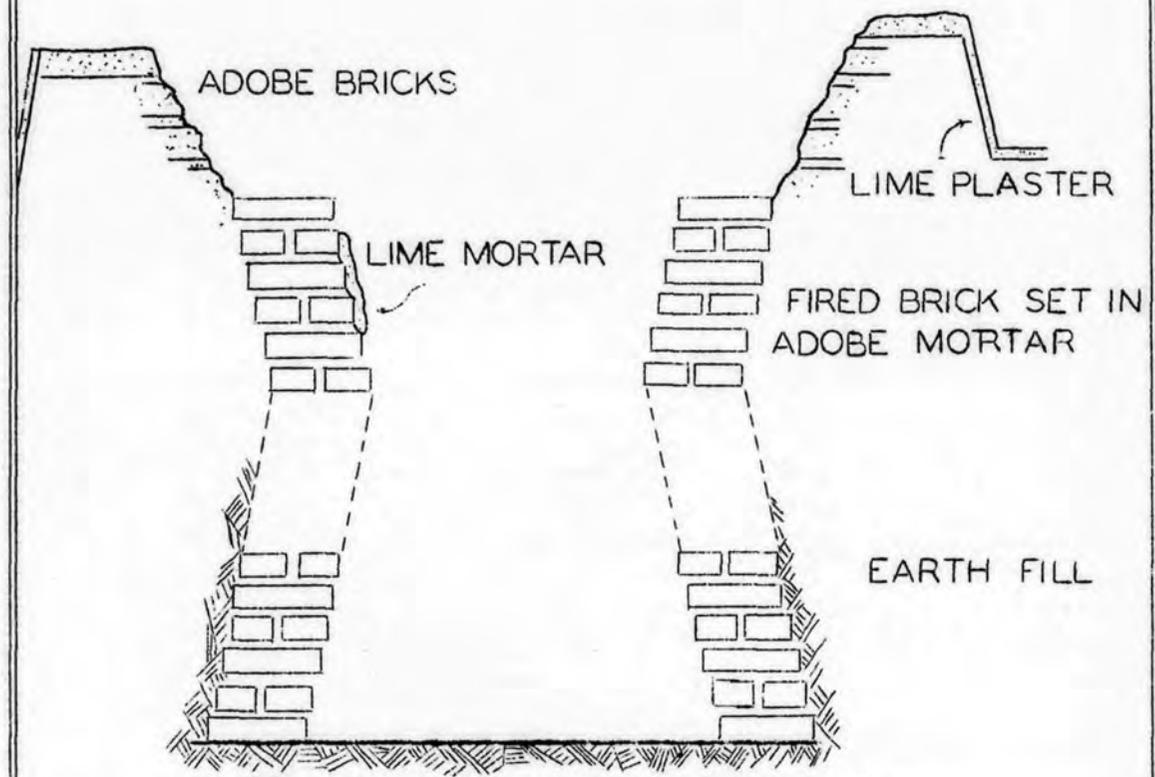
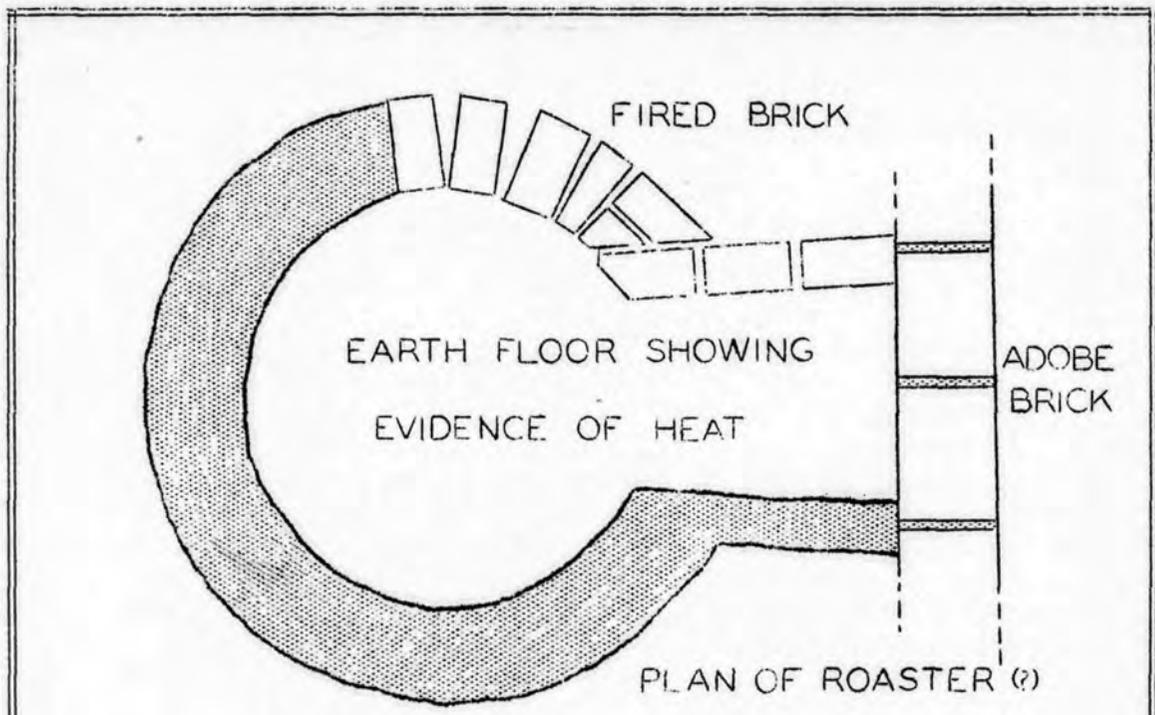
If these were vasos or primitive smelters, one would expect to find evidence of intense heat, a character not encountered. Perhaps an inner lining had been removed in recent years when some citizens of Tubac gathered quantities of slag here to be resmelted by modern methods.

The use of the problematical structure beside the vasos (Plate 3) is unknown. Its proximity to other structures tentatively identified as smelters suggested that its purpose was of a metallurgical nature. Some lime plaster inside the upper part was black from smoke, but was not fused. About six inches of wood ash lay on the earth floor. Resting on the ash layer were several tin cans whose paper labels had not entirely rotted. The top of the arched entrance had been vandalized. However, it appeared to have been a foot more in height than the entrances of the problematical structures nearby. The floor level of this structure was $3 \frac{3}{10}$ feet lower than the floor level of V II, and 3 feet lower than the floor level of V III.

The problematical structure by the patio wall was simply a brick-lined hole with a side entrance. The vertical portion had been smoothly plastered inside with lime plaster. The side entrance was located by removing loose fill in the surrounding packed soil; there were no constructed sides of burned or adobe brick. Slag was conspicuous by its absence in comparison with the structures several yards to the east, but pottery was more abundant here than at any other area on Monument. A broken burned brick from this hole bore a deep impression of a chicken's foot. Evidently a chicken had stepped on a freshly made adobe before it was placed in a kiln.

AREAS 54, 62, 63, 64 and 65

Only stone foundations found here except for the adobe pilaster of A 65 and the south walls of Areas 54 and 65. The two pilasters of Areas



SECTION OF ROASTER (?)

SEE PAGE 212

SCALE 1"=8'

REPORT ON TUMACACORI EXCAVATION (CONT.)

65 and 62 are almost in line with a third on the wall between Areas 54 and 55. The wall between Areas 54 and 62 is above their west wall. Nothing was found to indicate the age of these foundations, except their low level, but they may well be among the oldest on the Monument.

AREAS 55, 56, 57, 58 and 59

The east wall foundation of Areas 56 and 59, with the east foundation of Areas 11 and 12, form part of the western boundary of the old orchard. As this boundary is at the brow of a slope, it has suffered some damage from erosion.

The north foundation of Areas 55 and 56 carried one course of adobes for more than $\frac{2}{3}$ its length. These brick were of an unusual size, 6" x 15" x 24". No other adobes approaching this size were seen on Monument.

The north wall of A 57 ended just short of the west wall, and the south wall ended in a treasure hunter's hole.

There was a hard, uneven adobe floor over much of this area. Immediately above the adobe floor were several layers of odd colored soil, quite porous and friable. These layers varied greatly in type and thickness, sometimes within a few feet.

Some examples are given below:

| | | |
|------------------------|-----------------|------------------------|
| North side, A 55 | East side, A 55 | South side, A 55 |
| white $6\frac{1}{2}$ " | white 4" | white 2" |
| dark blue 1" | blue 1" | blue black 7" |
| light blue 7" | white 1" | light blue 5" |
| adobe floor -- | black 1" | black $2\frac{1}{3}$ " |
| | adobe floor -- | white $\frac{1}{2}$ " |
| | | adobe floor -- |

| | | |
|------------------------|-------------------|------------------------|
| North side, A 57 | North side, A 57 | South side, A 57 |
| white $2\frac{1}{2}$ " | (a few feet west) | white 3" |
| blue 2" | white 4" | black 1" |
| black $\frac{1}{4}$ " | blue black 2" | sandy |
| white 1" | very friable | sediment 2-3/4" |
| blue, pwd. 8" | soil from | brown $5\frac{1}{2}$ " |
| black 3/4" | white to | adobe floor -- |
| white $\frac{1}{2}$ " | yellow 5" | |
| adobe floor -- | adobe floor -- | |

REPORT ON TUMACACORI EXCAVATION (CONT.)

| | | |
|------------------------------|------------------------|------------------|
| South side, A 58 | West side, A 58 | South side, A 59 |
| white 2" | white 2" | yellowish 5" |
| blue 2" | blue 1" | blue, ashy 4" |
| black 1" | sandy sediment 3" | yellowish 4" |
| brownish red $\frac{1}{2}$ " | blue 2" | adobe floor -- |
| blue 6" | brownish black 1" | |
| adobe floor -- | adobe floor -- | |
| North side, A 60 | South side, A 60 | Center, A 61 |
| white $3\frac{1}{2}$ " | white $3\frac{1}{2}$ " | white 5" |
| black 2" | black $\frac{1}{2}$ " | blue 5" |
| brown $1\frac{1}{2}$ " | sandy sediment 1" | black 1" |
| blue brown 5" | black 1" | blue, pwd. 5" |
| adobe floor -- | blue $\frac{1}{4}$ " | adobe floor -- |
| | adobe floor -- | |

Some of the laborers on the project believed these layers resulted from burning the manure of a corral on several occasions. Perhaps, their explanation is as good as any. Modern methods of farming would demand that the fertilizer be taken to the fields but, I was told, some of the more lazy native farmers have cleaned their corrals by burning within the last few years. Just what sort of soil would result from keeping a corral free of manure by burning, for a long period of time, is something I don't know, but I suspect it would appear much like the soil of these rooms. The black layers did contain small pieces of wood charcoal.

These layers extended over the walls of Areas 57 and 58; which indicates the corral (if it was a corral) was in use after the walls of Areas 57, 58 and 59 were demolished. Perhaps, Areas 55 and 56 were corrals at one time and Areas 57, 58 and 59 were stables or storerooms for husbandry supplies. Then with the abandonment of Areas 57, 58 and 59, Rooms 60 and 61 became the storerooms or stables. The short length of wall connecting the northeast corner of Room 61 with the southwestern corner of orchard would have maintained a stock-proof corral.

Perhaps, some of the fires were set by the Apaches who are on record as having burned Tumacacori several times. As they couldn't get much smoke from adobe bricks, they must have had something to burn.

ROOMS 60 AND 61

Some adobe bricks remained in place on the stone foundations, and a few carried white wash topped with red stain on surfaces inside the wall. Evidently they had been taken from another wall. One brick carried several layers of plaster thinly applied with a brush; first, white; then, red; then, white; then, black; and then, white.

Soil layers, not so thick but similar to the layers of Areas 55, 56, etc., were found in these rooms. The layers did not extend over the

PROBLEMATICAL STRUCTURE
NO 75



SECTION



DOWN STREAM →

PLASTER FLOOR

PLAN

SCALE $\frac{7}{16}'' = 1'0''$

SEE PAGE 215

REPORT ON TUMACACORI EXCAVATION (CONT.)

dividing wall however. Nor did they extend south of these rooms.

The north wall of Rooms 60 and 61 was outlined by trenches on either side, and was never cleaned from the top. Possibly, doors would have been found. (Because visitors to the Monument had a habit of walking on walls newly uncovered, it was advisable to uncover the wall tops just before the rooms were to be backfilled. The laborers were taken from my charge before the refilling of these rooms was contemplated.) I do remember one gap, where a pit for an outdoor toilet had recently been excavated through the wall.

AREAS 66, 67, 68, 69, 70, 71, 72 and 74

Nothing found here other than the foundations. One of the younger laborers of project said that some of the younger boys of the neighborhood had scraped out a large swimming pool in this area, just a few years ago. Said lots of walls were found, and a few burials. The pool was filled from the nearby irrigating ditch which is probably the acequia mentioned by Prof. Wrightson, 1860.

AREA 75

75 was the number assigned to a problematical structure of burned brick, with plastered walls and floors. It was located in an irrigation ditch, about 14' inside south wall of orchard.

The constricted outlet would serve to raise the level of a stream flowing through this structure. The raise in water level might be desired to provide a "washing vat" or to introduce the water to another irrigation ditch. A 3" dip in the floor at the south end with a corresponding 3" rise at the north end suggests a secondary purpose for which I can not account.

ROOMS 19 to 36

Quoting from Prof. Wrightson's description: "To the south of the mission building, and fronting the church, was laid out a large plaza, which was surrounded by peon houses, thus forming a respectable village." Evidently this series of rooms represents the peon houses of the west side of plaza.

The east wall was eventually uncovered, and nowhere were there enough adobes in place to indicate a doorway. While this group of rooms had not been subject to much treasure hunting, water from the hills to the west had washed away much of the adobe and some of the light foundations. The thin wall between Rooms 23 and 24 contained some fired brick, indicating late construction.

Offsets in the side walls indicated that all rooms were not

REPORT ON TUMACACORI EXCAVATION (CONT.)

constructed at the same time, but I was never able to tell which of two adjacent rooms was the older. Foundations of older walls were found under the east wall of Rooms 25, 26, and 27.

The only constructed floor was found in Room 23. It was made of broken and overfired brick, laid irregularly in adobe mud. One brick in the northwest corner of Room 21, elevation 60 $\frac{2}{10}$, may indicate the floor level. The floor level of Room 22 is more confusing, with 6 or 7 bricks in the southeast corner, elevation 59 $\frac{6}{10}$, and $2\frac{1}{2}$ brick in the southwest corner, elevation 60 $\frac{8}{10}$. In Room 25, the small area of smoke-blackened, adobe floor probably represents a floor in that room.

The floor levels of the other rooms could only be approximated from foundation levels.

The only plaster of this group of rooms was found in Room 32, where the adobe wall bricks had been smoothed with adobe mud before an application of white wash. No red stain was discovered.

The benches of Rooms 25 and 26 were much alike, and appeared to be cheap imitations of the benches in the rooms around patio. They were constructed of adobe brick, plus a top course of fired brick laid unevenly in adobe mud. Many of the fired brick were broken; some were overfired and twisted; and, some carried a little lime plaster indicating their removal from other structures.

Foundations of other rooms in this group extended south to a distance some fifty-six feet beyond the monument boundary. The outside of the east and west walls had been uncovered when the project was taken from my charge. Later, the trenches were backfilled before they could be properly surveyed.

ROOM 79

Only a floor of broken, burnt brick, laid in mud, found here. This lay directly in an old roadway, a few feet from a cattle guard. Where there should have been stone foundations, I found nothing except on the west side where a wall, 3' long and three courses of burned brick high, remained. This structure was only a few inches below the surface of the road.

An old drawing of Tumacacori by J. Ross Brown shows a series of rooms in this vicinity. Several long deep trenches were excavated without finding anything. I believe he drew, with artist's license, the west side of plaza as if it extended west instead of south.

REPORT ON TUMACACORI EXCAVATION (CONT.)

AREA 80

80 was the number assigned to the lime kiln some 100 feet north of the graveyard, beyond the monument boundary. This was a circular structure with a bench, 8/10' wide and 3' high, around the inside. The remaining wall above the bench was nearly 4' high. The floor was 7' feet in diameter. An arched doorway, 2 7/10' wide, through the southeast side would serve for introducing fuel.

The walls had been constructed with adobe bricks, but due to the intense heat needed to produce quicklime, the inner surfaces of the adobes presented the appearance of overfired bricks.

In operation, pillars of limestone would be built bench-high on the floor. Arches of limestone would be built from the pillars to the surrounding bench. Above these arches more limestone would be placed. Fuel would be placed under the arches and ignited. After burning, perhaps for two days and nights, the arches would crumble, and the bottom layers of lime would be ready for use. The stone which had not received enough baking, would be placed in the next charge. Of course, impure nodules in the limestone would be discarded as worthless. Thus, quite a bit of reject material would accumulate if the kiln was much used.

There were several mounds of rejects adjacent to this structure, besides some unfired limestone. We found a few inches of slaked lime (slaked by rain water) on the floor, close to the bench. As there was possibility of this structure having something to do with metallurgical operations, a sharp watch was kept for slag and pieces of ore. However, this is the one area on Monument where none was found.

Several mounds in this vicinity suggested the possibility of small dwellings. Two or three were trenched without finding anything. A stray sherd or two were found in this vicinity, as one might find near any long occupied Indian village.

AREA 37

37 was the number assigned to the area between the mission and the west side of patio. 37a was a large area east of nave, and 37b was the small area just east of bell tower. This was a pleasant area in which to work, being in the shade of the mission on warm afternoons and protected from the prevalent southwest winds at all times. Such a delightful spot must have appealed to the treasure hunters as most of the area had been dug and redug, usually deeper than I cared to discover.

The remains of the south wall of 37b was constructed of a mixture of fired brick and unweathered adobe brick. Perhaps there was a wall there before 1827, but the remains found appeared to be more recent.

REPORT ON TUMACACORI EXCAVATION (CONT.)

An interesting feature of the area was the amount of copper it contained. Small pieces were everywhere in addition to a few large pieces. Altogether, some fifty pounds were collected. Samples taken to the University of Arizona were said to be copper with no silver.

There were three problematical structures of burned brick here which I have identified as units of a foundry. The north structure was identified as the retort. It was round in shape, and consisted of a deep foundation filled with sand. The top of the brick side walls was found at the present ground level, and the superstructure, perhaps dome shaped, had been demolished. The sandy floor inside was a few inches below the surrounding wall. The floor was almost covered with a thin layer of copper which had solidified in place. Small streams of copper had worked their way to a depth of six inches in the floor.

At the southwest side, an inch and a half below the floor level of the north side, was found a smooth, heat-darkened outlet for the molten metal.

About 1' 2" below the outlet was the top of another structure, 2' 8" high. This horseshoe-shaped structure of mud and fired brick is where the metal could have been cast. Obviously, it would be partially destroyed when the mould or metal was withdrawn.

Small lumps of sand, somewhat solidified from heat and coated thinly on one side with lime, were found about this latter structure. I believe they were pieces of moulds. Mr. Boundey told me of finding a mould of this type nearby. At first he thought it was the base of a statue, but later he decided it was the core mould of a bell. While he was conducting some visitors through the mission, another party arrived and dropped a heavy rock on the object. Of course, it crumbled into small pieces. No moulds found by me were complete enough to indicate what objects had been moulded.

The heat necessary for foundry operations could have been generated in a burned brick structure some four feet southeast of the retort. It was tunnel-like in appearance with the long axis north and south. Approximate inside dimensions were: 1' 0" wide, 3' 0" high, and 7' 9" long. Just north of this structure was a few square feet of earth floor reddish in color from heat. Its level was about two feet above the floor of the furnace. In removing the ordinary fill from the floor, a trench leading from the furnace to the north side of retort was discovered. I do not know whether this was a treasure hunting trench or whether it once contained a flue for conducting heat from the furnace to the retort. It was not lined with adobe or fired brick, nor did it show indisputable signs of heat. However, two bricks appeared to be in place as a roof at one point. Perhaps a brick lining had been removed by vandals. I have no theory about the few square feet of reddish floor.

REPORT ON TUMACACORI EXCAVATION (CONT.)

In operation, I believe a bellows playing on a charcoal fire in the furnace would drive enough heat through some sort of conduit to melt copper placed in the retort. The retort would be tapped at the outlet of southwest side, and the molten metal would flow into moulds placed in the structure below outlet.

Because of the churned condition of the soil due to treasure hunting activity, there was no means of accurately dating the foundry operations. As the retort lay in part above the wall of Room 17, it is evident they were subsequent to the abandonment of this room. This points to a late date. Further, it is doubtful that the Spanish Fathers would care to have a foundry so intimately associated with the church. I suspect the foundry postdates the abandonment of Tumacacori by the Spaniards.

CONCLUSION

The principal objective of the project was obtained in that the National Park Service now has maps of most of the walls and structures just below the surface. In the future it will be unnecessary to locate drainage ditches, pipe lines, adobe pits, etc., where they will do irreparable damage to the ruins. Further, rumors of buried treasure should die after 919 man-days were employed in excavation without finding material of five dollars value.

The almost total absence of worth while artifacts plus the greatly damaged structure remains, both resulting from unhampered treasure hunting over a long period of years, prevented the forming of many definite conclusions of archeological nature. However, differences in plaster types aided in many instances.

One series of rooms, 46 to 53, could be distinguished from the others by the use of whitewash topped with red stain. At a later date, during the last period of building activity by Spaniards, thick plaster applied with a trowel was characteristic of the rooms around the patio while plain whitewash was characteristic of the less important rooms about the plaza.

The present church carries a distinctive covering on the outside where groups of brown and black pieces of brick have been imbedded at regular intervals in the lime plaster. At an earlier period the building had been plastered both inside and out with a somewhat similar covering in which the spots were red in color and were irregularly arranged. This latter type was found inside Room 18, the sanctuary and the sacristy, and indicates that all were in use at the same time. It was found behind a pilaster which serves in part to uphold the dome over the sanctuary, so evidently the church has been remodeled with the roof changed and Rooms 17 and 18 abandoned.

Quite definitely, most plaster was applied evenly in a workmanlike

REPORT ON TUMACACORI EXCAVATION (CONT.)

manner. The crudely applied plaster of Rooms 13 and 14 may be attributed to the native families who have lived there into the 20th Century.

The different types of plaster were not always associated with a special type of floor. On the north side of the patio, some rooms had floors of plaster on boulders, while others had brick floors laid in a herringbone pattern. Room 15 on the west side of the patio had a checker-board floor of square bricks. The only room plastered with the red stained whitewash, 48, possessed a plaster floor.

Of particular interest were the problematical structures which were not positively identified as to purpose. Their identification must await further research at other sites less damaged by vandals. Nothing was ascertained regarding the date of the structures, and all could postdate the abandonment of Tumacacori by the Spaniards.

One thing quite obvious on the map of the ruins is that the area of Tumacacori National Monument is too small. The lime kiln is some fifty feet beyond the north boundary; several acres of the small orchard lay north and east of the Monument; while the south wall of the Monument was built across the series of rooms which formed the west side of the plaza. Just south of these latter rooms was the brick kiln (identified by Mr. Frank Pinkley at the time he restored the roof to the church in 1921), while southwest of this kiln is a ditch which applied water to the village.

Probably household water was procured from shallow wells, but none were discovered. Also, the rumored tunnel at Tumacacori was not located.

