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UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

OREGON CAVES NATIONAL MONUMENT

PROVISIONAL MANUAL OF INFORMATION

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Crater Lake National Park
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I. STATEMENT FROM THE SUPERINTENDENT

Everyone who works at Oregon Caves National Monument owes his presence there to the public, for the area was set aside to "promote the public interests". This end is being fulfilled, whether the employee is engaged in protective ranger work, conducting parties through the caves, serving in the Chateau, or doing maintenance - whether he is paid by the Federal Government or the Oregon Caves Resort.

In the interest of knowing about the area in order to serve better and of dispensing accurate information to the public, with the Cave guides particularly in mind, this tentative manual has been prepared for the information and guidance of all concerned.


John B. Wosky
Superintendent

II. INTRODUCTION

This manual has been prepared to give a broader understanding of Oregon Caves National Monument, its history, purpose, place in the national scene, administration and natural features. It is believed that this will enable all concerned with the operation of the Monument, whatever their affiliation, to do a better job through being more fully informed.

In the preparation of the material presented, the rangers and guides have been especially kept in mind, because protection hinges on understanding and a cave trip can be no better than the interpretation furnished by the guide. However, every person working at the monument is basically there for one purpose - to serve the public.

Only the most salient features of the story of Oregon Caves appear here, mainly because of the need to get the manual into use in the shortest time, partly because there is much we do not yet know. The need for such a manual has become so manifest that we have done what we could with the time and facilities available.

It will be recalled that this is a provisional manual and should be considered quite tentative. The next edition, for which work will have begun by the time this is in your hands, will contain additional material. It may also be changed in some respects due to more extensive information having been uncovered.

The story is not static. There can be no final word. It is our duty to keep abreast of changes brought to light by fuller knowledge. Suggestions and questions are very much in order and should be submitted in writing to Ranger Turner, who will pass them on for consideration by the compiler of the next edition.

Thanks are due members of the staffs of the Department of Geography and Geology, University of Oregon; Departments of Geography, Geology and Natural Resources, Oregon State College, for encouragement, advice and suggestions; and to the State Library, together with that at Oregon State College, for valuable aid with references and the loan of books. Several persons with experience at Oregon Caves as ranger or guide, or both, have been most helpful, as has the management of the Oregon Caves Resort. However, none of these persons or institutions is in any way responsible for any errors in the material presented here.



Harry C. Parker
Park Naturalist
Crater Lake National Park

June 1, 1953

III. HISTORY AND POLICY

The Oregon Caves have been known since one August day in 1874 when Elijah Davidson, then living in the Williams Valley, went hunting. The story goes that after wounding a bear, he followed it to an opening in the rocks. Davidson hastily gathered a few splinters of pitch for a torch, and, with an old muzzle-loading rifle, followed the bear. It was then that he made his remarkable discovery of the Caves. "Old Dick" Rowley was a close personal friend of Davidson, lived with him as a neighbor in the Williams Valley for years, and knows this story well.

Soon after this, the Caves became an attraction for the adventurous, and portions of them were explored and opened. Frank M. Nickerson, of Kerby, found four different levels in 1877 and opened a number of galleries which had been blocked by formations.

In 1884 two brothers attempted to acquire title to the Caves by "squatting" at the lower entrance. They expended funds and labor in enlarging passages and expected eventually to gain title to this natural wonder and reap a harvest. The region, however, was then too remote, the nearest railroad being 200 miles away, and the "squatters claim" was abandoned.

Later another attempt was made to open up and develop the Caves by a party of California promoters who dropped the plan after learning that the Caves were located in Oregon and not in California.

In April, 1903, a large region in that part of Oregon and California was withdrawn from entry and named the Siskiyou National Forest.

In 1907, two years before the establishment of Oregon Caves National Monument, the Caves were visited by Joaquin Miller (the Poet of the Sierra), C. B. Watson and Jefferson Meyers. They were deeply impressed and Miller did much to attract public attention to the area by his many references to the Caves as "The Marble Halls of Oregon".

President Taft, July 12, 1909, proclaimed the Oregon Caves, including a tract of 480 acres, approximately, as a National Monument, stating, "the public interests will be promoted by reserving these caves . . ." Since there was no National Park Service at the time, the Monument was administered by the U. S. Forest Service, which administration continued until 1934, when it was turned over to the National Park Service and administration delegated to the Superintendent of Crater Lake National Park.

Dick Rowley made his first trip through the Caves in 1908 with Elijah Davidson. He was intensely interested and made several trips later by himself. The place could only be reached by trail at that time.

In 1910, he accepted the job as ranger in charge for the Forest Service, acting as fire guard, forest ranger and guide until 1922. During this period he did all the development work that was done in the Caves. With the formation of the present concessioner company in 1922, Dick was retained as chief guide until his retirement a few years ago. He still comes to the Caves on special occasions and helps new guides get oriented at the beginning of each season, though now past 80 years old.

In 1922 the Forest Service granted a concession to the Oregon Caves Resort, which built the old Chalet and took over the guide service in 1923. In 1934 the Chateau was opened to the public.

In the years following 1934, the National Park Service made a number of physical improvements to the facilities in and around the Caves. Oregon Caves is one of ~~17~~¹⁷³ National Parks, Monuments and allied areas comprising a system unique in the annals of civilization - wherein a Federal Government set aside priceless parts of our national heritage to be conserved for all the people for all time (See Appendix D. *Page 23*)

That system got its start more than 75 years ago when a group of average Americans voluntarily relinquished their legal and moral rights to profit through private ownership of what is now Yellowstone National Park, deciding instead to work for the reservation of the area as a Park for all the people.

The law requires that National Parks and Monuments be administered to provide for public enjoyment "in such manner and by such means as will leave them unimpaired for the enjoyment of future generations". They are thus, in a sense, great outdoor museums, and that is why it is against the law to molest wild-life, plant life, cave formations and similar natural features that they contain.

It is the responsibility of the Secretary of the Interior, the Director of the National Park Service and the Administration Offices of the various areas to preserve, develop and regulate the use of these areas. Mr. John B. Wosky is the Superintendent of Oregon Caves National Monument, and his representative, Ranger Paul D. Turner, is in immediate charge of the area.

With approximately 85,000 visitors coming to the Monument each year, certain services and accommodations are needed for public convenience. The Oregon Caves Resort operates under a contract with the Secretary of the Interior to serve the needs of these people for a hotel, cabins, studio, food and facilities within the Caves. Mr. Richard L. Sabin is the Manager of the company.

In addition, the company is authorized to provide competent guides for conducting visitors through the caverns within the Monument. In this respect the contract is unique, in that the concessioner is the only private organization operating in the National Park System, which is authorized to provide cavern guide service. This is performed by uniformed personnel of the National Park Service in other National Parks and Monuments having caves open to the public. The informational and guide service performed by National Park Service employees is internationally known for its excellence and the high quality of the information given out.

It should be apparent, then, that the guides at Oregon Caves have a standard to measure up to. They work in one of the units of a system which has set a pattern for nature protection and interpretation eventually followed by other countries throughout the world. It is imperative that dignity be maintained and accurate information be given out. If they and all other employees grasp the true significance of the National Park idea, their work will mean far more to them than just a job. They will be proud to share in the responsibility of assisting the public to appreciate the natural values in Oregon Caves and contributing to the preservation of the Monument so as to leave it unimpaired for others to enjoy.

IV. GEOLOGIC STORY IN BRIEF

The Mountains.

In the heart of the Siskiyou Mountains is Mt. Elijah (5,225 ft.), where we find the Oregon Caves (Entrance 4,000 ft.) The Siskiyou Mountains lie between the Rogue and Klamath Rivers and extend west of the Cascades to the Pacific.

Over a period of time, possibly between 180 and 150 million years ago, or in the Triassic Period, a shallow arm of the sea covered this area, where there were accumulated masses of volcanic rock. These contained smaller bodies of limestone, sandstone, shales and similar rocks derived from sediments that had been deposited on the sea bottom.

Later came a period of mountain making, involving folding and uplifting of the rocks, due to stresses in the earth's crust and other forces. As a result of these processes, the limestone was changed by intense pressure and heat into marble, as exemplified by the narrow belt, tilted up on edge, running through Mt. Elijah.

At the same time, the marble was profoundly fractured and it is quite likely that this continued until a later period. Some of the more prominent fractures revealed in Oregon Caves are vertical, but in addition there are many minor cross fractures of varying angles.

For a long period following this, the mountains were slowly worn away by erosion until this was an area of low relief, near sea level. At this stage, the marble could have been well saturated with ground water.

The area was then uplifted in various stages, giving us the Siskiyou Mountains of today. Indications are that this was mainly accomplished before the Ice Age, and that glaciers were formed locally in the higher mountains during the latter period.

The Caves

The study of caves is often given the name speleology and those professionally competent in the subject are known as speleologists. In recent years, devotees of cave exploration and study, as an avocation, have called themselves "spelunkers".

Caves are in general classified according to the rock in which they developed. They may be formed in limestone, sandstone, or igneous rocks, such as volcanics. Of these, limestone caves are the most important and most frequently attain great size.

Oregon Caves represent a type found in limestone formations throughout the world, but are of special interest in that they have been formed in tilted strata of marble, which is limestone altered to its crystalline form. There can be little question that the cavities were produced by the action of underground water dissolving the marble and carrying it away.

This solution was initiated along cracks and joints until pockets were finally formed and these in turn enlarged to what are now

galleries or rooms. It would seem that the caverns at some time were completely or partly filled with standing water and the level of this water varied with that of the adjacent surface streams. As the streams deepened their valleys, this level would have been lowered, through drainage, allowing solution to take place at progressively lower levels within the marble. As the level of water dropped, galleries above were emptied.

These appear to have been only slightly altered by streams flowing through them afterward. What stream work does appear has not greatly modified the spongelike cave pattern produced by solution. Further, this general pattern of several-storied, honeycomb chambers does not conform to the branchwork that might be produced by free-running subterranean streams.

This is but a tentative account and the whole story needs detailed study by a competent geologist, in the light of modern knowledge about cave formation in limestone. Some of the points mentioned here will be referred to below, under "Progressive Cave Trip Comments" (Section V *Page 9*).

The marble is said to be 93% calcium carbonate (CaCO_3), which is soluble in plain water. However, if the water picks up carbon dioxide, the carbonic acid solution thus produced makes the calcium carbonate several times easier to dissolve. Rain water, as it percolates down through the soil, becomes charged with carbonic and other acids, derived from decaying vegetation and other sources. It finds its way along small fracture planes in the marble, dissolving out the calcium carbonate.

The carbonate dissolved thus in one place is redeposited wherever the water is subjected to evaporation. This occurred in the various cavities as the underground water in them was drained away and they became air filled. Particularly, where the water dripped slowly from the ceiling of a cavern, each drop, as it clung to the rock, lost some of its water to the air, and the calcite which it carried was left as a deposit on the rock. Each successive drop added its increment to the previous one, and gradually an icicle-like stalactite was formed.

Where the drops of water fell to the floor and there evaporated, a pillar known as a stalagmite was made. In some places a stalactite and stalagmite eventually joined, forming a column that extends from floor to ceiling.

By alteration of the volume and path of the water, drapery-like blades and fluting were produced. On the sides, where water ran down the walls, are layered deposits, sometimes known as travertine or flowstone. There are many forms taken by these deposits in Oregon Caves. A practical term to use for them collectively is dripstone. The process of deposition is still going on at varying rates, so that we can ascribe no time for deposition that will apply equally to all the formations.

It should be borne in mind that marble is merely altered limestone and that both of these, together with dripstone, are kinds of a mineral known as calcite, which has the chemical composition, CaCO_3 . It is also found in the Caves as free calcite crystals. However, since there are differences between all these in the external form that they take, it is inaccurate to say that they are all the same and use the terms interchangeably. The term "lime" is best abandoned in the cave story, for, while it is thus used freely by mining men, in the minds of visitors "lime" means the commercial products known by that name, which have different chemical compositions and different properties.

This geologic account should have indicated that a great many variable factors enter into the making of caves in limestone, and, therefore, specific comparisons cannot always be made between caves. This should be a guide in answering questions from visitors such as "In Blank Cave they told us the stalactites grew one cubic inch a century, but you say these don't all grow at the same rate?" or, "Why aren't Oregon Caves as large as Carlsbad Caverns"?

In the latter instance, the limestone is softer and older; is not severely tilted and marbleized; contains some masses of salt or gypsum, which dissolve much more easily than does calcite; and has a system of joints which would make it easier for the solution formation of chambers.

The general processes of solution cave formation, however, are becoming better understood and made more widely applicable as more and more caves are studied critically by geologists. That is why we can infer certain things about the history of Oregon Caves, because of certain recognizable signs that match those found in other caves where the story is more completely told in the rocks.

V. PROGRESSIVE CAVE TRIP COMMENTS

FOREWORD

A cave trip can be no better than the interpretation furnished by the guide, which begins with his neat appearance and good manners, for acceptance of his story hinges upon the impression that he makes.

The people in your party have paid to be shown the features of the cave and learn the story told by these. This does not mean that your tour has to be a "nature talk", but folks are entitled to know the salient facts about the natural history of the caves. It is no crime to say "I don't know" to a question that you have had no way of obtaining the answer for, but it is a betrayal of trust to bluff answers or deliberately misinform your patrons and guests. They can be made to understand that there is much that we don't know yet, without the guide "losing face". Nor does this mean that you should give a solema "spiel" throughout the trip, with no pleasant touches. But, when facts are given as facts, they should be accurate. Horseplay, flippancy and impertinence will not be tolerated. They are an insult to the intelligence of your paying guests.

The average person visiting a cave for the first time anticipates mystery, adventure and even romance. Such an attitude has led, at times, to exaggeration of the history and physical characteristics of the caves in "tall tales" by the guides. Such exploitation of the visitors' attitude is still a practice in many privately owned caves, but is definitely frowned upon by the National Park Service to which most of the complaints that may come will in all probability be addressed. The real story of Oregon Caves is romantic and impressive enough to satisfy the visitor's desire for spectacular information if the guide does a good job.

Use judgement in giving your story after sizing up the party. If you have a 300 pounder, probably no comment should be made at the "Fat Man's Squeeze", or if there are foreigners or colored persons, no co-called humorous allusions should be made that might prove offensive to them.

Make sure that the persons in the rear of your group are enjoying their trip and not having to rush along at a headlong clip. Above all, don't place a sweet young lady immediately behind you and devote all your efforts to making an impression on her. Remember the rest of the group also paid to see the caves and hear the interpretive story.

The study and use of the comments given below are obligatory. However, the wording of them may be changed to conform to the speaking style of the individual guide, who should vary his delivery on different trips for the sake of his own interest and to prevent sounding like a carnival "barker" to each party.

In addition to the cave trip comments, every guide will study thoroughly the geologic story (Section IV, pages 6, 7 & 8) which is necessary to understand the comments and be able to give intelligent answers to many questions. Again, don't bluff or give half-baked explanations.

Finally, never forget the safety of your party. You, individually, the Government and the Oregon Caves Resort, can be held liable for accidents and injuries that occur due to your improper acts and negligence.

You will be indoctrinated by your supervisor as to the mechanics of organizing and conducting your parties, and they will be touched upon very little here.

(Material in parentheses is for your information to be used as circumstances may warrant.)

DETAILED COMMENTS

These are based on verbatim transcriptions of talks given by "Old Dick" Rowley, who successfully guided thousands of visitors through the caves for nearly half a century.

At the Entrance

(Don't give the impression of being rushed. The way your trip succeeds will depend a great deal on how you set the mood at the beginning. This speech is important, or you wouldn't have to make it. It is in your best interests. If you spell it off and dash into the cave, many of the group will not have taken in what you said and the effort will have been wasted. The entrance speech can be effectively given in a minute and a half if the speaker pauses at the proper places).

Good Morning (Afternoon, Evening). My name is _____. May I have your tickets, please. I should like to remind you that Oregon Caves is a National Monument, part of the National Park System, and that, by Act of Congress, it is unlawful to break off any of the formations, mark or mar the caves in any way or bring out anything with you. I am sure that we will have a pleasant trip, but I want to remind you to be very careful, because neither the National Park Service nor the Oregon Caves Resort wants you to be involved in any accidents to mar your visit. There is no reason for alarm about this, for, since 1923, we have guided hundreds of thousands of people through the caves with no serious accidents.

If this gentleman will please take this flashlight - I don't think we'll need it, but he can be our tail light. Please stay in single file between me and the tail light. Now, as we go in, please watch out and don't bump your heads. (Note: It is of questionable legal value to make the bare statement, "The National Park Service and the Oregon Caves Resort cannot be responsible for any accidents in the caves.")

Watson's Grotto

If you will notice, right up over your head, that big crevice up there. The ground water found its way through such crevices and dissolved away the marble, which is what formed the caves. (If you look up to the right, there is a cut with sponge-like structure and side pockets which indicate that Cave Creek is now flowing along a previously made pattern, which was not entirely stream cut.

Note: This is not a mountain entirely made of marble).

Petrified Gardens

Turning around and looking back in that little room, we find the Petrified Gardens. You notice the formations - they resemble cabbage and different vegetables. These little fellows growing on the ceiling are stalactites. Down on the floor here they are stalagmites. The stalactites and stalagmites are built up from the same material and from the same cause. This marble that the caves are in is 93% calcium carbonate and these little drops that you see on the ends of the stalactites are water from the ground above, which has found its way down through this marble and carrying the calcium carbonate in solution. When it reaches the ceiling, the water is reduced by evaporation, leaving a bit of calcium deposit on the ceiling. Each drop adds its bit and so the stalactite grows. Where drops of water fall to the floor and evaporate there, a stalagmite is built up. In some places the stalactites and stalagmites join, forming a column. Those drapery-like blades are formed by the water coming in a slanting direction and probably in greater volume.

Free Root

The roots, that you see here ^{are} ~~en~~ the roots of a Douglas Fir that is growing forty feet above on the surface. They did not penetrate the solid marble to get here. They found little crevices previously filled with clay and followed them down, then extended for some 25 feet along the passageway. The tree is living forty feet above us.

Bear Pit

In 1874 Elijah Davidson wounded a bear which sought refuge in the Caves. Davidson, being handicapped for light, used a few splinters of pitch (wood) to make a torch, came in and killed his bear in this pit. This was the discovery of the Caves. (Various pioneers explored it and opened up the passageways that were blocked by formations in the early days, until, in 1909, the Caves and surrounding area to the extent of 480 acres were placed under Government protection when President William Howard Taft proclaimed the place to be a National Monument.)

River Styx

As soon as this little stream reaches the surface outside, it is called Cave Creek, but in here we give it the fanciful name of the River Styx. You may recall that, in Greek Mythology,

the Styx was the stream that Sharon used to ferry the lost souls across to Hades, from which they never returned. Well we bring you across the bridge here and are usually successful in getting 90% of the folks back again, the people who come here are so good. (Cave Creek originates in the Caves; visitors follow it along the road outside).

Devil's Cradle

Right there above you, you will notice how the water has carved out beneath the great shelf of marble and also how it has carved out from above it and left a projection out on the edge. That is the Devil's Cradle. It's smoothness and rounded inside indicates that possibly it is what is left of the channel cut by a stream coarse that once wandered back and forth at that level. (If the direction of curve is reconstructed, it would appear that this stream, and probably all streams through the caves, were secondary to the formation of the caves - the general pattern of the caves does not match the kind of pattern that streams would make).

Passageway of the Whale

Notice the narrow crevice lengthwise of the room overhead. It is just such crevices as this that furnished the water to carve out our passageways. This little crevice would furnish only a certain amount, but many other crevices throughout the marble furnished quantities of water and in the course of a long time this great passageway was carved out, perhaps with the assistance of underground streams. (It is possible that geologists may find that the upper part of this passageway was cut out by a stream after the main caves were dissolved out and filled with clay, then a secondary stream came along washing out the top of the clay and forming the curved part, or that the upper part represents upward solution by water in a cavity partially filled with clay. No competent man has passed final opinion). Many folks find that this resembles the interior of a whale, and so it is known as the Whale Passageway.

Tunnel

Now we go through a man-made tunnel, constructed so as to save 80 feet of ladder climbing. It was constructed by the Civilian Conservation Corps before the war.

Adams Tomb

Before the tunnel was made, we could not show you this room. Right here, looking above your head, you will see the reflection of a light and a handrail. We will make a complete loop on to a natural bridge and when we are up there we can look right down where we are standing. (The pockets and vertical grooves seen in this room indicate that it was formed by groundwater and not by a stream. Likewise, the natural bridge and the several levels, forming a honeycomb-like cross section are not the pattern that would normally be made by stream action. The latter would be more smoothly joined, and if it cut all these levels, probably could not leave a natural bridge). On the wall in front of us is one of the

lowest types of life. This is called algae (pronounced "algy") and was not found anywhere in the Caves until the lights were installed. For a time, it was believed that the heat caused the growth, but since certain colored lights do not show this growth in the Caves, it is believed that the ultra-violet or other rays necessary for plant growth brought it about.

Now we will climb above. Looking down where we were just a few minutes ago, we have climbed 18 feet. We have been climbing ever since we started, now having gained 80 feet.

Wigwam

Notice over there, on the wall, a couple of eyes, a nose and a mouth. In order to call this the Wigwam, we have to call that "Chief Rain-in-the face". See the outline of the camel over on the wall? That outline is caused by the natural cracks and jointing in the rock. Since the marble of this cave once lay almost horizontal as limestone and was later folded and thrust up until it was changed to marble, by heat and pressure, and the main joints were almost vertical, many cracks and crevices were made in the marble, which is just a crystalline form of limestone (Don't say "lime").

Paul Bunyan

(It is a question whether many visitors know what is meant when you say that "Babe is down on the Redwood Highway". Comments from some visitors indicate that this "corny" joke is better left out. We all don't have "Old Dick's" personality, which made the joke go over).

We have thirty feet to climb to the upper caves.

Beehive

Right up on the wall, there, that looks like a big hornet nest with a little hole for the insects to enter. It was for this reason that this room was named "The Beehive". We have here a good example of how flowstone, or cave deposits, can build up. Not all the calcium carbonate is formed into stalactites or stalagmites. Here there was a greater volume of water, probably with more of the carbonate in it.

Fat Man's Squeeze

Upper Entrance (110 feet above the entrance)

One of the two natural openings that lead into the caves. It was once used as an exit, but now we have a man-made tunnel that saves us from climbing back up here. (The old exit appears to be the remains of a sinkhole. Perhaps it once drained the upper caverns into Cave Creek, when its valley was up at this level, before the creek cut down to its present depth). We will not see daylight again for awhile (estimate the time), for there is lots more to see underground.

White House
Banana Room and Coral Gardens

Coral-like effect is due to calcite crystals thought to have been deposited by the air being saturated with mineral (Halactites?). On the left, on the way to the Jailhouse, is a water-worn curve, that may have been made by one of the secondary streams.

Young Stalagmite
Jailhouse

A solution cavity that was lined with flowstone, then the water circulation changed (?) so that columns were formed in front, making the "bars". An example here of plant growth induced by the light.

Niagara Falls

The resemblance of this formation to the falls enables people to name it before we get a chance to tell them about it. A typical example of flowstone, where quite a volume of calcium carbonate bearing water came in, making extensive deposits. Before the Caves were set aside as a National Monument, people came in here and wrote their names on the formations. Here we see one made in 1881. It is now covered by a deposit. See, you can't rub the writing off. It has been estimated that it is covered by about 100th of an inch of calcium carbonate. While that means that the deposit here is being built up, at the rate of about 100th of an inch every 50 or 60 years, we can't say that all the formations in the caves were built up at that same rate and thus estimate their age, because the dissolving strength of the water varies with the amount of carbonic acid, and how much rock it has traveled through to pick up the calcium to deposit when the water evaporates. (Deposition also depends upon how much water seeps through at a time and how much evaporating surface there is. It is impossible to correlate the age of the formations with the Ice Age and the glaciers did not carve out the caves, though meltwaters may have seeped down and formed secondary streams after the major pattern of the caves was set). Note the seeps coming through the joints in the rocks, showing how the waters of deposition get down to the caverns.

NEBU-CHAD-NEZZAR'S Throne Room (King's Throne Room)

Up in the end of the room where the light is shining, see King Nebuchadnezzar in the center? Also, there is the Hanging Garden of Babylon.

The Ballroom

An instance of where a rimstone of deposit was formed at the edge of a little pool and the water held behind it solidified. (Call it Fairy Dancehall and tell that they dance at midnight, if you like).

Neptune's Grotto

You remember that Neptune was King of the Seas. There is his daughter taking a bath under the fountain. According to mythology,

his little daughter was named Lotus, for the flower. There is little Lotus. (The sponge-like nature of the cave pattern is well demonstrated here. It appears that the solution was not performed by streams).

Now we are going down a couple of ladders/^{here} for about 25 feet. We think the safest way to go down steep ladders is to face the ladder, so we can hold on with both hands on the rails as we go down. I wish you would all do that, please.

Petrified Forest

The place to tell the story of stalagmites. Just before you get to the Grand Column, be sure to point out the place on the right wall where solution has taken place around joints and bedding planes. This is probably how the solution water first gets a good start at cavern-making. Such channels eventually ran together, forming pockets, then the pockets got bigger, etc.

Grand Column

A stalactite has grown down from the ceiling to a point within about two feet of the floor and has joined with a stalagmite that has grown up from the bottom. The column is about 7 feet in height and a foot through at the narrowest place. (Don't try to give an estimate of its age.)

(Caution about low ceilings)

Wishing Post

A tradition is to rub your left hand three times over the top of it and your wish is supposed to come true.

Joaquin Miller's Chapel

Some of you folks may have heard of Joaquin Miller, known as "Poet of the Sierra". He and a party of friends were here in 1907, and he became very enthusiastic about the Caves, referring to them as the "Marble Halls of Oregon". In 1909, ^{where} the National Monument was created, this room was dedicated as Joaquin Miller's Chapel, in recognition of what he had done to bring public attention to the Caves and other features of the Coast States.

Here we have a completed column and one in the process of growing. If they were to join, we would have a gateway. Behind it is one of the best stalagmites in the Caves, known as the Washington Monument. The jointing of the rock is again brought out here. (Show small pool with skim of lime carbonate, demonstrating how rimstone and flowstone can be created in such pockets, the vase of flowers, Garden of the Gods, Mt. Shasta, the heaviest one of all, and the twin stalagmites (Kate and Duplicate!).

Head Hunter's Trophy Room

(Three skulls)

Caution about 13 steps. (Lion's Head)

Atlantic Ocean

Kneel down and look across. Next is Chesapeake Bay. Devil's Washboard. (These formations have not been fully explained. Some believe that they formed that way as flowstone. Appearance also gives the impression that they are the result of part of the stone being more resistant to solution than the rest. It is being checked into, but the answer may not be given before next year.)

Cave Man

(Mention the Cave Men of Grants Pass, a nationally known organization that dresses as people suppose cavemen to have dressed. They greet famous visitors, such as presidential candidates, and initiate them. The club was formed to promote interest in the area).

Calcite Crystals

A formation made up of a type of calcite (not "lime", nor should "lime" be added to the "calcite") which takes a six-sided form, with the light shining through for a lovely effect. The tiny crystals on the surface may plainly be seen. Calcite takes more crystal forms than any other mineral. This is but one.

Cudjo's (Kudgel's) Cave

Look around behind you. Notice, all around, the black passageways that lead off in every direction and the huge jagged rocks all over the floor and the jagged walls. That is what one would imagine that cave would look like, and it was named after one in a book by that title. (Also, hard to imagine such a cave to be made in tilted marble by stream action alone!).

GHOST ROOM

One of the largest rooms in the Caves and the rest of the trip is involved with some part of it. It is 40 feet high, 50 feet wide and 300 feet long. You can see the ghosts across from you, but have no fear of them. Wave to them, and they wave right back. They are afraid of light and disappear when a light is turned on (Don't overplay this pleasant touch and get "sorry").

On the left is the dike (about which guides have asked). It sticks out from the wall, like a large, continuous blade. It is made up of a clay mineral containing partially rounded grains of quartz and possibly feldspar, and undoubtedly came from the outside. It has been described as a clastic dike, which would mean that it is a fissure filling, forced in by hydraulic pressure. The white covering is the regular cave deposit. (Be careful not to call this simply a "dike", which is usually igneous, or volcanic, in origin, being a molten mass that was forced into a crack under the surface. It definitely was not "pushed down by the glaciers", as one guide was glibly heard to tell his party. These facts seem probable to authorities at the University of Oregon, who made tentative identification of the nature of the material but have not seen the dike in place. Remember, say that it is considered as a clastic dike, but is under study).

The large rocks on the floor appear to have fallen there from the roof. (Fresh jointing is evident in this room in a number of places.)-
Widowmaker rock.

Paradise Lost

Before starting the climb up the stairs, look at the mother owl and the two little owls. Here is the Jaws of Death, and overhead, the Dinosaur. Warn people that on the 13th step to watch out for Headache Rock.

Note the five great cones in line, and on the right how everything has taken the form of a fungus, and to the left, everything is rounded out on top and all three of the formations have extended from the floor to the ceiling. This is considered the prettiest spot in the Caves. On the floor, new "Atlantic and Pacific Oceans" are forming.

Now I am going to put on some colored lights for a moment for a beautiful effect. Of course, the white light showed the formations best.

Before we go back to the Ghost Room, I may say that we are at the farthest point we will reach on our trip in the Caves. We are 3300 feet directly in and 1600 feet vertically from the top of the mountain. It is impossible for a ray of natural light to penetrate in to here. We are going to put out the lights for a moment and let you experience total darkness (hold on to railing). Move your hand before your eyes and you will prove that you can't see anything. *(This belongs in the Ghost Room)*

Dante's Inferno

Now, up that ladder where you see the light up there. Here we get a view of what Dante had in mind when he wrote the great poem "The Inferno", in which, in a dream, he saw the lost souls down in Hades being punished in a river of fire and then for further punishment the scene turned to an icy, frigid mass, and then back to Inferno again.

On our way up this ladder here if you will notice where my hand is forming a shadow on the wall you can see the shadow of the devil himself, right here in Hades. On the second ladder that we are climbing you will notice over to your left, where I am standing, the little "bird of paradise". Just over his head be sure to look for a little worm which he has been waiting a long time to get.

At this point on our trip, years ago, it was necessary to go back to the last place where we saw daylight to get out of the Caves again. However, now we have this tunnel, 512 feet long, which takes us to the surface through the side of the mountain. This also helps to handle the large crowds that come during the summer season. Notice how the sound echoes? That is because we do not have the extensive formations that have formed through the years back in the Caves, yet even here a tiny stalactite is beginning to form. Here is a natural room that was struck when the Government drove the tunnel through here. There must be many more rooms like this throughout the marble deposits in the mountain (Note: It is incorrect to call the whole mountain a "mountain of marble" -- it has other components that anyone can see).

At the Exit

Here we are, on the outside again. You are looking to the West. The entrance is ~~65~~²¹⁸⁻¹⁵ feet below us. You can return to the starting point or the Chateau a quarter of a mile down this trail. If you wish, you may sit here and smoke or rest awhile and look over the Siskiyou. There is no smoking allowed while you are travelling on the trail. Thank you for your attention during the trip, and I hope that you enjoyed it. (Note: If you conduct the party, or members of it, down the trail, you will have the same obligations toward their safety as you had within the Caves. Remember to collect the flashlight from the "taillight").

VI. OTHER SIGNIFICANT FEATURES OF THE MONUMENT

In addition to the Caves, the area has other outstanding scientific values, particularly in the botanical field, where we find certain rare species. Most famous of these are the weeping (Brewer's) spruce, the MacNab cypress, and kalmiopsis with creeping habit and rhododendron-like blossoms, boxleaved bitterbush, Marshall's currant, Sadler's oak and huckleberry oak.

Natural stands of Port Orford cedar, one of our most graceful native trees, are important features. Other plants include the snow plant, Hartweg's wild ginger, with beautifully mottled leaves, the many-flowered bitterroot and the phantom orchid. The rangers place labels on many of the plants along the trails that lead out of the central area.

The discovery of certain plants in this area is a source of interest to scientists who deal with plant distribution. The composition of the associated species of the area is so singular that it attracts the attention of authorities, since many species find the caves area the southern limit of their range, while species otherwise limited to California find here the northern limit of their range.

Last, but not least in interest, are the little plant colonies, mostly of simple types like algae and mosses, growing in the depths of the caves under electric lights that receive their ultra-violet radiation from this source, and which do not grow under bulbs of certain colors.

The large gray jays that come so readily to be fed at the Chalet are the gray jay, a race of the Canada Jay, "whiskey-jack", or "camprober". The blue jays with the topknot are Steller jays. It is entirely inaccurate to call them "blue jays".

At the same place, vying for peanuts, are golden-mantled ground-squirrels, often mistakenly thought to be chipmunks, but they are much larger and do not have stripes on the face. The Siskiyou chipmunks also come there, and it will be readily noted that they are smaller, have smaller feet, more pointed noses and stripes run along the sides of the face. *The large, grey squirrels with brown patches between shoulders are the Douglas ground squirrel.*

Bats have been observed in the caves, but it is not at present known what kind they were. There are no large colonies that pour out of the entrance like smoke, as at Carlsbad Caverns. Bats are not blind. No blind animals are recorded in park files from the Caves.

Perhaps it should have been mentioned first, rather than last, that the rugged, forested, wild beauty of the spot, where there is no logging, hunting, trapping or grazing, presents a charm that is of the utmost attractiveness to those who visit from places not so well endowed with wild land as Oregon.

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VIII. APPENDIX A - WHO'S WHO

Superintendent - - - - - John B. Wosky
 Assistant Superintendent-- - - - - Gerald E. Mernin
 Park Naturalist- - - - - Harry C. Parker
 Chief Ranger-- - - - - Louis W. Hallock
 Ranger in Charge - - - - - Paul D. Turner
 Manager, Oregon Caves Resort - - - - - Richard L. Sabin
 Assistant Manager and Supervisor of Guides - Glenn Happel
 Executive Secretary- - - - - Mrs. Lucy James
 Head Guide- - - - - Dick Rowley

IX. APPENDIX B - REGULATIONS IN BRIEF

It is unlawful to disturb, mar, mark or remove any formation, stalactite, stalagmite, or other mineral from the confines of the Monument.

Plant and animal life are absolutely protected. It is unlawful to tease, disturb or molest the animals or living or standing plant life. Hunting and trapping are forbidden.

No one can enter the Caves without a regular guide. Children under six years old are not allowed to take the trips. Guides can enter only in line of duty connected with guiding parties. Cave exploration is not allowed. (This means no "wiggles" parties, whether with guides or not.)

Dogs, cats and other pets must be kept under positive physical restraint at all times and then only in certain areas (see a Ranger).

Unsealed firearms are not allowed on the Monument.

There is no camping overnight on the Monument.

Fires are permissible in the picnic area only.

No smoking is allowed on trails outside the Caves during the fire season (see a Ranger).

Violating these regulations is violating the law.

X. APPENDIX C - ROADS AND TRAILS

	<u>Road Mileages</u>	
	20 miles	
Cave Junction		
Crater Lake	160 "	(Via US 199, 99 and Ore. 62)
Crescent City	77 "	(Via US 199)
Grants Pass	50 "	(Via US 199)
Medford	80 "	(Via US 199 and 99)
Portland	330 "	(Via US 199 and 99)
Roseburg	130 "	(Via US 199 and 99)
San Francisco	451 "	(Via US 199 and 101)
	618 "	(Via US 199 and 99)

Trails

Big Tree $1\frac{1}{2}$ miles (To Big Tree)
 $3\frac{1}{2}$ miles (Loop on Lake Mt. Trail to Chalet)
Cliff Nature 1 mile
Lake Mountain 5 miles (The portion within the Monument)

Ask a Ranger for further information, especially about other choices of trails.

XI. APPENDIX D - NATIONAL PARK SYSTEM IN BRIEF

The Act of Congress, August 25, 1916, to establish the National Park Service, defines the fundamental purpose of the Service to be as follows: "The Service thus established shall promote and regulate the use of the Federal areas known as national parks, monuments and reservations * * * by such means * * * as conform to the fundamental purpose * * * which * * * is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner * * * as will leave them unimpaired for the enjoyment of future generations".

Types of Areas Administered by the National Park Service

Type	Number	Example
National Parks	28	Crater Lake National Park
National Historical Parks	5	Colonial, Yorktown, Virginia
National Monuments	85	<u>Oregon Caves</u>
National Military Parks	11	Gettysburg, Pennsylvania
National Memorial Parks	1	Theodore Roosevelt, N.D.
National Battlefield Parks	2	Richmond, Virginia
National Battlefield Sites	6	White Plains, New York
National Historic Sites	11	Home of F.D.R., New York
National Memorials	9	House Where Lincoln Died
National Cemeteries	10	Vicksburg, Mississippi
National Parkways	4	Blue Ridge, Va. - N.C.
National Capital Parks	1	Washington, D.C. City Parks

Total National Park System, June 30, 1952 - 173

Also, 4 National Recreation Areas, such as at Coulee Dam, Washington and 1 National Historic Site administered by agreement with the Department of Defense.