WESTERN SPELEOLOGICAL SURVEY

Special Report #1
Preliminary Exploration of Haughton's Cave
Mountain Home State Park, Tulare County, Calif.

Report Submitted 7-15-52.

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Introduction: At the request of Mr. Cecil Metcalf of the California Division of Forestry, the California-Nevada Speleological Survey conducted a three day preliminary exploration and investigation of Haughton's Cave in Mountain Home State Forest. The purpose of the study was two-fold; first to determine the commercial potentialities of the cave for reference of the Division of Forestry in the event that the cave were to be opened to the public; and secondly to provide a description of the nature of the cave and its speleological significance such as biological, geological, etc. Many rumors attesting to the great extent of the cavern have been circulated in recent times; consequently, following the work of the Survey party in Sequoia National Park and vicinity, our group was called upon to produce an accurate and unexaggerated estimate of the cavern's properties as compared with those of other caves, both commercial as well as undeveloped, which were already familiar to the Speleological Survey.

The following report and the accompanying recommendations are offered to satisfy this need with the understanding that the information submitted is principally of a reconnaissance nature, since time did not allow a thorough survey of the entire cavern.

The exploring party is serving under authority of the Western Speleological Survey and the Stanford Grotto of the N.S.S., and is currently engaged in a 90 day survey of the caves of California and Nevada. Survey members are Raymond de Saussure, George Mowat, and Arthur Lange.

A.L.L.

History: Haughton's Cave is locally referred to as the "Crystal Cave", or "Camp Lena Crystal Cave", despite the fact that no crystals, as such, were encountered by the present exploring party. The "Haughton's Cave" has been adopted, and is used throughtout this report in recognition of the earlies known name applied to the cave. The local name "Crystal Caves" is not encouraged, because of its inevitable confusion with the Crystal Cave opened by Sequoia National Park, and with various other uncommercialized Crystal Caves throughout the State of California.

The history of the cave is obsure, although it is generally agreed that it has been known for some time. Actually, the cave was reported as early as 1884, when it appeared on the Official Map of Tulare County dated Dec. 4, 1884. How soon before that date the cave was actually discovered is uncertain, but may be disclosed by future research. Subsequently it appeared on a sketch map of Sequoia National Park and environs published in the Annual Report of the Acting Superintendent of Sequoia National Park to the Secretary of the Interior, in 1906 with the name "Haughton's Cave" appended. Since that time, there is evidence of visitation, confined for the most part to the upper levels. It is believed that only a small proportion of visitors have ever succeeded in making their way to the Mountain Room.

A.L.L.

Location and Exterior Description: The cave is situated in section 30 (to be confirmed), T 19S, R 29E, in the State Forest at an elevation of approximately 6500 feet, and on the watershed of the North Fork of the Middle Fork of the Tule River. Snow covers the region of Haughton's cave in winter, but the area is readily accessible in late Spring and Summer, comparing favorably with other commercial cave locations.

Surrounding the cave entrance ranges the extensive of Sequoia gigantea for which the area is renowned, and an intermingled Transition Zone growth of white fir, ponderosa and sugar pine may also be found. Massive outcrops of Sierra marble or metamorphosed limestone, reportedly Triassic in age, rear up immediately alongside the draw in which the cave mouth appears. These marble beds are part of a long chain of roof pendant meta-sediments which can be traced through the Transition Zone of the Western slope of the Sierra Nevada past Sequoia and Kings Canyon National Parks, and as far north as Huntington Lake in Fresno County. They house such magnificent caverns as Crystal Cave, Lost Soldier's Cave, and the now vandilized Clough Cave in Sequoia National Park. Owing to the exceptional granularity of the marble of these deposits, very few fossils have been recognized in them.

A.L.L.

Exploration Report:

July 7th: The entrance to the cave was located, and equipment and personnel were removed to this point through the courtesy of the Division of Forestry. At this time a small stream was found to be flowing directly into the entrance. The first load of equipment was moved through the entrance waterfall and down a series of intricate crawlways for a distance of about 50 feet. Here was encountered the first drop measuring about 20 feet vertically. This was bypassed by use of a small breakdown chimney. A large sloping streambed was found which flowed into the second drop, about 30 feet in height. This point was particularly difficult to pass, because of a waterfall of temperature 48° flowed directly in the line of the ladder. The levels above, and below the drop were explored, and the only immediate practical route was found to follow the stream course directly. This was followed to the third drop which was judged to be a major obstacle. At this time exposure conditions caused by continual drenching in the stream were so poor, that the party was unable to physically continue the exploration.

Returning to the surface, aid was obtained from the Bear Creek Camp, and a diversion ditch was constructed, causing the water to bypass the cave entrance. The water diversion took an unexpected course, when during the construction, on the removal of a large stone, the water promptly disappeared into the hole caused by the removal of the stone leaving the lower portion of the drainage ditch entirely dry. A later hasty examination indicated that the water did not emerge in the immediate upper portion of the cave, consequently no further drainage measures were taken.

The latter portion of the day was spent in reconnaissance on the surface to determine the resurgence of the stream that flowed into the cave. Although there are several temporary resurgences, the stream does not permanently emerge for about a third of a mile. There is no direct possibility of tracing the water from the lower end. Several choked openings in this vicinity may or may not lead into the main cave. The draft which occurs from at least one of these openings is definitely indicative of a cave behind the immediate blockage, but at the time of investigation it was decided that too much time would be required to enter.

Exploration Report (Con.)

July 8th: Riding the cave in a considerably drier condition, the remainder of the equipment was moved inside. Collecting of life specimens was accomplished in the upper chambers. The fissure or third drop was passed by climbing downward for 10 feet, and then establishing a 55 foot ladder. A small waterfall directly above the ladder aided in making this the most difficult obstacle in the cave. From here, a narrow winding fissure led to a 10 foot drop, separated by a small pool from a 20 foot drop. These constitute the fourth and fifth drops respectively. Earlier parties have probably combined the third, fourth, and fifth drops, which would then correspond rather closely to the rumored 96 foot drop which was originally reported to our group.

At this point, the stream bed is followed directly into the largest chamber, which lacking any previous nomenclature, we have termed the Mountain Room, due to the fact that the floor of this chamber actually constitutes an underground mountain. This room is extremely large and contains two independent streams, the one following the entrance route, and the other and smaller tributary arriving from an unknown source. Only a brief examination of this room was carried out in the remainder of this day.

July 9th: The cave was entered for the third and last day. Brief collecting was done in the upper chambers, and then operations were moved immediately to the Mountain Room. The main stream was followed to the lower end of this room which seems to culminate in a drop of about 30 feet. This sixth drop barred further exploration along the stream, since all the rope and ladder equipment were already in use along the previous route. Returning to the upper portions of this room, photography of the speleothems (cave formations) was undertaken. No photos of the entire room were attempted since flash equipment of this magnitude was not available. At the present time, considerable climbing is required to move about in this chamber, and much time was consumed simply in traveling between the various parts of the room. Biological collecting of high significance was accomplished at the upper level of this room. A preliminary measurement was taken along the slope of the floor to the Mountain Room, and it was found to be about 420 feet in length, thus establishing it as the largest known underground chamber in California. The ceiling rises to an estimated 75-100 feet, and the width in places reaches 100 feet.

The remainder of this day was spent in withdrawing equipment from the cave. Some idea of the difficulty of this approach can be obtained from the fact that even with all equipment in place, entry on the last day required an hour and a half, and four and a half hours were required to withdraw that equipment leave the cave. Consequently on the final day, 6 hours were spent merely in traveling to and from the region of exploration in the Mountain Room.

Upon leaving the cave area, the stream was re-diverted into the entrance, for those reasons which are listed later in this report.

R.D.

Geology and Description: The cave mouth is formed by a large sinkhole, which interrups the stream bed in such a manner that the water finds its way directly into the throat of the cave, unless diverted. When the stream was diverted in order to facilitate operations underground, the dispossessed waters disappeared into a second sink or swallet. This new underground course is as yet undetermined, and the stream was not definitely encountered underground by the exploring party. Downhill from the cavern's sinkhole, one may trace the dry stream course for a distance of about a third of a mile through dense hazel and ceanothus brush before once again encountering the water which issues from a heavy pile of talus, in a volume approximately equal to that which flows into the cave at the higher entrance. It is believed that this resurgence marks the lower a real boundary of the marble deposit. Wether the cave and stream underground follow a path corresponding to that of the surface stream channel is a point that can only be confirmed by careful mapping of the system. Positive identification of the resurgence with that of the swallet would require specific testing methods.

One enters Haughton's Cave, through the above-mentioned sinkhole which is about 4 feet in diameter, passing beneath blocks where the ceiling has collapsed at some unknown date. The stream, when flowing in its normal course, also makes its way into this aperture, cascading over the lip and rushing on down over a floor composed of water worn cobbles to the channel which is about 25 feet lower. The visitor, crawling past the blocks of marble, reaches a chimney down which he may descend to the more secure stream channel below. Alternatively he may crawl a short distance further in the horizontal plane before lowering himself down a constructed vertical passage, again leading to the main channel. From there, standing upright, he walks a distance of some 30 feet to the second drop down this steeply inclined passage. It is also possible to walk upstream to a point directly under the sink, where there commence a series of crawlways. Here, one also encounters the large fragment of a redwood tree trunk, which apparently slid into the sinkhole upon its collapse. Returning to the second drop, one descends by ladder approximately 30 feet below an overhanging ledge, over which the waterfall normally flows. The foot of the ladder lies directly under this waterfall in the center of a small circular chamber of smooth grey marble walls. The first dry spot which normally occurs in the cave is about 30 feet further downstream in an intermediate gallery. From this gallery are a number of subsidiary passages, some passable, but all leading to precipitate drops, which soon end in breakdown. Because of the irregularity of this gallery, no definite dimensions can be given, but its shape corresponds roughly to a circular floor area of 25 foot diameter with a 30 foot ceiling. The water pursues a course down and beyond this chamber, where for the first time, is recognized a reasonably symmetrical stream channel, dissolved out, and partially eroded away by the steeply graded flow. The floor of this channel is littered with debris from the surface, while the walls are conservatively decorated with flowstone and small stalactites. About 50 feet beyond the intermediate gallery, and down the sloping channel is encountered the third or principal vertical drop and waterfall of the cave, where it is necessary to secure a minimum of 55 feet of ladder. The outstanding feature of this descent is the view of the stream polished walls of crystalline marble, alternately banded white and blue-grey. Also prominent at this point are the projecting remnants of undissolved minerals on which the chemical action of carbonated water has no solution effect. From the foot of this drop begins the sinuous high-ceilinged water channel which eventually intercepts the Mountain Room.

One travels this channel with relative ease, except for two places which again require ladder and rope. These drops are approximately 10 and 20 feet in that order. The entire passage is striking because of its symetry and regularity. Several hundred feet farther, the channel finally opens into the vast expanse of the Mountain Room.

Within this chamber, the stream itself keeps to the lower wall, following a complex of talus until it finally pours over a brink about 30 feet high, beyond which no exploration by our party was accomplished.

The Mountain Room is in volume, the largest known single chamber in California, approached in magnitude only by the massive Main Chamber of Moaning Cave in Calaveras County, and the great Hall of Stone Man Cave in Shasta County. The floor of the room slopes steeply at an angle varying from 20 to 45° from the horizontal, and is composed of huge talus blocks fallen from the walls and ceiling, as well as a certain amount of soil washed from the surface, and deposited flowstone. This composite floor extends about 420 feet, and may be slightly greater after the sixth drop is passed. The maximum height of the ceiling above the floor is estimated at between 75 and 100 feet. The maximum width of the room could not be measured due to difficulty in reaching its extremities, however it can safely be estimated to exceed at least 100 feet at one point. In general the chamber is broader toward the end. Numerous side passages are as yet unexplored, including that containing the tributary stream.

There are many features of interest in this chamber. In addition to the vast underground expanse, there is a magnificent mountain of flowstone-covered blocks and other material, reminiscent of the more regular, but far smaller cone of earth found in Palmer Cave of Sequoia National Park. Such a phenomena, particularly when it tapers to an apex near the ceiling, as it does in Haughton's Cave, suggests that much of the material has washed in from a surface not too far above. From this uppermost point commence several upward leading passages, some of which could possibly conduct to the surface directly. Also to be found in the upper reaches of this chamber, an extensive number of clean, white formations of many varieties--stalactites, stalagmites, draperies, and flowstone, in addition to many excellent nests of cave pearls, or oolites (calcite-coated pepples) in the floor. The beauties of these features can not be overestimated. Similar groups of formations occur along the walls and ceiling of the chamber, culminating in the rare displays of draperies and terracing at the lower culminating in the rare displays of draperies and terracing at the lower end of the cavern. The gours, or rimstone terraces are outstanding examples, and are well preserved in a recessed grotto on one side of the chamber. These terraces are among the finest encountered in California Caves, and their overflow gives rise to an extensive sequence of flowstone, of exceeding whiteness. One formation, however, outranks all others in the cave, - the principal curtained stalactite of the far wall, with its colony of interwoven and fluted draperies, unbroken and unmarred in any manner, and thoroughly white and virtually translucent. The stalactite itself is at least 6 feet long and near the tip is a bout a foot in diameter. It can be said that the decorations of this chamber compare favorably with, and rival those of our finest surrounding caverns.

While difficult to draw geological conclusions on the cave before a complete map is available, a number of points are immediately manifest. Principal among these is the recognition that the cavern is a composite of at least two previously indepent systems; one the Mountain Room, and secondly the stream system. The Mountain Room appears to be a phenomena very similar to the Entrance Room of Palmer Cave, and to the Main Chamber of Moaning Cave. All of these have been dissolved from the country rock by quiet phreatic (below water table) waters along a zone of weakness, such as a contact, bedding, or fault plane. Upon dissolving to greater dimensions, fragmentary flakes and blocks of the ceiling and walls collapsed, either spontaneously or as a result of internal stresses, thus enlarging the chamber to a still greater extent.

Geology and Description: (Con.)
Eventually as the water table lowered, and the cavern's interior became filled with air, percolating waters dripping from the ceiling and flowing over the walls and floor slowly deposited calcium carbonate, or calcite over the country rock in the forms and configurations that grace the chamber today. This process of deposition is still going on. Meanwhile, the stream above the cave, which originally flowed along the surface and generated the recognizable stream bed, found its way to the Mountain Room, probably through a roof collapse that possibly occurred below the water table simultaneous to the formation of the Mountain Room, and the stream, following the path of least resistance through cracks and rock fissures, periodically encountering dissolved-out chambers made its way to the Mountain Room and beyond.

A.L.L.

Mapping: Since most of the available time in Haughton's Cave was spent in exploration and photography, an actual map was not prepared. Instead, a steel tape traverse of the Mountain Room was undertaken to give an indication of the size. This traverse followed a slight curve, and only slope distances were taken. The data obtained is as follows:

Station	Ht. (Estimated)	Width	Location & Comments
#1	25'	20'	Top of Cave
#2	20'	30'	100' down slope from #1
#3	25'	40'	81' beyond #2 on steep breakdown
#4	-	-	19' beyond #3. Tributary stream enters at this point, approaching from right side. The traverse direction changes from So. to SSE.
#5	60'	60'	86' from Station #4
#5A	70'	100'	42' from Station #5
#6	20'	-	82' from Station #5, just above lower stream.
#7			73' from Station #6. Traverse changes from about SSE to SE.

This traverse gives a total curving line through the room of 421 feet. The traverse is not intended as an accurate map of the room, but only as an indication of the actual size.

G.D.H.

Biology: Life specimens and evidences collected in Haughton's Cave may be divided into three classifications:

A. Extreme upper level, within about 50' of the entrance, and prior to the first drop. This region is classified as the "Twilight Zone" since it does not reach a state of total darkness.
B. Intermediate level. One one specimen was collected at this point which may be defined as the region between the third and fourth drop.
C. Lower level. This region may be defined as the Mountain Room.

Specimens collected:

#	Description	Level	Date
A-11	Salamander (Batrachosops sp.)*	A	7/8
A-12	5 insects*	A	7/8
A-13	Slender-bodied Flys	A	7/8
A-14	Insects*	A	7/8
A-15	Insects*	B	7/9
A-16	2 Beetles*	A	7/9
A-17	2 Crickets*	A	7/9
A-18	2 Snail Shells	C	7/9

Biology: (cont.)

Specimens collected: Cont.

#	Description	Level	Date
A-19	Insects	A	7/9
A-20	Droppings (Bat or Rat)	C	7/9
A-21	Charcoal	C	7/9
A-22	Large-bodied Flys*	C	7/9
A-23	3 small skulls (All less than 50mm)	C	7/9
A-24	Calcified Bones	C	7/0

With the exception of A-15, all the specimens were collected either at the entrance or inside the Mountain Room. Furthermore, those specimens collected at level C were all collected high above the stream level, where it would have been impossible under present conditions for them to have been washed. All the specimens collected there, namely A-18 and A-20 through A-24 are of types which would normally be found near the entrance. Of particular importance were the live flies found inside the Mountain Room. Although it might be argued that the larvae could have washed into the chamber, this does not account for their lack at the intermediate levels. The A-24 specimen points to an entrance having been open into the chamber at some time in the past. Other specimens collected at level C are indications of a relatively nearby entrance other than that through which our party entered.

In general, this biological evidence is one of the strongest indications favoring a seperate entrance in the lower cave regions.

Full identification of the specimens requires that they be shipped to specialists in various portions of the country, and a complete identification report will be available at some later date. It is very unlikely, however, that complete identification would in any way alter the above statements.

R.D.

*Specimen collected alive.

Photography: The photographs were taken with the idea of showing formations and characteristics of the cave. The Mountain Room, however, was far too large to have a representative distant view, unless far more lighting equipment were available. Therefore the photographs show localized formations and sections of the room believed to characterize the room best. Kodachrome 828 film was used for color, making 28 by 40 mm slides. For black and white pictures Kodak plus X 116 film was used.

Color as well as black and white were taken from approximately a 12 foot distance toward a large stalactite and drapery on the right hand side of the Mountain Room, on a level with the entrance to the room. Then a distance shot of the same formation at 25 feet was taken with both cameras, using a GE 22 bulb. Next, a close up picutre of a foot long rimstone pool just below the previous location wastaken in color and black and white. Then both cameras were again used to show the entirety of this small grotto from a distance of 15 feet. Both films were again used to show one of the large flowstone terraces which is located toward the center of the room.

The scene of operation was then transferred to the top of the Mountain room where two views, both color and regular were taken within a few feet of each other in opposite directions. These views protray the extreme whiteness of the flowstone and also show some delicate straw stalactites.

In leaving the cave, a black and white picture was taken which shows the ladder work at the fifth drop. A similar picture was taken with color at the third drop. A Sylvania #3 bulb was used for the color photo on the third drop, in order to obtain full effect. The blue bands on white marble were particularly pronounced in this portion of the cave, and the bulb was also used in an attempt to show this effect.

An elaborate flash lighting system for picturing the immensity of the Mountain Room is needed if such a picutre is to be obtained. Photography of the formations within this room is not such a pronounced problem, since close-ups may be obtained against a wall, where the immense blackness of the cavern will not interfere.

Prints of all the above pictures will be available at a slightly later date.

G.W.M.

Summary and Recommendations: There are three main recommendations which are to be made as a result of the preliminary exploration.

1. A gate should be placed on the cave.
2. The stream should be allowed to continue flowing through the cave.
3. No commercialization should be undertaken without a very careful study preceding such action.
4. A detailed study of the cave should be made.

Although these recommendations may seem clear-cut, and rather obvious, they are only the conclusions which can definitely be reached as the result of a relatively brief study.

A gate is necessary to the cave, both in order to protect the interior from vandalism, and to prevent accidents. As a result of our recent visit, the cave received unavoidable publicity, which can only result in numbers of curiosity seekers attempting to visit the cave. Although mŷ of these will fail, due to the difficulty of reaching the lower levels, and in failing, may pose difficult rescue problems, still, many may manage to reach the formations, and in the usual manner collect a few specimens for themselves or their friends.

Summary and Recommendations:(Con.)
Vandalism of this type is totally irreparable, and cannot be remedied at a later date. It has been estimated that such a gate would cost in the vicinity of $150.00 which certainly does not seem excessive, when it may mean the difference between a cave with commercial possibilities and a vandalized ruin. The gate should be constructed of steel bars, firmly anchored and built in such a manner as to allow free circulation of air through the cave, as well as the continued flow of running water. This gate should be kept locked and we recommend that several keys be made, one of which should be available at the Bear Creek Camp. The lock should be of the recessed type, which cannot be broken by direct hammering.

It is necessary to permit the stream to continue its flow through the cave so as to maintain the ecology and life balance in its present form. Furthermore, the stream undoubtedly plays an active part in keeping the present entrance open. The top levels of the cave, being largely breakdown material, would probably tend to collapse and seal the passage, were it not for the continued clensing action of the stream. This stream flows down a draw into the cave, and it would be difficult to affect a permanent ship in its course down this canyon. Thus, any permanent deviation of the stream from the cave would be not only both expensive and useless, but might actually result in damage to the cave.

If the above two recommendations are carried through, it will then be possible to act at any time, or after any lapse of time on the projected commercialization of the cave. Such commercialization, however, should be undertaken with extreme care, and most definitely should not take the form of an attempt to put a tourist route down the present entrance system. An entrance of this type would require blasting and stair construction down a total of 5 vertical drops to a depth of about 300 feet, and the stairs would have to be recessed into vertical limestone walls with appropriate railings and lightings. The cave would also have to be rendered dry in the upper portions, which would result in the loss of the waterfall attraction mentioned below. While such an attempt is undoubtedly engineeringly possible, it is certainly not economically practical. Not only would such an attempt result in an extreme expenditure of funds, but since it would then be necessary for the tourist to both enter and exit over the same lengthy system of stairs, almost devoid of formation, it is doubtful whether it would have any appreciable attreaction for the public.

The Mountain Room is definitely the focal point of interest in the cave. The formations contained therein are outstanding and of an extreme whiteness. Also, the fact that this room is the largest in California results in a pronounced commercial feature. Unfortunately, this size acts in direct direct opposition to the formations. While the formations are actually numerous, they are dwarfed by the size of the chamber. In addition a trail could be developed from this chamber back to the base of the fifth drop, which would then give the visitor a view of an underground waterfall, an extremely rare phenomenon which should not be underestimated. Such a development would be practical only if a shorter artificial entrance can be located which enters the cave at the Mountain Room. On the basis of life specimens collected collected near the top of this chamber, and the lack of such life for a considerable distance preceding it, our belief is that such a passage could easily be built, or possibly already exists at present. This would be easily determined by a detailed mapping and study project of high accuracy. But it should be noted that all the indications are in favor of such a passage, the lack of which would be the only stumbling block to the commercial development.

Press Release to the Visalia Times-Delta

Exploration of Haughton's Cave 7/16/52

Haughton's Cave, located above Springville, was recently explored by members of the California-Nevada Speleological Survey. This group is composed of Arthur Lange, and Raymond DeSaussure, speleologists or cave explorers, and George Nowat, Geology student at Stanford University.

The cave was extremely difficult to enter due to the fact that five vertical groups drops had to be passed. All the equipment available by the Survey was utilized for the exploration. Adding further to the difficulties was the fact that a stream flowed down the entire course of exploration, and the drops were, in reality, waterfalls. Inevitably the rope ladders hung directly in the waterfalls. The obstacles were such, that on the last day six hours were spent in traveling to and from the point of investigation.

This cave was examined without charge for the State Division of Forestry, in order to determine the potentialities as a commercial cave. A preliminary report has already been made and is in the hands of that Division.

The California-Nevada Speleological Survey is currently engaged in a 90 day expedition under the joint sponsorship of the Western Speleological Survey and Stanford Grotto.

Among other data collected, the group is interested in obtaining biological specimens representative of cave life in various localities. Such specimens were collected from Haughton's Cave, and it is anticipated that some of these may turn out to be new species.

Haughton's Cave is closed at the present time to the general public due to the difficulty and danger attending its entry.

Raymond de Saussure
California-Nevada Speleological Survey.