

REPORTS

OF THE

SUPERINTENDENT OF THE MESA VERDE
NATIONAL PARK

AND

J. WALTER FEWKES, IN CHARGE OF
EXCAVATION AND REPAIR
OF RUINS

TO THE

SECRETARY OF THE INTERIOR

1909



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REPORT OF THE SUPERINTENDENT OF MESA VERDE NATIONAL PARK.

OFFICE OF THE SUPERINTENDENT,
Mancos, Colo., October 9, 1909.

SIR: I have the honor to submit the following report on the management of the Mesa Verde National Park for the season of 1909.

By act of Congress approved June 29, 1906 (34 Stat., 616), certain tracts of land in Montezuma County, Colo., adjacent to the Southern Ute Indian Reservation, were reserved and withdrawn from settlement, entry, sale, or other disposal, and set apart as a public reservation to be known as the "Mesa Verde National Park." The area of this tract is 66.2 square miles, or 42,376 acres, and the altitude of the highest point, Point Lookout, is 8,700 feet above sea level and 2,000 feet above the Montezuma Valley, the southern rim of which follows the park boundary line on the north for miles.

The park is placed under the exclusive control of the Secretary of the Interior, who is authorized to prescribe such rules and regulations and establish such service as he may deem necessary for the care and management of the park, and for the preservation from injury or spoliation of the ruins and other works and relics of prehistoric or primitive man within the limits of the reservation, and to grant permits for the examination, excavation, and other gathering of objects of antiquity by any person or persons deemed properly qualified to conduct the same, provided they are undertaken only for the benefit of some reputable museum, university, college, or other recognized scientific or educational institution, with a view to increasing the knowledge of such objects and aiding the general advancement of archæological science.

The act also provides that all prehistoric ruins situated within 5 miles of the boundaries of the park, on Indian and public lands not alienated by patent from the ownership of the United States, shall be under the custodianship of the Secretary of the Interior, to be administered by the same service established for the custodianship of the park. The area of this 5-mile strip is about 274 square miles, or 175,360 acres.

LOCATION AND CHARACTER OF RUINS.

The Rio Mancos cuts through the park and abutting 5-mile strip from northeast to southwest, forming a canyon 1,000 to 2,000 feet deep. On both sides of this gorge, more especially to the west, narrow lateral canyons of like depth and even more picturesque beauty cut the mesa into shreds, producing successions of huge promontories, sculptured ledges, and bold, jagged cliffs. The Navaho, Cliff, Moccasin, and Ute are the principal canyons which enter the Mancos

from the north. These, with their numerous branches, furnish the labyrinth of cliffs in the high and almost inaccessible recesses of which we find the abandoned homes of the ancient inhabitants. The Fort Lewis, Grass, and Webber canyons, running into Mancos Canyon from the east, contain many ancient ruins, but are rather less picturesque than those on the west.

Within the park jurisdiction are many notable prehistoric ruins, the cliff dwellings comprising a group of great importance to the study of American archaeology.

The principal and most accessible ruins are the Spruce Tree House,^a located near the head of a draw of Navaho Canyon, originally containing about 130 rooms, but now reduced to 114 rooms and 8 kivas, or ceremonial rooms; the Cliff Palace,^b located about 2 miles east of the Spruce Tree House, in a left branch of the Cliff Canyon, consisting of a group of houses with ruins of about 200 rooms, including 23 kivas of various shapes, and a tapering loopholed tower, forming a crescent of about 100 yards from horn to horn, which is reputed to be one of the most famous works of prehistoric man in existence; the Balcony House, a mile east of the Cliff House, in Cliff Canyon, containing about 25 rooms, some of which are in almost perfect condition. In each of these villages is an elaborate system of fortifications, in some cases walls 2 feet 3 inches thick and 20 feet high, watchtowers 30 feet high, and blockhouses pierced with small loopholes for arrows.

These villages and other important ruins, particularly the Spring House, Long House, and Mug House, are located on the Southern Ute Indian Reservation, within the 5-mile strip surrounding the park, where the park jurisdiction is not exclusive, and when tourist travel increases the preservation and protection of such objects of antiquity will no doubt be more difficult than for the ruins on park lands.

GENERAL STATEMENT.

The headquarters of the superintendent were maintained in the Bauer Block, Mancos, Colo., until May 1, 1909, at which time larger quarters were obtained in a building detached from the business houses. The work of the year has consisted in the protection of the ruins in the park from vandalism, the preservation of order, general oversight over tourists travel, the building of roads and improvement of trails and water supply, and cooperation in the work of excavation and repair of ruins. As yet no permanent buildings have been erected in the reservation.

ORDER IN THE PARK.

No vandalism has been committed on the ruins during the past season, or unlawful excavations attempted. No violations of the game laws have been detected, and it was not found necessary to remove any persons for disorderly conduct or violation of the park regulations.

^a A description of Spruce Tree House is given in the report of Dr. J. Walter Fewkes, Smithsonian Institution, accompanying the 1908 report of the superintendent of the Mesa Verde National Park. A more detailed account of the ruins and descriptions of the antiquities are given in Bulletin No. 41 of the Bureau of American Ethnology, published as House Document No. 1530, Sixtieth Congress, second session.

^b The report of Dr. J. Walter Fewkes on excavation and repair of Cliff House during the summer of 1909 is hereto appended.

MOVEMENTS OF STOCK.

About 600 head of cattle were moved across the park in November, 1908, destined for the Southern Ute Indian Reservation, and the same number were drifted back north in the spring to the Montezuma Valley.

ROADS AND TRAILS.

Entrance to the park can still be effected only on horseback; the carriage road ends at the foot of the mesa, 15 miles from Mancos, the nearest railroad station, and from the foot of the mesa horses are taken for the remainder of the distance. The expense of conducting the excavations and improvements of every kind is very great because of this lack of a suitable highway. All supplies, tools, and material have to be transported by means of pack animals at present, and this expense could be materially lessened by a good road.

The Mills survey, made in the spring of 1908, provided for a wagon road from the northern boundary of the park to the Spruce Tree House on the south, estimated to cost about \$15,000. The less expensive part of the work, extending from Spruce Tree House to station 663, on the line of survey, was performed last fall, as far as the funds would permit, at a total cost of \$1,700. This lies entirely upon the top of the mesa. There was also constructed a trail system connecting Spruce Tree House, Cliff Palace, Peabody House, and Balcony House.

Nearly all of the \$2,000 allotted for road construction from the appropriation for the current fiscal year has been expended this summer, and the road from station 0 to 17, which is a very difficult piece of construction, was completed, and from station 17 to 27 it is partially completed. From station 27 to 53, at the head of Morefield Canyon, the cost will be about \$1,000, but from that point to station 663 it will probably not exceed six or seven hundred dollars per mile. The first mile of road now constructed at the northern boundary is of the greatest importance in getting to the top of the mesa, and next year the work should progress more rapidly. The wagon road from station 0 to 53 will be one of the finest scenic roads in the country, offering a view into Utah, New Mexico, and Arizona.

As the park was created for the purpose of making the ancient ruins therein accessible to the traveling public, there should be another carriage road constructed wholly upon the mesa, touching the points of greatest scenic and historic interest. The most favorable route would probably be from Spruce Tree House along the rim of Navaho Canyon, touching Alcove House, Navaho Point, the Swallows' Nest, Peabody House, and Casa Colorado; thence across the mesa to Cliff Canyon, at a point overlooking the ruins of Cliff Palace, Cedar House, and the Fewkes Canyon group; thence around to Cliff Palace and across to Balcony House on Ruin Canyon, from which point it should return in a direct line to Spruce Tree House. This road would be about 8 miles in length, and the cost of construction comparatively small.

Because of the great depth of the canyons, cutting the mesa from north to south, the expense of building a road to some of the most interesting ruins in the western part of the park is too great for it to be undertaken at present, although trails could be built for \$500

from Spruce Tree House to the important ruins of Garfield Canyon and its tributaries and bring them within four hours' ride of the former ruin.

WATER SUPPLY.

The springs and cisterns in Spruce Tree House Canyon having proven adequate for the use of travelers and stock, no further expenditures were made on the water supply at the ruins. In order to provide water in the northern part of the park, near the road leading to the ruins, a well was sunk 30 feet at the head of Navaho Canyon, at a small cost, and a good supply of water obtained.

EXCAVATION AND REPAIR OF RUINS.

The sum of \$2,000 was set aside for the purpose of excavating and repairing ruins during the past fiscal year, as well as a similar sum from the appropriation for the current fiscal year, practically all of which was expended between May 12 and August 31, 1909, under the direction of Dr. J. Walter Fewkes, of the Smithsonian Institution, on the Cliff Palace ruin. This ruin was completely cleared of all loose stones, dirt, and other débris. Walls that were found to be in a dangerous condition were properly repaired and strengthened and such restoration effected as seemed necessary for the preservation of the buildings. Such antiquities as were found were forwarded to the National Museum at Washington.

TRAVEL.

As predicted in last year's report, no marked increase of travel to the park occurred, because of the lack of a wagon road; until this obstacle is overcome only those capable of a rather trying horseback trip will visit the park. The number registered for the year was 165. These were mostly regular travelers and tourists, who stayed from one to three days.

PRIVILEGES.

I desire to repeat what was said in last year's report concerning privileges. The act setting aside the Mesa Verde National Park is defective in that no provision was made for the granting of privileges or leasing of sites for the entertainment and accommodation of tourists.

House bill 19861 (60th Cong., 1st sess.), introduced by Hon. Warren A. Haggott, was designed to empower the Secretary of the Interior, upon terms and conditions to be fixed by him, to grant leases and permits for the use of the lands or development of the resources thereof, in the Mesa Verde National Park and 5-mile strip, and the use of the revenues derived therefrom in the administration of the reservation. Mr. Guggenheim reintroduced a similar bill (S. 1751 61st Cong., 1st sess.), but it has not yet become a law. Such legislation would incidentally include the right to lease lands for coal mining and grazing, and should provide a good revenue to help maintain the reservation, especially as coal is known to underlie a large portion thereof, and there is a local demand for the opening of mines heretofore operated before the mining claims were invalidated by the reservation of the lands for park purposes.

LANDS.

At the time of the creation of this park there were 240 acres of patented lands, 800 acres in unperfected entries, and school sections 16 and 36, aggregating 2,080 acres, within the reservation. During the year unperfected homestead entry No. 2528, of William U. Michaels, covering 160 acres, was canceled for expiration of the statutory period in which to submit final proof. Under date of January 8, 1909, all of the school sections were eliminated by the certification to the State of Colorado of certain lieu selections contained in Denver lists Nos. 405, 407, 408, and 409, and these tracts are now available for general park purposes.

The patented holdings in the park are now as follows:

Final homestead entry 915, Albert Prater, for SE. $\frac{1}{4}$, SE. $\frac{1}{4}$, sec. 18, E. $\frac{1}{2}$, NE. $\frac{1}{4}$ and NE. $\frac{1}{4}$, SE. $\frac{1}{4}$, sec. 19, T. 35 N., R. 14 W., New Mexico meridian, 160 acres, patented November 14, 1905.

Final homestead entry 1021, William F. Prater, for SE. $\frac{1}{4}$, SE. $\frac{1}{4}$, sec. 19, E. $\frac{1}{2}$, NE. $\frac{1}{4}$ and NE. $\frac{1}{4}$, SE. $\frac{1}{4}$, sec. 30, same township, 160 acres, patented August 10, 1906.

Preemption cash entry 395, George Comfort, for NE. $\frac{1}{4}$, NW. $\frac{1}{4}$, sec. 26, same township, 40 acres, patented July 14, 1891.

Preemption cash entry 339, Frederick Richards, for NE. $\frac{1}{4}$, SW. $\frac{1}{4}$, sec. 26, same township, 40 acres, patented July 14, 1891.

This gives a total of 400 acres in patented lands and 480 acres in unperfected entries.

In the 5-mile strip surrounding the park there are patented lands aggregating 31,535.98 acres, unperfected entries aggregating 13,890.16 acres, and lands granted to the State aggregating 4,920 acres. The Indian Office reports that there are no allotted lands in that portion of the Southern Ute Reservation lying within the 5-mile strip.

EXTENSION OF BOUNDARIES.

During the past year my attention was called to the desire of the Ute Indians to secure the Ute Mountain tract, situated at the far end of the Montezuma National Forest, and their willingness to relinquish therefor, for inclusion in the Mesa Verde National Park, the portion of the 5-mile strip surrounding the park and lying within the Southern Ute Indian Reservation. After conference with the superintendent of the Fort Lewis Indian School as to the feeling of the Ute Indians and the supervisor of the Montezuma National Forest, I have ascertained that the Ute Mountain contains no merchantable timber, that it is isolated from the remainder of the forest, and expensive to administer, and the supervisor recommends the elimination of the entire Ute Mountain division; the land within the "strip" is rough, arid, and of little benefit to the Indians, and practically inaccessible from the west side of the reservation, where most of them live, but this tract contains the largest and most important cliff dwellings, which could be administered to far greater advantage by their inclusion within the park proper. This strip which the Indians are willing to relinquish is worth something for pasture, but is not used by them for that purpose. They care a great deal for the Ute Mountain country, which is easy of access to all and is much used

as a summer range, and the Indians claim they never agreed to the relinquishment of this tract.

Legislation which will effectuate the above changes will be most satisfactory to all concerned, and will greatly facilitate the administration of the various services having jurisdiction.

RECOMMENDATIONS.

1. *Road building.*—The most pressing necessity in the development of the park is that of road building. The cost of excavating and repairing of ruins and of all other development work is made excessive by having to use pack animals for transportation, and the use of the park by visitors is greatly reduced on this account. The carriage road should be completed at the earliest possible moment so as to permit driving to all the principal ruins.

2. *Ruin work.*—The work of Doctor Fewkes in the excavation and repair of Spruce Tree House and Cliff Palace has greatly increased the interest in the park. It is now important that Balcony House and Peabody House should be similarly treated, so as to prevent further decay. These houses have suffered considerable deterioration through the natural action of the weather during the year and are in a dangerous condition at the present time. On account of the urgent necessity for completing the roads, the recommendation for the building of the custodian's house and telephone line formerly made are withdrawn for the present.

3. *Park rangers.*—On account of the large amount of money that has been spent on the excavation and repair of ruins, it is now necessary that there be a resident custodian in the park during all except the coldest winter months. It is therefore recommended that the head ranger be provided with a suitable cabin and required to live at Spruce Tree House for nine months in the year until the carriage road is completed, after which he should remain there all the year around. Such ranger should be paid not less than \$90 per month. There should be another regular ranger at a salary of \$75 per month to look after stock, guard the ruins from vandalism, and to serve as a guide for travelers.

4. *Legislation.*—The private holdings in the park should be eliminated, provision made for the inclusion of the Ute Indian Reservation lands within the strip in the park proper by exchanging the Ute Mountain tract therefor, and for the granting of privileges and use of revenues derived therefrom.

ESTIMATES.

The following estimates of appropriation required for the ensuing fiscal year have been submitted: Salaries of superintendent, regular park ranger, temporary rangers, and clerk during the tourist season, \$3,600; incidental office expenses, telephone service, and office rent, \$467.20; continuation of wagon road construction, \$12,500; excavation and repair of ruins, \$6,000; total, \$22,567.20.

Respectfully submitted.

HANS M. RANDOLPH,
Superintendent.

*The SECRETARY OF THE INTERIOR.

RULES AND REGULATIONS.**GENERAL REGULATIONS OF MARCH 19, 1908.**

Pursuant to authority conferred by the act of Congress approved June 29, 1906, the following rules and regulations for the government of the Mesa Verde National Park, in Colorado, are hereby established and made public and extended as far as applicable to all prehistoric ruins situated within 5 miles of the boundaries thereof on Indian and public lands not alienated by patent from the ownership of the United States:

1. It is forbidden to injure or disturb, except as herein provided, any of the mineral deposits, natural curiosities, wonders, ruins, and other works and relics of prehistoric or primitive man, on government lands within the park or the ruins and other works or relics of prehistoric man on government lands within 5 miles of the boundaries of the park.

2. Permits for the examination of ruins, the excavation of archaeological sites, and the gathering of objects of antiquity, will, upon application to the Secretary of the Interior through the superintendent of the park, be granted to accredited representatives of reputable museums, universities, colleges, or other recognized scientific or educational institutions, with a view to increasing the knowledge of such objects and aiding the general advancement of archaeological science, under the conditions and restrictions contained in present or future regulations promulgated by the Secretary of the Interior to carry out the provisions of the act of Congress approved June 8, 1906, entitled "An act for the preservation of American antiquities."

3. Persons bearing archeological permits from the department may be permitted to enter the ruins unaccompanied after presenting their credentials to the superintendent or other park officer. Persons without archeological permits who wish to visit and enter the ruins shall in all cases be accompanied by a park ranger, or other person duly authorized by the superintendent.

4. The superintendent is authorized, in his discretion, to close any ruin on government lands within the park or the 5-mile limit, to visitors when it shall appear to him that entrance thereto would be dangerous to visitors or might result in injury to walls or other insecure portions thereof, or during repairs.

5. The superintendent is authorized, in his discretion, to designate the place or places to be used by campers in the park, and where firewood can be obtained by them. All garbage and refuse must be deposited in places where it will not be offensive to the eye or contaminate any water supply on the park lands.

6. It is forbidden to cut or injure any timber growing on the park lands, except as provided in paragraph 5 of these regulations; but dead or fallen timber may be taken by campers for fuel without obtaining permission therefor.

7. Fires should be lighted only when necessary and completely extinguished when not longer required. The utmost care must be taken at all times to avoid setting fire to the timber and grass.

8. Hunting or killing, wounding or capturing any bird or wild animal on the park lands, except dangerous animals when necessary to prevent them from destroying life or inflicting an injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed on the park lands under other circumstances than those prescribed above, will be taken up by the superintendent and held subject to the order of the Secretary of the Interior, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person or persons violating this regulation and the actual owner thereof was not a party to such violation. Firearms will be permitted in the park only on written permission from the superintendent.

9. No person shall be permitted to reside permanently or to engage in any business on the government lands in the park without permission, in writing, from the Secretary of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion, and no pack trains will be allowed in the park unless in charge of a duly registered guide.

10. Owners of patented lands within the park limits are entitled to the full use and enjoyment thereof; such lands, however, shall have the metes and bounds thereof so marked and defined as to be readily distinguished from the park lands. Stock may be taken over the park lands to patented lands with the written permission and under the supervision of the superintendent.

11. The herding or grazing of loose stock or cattle of any kind on the government lands within the park, as well as the driving of such stock or cattle over

the same, is strictly forbidden, except in such cases where authority therefor is granted by the superintendent.

12. The sale of intoxicating liquors on the government lands in the park is strictly forbidden.

13. Private notices or advertisements shall not be posted or displayed on the government lands within the park, nor upon or about ruins on government lands within the 5-mile strip surrounding the same, except such as may be necessary for the convenience and guidance of the public.

14. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who may violate any of the foregoing rules, will be summarily removed from the park and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

15. The act creating the park provides that any person or persons who may, without having secured proper permission from the Secretary of the Interior, willfully remove, disturb, destroy, or molest any of the ruins, mounds, buildings, graves, relics, or other evidences of an ancient civilization or other property in said park, shall be deemed guilty of a misdemeanor, and upon conviction before any court having jurisdiction of such offenses shall be fined not more than \$1,000 or imprisoned not more than twelve months, or such person or persons may be fined and imprisoned, at the discretion of the court, and shall be required to restore the property destroyed, if possible.

Any person or persons guilty of such vandalism upon government lands within the 5-mile strip will be liable to a penalty of \$500 or imprisonment of not more than ninety days, or both, in the discretion of the court, as provided in the act of Congress approved June 8, 1906, entitled "An act for the preservation of American antiquities."

16. The superintendent designated by the Secretary of the Interior is hereby authorized and directed to remove all trespassers from the government lands in the park and to enforce these rules and regulations and all the provisions of the act of Congress creating the same.

The Indian police and field employees of the General Land Office are required to cooperate with the superintendent in the enforcement of these regulations as regards the 5-mile strip surrounding the park.

REGULATIONS OF MARCH 19, 1908, GOVERNING THE IMPOUNDING AND DISPOSITION OF LOOSE LIVE STOCK.

Horses, cattle, or other domestic live stock running at large or being herded or grazed on the government lands in the Mesa Verde National Park without authority from the superintendent of the park will be taken up and impounded by the superintendent, who will at once give notice thereof to the owner, if known. If the owner is not known, notices of such impounding, giving a description of the animal or animals, with the brands thereon, will be posted in six public places inside the park and in two public places outside the park. Any owner of an animal thus impounded may, at any time before the sale thereof, reclaim the same upon proving ownership and paying the cost of notice and all expenses incident to the taking up and detention of such animal, including the cost of feeding and caring for the same. If any animal thus impounded should not be reclaimed within thirty days from notice to the owner or from the date of posting notices, it shall be sold at public auction at such time and place as may be fixed by the superintendent after ten days' notice, to be given by posting notices in six public places in the park and two public places outside the park and by mailing to the owner, if known, a copy thereof.

All money received from the sale of such animals and remaining after the payment of all expenses incident to the taking up, impounding, and selling thereof, shall be carefully retained by the superintendent in a separate fund for a period of six months, during which time the net proceeds from the sale of any animal may be claimed by and paid to the owner upon the presentation of satisfactory proof of ownership; and if not so claimed within six months from the date of sale, such proceeds shall be turned into the Mesa Verde National Park fund.

The superintendent shall keep a record in which shall be set down a description of all animals impounded, giving the brands found on them, the date and locality of the taking up, the date of all notices and manner in which they were given, the date of sale, and the name and address of the purchaser, the amount for which each animal was sold, and the cost incurred in connection therewith, and the disposition of the proceeds.

The superintendent shall in each instance make every reasonable effort to ascertain the owner of animals impounded and give actual notice thereof to such owner.

REPORT ON THE EXCAVATION AND REPAIR OF CLIFF PALACE, MESA VERDE NATIONAL PARK. COLORADO, IN 1909.

INTRODUCTION.

SIR: In accordance with your request, and by the direction of the Secretary of the Smithsonian Institution, the excavation and repair of ruins in the Mesa Verde National Park were continued under my charge from May to August, 1909. This work was a continuance of the plan of operations at Spruce Tree House in 1908, and was limited to the largest and one of the most picturesque prehistoric ruins, known as "Cliff Palace."^a The rooms, courts, and terraces were completely excavated and the walls carefully repaired in such a manner that they will resist the destructive action of the elements for several years without additional expenditures.

GENERAL DESCRIPTION.

Cliff Palace lies in an eastern spur of Cliff Canyon, under the roof of an enormous cave which arches 50 or 100 feet above it. The floor of this cavern is elevated several hundred feet above the bottom of the canyon. The entrance faces the west, looking across the canyon to the opposite side, in full view of a great promontory, on top of which stands the ruin of an ancient pueblo, now a pile of fallen stones, partially concealed by a thick growth of cedar trees. The floor of the recess in which Cliff Palace is built is practically covered with buildings, some of which, specially those at each end, extend beyond the shelter of the cave roof. The total length of the Cliff Palace is approximately 300 feet.

About two-thirds of Cliff Palace is situated under the sheltering cave roof and is thus protected from rain or from water dripping from the rim of the canyon above. Whenever there is a heavy down-pour on the mesa top the water falls over the cliff in a stream of considerable size, which precipitates itself into the trees a few feet in front of the outmost retaining wall of the central part of the ruin. While the greater portion of the drainage of the surface of the mesa in this neighborhood is thus thrown beyond the outer walls, smaller rivulets fall directly on the tops of the exposed southern and western extremities, working great injury to the aboriginal adobe masonry. To these rivulets, whose erosive power is much increased by the height of the fall, may be ascribed the almost complete destruction

^a The sum of \$4,360 was allotted for this work, my salary and traveling expenses being paid by an additional allotment by the Bureau of American Ethnology of the Smithsonian Institution.

of walls at the western extension of the northern end and the burial of subterranean chambers in the southern quarter. The streams also bring from above much earth and large stones, which have broken down walls and in places have buried them many feet deep.

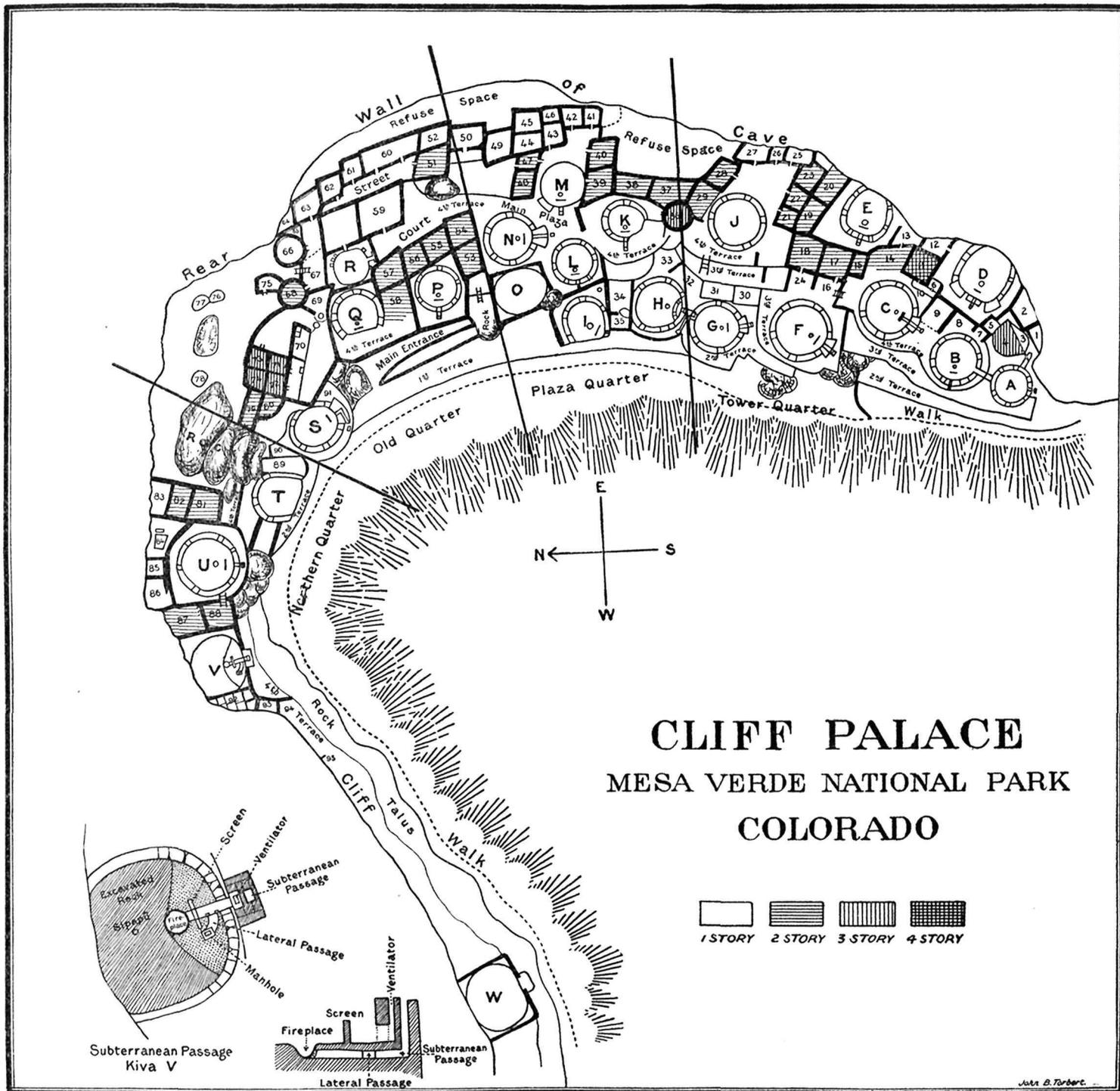
The underside of the roof of rock arching over Cliff Palace is comparatively smooth, exhibiting horizontal cleavage and plane surfaces. A break in this cleavage extends approximately north and south, forming a ledge a few feet in breadth. On its edge the ancients constructed a long wall, thus making a passageway between it and the solid cliff. Although now inaccessible from the ruin below, in ancient times this passageway could have been entered from the roof of one of the houses (66) through a doorway which is still visible. Similar ledge rooms are common features in Mesa Verde ruins.

The floor of the cave in which Cliff Palace was built had practically one level, determined no doubt by a layer of comparatively hard rock which resisted erosion more successfully than the softer strata above it. This floor was strewn with great angular bowlders that in the process of formation of the cave had fallen from the roof. These are too large to be moved by primitive man and must have presented to the ancient builders uninviting foundations upon which to erect their structures. The spaces between these rocks were better suited for their purpose. These were filled with smaller stones that could be removed, leaving cavities which could be utilized for the construction of subterranean rooms. The upper surfaces of the large rocks, even those which are angular, served as foundations for houses above ground and determined the levels of the plazas. From the bases of these rocks, which formed the outer edge of the level cave floor, a talus extended down the canyon side to the bottom. The rooms forming the front of the ancient village were constructed in this talus, and as their site was sloping, they were necessarily situated at lower levels on terraces bounded by retaining walls which are marked features in this part of Cliff Palace. At least three different terraces indicating as many levels are recognized. These levels are indicated by the rows of kivas, or ceremonial rooms, which skirt the southern and middle sections of the ancient village. At the southern end, where the talus is less precipitous and where, on account of the absence of a cave roof, the fallen rocks are smaller, the terrace with its subterranean rooms is on the level of the floor of the cave, having the same height as the foundations built thereon. At the western extremity the buildings were erected on the tops of huge rocks fallen from the roof of the cave. Here the talus is narrow or wanting and no rooms were constructed in front of these rocks. Thus the terrace rooms on the lowest level are found along the middle section of the cave, where the floor is highest and where the great fallen rocks still remain in sheltered places.

APPEARANCE OF RUIN WHEN WORK BEGAN.

When the excavation and repair work began these terraces and the rooms built in or above them were covered and concealed by stones that had fallen down the hill from walls of rooms above.^a The

^a The copyrighted photographs used in the preparation of Plate II, fig. 1, and Plate IV were furnished for publication by Mr. Frederick K. Vreeland. Plate V is from a photograph by Mr. R. G. Fuller



SKETCH PLAN OF CLIFF PALACE.

mass of fallen material was so great that its surface sloped uniformly down the side of the precipice from the foundations of the rooms on the cave floor to the canyon below, and the huge rocks on which the rooms in the cave stood barely projected above the surface. The walls of subterranean rooms in the terraces were concealed by this mass of débris, their position being indicated only by slight depressions or by fragments of the tops of low walls. No sign of the main passageway or entrance into Cliff Palace was visible. It was difficult to walk along the front of the ruin over this accumulation of fallen stones 5 or 6 feet deep. The débris from former excavations had been thrown on the stones covering the terraces, through embrasures made in the walls for the purpose, thus increasing the amount of accumulated material. The sight of the work to be done was discouraging, as it seemed almost impossible to bring order out of the chaos of fallen stones and broken-down walls covered with débris in front of the ruin. It was difficult to tell where to begin work or how to discover foundations of rooms under the mass. A study of the situation soon revealed that the least difficulties presented themselves at the southern end and here excavation was begun, being gradually carried northward until the terraces and retaining walls of Cliff Palace were brought to light. The appearance of the rooms in the rear of the cave farther back under the roof was not so discouraging; here the ruin was in a better state of preservation, but even here were piles of stone and débris concealing subterranean rooms and covering floors of those above ground. Many walls had fallen and others were tottering. Great holes had been blasted in their sides and foundations were so undermined that in some instances they could be swayed back and forth by the pressure of the hand. Moreover, in many places it was dangerous for workmen to begin excavations, for buried foundations of sandstone, not very hard at best, had disintegrated. The process had gone so far in the subterranean rooms, especially on the lowest terrace, that the stones were practically softer than the mortar between them, being merely crumbling sand.

TRAILS TO THE RUIN.

The first work undertaken was to make the ruin more easily accessible from the mesa above, where camp was necessarily established. To do this a new trail was constructed a short distance from the southern end of Cliff Palace, following a rift between a huge detached rock and the side of the cliff. Near a series of foot holes (an ancient stairway) four ladders were placed one above another, firmly attached to the rock. These ladders were used throughout the summer by the workmen and now furnish visitors a means of easy descent from the mesa rim to the level of the ruin, many feet below. Incidentally, it may be said that the view of the western end of Cliff Palace from the head of this trail is superb. From its base an easy pathway, revealing attractive and picturesque outlooks on all sides, leads through the woods to the main entrance on a level with the lowest terrace. The steep part of the old trail, facetiously called "Fat Man's Misery," has been used ever since the discovery of Cliff Palace to descend to the ruin; this trail likewise follows an old Indian line of foot holes in the cliff and was not changed. From its lower end a pathway leads along the base of the western end of the cliff to the

ancient entrance to Cliff Palace. This part of the trail was improved by cutting down bushes, removing logs, and grading. Visitors descending this trail to the level of the ruin can, by following a comparatively level path to the main entrance, inspect the terraces and front walls from picturesque points.

The view of Cliff Palace from a point opposite its main entrance gives a striking impression of its great size. Ladders designed to facilitate progress through the ruin have been placed near the round tower, at the northern termination of the street, and at the western end. A ladder was also conveniently placed not far from the square tower. By means of a notched log placed in room six one can ascend the high wall in front of kiva D, one of the best known examples of cliff-house masonry, and from this elevation an outlook to the west may be enjoyed which embraces the most striking features of Cliff Palace.

A roof was constructed over the last room at the western end, in which are four well-preserved corn-grinding mills. This construction was necessary for their preservation, as they lie directly under a cleft in the cliff through which there is a downpour of water whenever it rains.

SCARCITY OF WATER.

When I arrived at Cliff Palace one of the first difficulties to be overcome was the total absence of water in the neighborhood. For the camp of 22 men about 20 to 30 gallons of potable water were needed daily, and for use in the masonry on the ruin below 50 gallons would barely suffice. The nearest source of water for camp purposes was Spruce Tree House, more than 2 miles away, and throughout the summer water was brought that distance daily on pack animals. For the water used in repair work a reservoir 15 feet deep was blasted in solid rock. In this was collected enough water for masonry during May and June. In July the supply failed, and it was necessary to construct another reservoir about a quarter of a mile from the ruin in a neighboring canyon. To transport this water a trail had to be made along the side of the canyon—not an easy task considering the precipice along which it was built. This source of water also failed in July and a large pothole on top of the mesa was cemented and walled in, the intention being to catch the rain and bring the water down the cliff through a hose. For several days the water for masonry work had to be brought from Spruce Tree House on pack animals. During August water was abundant everywhere on account of heavy rains.

VANDALISM AT CLIFF PALACE.

Probably no cliff dwelling in the southwest has been more thoroughly dug over in search of pottery and other objects for commercial purposes than Cliff Palace. Parties of "curio seekers" camped in the ruin for several winters, and it is reported that many hundred specimens therefrom have been carried down the mesa and sold to private individuals. Some of these objects are now in museums, but many are forever lost to science. In order to secure this valuable archaeological material, walls were broken down with giant powder, often simply to let light into the darker rooms; floors were invariably



Fig. 1.—Before repairing.

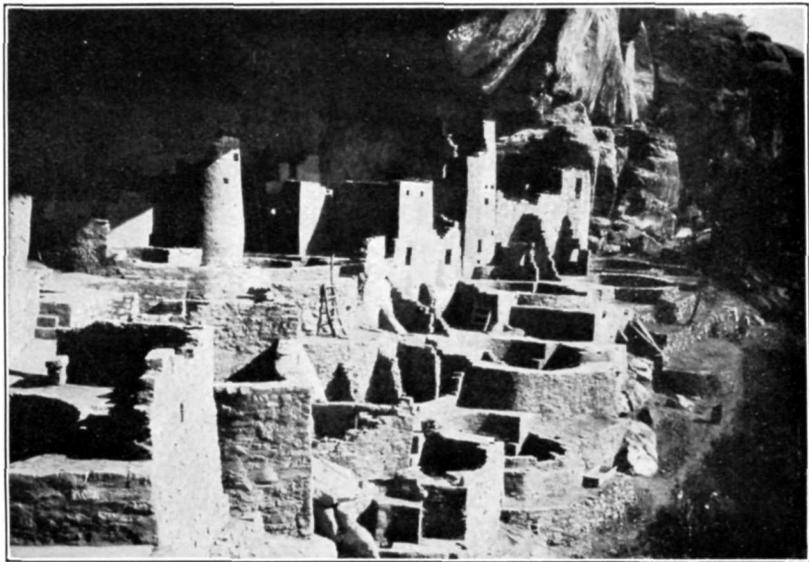


Fig. 2.—After repairing.

CLIFF PALACE FROM THE NORTH.

opened and buried kivas mutilated. To facilitate this work and get rid of the debris, great openings were broken through the fine walls which form the front of the ruin. Beams were used for firewood to so great an extent that not a single roof now remains. This work of destruction, added to that resulting from the erosion due to torrents of rain, left Cliff Palace in a sad condition.

REFUSE HEAPS.

In the rear of the buildings—that is, in the deeper part of the cave—there is a dark recess filled with refuse that has never been removed, although pretty thoroughly dug over before systematic excavation and repair began. This refuse contains ashes, birdlime, cobs, stalks and leaves of corn, and many other rejects of the ancient population. The roof of the cave is badly smoked, as if great fires had once been kindled beneath. This recess is said to have been used as a cemetery, and it is reported that several human mummies have been found in it. Desiccated bodies of small animals, such as lizards, snakes, rats, and chipmunks, were unearthed from this refuse heap, but all human mummies had been removed.

In a walled inclosure at one end of this section was found a quantity of calcined human bones accompanied by mortuary objects, as dippers, vases, and small food bowls. From the smoke on the roof and the presence of burnt bones it appears that cremation was practiced at Cliff Palace. As a rule the cliff dwellers inhumated their dead, returning them to "Mother Earth" in the posture they had before death. Mummification resulted from the action of natural agencies in the dry soil in which the bodies were interred.

METHOD OF REPAIR WORK.

It was found, as was to be expected, that the repair work on Cliff Palace was of much greater magnitude than that on Spruce Tree House last year. Cliff Palace is three times as large as the latter ruin, and the problem of its preservation was much complicated by the terraced front.

The method of treatment was essentially the same as that followed at Spruce Tree House. No attempt was made to restore the buildings, the rooms being merely cleaned out and their broken foundations repaired in order to preserve the original lines as far as possible. Repair work was devoted principally to the walls to prevent their further destruction. In some instances it was found necessary to construct buttresses to hold up tottering walls or strengthen foundations.

One corner and more than half of the two adjacent sides of the four-storied building had to be reconstructed from the level of the floor of the adjoining kiva, in order to prevent the fall of the two upper stories, on one of which are preserved the finest examples of mural paintings in Cliff Palace. This building undoubtedly would have fallen within six months but for this work.

EDUCATIONAL IDEAL.

As far as possible I endeavored to increase the educational value of Cliff Palace and to develop it into a "type ruin." It is well adapted for this purpose, being the largest cliff house known and

containing most of the architectural features of this type of prehistoric buildings. It has circular kivas of two kinds, round and square towers, circular and rectangular secular rooms of all kinds, terraces, and retaining walls. The kivas present all the variety of detail characteristic of cliff-houses. Anyone familiar with the Cliff Palace as now repaired has a type for interpretation of all other cliff ruins in the Mesa Verde National Park, and for comparison with those situated outside this area.

GENERAL DESCRIPTION OF THE REPAIRED CLIFF PALACE.

Fortunately the configuration of the cliffs above the ruin makes it possible to get a fine bird's-eye view of Cliff Palace from the rim of the mesa. Views obtained from the heads of the two trails are most striking and should be enjoyed before closer examination and detailed study of the rooms in Cliff Palace. To obtain the best general view of the whole ruin from the front one may cross the canyon and climb a promontory whence Cliff Palace appears to be set among trees in a rocky frame, the lower side being the precipice beneath and the upper the roof above.^a

ANCIENT ENTRANCE.

Deep under the débris which covered the lower terrace of Cliff Palace there was brought to light by excavation an ancient way, hitherto unknown, which leads by a gradual slope to the center of the village. This pathway extends parallel with the high front wall of kiva O, and, passing to a large rock in which foot rests were cut, enters Cliff Palace through a narrow court between high walls. From this court ascent to the level of the cave floor was accomplished by means of a ladder, which could be drawn in when danger necessitated. The floor of the main entrance was hardened adobe, the outer edge of which was held by a roughly laid retaining wall resting at the lower end on logs still well preserved. This main entrance may have led formerly to the village spring in the canyon below, now dry, and along it no doubt in ancient times toiled the weary women with jars of water on their heads.

GROUND PLAN OF REPAIRED CLIFF PALACE.

An examination of the correct ground plan of Cliff Palace, here for the first time published, shows that the houses were arranged in a crescent, the northern extension of rooms corresponding roughly to one point. The curve of the village follows, generally speaking, that of the rear of the cave in which it was constructed. There is little regularity in the arrangement of the rooms, which, as a rule, are not crowded together; most of the subterranean chambers are situated on

^a Just opposite Cliff Palace there stands on or near the point of the mesa a pueblo ruin which, but for the thick grove of cedars, could plainly be seen from the opposite canyon rim. The site of this pueblo, except for the trees, recalls sites of Hopi pueblos. Its walls where dug out are in good condition, although formerly covered with rocks. If it were excavated and repaired it would present an instructive object lesson in comparative studies of cliff dwellings and pueblos situated in the open mesa tops, a type well represented in the Mesa Verde National Park.



Fig. 1.—Front walls, after repairing.



Fig. 2.—Main entrance, after repairing.

MIDDLE REGION OF CLIFF PALACE.

terraces in front of the secular rooms. There is one passageway that may be designated a street; this is bordered by high walls over which a passer-by could not look. No open space of considerable size is destitute of a ceremonial chamber, and the largest court contains five of these rooms. It is not possible to count the exact number of rooms that Cliff Palace formerly had, as many upper stories have fallen and a considerable number of terraced rooms along the front are indicated only by fragments of walls. Roughly speaking, 200 is a fair estimate.

It is instructive to note that although Cliff Palace is about three times as large as Spruce Tree House, judging from ceremonial chambers, it has no more than double the number of secular rooms.^a

The most striking addition to our knowledge revealed by the excavations at Cliff Palace is a more accurate ground plan of this village. This enlarged knowledge is effectually shown by a comparison of my plate ^b with that given by Nordenskiöld. The most important discoveries were made in the course of excavations at the southern and northern ends and on the terraces, where great accumulations of débris had concealed existing walls from former students. In place of 17 ceremonial rooms ("estufas") represented by Nordenskiöld in his ground plan 23 may now be counted. He makes no reference to the kiva situated a short distance from the western end of the ruin and missed the series on the terraces at the south end.

CLIFF PALACE SUBDIVISIONS.

In order to facilitate description of the Cliff Palace as repaired, it is here arbitrarily divided into certain quarters or sections. The front entrance, being situated about midway of the length of the village, is naturally a point of division of the ruin into halves.^c

Four different regions may be distinguished in the ruin, two north of a line drawn from the front entrance to the rear of the cave and two south of that line. While structurally there appear to be no essential differences in these quarters, they present certain characteristic archaeological features which are worthy of consideration.

The part of Cliff Palace extending northward from the main entrance to the point where the ruin turns westward lies in the deepest part of the cave and may be called the "Old Quarter." Its northern end is formed by a castellated building three stories high, constructed of the finest masonry and perched on a huge fallen rock. This building contains several rooms, story above story, the uppermost reaching to the roof of the cave. It may be called the "Speaker Chief's House" from a banquette on one side overlooking the whole southern end of the ruin.

The extension of Cliff Palace westward from the Speaker Chief's House to the end of the ruin may be designated the "Northern Quarter." About 50 feet beyond the extreme western end stands above ground a solitary building, or ceremonial room, of singular construc-

^a This is explained on the theory that Cliff Palace is more ancient than Spruce Tree House, the kivas being the older rooms and probably more strictly limited to the use of clans, while at Spruce Tree House they are more in the nature of fraternity rooms, the membership of the priesthood occupying them being drawn from several clans.

^b The sketch ground plan here published was made under my direction by a voluntary assistant, Mr. R. G. Fuller, who served as photographer of the party.

^c The quarters into which Cliff Palace is divided were possibly sociologically different.

tion.^a The part of the ruin from the main entrance to the Round Tower contains five ceremonial rooms huddled together. Their roofs and the intervening spaces formerly constituted the most extensive plaza in the village, and it seems appropriate to call this the Plaza Quarter.

The part of the ruin from the Round Tower to the extreme southern end is divided into halves by the Square Tower, a four-storied room with painted walls.

To recapitulate, there are here recognized in Cliff Palace the following quarters:

1. Northern Quarter, from Speaker Chief's House to west end.
2. Old Quarter, from Speaker Chief's House to entrance to ruin.
3. Plaza Quarter, from village entrance to Round Tower.
4. Tower Quarter, from Round Tower to southern end.

NORTHERN QUARTER.

This quarter contains four ceremonial rooms and accompanying secular inclosures. On the western end it has a room fitted up with four corn-grinding bins (*metakis*), a second room with one *metaki*, and two cooking rooms.

This quarter is built on two levels, the lower adjoining the Old Quarter having fine masonry composed of well-dressed building stones. The higher level has two kivas, the more western of which shows in its floor the most extensive example of excavation in solid rock known in Cliff Palace. For more than two-thirds of its area the floor is here cut down on one side about 2 feet. The whole western section was considerably mutilated and was covered with small building stones and débris when the excavation and repair work began. This is obscurely indicated on previously published ground plans in which its rooms are not accurately represented.

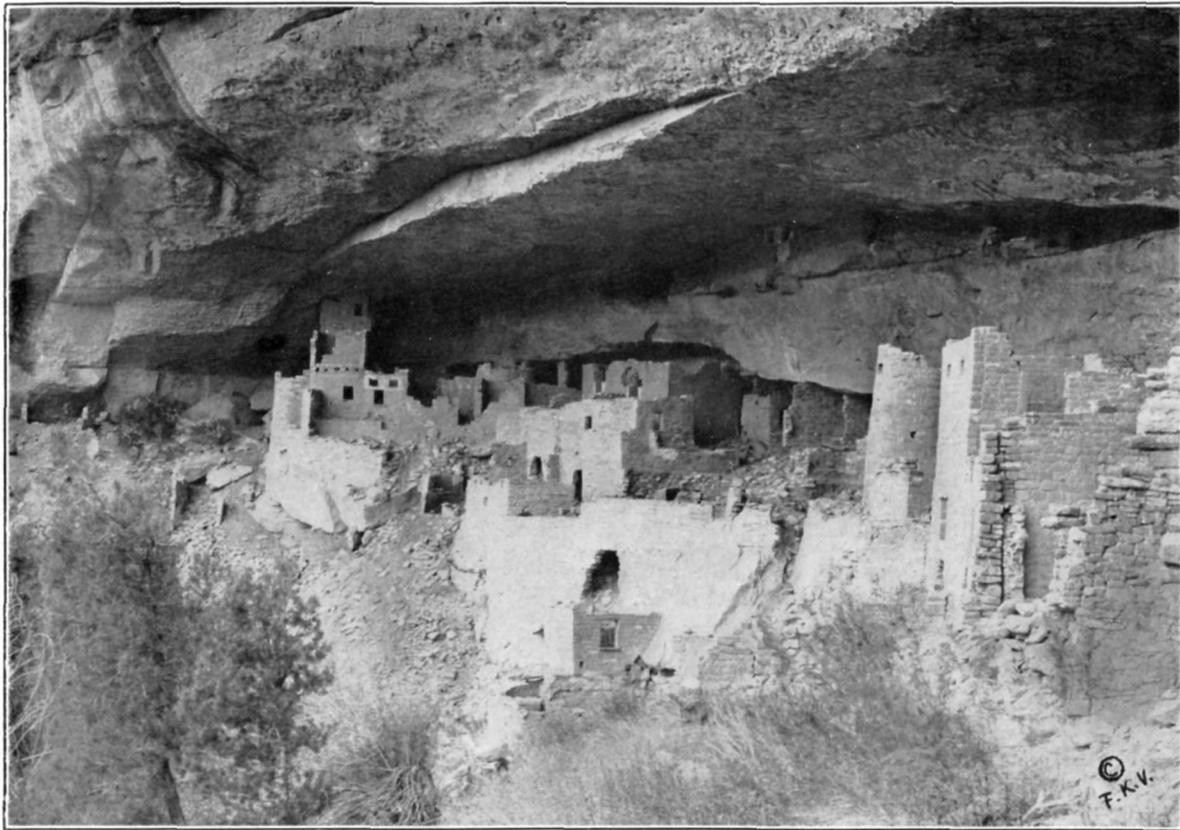
OLD QUARTER.

The region northward from the main entrance of the Cliff Palace, including the lofty castellated building called "Speaker Chief's House," may be known as the "Old Quarter." This contains many secular rooms, some of which are round and others rectangular, and three fine ceremonial rooms, one of which is of a type rare in cliff-dwellings. The Old Quarter falls naturally into two regions, the Speaker Chief's House and the section adjoining the main entrance. A street extending north and south divides this quarter into a front and a rear section.

It seems probable that the Old Quarter was inhabited by the oldest and most influential clans of the pueblo. The masonry of the Speaker Chief's building is not only the finest in Cliff Palace, but compares well with that laid by white masons. The walls throughout were built of hewn stones, ground plane, carefully laid and smoothly plastered.^b The main building was erected on the inclined face of a very high, angular rock, unfortunately cracked, by which

^a Probably belonging to the second type of ceremonial rooms later described.

^b It is sometimes stated that the cliff dwellers rarely dressed or smoothed the stones out of which they constructed walls. While this may be true of some cliff dwellings, it is not true of those on Mesa Verde.



CLIFF PALACE FROM THE SOUTH, BEFORE REPAIRING.



CLIFF PALACE FROM THE SOUTH, AFTER REPAIRING.

the foundations are raised above neighboring buildings and terraces. The castellated part extends to the roof of the cave and is three stories high. On the north side the wall of this part is curved, but on the south side there is a banquette or platform to which one mounts by a single step. The whole central and southern parts of Cliff Palace lie in full sight of this platform, and we may suppose that a Speaker Chief stood upon it every morning when he announced the events of the day.

In addition to the three-storied castellated building there are included in the Old Quarter four fine ceremonial rooms and two circular rooms that lie deep in the cave.

The southern part of the Old Quarter, that adjoining the entrance to the village, has one ceremonial room and several secular inclosures. The "street" lies almost wholly in this section.

PLAZA QUARTER.

Almost the whole of this quarter is occupied by a large open space containing five kivas. These subterranean rooms are so close to one another and are so arranged that their roofs must have formed an almost level plaza, which was the central and largest open place of Cliff Palace. Two kivas, I and H, on the lower terraces, likewise belong to this quarter. In addition to the subterranean rooms on the upper level, there extends from it into the Old Quarter a court into which opens the "street." It may well be supposed that the Plaza Quarter was one of the most frequented breathing places in this cliff-dwelling when inhabited. Here we find a broad open place fitted for ceremonial dances, into which opened the only large court and street of the village. The main entrance to Cliff Palace was situated at its northwest corner. It was well protected in all seasons of the year by the overhanging roof of the cave and the massive walls surrounding it on three sides. The outlook from its western side across Cliff Canyon is one of the finest. Situated midway between the two ends of the village, near the center of population, the Plaza Quarter must have been a much frequented place when Cliff Palace was inhabited, and may well be called the chief quarter.

TOWER QUARTER.

The Round Tower section includes the ceremonial rooms E to G and the secular buildings 13 to 33. Of the former, F and G lie at lower levels in front of the foundations of the Round Tower. Kiva J is situated on a high level, and E is built near the cliff in the rear of the village.

The most striking architectural feature of this quarter is of course the picturesque Round Tower, a symmetrical structure perched on top of a huge rock. The use of this tower is unknown, but we can hardly suppose so important a building was built in this commanding position for purely secular purposes.

The southern end of Cliff Palace, including rooms 1 and 10, and the subterranean chambers A to D, is somewhat exposed to the weather and therefore much worn. Kivas A to C lie in the open in front of the rooms and outside the rim of the roof. The walls of kiva D, among the finest known in cliff dwellings, are painted yellow

and have the superficial plastering well preserved. The Square Tower (11) is four stories high and has fine mural decorations in white and red on the inner walls of the third story. The whole north-west angle of this tower had to be rebuilt to support the walls of this story.

CLASSIFICATION OF ROOMS.

The arrangement of houses in a cliff dwelling of the size of Cliff Palace is characteristic and intimately associated with the distribution of the social divisions of the inhabitants. The population was composed of a number of units, possibly clans, each of which had its own social organization more or less distinct from others, a condition that appears in the arrangement of rooms. The rooms occupied by a clan were not necessarily connected, although generally neighboring rooms were distinguished from one another by their uses. Thus each clan had its men's room, which was ceremonially called the "kiva." Here the men of the clan practically lived, engaged in their occupations. Each clan had also one or more rooms, which may be styled the living rooms, and other inclosures for granaries or storage of corn. The corn was ground into meal in another room containing the metate set in a bin or stone box, and in some instances in fireplaces, although these were generally placed in the plazas or on the house tops. All these different kinds of rooms, taken together, constitute the houses that belonged to one clan.

The conviction that each kiva denotes a distinct social unit, as a clan or a family, is supported by a general similarity in the masonry of the kiva walls and that of adjacent houses ascribed to the same clan. From the number of these rooms it would appear that there were at least 23 social units or clans in Cliff Palace. The kivas were the rooms where the men spent most of their time devoted to ceremonies, councils, and other gatherings. In the social conditions prevalent at Cliff Palace the religious fraternity was limited to the men of the clan.

Apparently there is no uniformity in the distribution of the kivas. As it was prescribed that these rooms should be subterranean, the greatest number were placed in front of the rectangular buildings, where it was easiest to excavate them. But when necessary these structures were built far back in the cave and inclosed by a double wall, the intervals between whose sections were filled with earth or rubble to raise it to the level of the kiva roof. In that way they were artificially made subterranean, as the ritual required.

CEREMONIAL ROOMS.

The majority of the ceremonial rooms in Cliff Palace are accompanied by rectangular chambers, but one of the former, situated about 50 feet from the wetsern end, has no rooms near it. The ceremonial rooms naturally fall into two types: (1) Subterranean kivas having banquettes around their sides, separated by roof supports called pedestals; (2) kivas destitute of banquettes or pedestals, probably roofless, their roofs being replaced by high surrounding walls. Twenty ceremonial rooms have been referred to the first type, two or three to the second. The isolated kiva resembles in many particulars the

other examples of the second type.^a The shape of the kivas varies from circular to square with rounded corners. Their architecture varies somewhat and their depth is not uniform. The walls are well constructed and generally show signs of plastering, often blackened with smoke. One of the kivas is painted yellow; the lower part of another is red with triangular decorations on the upper border.^b

KIVAS OF THE FIRST TYPE.

The Cliff Palace kivas, provided with pedestals or roof supports, furnish examples of some of the finest masonry in prehistoric buildings of our Southwest. Owing to their subterranean position it was often necessary for the builders to excavate the floors in solid rock and the curves of the sides were obtained in many instances by removing projecting ends of huge rocks. The number of pedestals vary in different kivas. In the majority there are six of these roof supports; the kiva in the Speaker Chief's section has eight, others four, and one has but two. The number of banquettes necessarily varies with the number of pedestals; one called the altar banquette is commonly larger than the remainder. This large shelf may be the place where ceremonial paraphernalia were placed; in most cases it is situated in the same side as the air shaft or ventilator. Every kiva of the first type has a ventilator, firehole, and deflector, as explained in my report on the repair work at Spruce Tree House.

Although these structures are represented in every kiva the configuration of the walls of many kivas made it difficult to introduce the ventilator on the same side or in the same form. In one case the passage turns at right angles before it joins the vertical so-called ventilator. In another instance this vertical passage is situated like a chimney at one angle of the outside wall and in still another it opens through a roof support.^c

Deflectors in Cliff Palace kivas have four modifications: (1) A slab of stone placed upright; (2) a low stone wall; (3) a curved wall joining the wall of the kiva on each side of the lateral entrance into the ventilator; (4) a row of upright sticks having twigs woven between them, the whole being covered and hidden with clay mortar. Thus all varieties of deflectors discovered in Mesa Verde ruins are represented at Cliff Palace.

Every kiva of the first type has a fireplace near the center of the room, which is generally found to be packed solid with wood ashes; in some cases the sides are rimmed with flat stones, one stone smaller than the rest sometimes projecting slightly above the level of the floor. The symbolic opening (*sipapû*) in the floor is not found in all Cliff Palace kivas. It is rarely absent; usually it is situated slightly to one side of the middle of the floor. In one kiva the opening is double and in another room this hole lies near the wall. Even when necessary to drill into solid rock the ancients did not hesitate to make this ceremonial opening, which, in some instances, was lined with a burnt clay

^a At Spruce Tree House there are 8 kivas of the first type and 1 of the second.

^b Similar decorations occur likewise on the pedestals of kiva A of Spruce Tree House and on the inner walls of the third story of the Square Tower.

^c In the kivas of some of the cliff dwellings in Navajo National Monument a doorway occupies the position of the lateral entrance of the ventilator into the kiva. These kivas are rectangular and are exceptional in having entrances opening laterally instead of vertically.

tube. For the reception of small objects diminutive niches were constructed in the walls of almost every kiva and vases are now found inserted in the banquettes of a few of these chambers.

Each kiva possesses special characters, notwithstanding that all the kivas have a general similarity. The former roof of the most southerly kiva (A), one of those on a terrace in front of the buildings, was on a level with their foundations and measures 11 feet in diameter; it has a subterranean passageway, with steps leading to the floor of the most southerly room of the ruin.

Another passageway communicates with kiva B, which lies to the north at the same level. The diameter of kiva B is 13 feet. Its masonry is somewhat better than that of kiva A. A large banquette lies over the lateral passage, which communicates with the ventilator.

Kiva C, the third ceremonial room at the southern end of the ruin, is also 13 feet in diameter; the roof was about level with the preceding roof; its walls are well made and apparently plastered.

Not all of these ceremonial rooms are circular, some being square with rounded corners. To this group belongs kiva D, also 13 feet in diameter, whose plastered walls, painted yellow and somewhat blackened with smoke, are still preserved. The masonry of this room needed no repair, being practically as good as any in Cliff Palace. One side is formed almost entirely by the cave wall; it is protected above by the cave roof and is hidden from outside by rooms with high walls.

Kiva E is also sheltered by the roof of the cave and protected from rains by secular rooms in front of it. There has been considerable excavation in the rock, to lower its floor to the desired depth. This kiva measures 11 feet in diameter. An exceptional feature in this chamber is a rough-ware vase set in the firehole, which in other respects is normal in position and construction. No ceremonial opening was detected by a thorough examination of the floor of this room.

Evidences of fire are found on the walls of kiva F, which is square with rounded corners. It measures 13 feet in diameter.

The kivas above mentioned, that are situated in front of the cave and outside the protection of its roof, are exposed to the direct effects of rain or of water dripping from the rim of the canyon. To prevent further injury to the walls of these kivas, it was necessary to cover their upper surfaces and the adjacent plazas with Portland cement and to provide them with runways and spouts to carry off the excess water which in heavy rains falls upon them and endangers their masonry. It was necessary, also, to treat exposed neighboring walls with the same material. This work was expensive, because the cement had to be brought from a great distance; but there was no other way of protecting the kivas outside the walls at the southern end of the ruin from heavy rains except roofing the entire end.

Kiva G is 12 feet in diameter. It has two ceremonial openings in the floor.

In Kiva H the ventilator is built up on the outside on one corner; it has a turn at right angles where the lateral passage joins the vertical. Unlike any other kiva in Cliff Palace, this chamber is connected with a small room by a doorway. This room, part of whose roof is still intact, probably served as a receptacle for ceremonial paraphernalia.

Kiva I, situated on the lowest terrace in front of the middle of the village, was completely buried under débris thrown through a break in the wall of the ruin, made for that purpose. Owing to the fact that it had been so long under ground, the stones in its walls were very soft and some of them had become sand. The whole front of this kiva was destroyed, but on the walls that remained red decorations are clearly visible, especially on the inner surfaces of the niches found in the north side. In a covered vase set in the wall of this room, at the level of the former floor, were found several dried lizards.

Kiva J, measuring 14 feet in diameter, is one of the large ceremonial rooms. It is situated at the level of the cave floor and is surrounded by well-preserved rooms with high walls. Its banquettes number six, one of which is relatively very large.

Kiva K is one of the smallest ceremonial rooms in Cliff Palace. It was excavated practically out of rock, being enlarged by hewing out fallen fragments of the cliff. On its blackened walls are found indistinct scratches or outlines of animals or of human heads, which when interpreted may add a new chapter to our knowledge of the old life of the Mesa Verde canyons. These random inscriptions were made by some old priest, either to wile away the tedious vigils between ceremonies, or they may have some connection with particular rites once performed in this kiva. The diameter of kiva K is 9 feet; the chamber contains only five roof supports or pedestals. In the blackened walls are inserted eyelets of unknown uses, made of osiers. The deflector of this kiva consists of upright sticks interlaced with small willow twigs, the whole being plastered over with adobe cement—a unique way of making this part.

Kiva L is round in form and measures 12 feet in diameter. This room was in bad condition, especially on the west side where a breach had been made in order to dispose of the débris that had been dumped into it from back rooms. So far destroyed was this kiva that it was impossible to determine the floor level. The large break in the west wall, whose foundations extend to the depth of the kiva below, was repaired. The chamber was excavated to what was supposed to be the floor level and numerous weak places in its walls were strengthened.

All kivas of the first type, except kiva M, have roof pedestals, but in this room they are wanting. The form of its deep banquette leaves no doubt that the kiva should be referred to the first type, with which it is structurally related. Since its pedestals are missing, the method of roofing kiva M is unknown. Much work had to be done in repairing this room. The whole south side had fallen, and a wall of a neighboring room, which formerly depended on it for support, had tottered over this side. To save this wall it was necessary to erect a buttress extending under its foundations from the floor of the kiva.

Kiva N is finely made, almost filling the space at the north end of the chief plaza of Cliff Palace.

The walls of O, a ceremonial room of the second type, on the west side, are massive, while those on the north form the sides of the narrow court which is the main entrance to the pueblo.

The inclosure P is almost completely filled by the subterranean room, kiva P, whose floor rests on cedar logs, the ends of which project through the west wall just above the main passageway into Cliff Palace. It is evident that the foundation at this place was far from level and that these logs had been laid from a wall deeper in the cave to one in front of it in order to form a level surface on which to construct the kiva floor.

The best masonry in Cliff Palace, as elsewhere mentioned, is in the Speaker Chief's Quarter, and the two kivas which belong to it show fine specimens. Kiva Q belongs to the first type; R to the second (those without roof supports).

The whole west wall of kiva Q, containing the ventilator, is broken down, but the fireplace and the deflector remain, showing that it was like other kivas in Spruce Tree House and Cliff Palace. There may have been eight roof supports in this kiva instead of the usual number six. The masonry of walls, banquettes, and roof supports is exceptionally good. Not only were the component rocks dressed into shape, but there is evidence that, after having been laid, their surfaces were smoothed by rubbing before being plastered. Although the floor is well preserved, the ceremonial floor opening was not found; a broken place slightly to one side of the center may indicate the position of this important feature.

The ceremonial room, kiva S, is situated on a lower terrace than that last mentioned, partially beneath the great rock upon which the foundations of the Speaker Chief's House rest. Considerable repair work was required to put it in good condition, the chamber being wholly buried under fallen rocks and more or less demolished.

On excavation the entire south side of the small kiva T was found to have been destroyed, but the wall that remained shows fine masonry.

Kiva U, situated at a higher level than the last two named, is one of the largest in the whole ruin. Although one of the most badly damaged, it was put in good repair, and, while somewhat exposed to southeastern storms, may be preserved for many years.

The floor of kiva V presents the most extensive example of rock excavation in Cliff Palace. In this room the solid rock, which is hard and compact, had been cut down on the northern side by the ancient builders to a level 2 feet below its former surface, the excavation embracing about two-thirds of the area of the room. A ceremonial opening was drilled into the rock to the depth of an additional foot and lined with burnt clay. This kiva possesses another unique feature. Below the floor is a subterranean passageway barely large enough to admit a man's body, extending from the bottom of the firehole to the outer wall. This passage, which lies below the ventilator, has a lateral branch, also under the floor of the room, opening into the chamber through a manhole. The object of these subterranean passages is unknown,^a but they are probably ceremonial.

Kiva W is situated some distance west of the western end of Cliff Palace and is not accompanied by secular rooms. The first impression would be that of a rectangular room above a circular kiva, but W is evidently a kiva of the second type, the imposing wall rising high above it being similar to those always found with rooms of this type.

^a This passage should not be confounded with the ventilator, which is present here as in other ceremonial chambers of the same type.

KIVAS OF SECOND TYPE.

There are two, possibly three, ceremonial rooms that show no signs of roof supports or pedestals, no evidences of fireplaces, deflectors, or ventilators. It would appear that these rooms were used for the same purpose as kivas of the first type.^a They have banquettes on the side wall, quite wide at each end and generally a lateral passageway at the floor level.

The existence of two types of ceremonial rooms in Cliff Palace may indicate a division of the ritual into two distinct parts performed by the summer and the winter people, respectively, a specialization still perpetuated among some modern pueblos. The best example of the second type is kiva R, situated in the Old Quarter of the ruin in the neighborhood of the Speaker Chief's House. No signs of pedestals are to be found, but broad banquettes occupy the northern and southern ends, connected on the other sides by a narrow shelf. In the side walls below the banquettes are several recesses or cubby holes, and there is a lateral entrance on the floor level in the southern side, which sends off side branches under the banquette, but no indication was discovered of a vertically placed ventilator.

The walls above this kiva were built high, as if to prevent observation by outsiders; there was probably no roof.^b

SECULAR ROOMS.

Secular rooms in Cliff Palace may be classified as follows: (1) Living rooms; (2) storage rooms; (3) mill rooms; (4) granaries; (5) dark rooms of unknown use; (6) towers, round and square; (7) round rooms not towers. The highest rooms have four stories; there are several of three stories, many of two, but the majority have only one. Walls projecting at right angles to the foundations in front of the ruin on a level below the cave floor indicate that in this part Cliff Palace was terraced, consisting of several-storied houses and terraces at different levels. There is little uniformity in size, shape, or character of the walls of secular rooms. In rare instances they extend to the roof of the cave, a feature sometimes shown by markings or fragments of masonry on the rock surface.

LIVING ROOMS.

Several rooms show such marked evidences that they were inhabited and used as sleeping places that they are called living rooms. One or two of these have each a banquette extending across one side and several have fireplaces in the floor in one corner. The inner walls of these rooms are generally smoothly plastered, sometimes painted. They contain small niches, and in one case pegs on the walls on which blankets or kilts could be hung. These chambers are supposed to have been the sleeping rooms for women and children, and although not living rooms in one sense, they are the nearest approach to them

^aA similar room in Spruce Tree House was called, in my report on Spruce Tree House, a "warrior room," without sufficient reason.

^bNordenskiöld's comments on this chamber as a connecting link between circular and square kivas are not convincing. In origin square kivas were independent of circular kivas and the indications are that in some cases the former had lateral openings or doorways.

in Cliff Palace. Much of the daily work—pottery making, cooking, etc.—was done on house tops or in open places adjoining the living rooms.

MILL ROOMS.

Several special rooms set apart for mills in which corn was ground were discovered in different quarters of Cliff Palace. These differed from some other rooms only in being smaller. Almost the whole space was occupied by rude stone mills of characteristic forms. These consist of boxes made of slabs of rock set upright, in each of which was placed an inclined stone, the mealstone (*metate*). In front of this, at the bottom of the mill, is a receptacle into which the meal fell after it had been ground by hand by means of a slab of stone called the *mano*. The women or girls who ground the corn knelt on the side of the mill at the top of the metate and rubbed the *mano* over the metate (mealstone) until the corn between was ground. In one of these mill rooms there were two and in another four of these mills set in a row side by side. The surfaces of the metates in this series are graded in roughness, so as to grind the meal finer and finer as it was passed from one to another. The mills were so well preserved that even the fragments of pottery in the angles of the receptacles in which the meal collected after grinding were still in place, and the upright stones on which the girls braced their feet had not been moved. The brushes with which the meal was brushed into baskets after grinding had been left in the mills and were still in good condition.

STORAGE ROOMS.

The smaller rooms and the back chambers, many of them darkened by their position in the rear of other rooms, were probably used for storage of corn. These diminutive rooms, many having the form of cists, are carefully built; many are erected on flat rocks, but have doorways. Every crevice and hole in the corners of these granaries was carefully stopped with clay, no doubt to prevent rats or squirrels from entering. The impression prevalent in some places that the inhabitants of Cliff Palace and of other cliff dwellings were of diminutive size is supported by the erroneous belief that these rooms were used as dwellings. If we had visited Cliff Palace when inhabited we should probably have found in these storage rooms corn on the cobs stacked in piles, from which the daily consumption was drawn. The living rooms were often small, but they were unencumbered with furniture or even with food in great quantities, and were ample for people of small stature. The cliff dwellers were not pigmies.

ROUND TOWER AND ROUND ROOMS.

The most prominent and picturesque building in Cliff Palace is the Round Tower, situated about midway in its length on a high angular rock, which raises it in full view above all the terraces. This tower is not the only round room in the ruin, for there are foundations and walls of two other circular rooms not far from the Speaker Chief's House at the north end of the "street." These are inconspicuous because hidden far back in the cave behind more lofty walls.

The Round Tower, formerly two stories high, was entered from the north side. It was little damaged during the centuries elapsing since Cliff Palace was abandoned and needed little repair. The walls show most beautiful examples of aboriginal masonry, perhaps the finest north of Mexico. Almost perfectly symmetrical in form, the stones that compose the walls are skillfully dressed, fitted to one another, and carefully laid. This tower was evidently ceremonial in function, or it may have served as an observatory, for which purpose it is well situated. The presence of small peepholes through which one can look far down the canyon supports the theory that the tower was a lookout, to which theory its resemblance to other towers in the Mesa Verde region likewise contributes.

SQUARE TOWER.

This building also is one of the picturesque and prominent structures at the southern end of Cliff Palace. It is four stories high, the walls reaching from the floor to the roof of the cave. The walls of the third story are painted white and red with decorative symbols, as triangles, zigzag lines, and parallel lines, perhaps representing feathers. When work began on this tower the whole northwestern angle had fallen and the wall of the "painted room" was tottering and in great danger of falling. The repair of this section was dangerous as well as difficult, one whole corner having to be rebuilt from the bottom of an adjacent kiva. This undertaking was not the least hazardous work done on Cliff Palace last summer.

LEDGE ROOMS.

A projecting ledge in the cave roof, about 20 feet above the top of the highest wall, served as the foundation of a marginal wall and accompanying rooms. This wall is pierced by doorways, windows, and peepholes. One of the doorways, probably an entrance situated near the northern end, was apparently on the former level of the roof of one of the round rooms of the Old Quarter of the pueblo. The outer surface of the marginal wall is decorated with a white terraced figure, suggesting the white figure overlooking plaza C in Spruce Tree House. The ledge rooms, which occur in several Mesa Verde ruins, were probably used for storage or for protection.

CONSTRUCTION OF WALLS.

The character of the masonry of Cliff Palace varies greatly in different quarters, being fine in certain rooms and poor in others. As a rule the walls are constructed of dressed stones mostly of small size, some smoothed by rubbing their faces after they were laid. Usually the corners were not bonded or tied and small rubble was used for foundations. In places, specially where a wall approaches the roof of the cave, the junction was made by means of flat slabs of stone set on edge.

This variation in character of workmanship may be traced to the varying skill of different clans, for while some clans had skillful stone masons, the artisans of other clans were poor or indifferent. The erection of buildings was largely a clan affair, there being no special group of workmen who performed this duty for the whole

village. On account of this fact it is often possible to tell what walls were constructed by the same clan. For instance, all the rooms near the Speaker Chief's House share fine masonry with it. The foundations of many high walls were very poor, indicating that there was no intention when they were laid of constructing such walls upon them. Here thin slabs were set on edge or foundations were placed on ashes or sand. Foundations were laid also on slanting surfaces of fallen rock inclined at considerable angles; necessarily in course of time such constructions slid down the incline and the wall was thus destroyed. This was not always the case, however, for in some instances steps were cut in the incline to secure a good base. Often logs were laid as foundations, either to level a floor or to bridge two rocks, as necessitated by the site of the building.

The width of walls varies greatly. None are perfectly plumb or straight and no rooms are perfectly circular, square, or rectangular. The foundations are thicker in places than the upper part, many offsets being visible as low shelves or ledges. Large stones are more common in foundation than in upper walls. The adobe mortar is hard in several instances, more durable than the rocks themselves, many of which crumbled into sand as the accumulations of débris about them were removed. Many walls were plastered inside, others on their exterior surfaces; others were laid dry and afterwards pointed. The mortar in joints between stones in places was chinked with stones which appear on the outside in ornamental lines. Many prints of human fingers show that the plastering was put on with the hand, not with trowels.

Apparently the ancient builders found the construction of round rooms as easy as that of angular chambers, and cut stones in curved as readily as in plane surfaces. There were places where poorly-laid masonry evidently had been repaired by the ancients, as shown by the difference in color of the adobe mortar used. A number of rejected slabs which the builders had failed to cut where they wished showed their method of dressing building stones. A groove was pecked along the surface where fracture was desired and the fragments were afterwards broken off with stone hammers. Water was used to soften the stone. Battered edges of stone are common and projections from the walls not rare. Stones of different degrees of hardness were laid with one another. The largest stones observed in the walls could be readily handled by two persons without mechanical contrivances.^a

The stones used for thresholds, lintels, and jambs were smoothed by rubbing as well as hewn into shape. No indication was found that the Cliff Palace masons knew anything of the arch or the keystone. They did not use the supporting pillar or column, as at Spruce Tree House.

DOORS AND WINDOWS.

Two types of doorways, lateral and vertical, are represented in Cliff Palace. In the upper stories the T-shaped and the rectangular doorways are about equal in number, both occurring in such positions that it is not possible to say how they were entered from the ground or from the terrace far below them. Rarely does the threshold lie on

^a Stones were transported from quarries a short distance from the ruin.

a level with the floor, and commonly there is a projecting stone in the wall below it to facilitate entrance. Although doorways are mostly low and narrow, some are wide enough to admit two persons side by side.

In most instances both lintels and thresholds are made of dressed stone, and the latter in places project slightly beyond the wall. The door is a rectangular stone held in place by upright sticks and clay.

Small peepholes admit light or in some cases these served as outlooks from which to observe passers-by. One of the most interesting of these is situated in such a position that one can see everyone entering the street from the main plaza.

FLOORS AND ROOFS.

No roof in Cliff Palace was found intact, the beams of all having been torn from the walls, but the line of holes in the latter, indicating their former presence, show the method of insertion of rafters.

Most of the floors had been broken into for skeletons or other buried objects. Those of certain kivas are hard, evidently having been laboriously leveled by the builders with stone implements. As a rule, however, the floors were hardened adobe tramped or beaten down, in some cases laid on sticks.

FIREPLACES.

Fireplaces are common in all plazas, generally in angles of rooms, and indeed wherever opportunity offered. Most of them are rimmed with clay borders or with stone slabs set upright. Ashes are found in the majority of them and the adjacent walls are blackened by smoke.

COLLECTIONS.

Notwithstanding the fact that Cliff Palace had probably been dug over more than any other cliff dwelling on the Mesa Verde, a fairly good representative collection was obtained, which will be described in a report to the Secretary of the Smithsonian Institution. The unique specimens were deposited in the National Museum, but many duplicates, especially of large objects, were left *in situ*. Fragments and whole pieces of pottery secured show that there was not a great variety of form or color in the ceramic ware of Cliff Palace. The best specimens are coiled or indented ware. The smooth forms for the most part are white with black decoration or red with black lines. The ornamentation of the former consists of scrolls, crosses, or bird tracks, always in relief, that of the latter mainly geometrical figures.

A considerable number of stone axes, single or double edged, pitted mauls, hammers, and grinding stones were excavated. One of the axes still has its wooden handle attached. Bent or broken sticks and detached handles were not rare in refuse heaps.

Woven fabrics, as basketry, belts, cloth, and cords are numerous. A few sandals and fragments of a moccasin show the character of footwear used by the ancient inhabitants. Not the least important specimens are bone awls of different shapes, needles, skin scrapers, and tubes tied together, evidently ornamental in character.

The indications from the human bones collected are that the inhabitants of Cliff Palace were of small stature. They were peaceable, timid agriculturalists who passed their lives in the cultivation of small farms on the mesa top, which can still be traced by the clearings. Their scanty clothing consisted mainly of woven kilts made of yucca fiber and cotton, or coarse fabrics in which were woven feathers or strips of rabbit skin.

The work was apparently apportioned among the men and the women as among the Hopi. The men made kilts, blankets, and sashes and performed an almost endless round of rites and ceremonies. They were masons and in a measure hunters. The women owned the secular houses and were potters; they ground the corn and prepared the food. They assisted in building the houses and were the plasterers. They were also the burden bearers, bringing water from the water holes. All wore ornaments, some of polished lignite, bone, or rarely turquoise. The warriors had bows and arrows, stone hatchets, mauls, and other weapons. The ancient inhabitants were ignorant of metal implements and of seashells. They had no domesticated animals except possibly the dog and the turkey or the eagle, the feathers of which birds were used for ceremonial purposes.

CONCLUSIONS.

The indications are that Cliff Palace, like other cliff dwellings of considerable size, was not constructed all at once or in one generation. It may be assumed that originally one or more clans settled in the Cliff Palace cave, and that subsequently other families or clans joined them, accepting building sites allotted by mutual agreement. The growth in population resulting from outside accessions and from natural increase within necessitated the building of new rooms to accommodate them. By intermarriage this population tended to homogeneity and buildings once separated were united. It follows that the present plan of Cliff Palace was not thought out in the beginning but is the result of a haphazard growth of clans more or less independent.

The desertion of Cliff Palace possibly followed the same course as its growth, as one clan after another sought new homes or more congenial neighbors. Finally the last remaining inhabitants abandoned Cliff Palace, or perhaps died out in their pueblo, and the place was deserted. The causes of the abandonment are conjectural, possibly more trivial than we may suspect. Failure of the water supply or of crops, the presence of contagious diseases, or internal dissensions ultimately may have led to the desertion of the place. It is possible also that hostiles raided the cornfields at harvest time and forced the inhabitants to seek other homes. Quarrels about water, desire for union with clans of neighboring or distant villages, fear that the gods were displeased, rivalry of clans, petty altercations due to gossip—one or all of these considerations, according to Hopi legends, may have culminated in the abandonment by the natives of pueblos in which their ancestors formerly lived.

The aimless desire for new habitations, the drifting of clans to new and, in their eyes, better localities, was a cause that likewise must be considered. It must be borne in mind that there was little cohe-

sion among the cliff-house clans. There were continual bickering and many altercations in which the inhabitants took one side or another, which ultimately led to the abandonment of the place.^a

My investigations at Cliff Palace add little to our knowledge concerning the century in which the earliest clan began its construction or the date when this ancient cliff dwelling was deserted. Possibly it was inhabited five hundred years ago, but there is no proof that it was not populous at an earlier or a later date. There is some ground for the belief that the site was occupied before that of its nearest large neighbors, Spruce Tree House and Balcony House, and it is probable that the first houses were built in what has been designated the "Old Quarter."

The most ancient arrivals apparently lived after much the same manner as the more modern. Cliff-house culture was not evolved in this canyon, although here the building instinct reached its maximum development. Every addition to our knowledge favors the supposition that this culture has been practically perpetuated, with many modifications, to the present day in that of modern pueblos, but this statement does not mean, of course, that new blood has not been introduced and some cultural differences have not been lost. The people of Cliff Palace were undoubtedly better masons than the cliff dwellers of northern Arizona or of any of the modern Hopi pueblos, as Walpi or Oraibi, but they were not as good potters as the Sikyatki women, the direct ancestors of some of the Hopi clans. Apparently people of the same culture as that of Cliff Palace inhabited the pueblo now in ruins on the point west of the ruin and others scattered over the mesa. The ruins of these pueblos can hardly be distinguished from ruins of ancient Hopi villages. Discussion of this and other questions of speculative interest finds a natural place in my report to the secretary of the Smithsonian Institution.

In conclusion, permit me to express my appreciation of your action in giving me the opportunity to work out the problem of the excavation and preservation of Cliff Palace. It is believed that this great structure is now accessible to those who would study one of the greatest known examples within our borders of the work of the American aborigines.

I have the honor to be, very respectfully, yours,

J. WALTER FEWKES,

*Ethnologist, Bureau of American Ethnology,
Smithsonian Institution.*

THE SECRETARY OF THE INTERIOR.

^a A sociological study of the causes of the dismemberment of the Hopi pueblo, Oraibi, might shed much light on the desertion of ancient habitations where the ancestors of allied people once lived.

