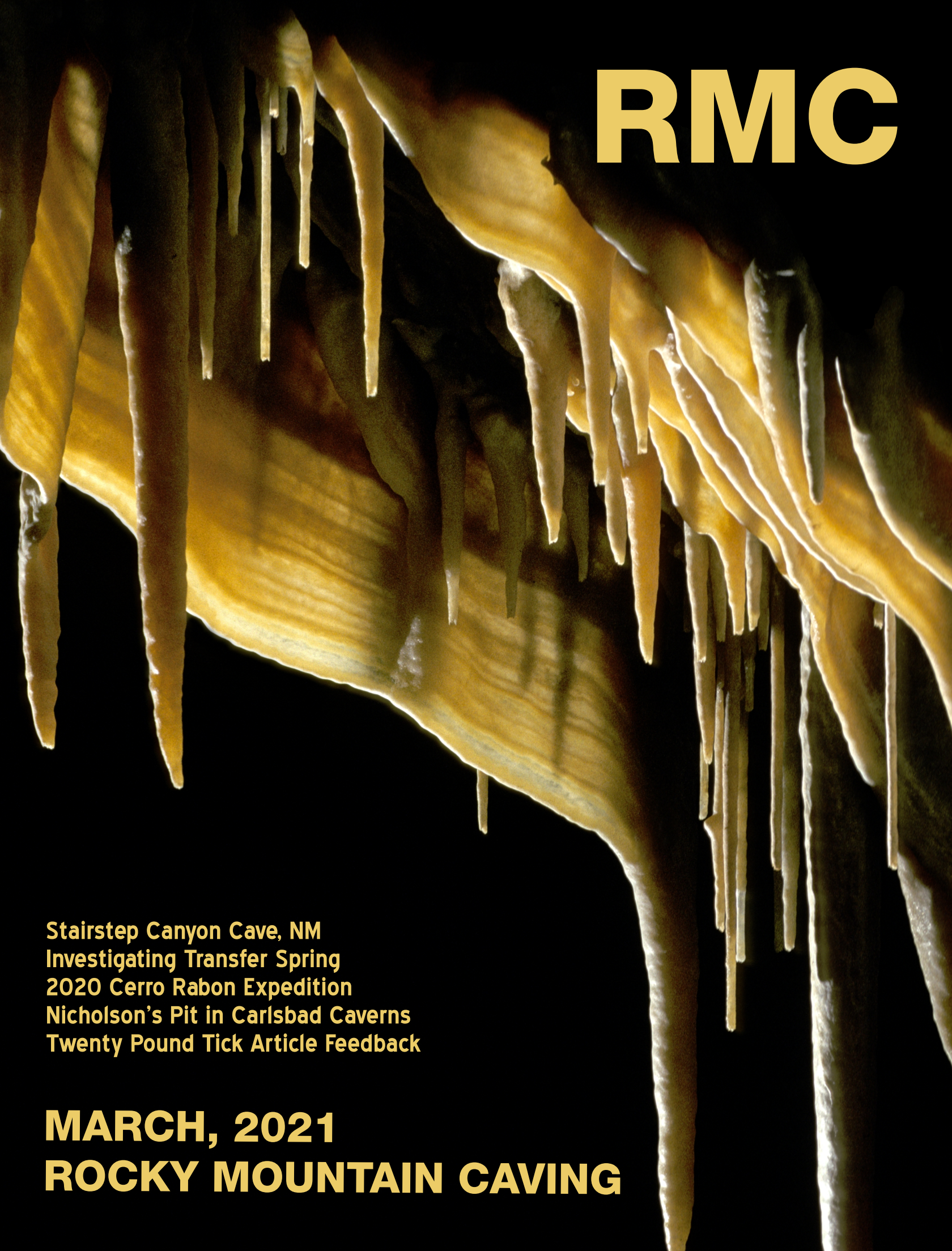


RMC

Stairstep Canyon Cave, NM
Investigating Transfer Spring
2020 Cerro Rabon Expedition
Nicholson's Pit in Carlsbad Caverns
Twenty Pound Tick Article Feedback

MARCH, 2021
ROCKY MOUNTAIN CAVING

CREDITS

EDITOR

Rob Kolstad
editor@rockymountaincaving.com

SPECIAL EDITORIAL CONSULTANT

Richard Rhinehart
NSS@rockymountaincaving.com

DIGITAL EDITOR

Richard Rhinehart
NSS@rockymountaincaving.com

BUSINESS MANAGER

Your name could be here!

LEAD PROOFREADER

Donald G. Davis – *dgdavis@nyx.net*

PROOFREADER

Kristen Levy – *kblevy@comcast.net*

RMC BOARD MEMBERS

Jenn Scott – *CG*
Teka Israel – *CWSG*
Ben Smith – *FRG*
Kristen Levy – *NCG*
Donna Frazier – *SCMG*

FRONT COVER

A detail from Norman R. Thompson's gorgeous photo of bacon and stalactites in LaSunder Cave.

BACK COVER

Norman R. Thompson's photo of Nicola Tisato on his initial reconnaissance of Breezeway Cave. Tisato is a speleologist who is planning a study of the microbiology of Breezeway Cave. The large cluster of beaded helictites is called the Tesla Coil, named after electrical engineer (and former Colorado Springs resident) Nikola Tesla, after whom the car company is named. It is coincidental that Tisato's first name matches that of Tesla's.

Colorado Cave Rescue Phone Numbers:

- ***General Emergency (most of Colorado):*** Dial 911
- ***Colorado Search and Rescue Board 24 Hour Hotline (ask for SAR Coordinator):*** 303-279-8855.
- ***Phone list of all Colorado County Sheriffs***: https://coloradosheriffs.org/resources/counties/

EDITOR'S NOTES

I am fully vaccinated (more than two weeks ago). Perhaps this pandemic will finally wind down, and we can all get back to living our lives again.

In other news, the Colorado Grotto's 70th (platinum) anniversary is coming up! Please submit your commemorative articles by mid-summer. If you have an idea for a particularly relevant article, please email me so I can identify someone to create it.

Do you have a nice cave picture? If it's tack-sharp and appropriate for the front or back cover of *RMC*, please consider submitting it for publication.

We're still searching for a business manager. The job keeps getting easier as its functions are automated. Here's your chance to step into a contributory role for Colorado Caving.

Special thanks to Rick Rhinehart for his double contribution this month. I hope you enjoy the saga of Carlsbad exploration at the height of the 1929 depression as much as I did; things have surely evolved since then.

Even more thanks to Norman Thompson for contributing the cover photos for this and other recent issues.

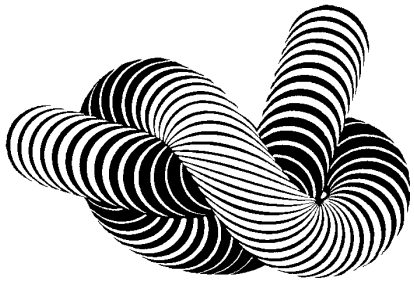
RK

RMC Business Manager

Rocky Mountain Caving magazine needs a volunteer to take over immediately as Business Manager who manages finances and subscriptions for *RMC*. Interested? Contact Richard Rhinehart at NSS@rockymountaincaving.com .

CONTACTS

@RockyMtnCaving (http://twitter.com/RockyMtnCaving).
http://www.RockyMountainCaving.com .
(including the blog at https://www.rockymountaincaving.com/blog)
editor@rockymountaincaving.com .



Postmaster: Send address changes to: RMC c/o Colorado Grotto, National Speleological Society, PO Box 101091, Denver, CO 80250-1091, USA.

Rocky Mountain Caving (ISSN 8756-033X) is a quarterly publication of the National Speleological chapters in Colorado. It is published in the months of March, June, September and December. Domestic subscription rate is $25.00 per year.

When changing address, please give old address as well as new.

First-class mailing postage paid at Denver, CO.

ROCKY MOUNTAIN CAVING

Volume 39, Number 1
March, 2021

Table of Contents

Call for Publishable Material

Please submit your articles about exploration, science, research, gatherings, interviews, original poetry and music, people, notes and happenings, and anything else cave-related. We'll try to print everything of quality. Keep it this side of R-Rated and please have patience with editing/condensing.

Please don't hesitate to submit your best vertical and horizontal photographs, cartoons, art, etchings, and other graphics.

Deadlines

RMC is currently published quarterly in March, June, September, December. That means editing and typesetting *should* commence around the 15th of the previous month so the magazine is ready for distribution at Grotto meetings.

Rolling deadlines seemed like such a great idea but, alas, no joy. For your planning purposes, the deadlines for material to be included are: November 15, February 15, May 15, and August 15.

Renewals

Don't forget to renew your subscription if it's coming due! Just $20/year for grotto delivery; $25/year for first-class mail delivery; $9.99/year for a digital subscription.

Credit card users can renew at https://rockymountaincaving.com . Others can mail check or money-order (payable to "Rocky Mountain Caving") to P. O. Box 101091; Denver, CO 80250-1091.

Back issues, when they are available, are $5 + $2 postage.

Comments on Carl Bern's Twenty Pound Tick Article in the December, 2020 *RMC*

by Norm Pace, Carl Bern, and Donald G. Davis

All three authors are eminent Colorado cavers; in aggregate they have over a century of caving experience and dozens of published papers in both refereed and other publications.

Editor's Note: This article summarizes a set of emails exchanged among Norm Pace, Carl Bern, and Donald G. Davis regarding Carl Bern's article "Adventure and Resurvey in Twenty Pound Tick Cave" published in the December, 2020 *Rocky Mountain Caving*. While the text moved around in a variety of formats, it is shown here as a set of typeset email messages, each of which is preceded by the sender, major recipient(s) (although many parties were cc'd on each and every email), and date (for sequencing).

These notes serve as a model of civil discussion about facts and issues in a publication; all participants are to be commended for their diligence and patience!

From: Norm Pace to Carl Bern, et al.
Date: Tue, Jan 26, 11:17 PM

I enjoyed Carl Bern's article on the recent resurvey efforts in Twenty Pound Tick Cave, but I write to clarify a few things for the historical record.

As reported by Carl, John Pollack and I originally found the cave in 1970. However, we couldn't get in initially because of high water flow gushing out; we returned after snowmelt diminished. As I recall (and verified with Pollack), it was not necessary to move any rocks or dig to get into the small entrance chamber. The blowhole mentioned by Carl was noteworthy – there had to be significant cave beyond.

A narrow, water-filled canyon, the obvious source of the stream was the only lead, however. I chimneyed down the canyon to where the ceiling pinched above the water, but I could see that about 8-10 feet below the water level a tight canyon led perpendicularly off to the right. It seemed clear that this was the way on.

I considered this a sweet lead, but lots of other caving intervened before I got back to it, in 1979, as Carl mentioned. Rick Rhinehart and a few others helped me haul dive gear to the cave. I dived the sump using, as I recall, two, side-mounted 15 cubic foot tanks and I deliberately under-weighted in order to stay high in the canyon, which was about 10-15 feet high. I was not using a buoyancy compensator because of the limited width of the canyon. It was about 2.5 feet wide toward the top and densely covered throughout with beautiful, needle-like crystal development.

As I finned into the canyon, the crystals literally exploded into zero visibility, a scary situation since I didn't know where I was going, and I don't recall that I was using a line. The canyon shot straight into open passage, however, perhaps only about 75 feet. As I recall there were no sharp turns, as suggested by Carl; I'm not sure where that came from.

I popped up in the pool that feeds the connection canyon, but didn't immediately find a place I could climb out of the deep water wearing fins; so, after bobbing around a bit, I returned through the now-turbid canyon. Nonetheless, it was clear that there was going cave.

I returned to the cave several months later with Tom Taylor and another caver, who hadn't done any cave diving, with the intent of pushing upstream. I went through the sump first; Tom proceeded after me.

We paddled around waiting for the third person, who never arrived; he was reluctant to dive into what was by that time a thoroughly mucked-up canyon (can't blame him). So we bagged the trip and exited without pushing further upstream. I never went back, but I was delighted to follow in *RMC* the escapades of those who did.

Onwards,
Norm Pace

From: Carl Bern to Norm Pace
Date: Wed, Jan 27, 9:17 PM

Hi Norm,

Thanks for the additional info on the early exploration of Twenty Pound Tick. I got the impression of a couple turns in the sump from the TPT entry in the 2011 Convention Guidebook. Sorry now to have contributed to misinformation on that passage. The other comments on possible digging were also based on the guidebook. Steve Reames has sent me copies of four old

RMC articles regarding TPT exploration and surveying (all by Steve Simms I think). I will write another RMC article when the resurvey is complete and will do a better job summarizing the history in that article.

Cheers,

Carl

From: From Donald G. Davis to Carl Bern
Date: Wed, Jan 27, 9:50 PM

Carl, Norman Pace reported seeing crystals in the sump that looked like aragonite needles. I can't recall recognizing aragonite in any subaqueous cave environment – do you know whether it does occur underwater? Also, have you seen any sign in the cave that the stream is saturated with $CaCO_3$? I've never seen it depositing any at the entrance or downstream.

From: Carl Bern to Donald G. Davis
Date: Thu, Jan 28, 7:10 AM
Hi Donald,

There are accumulations of travertine in the gully leading up to the entrance of the Tick, so the stream is saturated relative to $CaCO_3$ at least at some times. The crystal deposits that Norm describes in the sump also occur below water level in the passages beyond the sump. My recollection is that they are present below water level throughout the passage called Charon's Way, where the water is backed up by the sump. Flow through here would be slow. The deposits are rather fragile and disintegrate underfoot if one tries to chimney up out of the still water. The walls above water level are sturdy. When the deposits disintegrate they yield clouds of suspended sediment and small bits of crystal that sink. The morphology of the deposits, bulging outward from the walls below waterline, does suggest that they are an accumulation of material.

Carl

From: Donald G. Davis to Carl Bern
Date: Thu, Jan 28, 3:13 PM

I stand corrected about undersaturation. I don't remember noticing travertine downstream from the cave. I presume that the stream might be saturated at low water, but unsaturated during the snowmelt pulse.

I reviewed *Cave Minerals of the World*'s treatment of aragonite and find no mention of subaqueous occurrences, except for a subaqueous coating in a hydrothermal cave. I suggest that samples of the Twenty Pound crystals be collected for close examination and identification. It seems to be something unusual.

– Donald

From: Donald G. Davis to Norm Pace, et al.
Date: Tue, Feb 2, 9:12 PM

I suddenly thought of another possibility for the mysterious Twenty Pound-Tick needles: monohydrocalcite. As of the 1997 2nd edition of *Cave Minerals of the World*, it was treated primarily as a subaerial (and even aerosol) speleothem, recorded as moonmilk in Thursday Morning and other cold high-elevation caves, and "...is metastable under subaquatic conditions and quickly transforms into calcite and aragonite... monohydrocalcite may have precipitated from running water in Hidden Cave [NM]..." There's plenty as moonmilk in the Plateau caves, and this seems to me a likely candidate for a precipitate in the cold 20-pound stream.

– Donald

Union Pacific Sealing Off Cave Often Used as Homeless Encampment

Forwarded by Donald G. Davis

Going through year-old *Denver Post*s for woodstove kindling, I came across this item from Mar. 8, 2020, p. 2B:

Union Pacific sealing off cave often used as homeless encampment

GLENWOOD SPRINGS >> For several days, crews in hazmat suits have been cleaning out a cave east of the city on the Union Pacific Railroad line.

The cave has been a campsite for the homeless for years, but the railroad decided to seal it this week. The cave sits about 20 feet from the railroad tracks. People have also been staying in a culvert under the tracks.

The number of people camping there has been increasing in recent years, according to an employee at the train station. – Staff and wire reports

I seem to recall someone saying that they've also covered Vapor Cave #1.

Additional comment from: Douglas Medville
Date: Apr 16, 2021, 4:35 PM

I am the source of Vapor Cave #1 information. I mentioned it to Rick Rhinehart after two of my eastern caving friends went to take a look at it last month and found that the vertical entrance had been completely filled with rocks. I suppose that the Union Pacific RR did it since its on their right of way. Too bad that they didn't consult with anyone in the caving community. The cave is short, hot (I measured the temp at 123F), and possibly scientifically significant since it contains neat sulfate minerology, a Chandelier Ballroom type of hanging crystalline speleothem, and probably a microbial community since in a similar cave nearby Donald and I found snottites there – first ones found in CO.

The Biggest Limestone Sinkhole in Colorado

by Michael D. Frazier

Colorado has some big sinkholes. Jet Lake sink on the Blair Lake bench is a prime example; it takes the entire flow of Jet Lake. The sinkhole above the town of Garfield is another. Still another exists near the top of Cottonwood Pass near Gypsum Colorado. This one has a 40-foot wall and can be seen from Google Earth.

What Colorado sinkhole is the biggest of them all? The answer lies near the other Cottonwood Pass just west of Buena Vista, Colorado. The sink lies approximately 3½ miles due south of Cottonwood Pass. The bottom of the sinkhole is at an elevation 11,864 feet in a body of water named Spout Lake. The high sides of the sink are what we will call Tag Peak due south of Spout Lake at 12,885 feet, and what we will call Spout Peak at 12,879 feet just west of the lake. This makes the sink 1,021 feet deep excluding the depth of the lake and possible cave passage at the bottom. The sinkhole is measured by Google Earth at 2,735 feet wide by 4,337 feet long. I believe this exceeds the dimensions of any other limestone sinkhole in Colorado.

Investigating the Transfer Spring

Subterranean Drainage Along the White River Plateau's Southern Flank at Glenwood Springs

by Richard Rhinehart

Richard Rhinehart serves as the digital editor for Rocky Mountain Caving. *The journal's founding editor, he began caving in 1973 and joined the National Speleological Society in 1974.*

Rocky Mountain Industrial's proposal to dramatically expand the Mid-Continent Quarry north of Glenwood Springs has raised the question as to whether the removal of the Leadville Limestone strata within the quarry footprint might adversely affect the city's well-known hot springs.

Texas geologists contracted by the Denver mineral development firm in 2018 noted in their analysis the absence of major karst features on the slope. Without sinkholes, disappearing streams, and other geologic features common in eastern cave and karst regions, they suggested underground water flow is minimal or even non-existent in the limestone.

In ongoing discussions about caves and underground water flow in the Glenwood Springs region, I learned from knowledgeable geologists Harvey DuChene and Mark Maslyn that it is likely that the uplifted Leadville strata north of Glenwood transmits water down the dip of the rock. Oasis Spring, a major karst resurgence on the western wall of Oasis Creek a few thousand feet northwest of the proposed quarry, is a prime example of significant underground drainage. This spring is most likely fed by snow-melt and rain entering sinks and joints in the Leadville strata a mile or more to the north, along the No Name Divide. Water flows down the dip of the limestone, emerging at the spring where a fault crosses the canyon.

It seemed logical to me that if subterranean drainage is found on the western side of Oasis Creek, it most likely is also found on the eastern side, where the quarry expansion is proposed.

Reviewing geologic and topographic maps of this region, I noticed a feature identified as the Transfer Spring. This spring is not along the well-known Transfer Trail, the historic four-wheel-drive route leading from Glenwood Springs to the high White River Plateau at Carbonate. Instead, it is in the upper headwaters of Cascade Creek, the canyon draining south past the abandoned Marblehead Quarry to the Colorado River, just west of the No Name Tunnels on Interstate Highway 70.

I researched the spring and discovered that for about five decades, from the early 1890s to the early 1940s, the White River National Forest maintained a ranger station along the Transfer Trail at this location. For many years, the station even had telephone service.

However, sometime around the start of World War II, the Forest management decided to shutter the facility. Perhaps at the same time, or shortly thereafter, the Transfer Trail was re-routed in this region, with new switchbacks constructed to the west, probably allowing for a less steep grade for motorized vehicles.

The road was originally constructed in the mid-1880s, providing access to a sawmill near Windy Point high above No Name Creek. Later, it was moved west of this spectacular viewpoint to the No Name headwaters. This location was called Hip Roof, after a building constructed at the mill featuring a distinctive hip roof. In the late 19th century, many visitors would take day trips on mule and horseback from Glenwood, being thrilled by the terrific exposure at Windy Point, and enjoying a chuckwagon

Photo by Richard Rhinehart.

Old concrete work at the Transfer Spring.

lunch along the route.

The location of Transfer Spring raised my interest when I found geologic maps indicated the surrounding bedrock is the Leadville Limestone. Given a ranger station was built adjacent to the feature, I reasoned that the spring must have been an important source of water both for travelers and for cattle and sheep moving up or down the mountain.

On Saturday, October 10, 2020, I had the opportunity to visit the area and relocate the spring.

I started off from the saddle north of Glenwood Caverns late in the morning, around 11 a.m. After a mile of walking, a hunter in an ATV stopped adjacent to me. He kindly inquired if I would like a ride up the road. He had been readying his ATV when I left my vehicle, and so I gratefully accepted his offer. He drove me the remaining distance, a total of 4.9 miles from the trailhead, according to his ATV mileage.

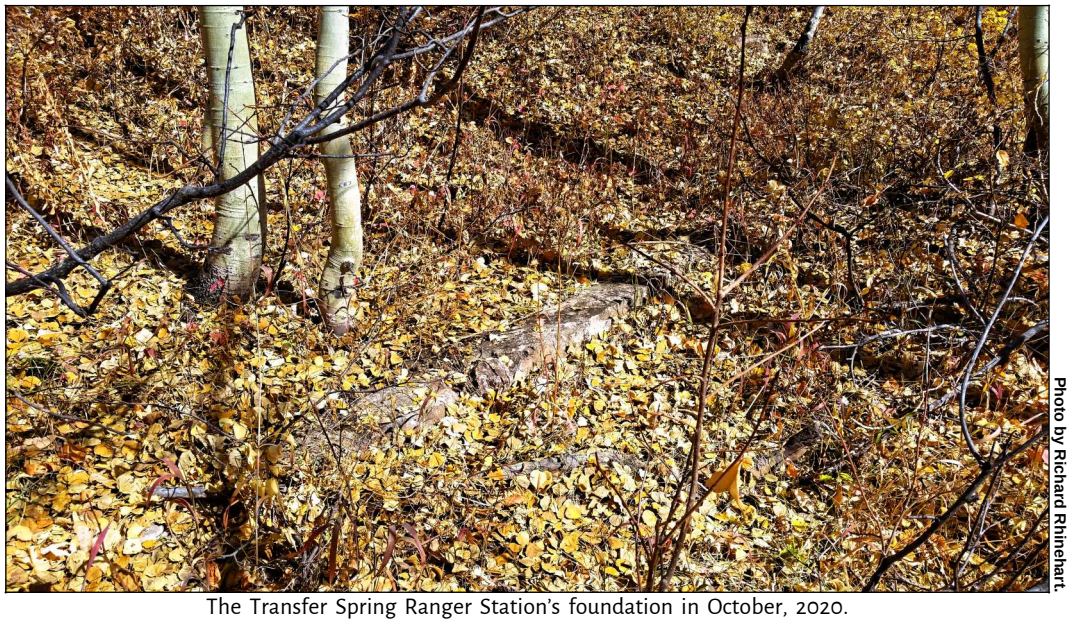


Photo by Richard Rhinehart.

The Transfer Spring Ranger Station's foundation in October, 2020.

The hunter dropped me off at the head of the Cascade Creek drainage and continued on his way. It was shortly before noon, and I found a pleasant fallen log to sit on for my meal. The Leadville outcrops throughout this area, with limestone pavement and broken slopes of bedrock visible. I walked a little of it, being reminded of other areas of the Plateau that sometimes have hidden pits in similar outcroppings, but decided I should set off for my destination.

I dropped into the shallow valley that would deepen as I descended in altitude. Aspen groves dominated the slopes along with occasional pines. I wondered if all the older trees had been harvested in the late 19th century, when the sawmill was operational, and the population of Glenwood was hungry for boards for buildings and firewood.

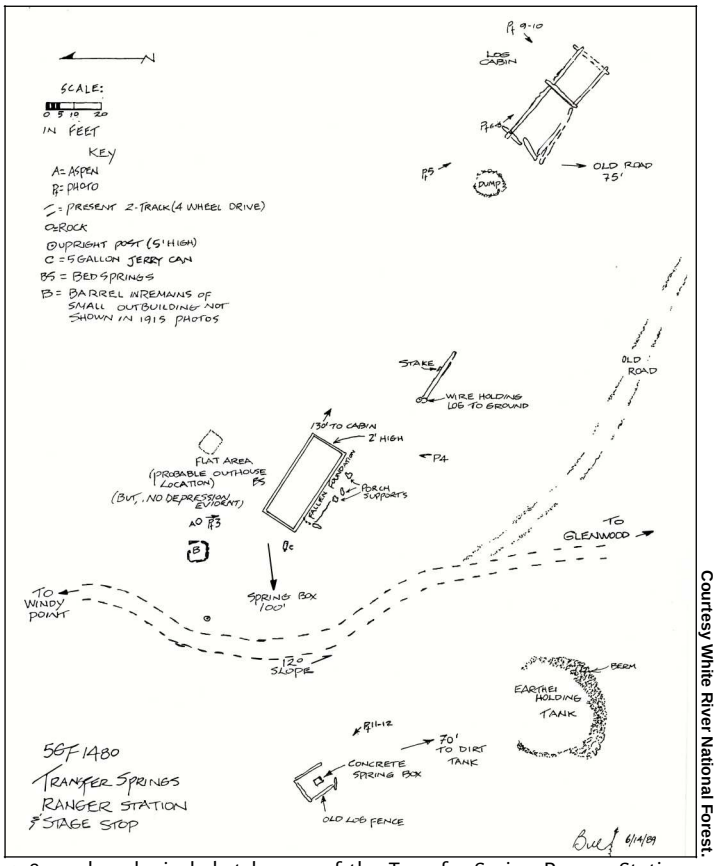
To my surprise, I came upon the spring almost immediately. Unfortunately, it was dry and displayed no indication that water had recently flowed from it. Using my walking stick, I poked down into the darkened concrete structure, finding a metal floor about two feet below the rim. I presume the spring is actually below this floor, and the water rises to flow out in the spring time, or at least becomes usable from the spring basin. I did not see piping from the spring on the slope below, but I suspect it must be present.

It was clear to me that very few people ever visit this site, much less know its history. The old Transfer Trail wagon road is overgrown but visible perhaps 30 feet or so to the east along the floor of the wide, green valley.

A very prominent footpath leads east from the spring basin, crossing the old road. It ends at an area that appeared to have been built up. Looking about, I first spotted a piece of sheet metal, rusted and old, half-buried in the leaves and other organic debris. Looking harder in the immediate vicinity, above the sheet metal, a series of flat pieces of limestone laid in a row seemed out of place. Investigating more closely, I found this was actually a part of a low concrete wall – probably the footing for the ranger station.

Kicking aside fallen leaves, I uncovered more of the footing – it probably extends 25 or 30 feet. My impression is that this was large enough so that a public office might have occupied the west side, closest to the Transfer Trail, with living quarters and a kitchen adjacent and to the east. Up the hill a few feet northeast of the apparent end of the foundation, I spotted an odd area with a mound of dirt that was not natural. I suspect this was most likely the location of the outhouse, which probably was buried when the station was abandoned and closed.

Given the lack of materials remaining at the site, I believe



Courtesy White River National Forest.

1989 archaeological sketch map of the Transfer Spring Ranger Station.

that when the Forest closed the station, they completely dismantled it, possibly using the materials elsewhere owing to the war. This was not uncommon in that era; I recall reading of crews dismantling abandoned railroads like the Corona Pass route above the Moffat Tunnel west of Boulder for use in the war effort.

Back at the spring, I noticed to the southwest what appeared to be a depression in the hillside. Could this be another abandoned structure? Investigating, I found an oval basin perhaps 25 or 30 feet wide by 20 feet wide in length. The basin was surrounded by a large mound of dirt, so I decided this had probably been a stock pond. Water from the spring was probably piped down the hill to the basin, filling it with water. Sheep or cattle moving up or down the hill and perhaps teams of horses for forest visitors might have watered at the pond.

The station itself is within view of Glenwood Springs and the Roaring Fork Valley to Mount Sopris. Most likely, this was a convenient location for the Forest to provide a public service of water for passing visitors and stock in addition to allowing the administrators to post a man in the field to watch over the region, including potential wildfires.

Departing the pond basin, on the slope southwest of the Cascade Creek drainage I found that the Leadville bedrock outcrops extensively. It shows clear signs of solution with shallow grooves, basins, and holes. Obviously, all drainage in this region is underground, draining down dip to the Colorado River valley several thousand feet lower.

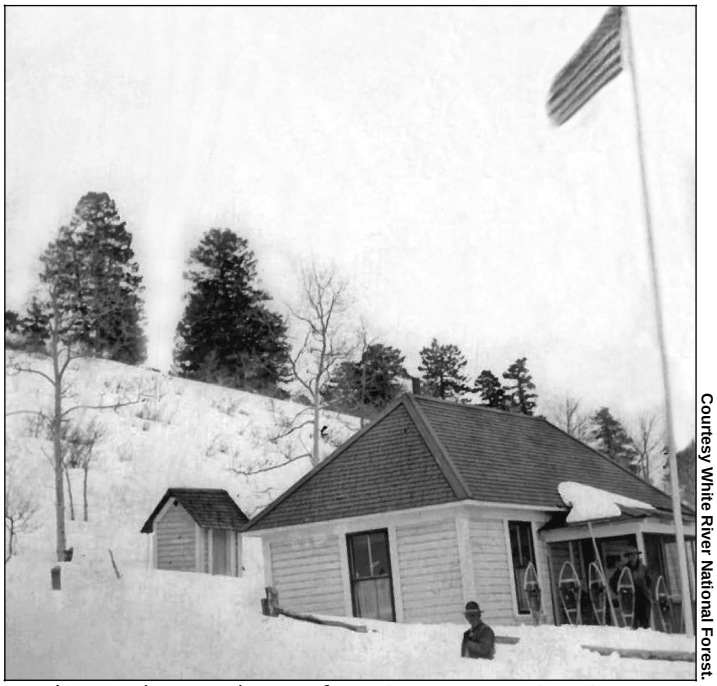
A minute or two of traversing across the slope farther to the west brought me to the massive fire line created in August during the height of the destructive Grizzly Creek Fire to the east in No Name Creek. Fire fighters bulldozed and leveled trees and scrub for thousands of feet along a straight line that extends north and south. This is a noticeable scar on the mountain, but I can understand the urgency of taking action when the expansion of the fire to the west in mid-August was considered likely. I am relieved that the firefighters ran the line down the mountain where they did, rather than farther to the east where they might have used the historic Transfer Trail.

Having completed my primary task, I took 40 minutes or so to walk the side road leading to the Oasis Creek overlook which I last visited in July 2019 with geologists from the Bureau of Land Management. Though we had admired the substantial water flow issuing from Oasis Spring on our previous visit, I was surprised to see it was dry in October, 2020. The lack of summer monsoon storms undoubtedly depleted the water table in the region.

Walking back down the road to the saddle parking lot, I took another view of the city, overlooking the area that is within the footprint of the quarry expansion. As much as I could see on my walk, the Leadville Limestone is continuous down this entire slope, from the head of Cascade Creek above Transfer Spring, to the eastern rim of Oasis Creek.

Along the Transfer Trail where it drops down into the Cascade Creek drainage, I examined a curious concrete structure along the Trail's north side. This concrete appears very similar in age and design to the concrete structure at Transfer Spring. A concrete culvert extends beneath the road bed for drainage.

In March, 2020, Rob McFarland reported he noticed that water was flowing down the slope from this culvert. Water seeping out of the hillside adjacent to the road and upslope in the rock fed the flow. The 1960s-era geologic map of this region marks this feature as a spring, with the underlying rock strata



Courtesy White River National Forest.

Looking northeast to the Transfer Spring Ranger Station, circa 1930.

the Leadville Limestone. Clearly, this is a seasonal resurgence.

I reached out to Tom Fuller with the White River National Forest to see if he had additional information regarding the historic Transfer Spring Ranger Station. As the Heritage Program Manager for the Forest, Tom searched his historic files. He found a cultural resource inventory had been undertaken of the site in June, 2003, following the Coal Seam Fire, which burned through the forest immediately to the north.

This study was apparently the first since a June, 1989 survey of the historic station. This survey was provided to the State of Colorado as a part of the Historic Preservation records for the state.

Between the 1989 survey, and my visit 31 years later, many of the historic features of the station had disappeared, or at least had become less evident, such as the bed springs and the barrel in the remains of an outbuilding. I was delighted, however, that my investigation found and correctly identified the main cultural features of the site.

Transfer Spring, and the lower-elevation spring adjacent to the Transfer Trail near the proposed expansion of the quarry, provide clear evidence of at least seasonal flow of water through the Leadville Limestone strata that outcrop along the dip slope from the No Name Divide to the north, several miles south to the West Glenwood Fault immediately north of the city. A visit in the spring season can better determine the flow of these limestone springs, which can help determine the overall amount of water flowing down the slope.

In late May, 2020, Cascade Creek had measurable water flowing past the abandoned Marblehead Quarry. Whether this water comes from either of these springs has yet to be determined.

It is clear, however, that the removal of the Leadville Limestone and underlying Dyer Dolomite strata at the quarry site for aggregate will disrupt the flow of water down the slope to the water table at Glenwood Springs. How this may impact the water feeding the Glenwood Hot Springs, Vapor Cave, and Iron Mountain Hot Springs is undetermined.

Stairstep Canyon Cave, San Juan County, New Mexico

by Doug Medville

Although Doug began as a limestone caver, he was lured over to the dirty side by Donald G. Davis on a 1998 survey trip into Anvil Points Claystone Cave. Since then, Doug has found and surveyed hundreds of claystone caves in Wyoming, Colorado, and New Mexico. This is the story of a recent discovery of three of these claystone caves, east of Olathe in western Colorado.

In the June, 2020 issue of RMC, I wrote an article describing the longest and deepest soil piping cave in the U.S.: B&B Caverns with 2,695 feet of surveyed passage extending to 325 feet in depth. Since then, we connected it to a small cave above, increasing its length to 2,887 feet and depth to 339 feet or 103 meters. This article describes a cave called Stairstep Canyon Cave which is just a couple of hundred feet from B&B. While the canyon that it's in does stairstep upward for over 400 vertical feet, there's another reason why we gave the cave this name.

Both caves, as well as over 200 others relatively close by, are in a 40-square-mile canyon complex called Kutz Canyon, south of Bloomfield, NM. The most notable feature in the canyon is a local promontory called Angel Peak, a spire that sticks up above the canyon rim and is visible from miles away. The BLM Angel Peak campground on the rim is a few miles from the peak, and other viewpoints along the canyon rim road give good views of the canyon below.

As with B&B, the lowest entrance to Stairstep Canyon Cave is an unassuming belly crawl at the bottom of a steeply-ascending canyon. We found this entrance in May, 2012, one of the first caves that we found in Kutz. We went in, ascending short nuisance climbs which prompted us on a subsequent trip to build a

Photo by Ted Lappin.

Carrying a wooden ladder to the Stairstep Canyon Cave lowest entrance.

Photo by Ted Lappin.

Bob Richards looking at yellow minerals on the cave wall.

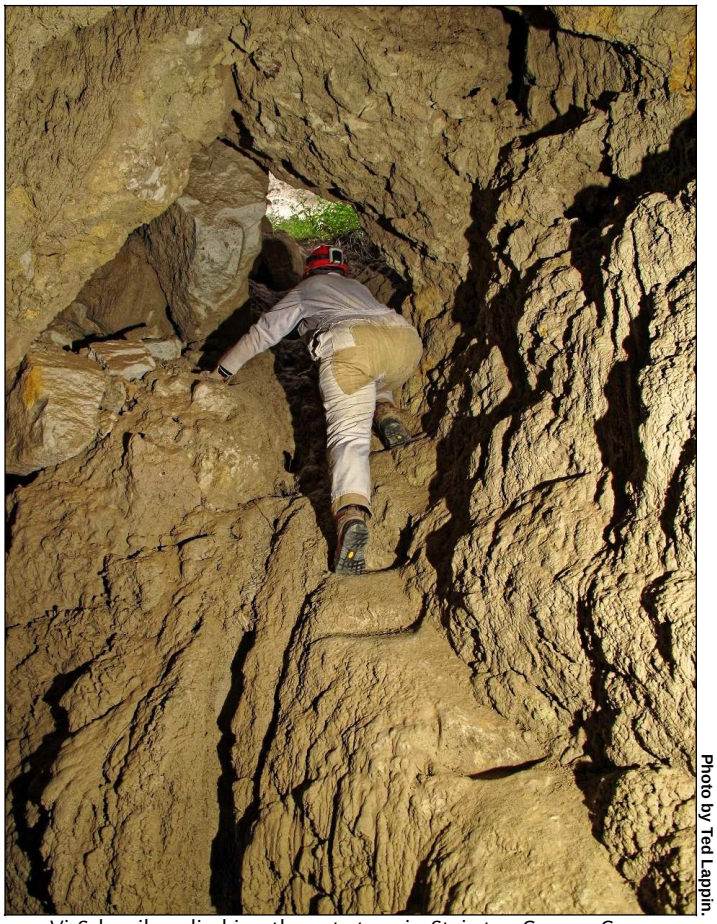


Photo by Ted Lappin.

Vi Schweiker climbing the cut steps in Stairstep Canyon Cave.

Photo by Ted Lappin.

Nancy Pistole at the top of the 31' pit.

short wooden ladder to scale them more easily.

On our first survey trip, Bob Richards, Bill Koerschner (caver-geologist, then living in Farmington, NM), and I surveyed in and upward for a few hundred feet, reaching a nice room with yellow mineralization on the walls. In the second picture, Bob is shown looking at the mineral, which was analyzed and found to be a sodium iron sulfate called natrojarosite: $NaFe_3(SO_4)_2(OH)_6$.

Just beyond the room, a slot canyon led to a 6-foot-high but very narrow climb with passage above it. Over the slot canyon and to its right, a steeply-ascending and exposed ledge went to the bottom of a deep sink that we could not climb out of. Sometime in the past, someone had cut several steps on the ledge to make it easier and safer to reach the sink. Who did it and when? We have no idea.

It could have been a curious gas field worker (since Kutz is an active gas field with well pads and other infrastructure), or it could have been an unknown earlier explorer. We didn't see any cut marks on the steps from a digging tool, so this is a minor mystery. The steps, shown in the third picture, gave the cave its name: Stairstep Canyon Cave.

On our next trip, in October 2012, I climbed up the canyon past the end of the cave, walked past the deep sink above the steps, and found a pit with observable passage. The pit was 31 feet deep, but on the uphill side, I could see a passage entering about 10 feet below the lip. Pieces of wood on the floor of the passage gave me hope that the cave continued up the canyon with the wood washed in from above.

In October, 2014 we returned to the pit with California cavers Carol Vesely, Matt Oliphant, and Nancy Pistole. Rigging the pit involved the usual hammering of metal stakes into the sandy claystone and tying off to them.

Nancy and Carol dropped the pit while surveying downstream; meanwhile, I descended into the lower passage and then journeyed upstream to the slot climb. I soon heard Nancy's voice, and we connected our surveys. I left the cave while Nancy and Carol went back up the pit and entered the passage with the wood in it. Along with Matt, they continued the survey, passing beneath another 25-foot pit as they went.

After leaving the cave, Ted Lappin and I climbed farther up the canyon and found the top of the 25-foot pit. Wanting to join the others, I rigged my 15 foot cable ladder but, since 15 is less than 25, we failed in the attempt (see the picture of the pit with the ladder dangling in it).

Photo by Ted Lappin.

Too-short ladder in a 25-foot deep pit.

Photo by Ted Lappin.

Matt Oliphant (in green and black circles) climbing Stairstep Canyon. Triangular entrance is above him in upper black circle.

Photo by Ted Lappin.

Carol Vesely at top of rappel to Matt's entrance.

Continuing beyond the pit, the cavers below reached a too-tight slot at station B21 with passage seen beyond; this ended the day's efforts. The cave now had 703 feet of surveyed passage and was 230 feet deep (or high) so we figured that that we were done.

We were wrong.

Matt is an excellent climber and, after getting out of the 31' pit, he ascended some exposed climbs to a low triangular-shaped entrance at the base of a 20-foot cliff (see the picture with circles; Matt is circled in green).

Going a few feet into this entrance, he reached the top of a short drop with passage observed going upstream. He couldn't see if it went downstream and toward Stairstep but we figured that it should, possibly connecting to the station B21 slot from above.

So, was this a higher entrance? In May, 2015 we decided to approach the cave by climbing down from the canyon rim instead of repeating Matt's exposed climb from the bottom. When we got to the top of the little cliff above Matt's entrance, we banged a couple of stakes into the ground, tied off, and Carol and I rappelled down.

We surveyed a few shots to the top of the drop, but the rope we used for rappelling didn't reach it, so we couldn't go down; we left.

A couple of years went by, since there were (and are) plenty of other caves to work on; following the 2017 NSS Convention in New Mexico, though, we returned. Carol was determined to go down the short interior drop. Accompanied by fellow California caver Cyndie Walck and loaded down with two ropes, a hammer, stakes to drive into the clay, slings, their vertigear, and the usual caving/surveying equipment, they rappelled down to the entrance using one of their ropes.

Placing stakes at the top of the little drop inside, they used their other rope to continue downward. Surveying down-canyon, they soon reached the too-narrow place, labeled on the cave map as "tight slot", and tied their survey into station B21, set from below two years earlier.

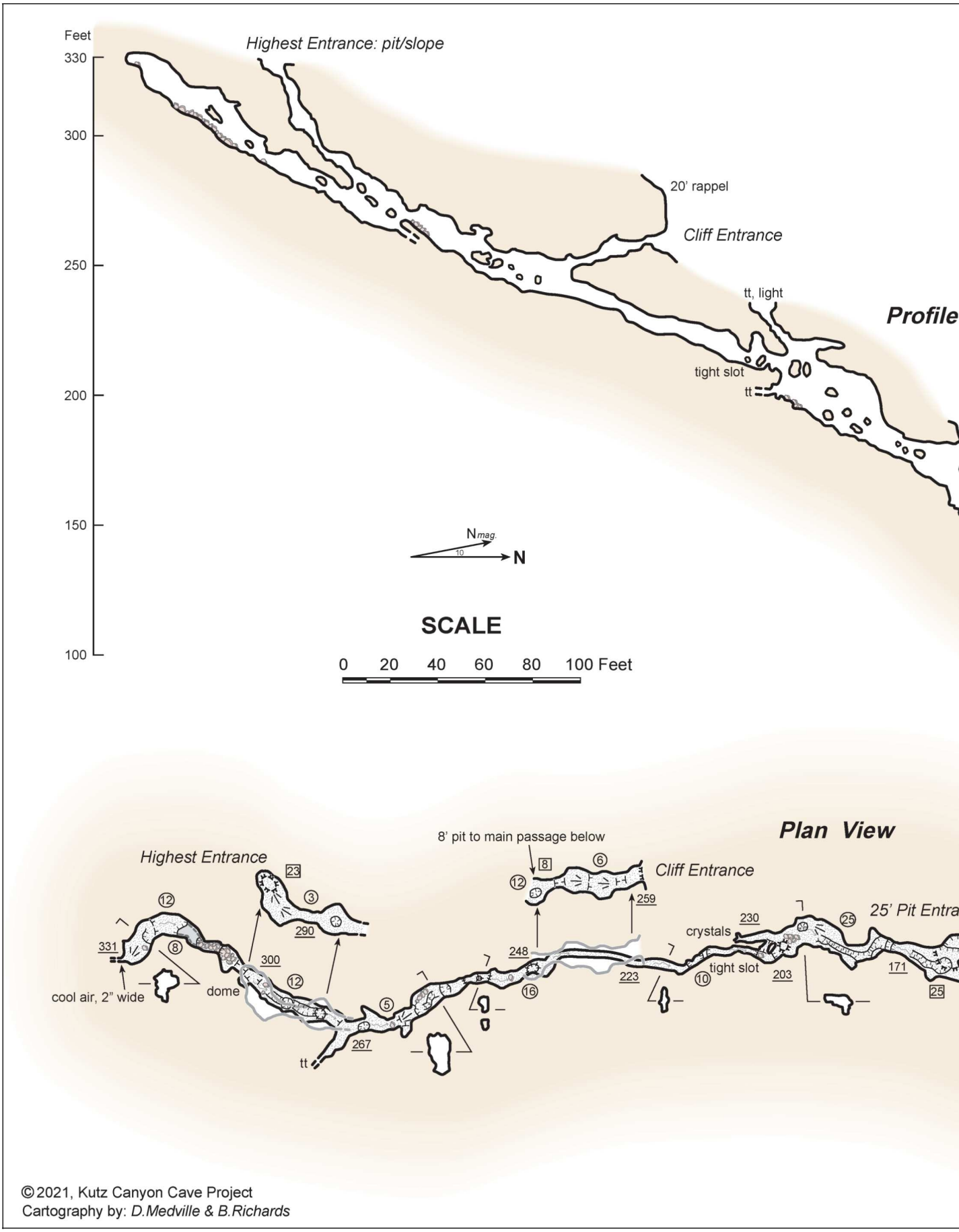
The passage also went uphill, so they surveyed that way for a few stations to another tight place where they were stopped. With this survey, the cave's length increased to 842 feet and its depth to 259 feet.

This should have ended the cave but – once again – it didn't. Looking on Google Earth at the canyon that hosts the cave, I saw a dark area that could be a possible higher entrance. Thus, in October, 2018, Carol, Bob, Nancy, Matt, and I returned, again climbing down from the rim.

The dark feature seen on Google Earth turned out to be a nice-looking pit with a steeply sloping but narrow passage below. Rigging and rappelling in, Carol, Matt, and Nancy went down about 25 feet.

Surveying downhill, they connected to the highest station from the previous year by Carol and Cyndie. They then surveyed uphill to a terminal choke, 331 feet above the cave's lowest entrance and increasing its length to 1,181 feet. This choke is diggable and we do have a yet-higher entrance; for now, though, we'll declare the cave to be done.

With 100.8 meters of relief, this is the second piping cave in the U.S. that is over 100 meters deep, the other being B&B Caverns next door. With its mysterious cut steps and pit entrances, this was a fun cave to explore and survey, even though it took us a few years to do it. Can we find another one over 100 meters deep? We shall see.


Feet
330
300
250
200
150
100
Highest Entrance: pit/slope
20' rappel
Cliff Entrance
tt, light
tight slot
tt
Profile
N mag.
10
N
SCALE
0 20 40 60 80 100 Feet
Plan View
Highest Entrance
8' pit to main passage below
Cliff Entrance
25' Pit Entra
crystals
tight slot
cool air, 2" wide
dome
tt
331
290
300
267
248
259
223
230
203
171
25
© 2021, Kutz Canyon Cave Project
Cartography by: D.Medville & B.Richards

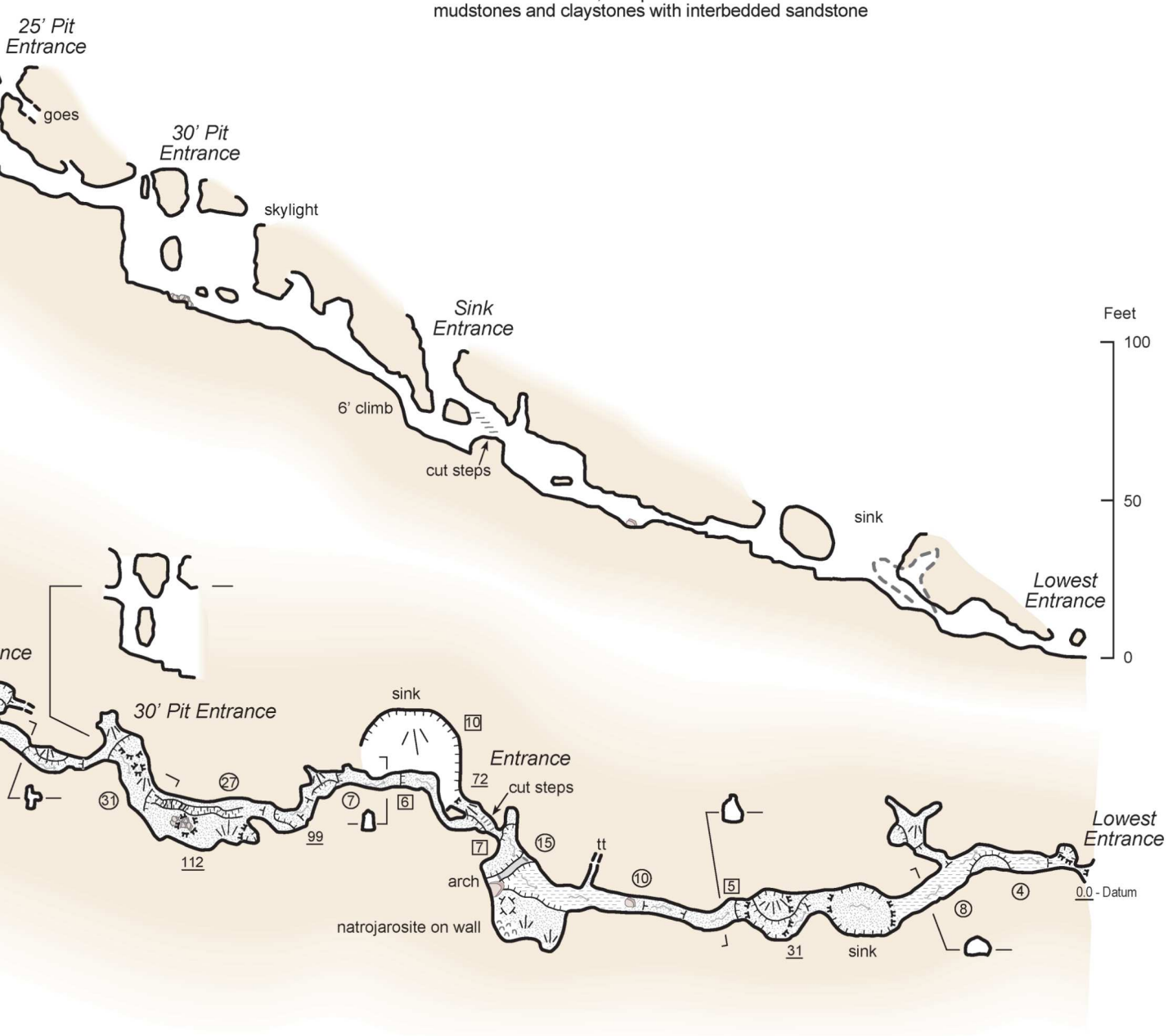
STAIRSTEP CANYON CAVE

San Juan County, NM

Surveyed 2012-2018 by:
Carol Vesely, Bob Richards, Ted Lappin,
Vi Schweiker, Bill Koerschner, Doug Medville,
Matt Oliphant, Nancy Pistole, Cyndie Walck
Lenght: *1,181 ft (360m)*
Depth: *331 ft (101m)*

Stairstep Canyon Cave is developed in the 65-61 Ma Paleocene Nacimiento Formation, composed of nonmarine bentonitic mudstones and claystones with interbedded sandstone

View



Trip Report

2020 Cerro Rabon Expedition

by Michael D. Frazier

Mike Frazier has been with the National Speleological Society for over thirty years and is a fellow and life member. Mike has participated in and/or coordinated over 40 international caving expeditions and has been part in the exploration of eight caves that pass -1000m in depth. Locally, Mike coordinated the survey of Hurricane Cave, the deepest surveyed granite cave in the world. He and his wife Donna are the proud owners of Defiance Cave preserve.

Photo by Jean-Marc.

Caver behind the bowling ball formation.

This is the story of the 2020 Cerro Rabon expedition led by the Swiss. Special thanks to Gilles Connes for providing me notes from his journal.

On the evening of Thursday, February 20th, 2020 Donna and I met several members of the 2020 Cerro Rabon Expedition team in Tuxtepec. Attendees included Karlin Myers (American/Swiss), Gilles and his daughter Lilou (France), Amandine and Diego (Swiss/German), and Patrick Deriaz (Swiss/German).

On Friday, the group split into teams to purchase food and other items needed for the trip. We then drove to Carlotta, a small pueblo in the rain forest at the foot of the Cerro Rabon massif to await word on permission.

Carlotta is known for its coffee plantation that won a gold medal in the World's Fair. Donna and I own a little house there. The house is quite small but the views of the valley and of the Cerro Rabon Massif are superb. Cavers made themselves at home sleeping on the floor.

The next afternoon we all drove to Ayautla for dinner at a local restaurant. The atmosphere of our group was quite pleasant. We enjoyed the meal conversing in English, French, and German.

Meanwhile, Jean Marc, Laurent Deschanel, and Pierre Yves were in Tenango on the other side of the massif working on securing permission, not an easy task. Fortunately, the president of San Martin Cabellero (and our longtime friend) Anselmo tipped the scales in our favor; we

received permission after a few days of negotiation.

On our final day in Carlotta the group took a trip to the nearby Rio Uluapan. The Uluapan is a large cave resurgence sitting at the base of a 1000m cliff face covered in primary forest. This resurgence expels as much as 30 cubic meters per second (1,000 cfs) of water during flood.

We had gotten word that the Rat House which we rented from Anselmo still had no roof and no electricity. We all piled in my truck and drove the four hours to San Martin. This is the first year the group has had the luxury of a road into town. In the past years we had to hike in 7 kilometers from Tenango.

Upon arriving at the Rat House we found that a metal roof had been started along the porch area. We set up tents and barriers to keep the cows out; then Jean Marc, Lilou and I hiked up into the rain forest and began cutting a trail.

It rained very hard that night creating a muddy wet mess inside the Rat House. A Mazatecan man and his son continued building the roof and putting on doors for the next week or so.

In subsequent days, Laurent, Lilou, Amandine, Diego and Karlin began to rig two enticing wells and explore two sinks that Gilles and I had located the previous day. Gilles, who has had a recent back surgery, and I began to cut a trail towards a large sink that was the terminus of exploration in 2008.

Gilles is a French caver who is very amicable, strong and motivated. We both share a common passion for the area and we worked well together taking turns out front with the machete. The old growth primary forest is still as magical as ever.

We cut a steep trail across several sinkholes towards a large depression that was discovered by Laurent and Jean Marc 12 years ago. We did not want to turn around until we reached the 50m pit they found.

The sinkhole was reached and explored through a series of efforts to drop 70m in the steep thick cover of foliage. At the bottom of the sink, we encountered large blocks but no cave.

We then followed the rim of the sinkhole until a row of pits was encountered. It is difficult to find stones in the forest to throw in, but we soon found some. Gilles filmed while I threw in stones. The first pit seemed to be around 40 to 50m deep, while the second was around 25m but appeared to have going cave at the bottom.

Photo by Marc.

A very large room in a Mexican cave.

Upon returning to camp we found out that these sinks were different from what the others had found in 2008. The GPS said the one they found was only 10 meters away. A return trip was certain but the walk took five hours.

The following day I joined the Italian team in pushing Nanga Cave (*butterfly* in Mazateca) to a depth of 250m. The cave seemed to end but I noticed a tight crawlway just 10 meters above the terminus. Pushing through the tight crawl with a rock hammer, I was again in meandering walking passage which Daniele (Poupi) and I pushed for a hundred meters or so before returning to the group.

On the return trip, we noted a side passage that bypassed the tight crawl and put us out on a ledge in the main passage. The cave was re-rigged accordingly.

Meanwhile, Hard Rock Cave was rigged

Photo by Gilles.

Mike Frazier on rope in a Mexican cave.

to a depth of -200m by some of the Italians. A tight vertical restriction was encountered at this depth and discouraged several members of the team.

Lilou and Jean Marc hiked out to explore a sinkhole in the San Antonio area in hopes of finding another entrance near the terminus of the -1200m Kijaje. In coming days Herba, Suzy, Andrea and Laura continue rigging Hard Rock Cave to a depth of -800m replacing old anchors and maillons with stainless. They were in the cave 22 hours, and this does not include hike time up and down the mountain. They are all definitely in top physical condition!

Evenings at the Rat House are generally spent enjoying group meals and guitar music. Lilou, who is quite an artist, drew portraits of the team members, as well as one of Anselmo.

Over the next few days, Jean Marc, Amandine, Diego, Lilou, Patrick and Pierre Yves walked sections of the Never-Ending Trail towards Tenango searching for "Die Big Schach," a giant pit that was spotted in 1995 but never dropped. They explored many small caves and pits including the -100m Centipede Cave (*gosientopa* in Mazateca).

A friendly local named David led Marc, Anne, Jean Marc, Patrick and Laurent to some pits in the forest he had located. He showed them 12 wells that varied from 15m to 60m in depth. The next day several members returned to the area on top where Gilles and I had discovered the pits. The Italians were eager to explore them.

The 50m pit turned out to be only 35m, motivating taunts from Marc for our big fish story. Another pit, however, turned out to be 120m deep.

Laurent and Gilles continued constructing our trail deeper into the forest but were turned back by lapiés killer karst terrain. They did find two other pits of -50m and -80m.

Simultaneously, a group comprising Marc, Daniele (Poupi), Andrea, Herba and Laura pushed Hard Rock cave and connected it to the Kijaje just beyond the lake. The group replaced 36 anchors on the 26 hour trip taking a four-hour mini-bivy before returning to the surface. These guys and gals are indestructible!

On Monday, March 2nd, Jean Marc, Gilles, Laurent and I returned to the pits David had shown them above what we coined Valley of the Milpa. I carried the rope, but, having left my vertical gear at the entrance to Hard Rock Cave, I let the others explore the shaft that turned out to be 66m deep while I continued cutting the trail deeper into the forest.

Trail cutting in this area turned out not to be so bad, so I made great progress towards a giant sink spotted on Google Earth. I cut trail until 3 pm when it was time to start back before dark.

Upon returning to the 55m pit, I surmised that the others had gone back to camp. I had a good GPS on the Rat House but did not think to take a GPS on the start of the Milpa valley trail. The trail was only a few days old and not well marked. After spending several hours crashing through the forest climbing logs across deep ravines and scaling scary cliff faces with little juice left in the batteries of my GPS, I decided that I would better off waiting until morning when I could travel more safely.

The rest of the night was spent rocking back and forth trying to retain some heat; the light drizzle did not help. With the sunrise, I went east for a few hours and eventually found a trail. Around 8:00 am I arrived at the Rat House much to the relief of my comrades.

I took a rest day as others continued to look for caves along the Never-Ending Trail. A group of us hiked down to the site of our original base camp from the 1990's to spread the ashes of legendary caver Ernesto (Ernie) Garza.

His remains were placed at the base of a large old tree. Ernie is loved by many as was evident by the impromptu eulogies that brought tears to all our eyes.

Karlin, Suzi, Pierre Yves, Andrea and Gino returned to the Hard Rock and the Kieaje. The plan was to re-locate the route

to the farthest end of the cave by way of the Labyrinths. This would test both Karlin's and Pierre Yves's memories as they were the only people on the trip who might remember the route.

Unfortunately, it had been 20 years, and the route was so confusing that they never made it. They made a temporary bivy in a new location but after three days, they returned to the Rat House.

Andreas, Lilou and Amandine returned to derig Nanga Cave but found another meandering lead at -150m. They pushed the meander to the top of a large well but did not have enough gear to drop it.

The next day Poupi, Diego and Jean Marc returned and found that the lead connected back into known cave. A group of Italians went back to a lead they noticed in Hard Rock Cave at -650m. They dropped an 80m shaft and could see ropes rigged through a small window but could not get to them. They continued through several large galleries and came to the top of another pit of 70m. This trip lasted 24 hours.

Meanwhile, Gilles and I decided to continue our trail into the unknown in an attempt to reach a large sink seen on Google earth. Gilles had christened it Mikes Sink after I showed it to him on satellite photos. We decide to travel light and carry minimal food, water and equipment.

We set up jungle hammocks near the end of the trail that I cut on the day before I spent the night in the woods. We wore our jackets and hats inside our light sleeping bags as the night was quite chilly.

The next morning we continued cutting trail towards the sink. We imagined that we were the first humans to traverse this area. We took turns chopping trail and, at first, it seemed to be going well. We were sure we would reach the large sink.

Soon after, however, we found ourselves in treacherous terrain where footing was uncertain, unstable, and covered by vegetation. Gilles's leg was caught in a hole that trapped him, and he let out a scream. We took a minute for him to recover.

By the afternoon, it was apparent that we were not going to make it to the large dolina. We had only traveled about a quarter of the way there by 2:30 pm. We still had a kilometer to go.

We returned to camp and began to locate several new pits. The most exciting was a large deep fissure of about -50m with a huge gust of wind coming out. I called it Lilou's after Gilles's daughter who was an artist and a lovely individual.

We again located Gilles's pit which I had found and named on my solo hike. Around this time, Amandine, Anne and Lilou departed for Mexico City, followed a few days later by the Italian team.

The next day Jean Marc, Pierre Yves, Gilles and I returned to Boules Cave (named for the 60 cm chert balls within). We surveyed to -180 m and performed some additional exploration.

Gilles and I also rigged another pit only 25m away from Boules. It turned out to be a 70m entrance pitch. Another 15m pitch and we reached a breakdown pile. Back in the entrance pit, a pendulum to a window led to what looks like a 50m pitch. Of course, we must save something for the future explorers. The caves were all derigged and the gear put in storage.

In total, the group surveyed 21 new caves and connected Hard Rock Cave to the Kijaje in various locations. We also have a long leads list with many unchecked pits waiting to be explored.

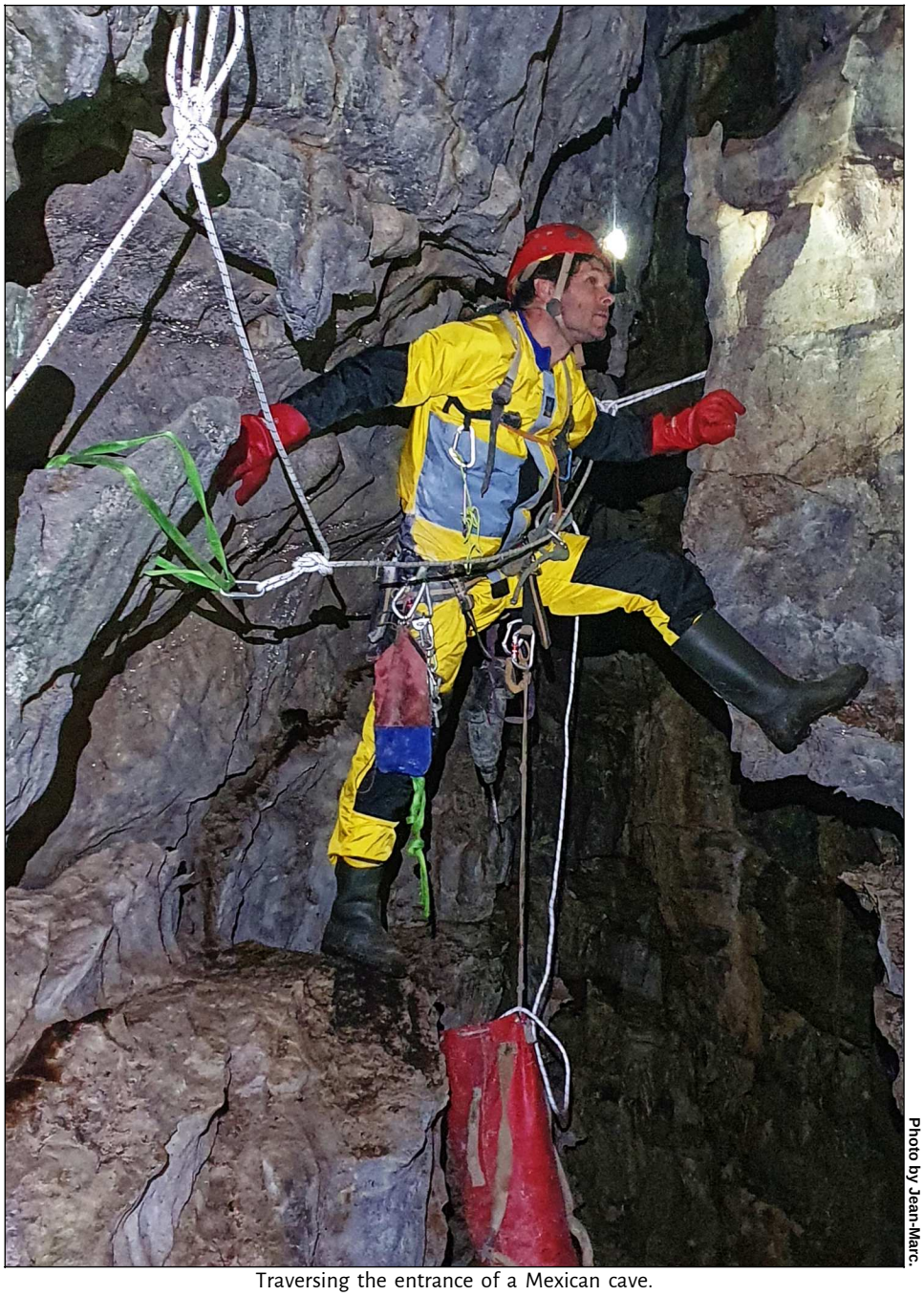


Photo by Jean-Marc.

Traversing the entrance of a Mexican cave.

Blackness of a Measureless Depth: The Mystery of Nicholson's Pit

by Richard Rhinehart

Richard Rhinehart serves as the digital editor for Rocky Mountain Caving*. The journal's founding editor, he began caving in 1973 and joined the National Speleological Society in 1974.*

Frank Ernest Nicholson was a newspaper man by profession, but a promoter and showman at heart. Learning of an upcoming expedition by the New York Times Features Syndicate to explore Carlsbad's fabulous cave in February, 1930, the 29-year-old Texan made certain he was a member of the 15-person team.

The expedition was originally imagined as an opportunity to test radio reception and broadcasting from deep below the Earth's surface. With Nicholson's influence, though, it grew into a larger expedition with goals to fully explore the cavern and dispel rumors about the cave that confused the public and potentially discouraged visitation.

Colonel Thomas Boles, the park's sociable superintendent, saw the expedition as an opportunity to increase public awareness and knowledge, as well as convince Congress to pass a pending bill elevating the southeastern New Mexico cave from a national monument to a national park.

The aviatress Amelia Earhart showed interest in joining the exploration, but her aviation adventures, including competing in a challenging, transcontinental All-Women's Air Derby in August, 1929 unfortunately kept her busy and unavailable during the expedition's scheduled visit.

Arriving at Carlsbad's La Caverna Hotel on February 20. 1930, the team included two geologists, a war veteran who would direct planned balloon efforts within the cave, a Boy Scout who had recently visited Africa on an expedition, and supply experts who would manage the team's considerable exploration supplies. Gathering together, they quickly recognized the team was light on caving experience and practical knowledge. This allowed Nicholson to assume leadership, claiming he was "an explorer of caves on five continents" and a qualified speleologist.

By the arrival of the expedition team, Carlsbad Cavern had seen decades of active exploration. Past explorers such as Jim White, Willis Lee, and the National Geographic Society, which hosted a six-month expedition with Lee that began in March, 1924, had explored more than ten miles of passage. National Geographic produced the first map of the cave, published in the September, 1925 edition of *The National Geographic Magazine*.

Just days prior to the New York Times expedition's arrival, on February 18, the Lake of the Clouds was discovered by Bowles, Assistant Chief Ranger Carroll Miller, and other Park Service employees at the end of Left Hand Tunnel. This discovery of the pristine lake at the bottom of a long, slippery

Photo supplied by author.

Newspaper man Frank Ernest Nicholson, from the frontispiece to his book, "Exploration of Carlsbad Caverns."

slope established a new depth record for Carlsbad Cavern at 1,035 feet, deeper than the lower-level passages and chambers explored six years earlier during the National Geographic expedition.

Nicholson and the team began several days of preparatory work for their underground explorations. One of their goals was to install a short wave radio station within the cave to allow the team to communicate with the outside world. On February 25, the team set the station and antenna in the Main Corridor, at a location they called the Amphitheater. It was successful in reaching outside stations.

The supply team carried large quantities of food into the cave – enough, Nicholson reported, to provide food for several weeks of exploration. A Goodyear racing balloon was transported to Carlsbad by rail car to launch in the Big Room, providing access to high leads that could be seen far above the floor of the colossal chamber. It was never uncrated.

Collapsible boats were ready for use to explore any underground rivers that might be discovered. Portable telephones and wires would connect the team during their explorations with the shortwave radio station to provide instant communication with the outside world.

With all in place, the team began their underground explorations by walking the tourist trail.

"We bid the world as we know and love, good-bye and worked our way downward in Stygian darkness," Nicholson reported.

Carlsbad was hardly a wild place at that time, with box lunches being served at the Lunchroom since 1928, a telephone line strung through the cave for underground communication, and water available for visitors at the Devil's Den. Electrical generators fueled by diesel provided power for the park, with electrical lighting within the Cavern extending to the Big Room.

The expedition team was not without its challenges. On the first day's drive from Carlsbad to the Cavern, an automobile accident overturned a car and bruised some of the expedition members. One team member was banned from the cave after the first day when he was caught attempting to remove stalactites from the cave. Another member was also dismissed for imbibing "too freely of the forbidden cup," presumably during the underground exploration.

Nicholson reported in his compendium of articles for the *Times* of the expedition, "The Exploration of Carlsbad Cavern," that the dismissals were taken badly by the team, who exhibited anger and frustration with Nicholson. Colonel Boles conferred with Nicholson, and they decided the exploration would be conducted by a team of four men – Nicholson, Ranger Carroll Miller, Boy Scout Douglas Oliver, geologist and personal assistant G.L. Mendenhall, and photographer Reed Haythorn, who would document their daring underground adventures.

Unfortunately, Reed was inexperienced in underground photography, so after the first day, Boles forbid him from undertaking any additional flash photographs owing to the smoke. Radio specialist Eric Palmer was also forced to discontinue his underground activities after he was unable to show a shortwave transmitting license. The park prohibited him from continuing his broadcasts.

After a few days of exploration, the park decided that only Nicholson was qualified to continue, leaving the rest of the expedition outside. Nicholson continued exploration with park staff members more familiar with the underground.

Following several days of exploring extensions of the Mystery Room, as well as the Bat Cave, Nicholson and his colleagues descended to Carlsbad's lowest level, explored by the National Geographic team six years earlier.

Wandering about these passageways, which were comparatively barren of decorations common to other regions of the cave, Nicholson named one area Hell's Half Acre. From here, the team found a descending hole which had apparently been overlooked by the Geographic team.

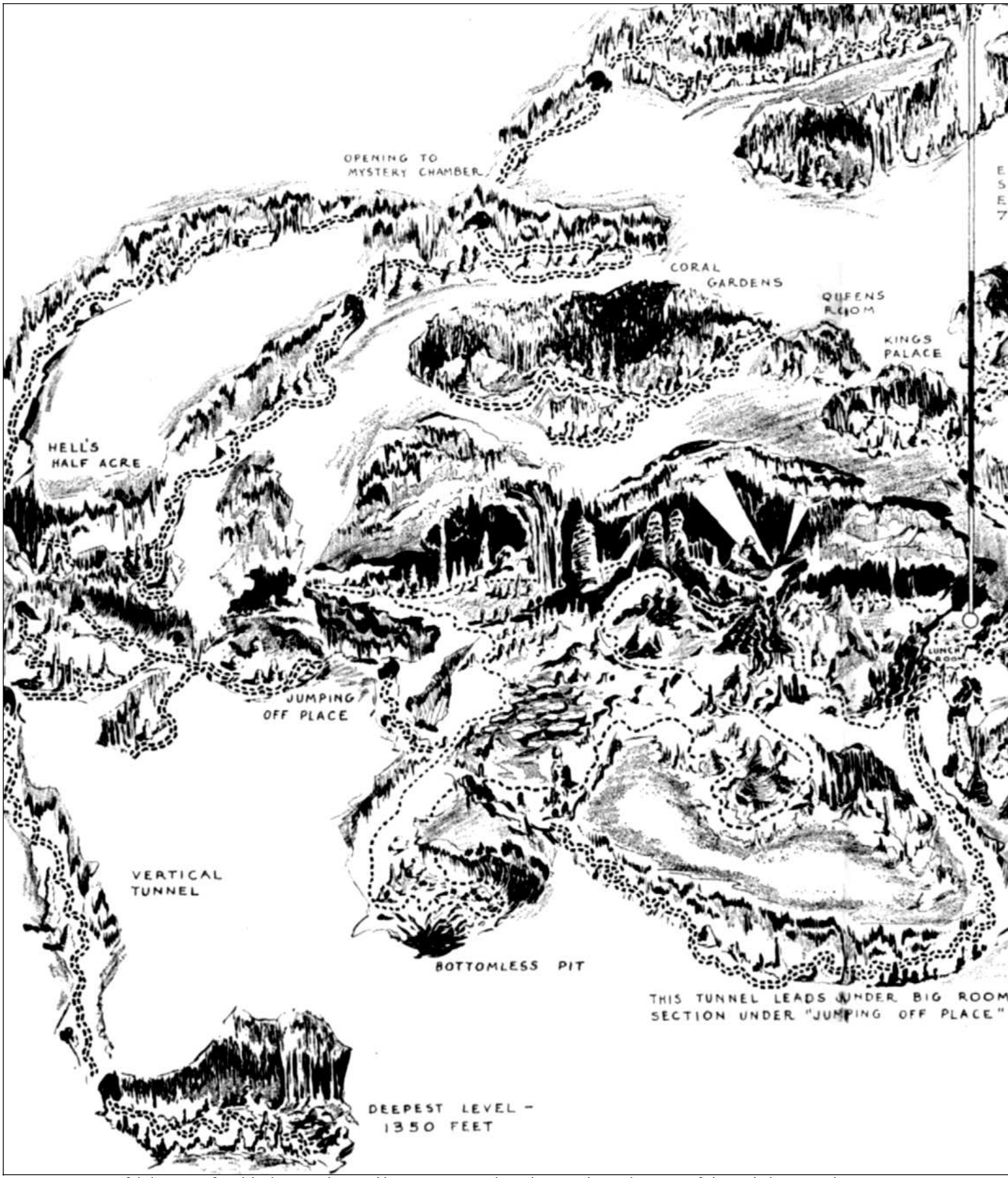
Nicholson describes the exploration of this inviting shaft:

> Within the area we christened Hell's Half Acre a black hole was found in the floor of an off-leading tunnel. At this point the floor level is approximately 1,000 feet below the earth's surface. We sounded the depth of the pit by means of a loose stone, and found it to exceed 100 feet. How much more we did not know. A 150-foot strand of rope was made fast to a large stone formation nearby, and I began a hand-over-hand descent into the black depth.
>
> To be lowered or raised by sliding or pulling a rope was quite out of the question, inasmuch as all sides of the pit, as well as the upper rim, were covered with a thick growth of crystal formation, with edges as sharp as a knife blade.
>
> My feet touched stone at approximately 100 feet down, and I found myself on a ledge that was perhaps a yard wide. Turning the beam of my flashlight downward, I could discern another ledge far below the dangling end of my rope. I shouted to my companions above, and one of them, with a second coil of rope, made his way down to the ledge upon which I was clinging. I attached the second coil to the first and continued on until I reached the lower ledge. Again I flashed my light downward, but its powerful ray was swallowed in the blackness of a measureless depth below me.
>
> I was now too deep for my shouts to be audible to those on the level above me so another member of the party descended to the second ledge. I relayed an order for more rope and the third strand gave me access to a room 1,350 feet from the surface of the earth, establishing a new deep level, lower than what was formerly considered the deepest level of the Carlsbad Caverns.

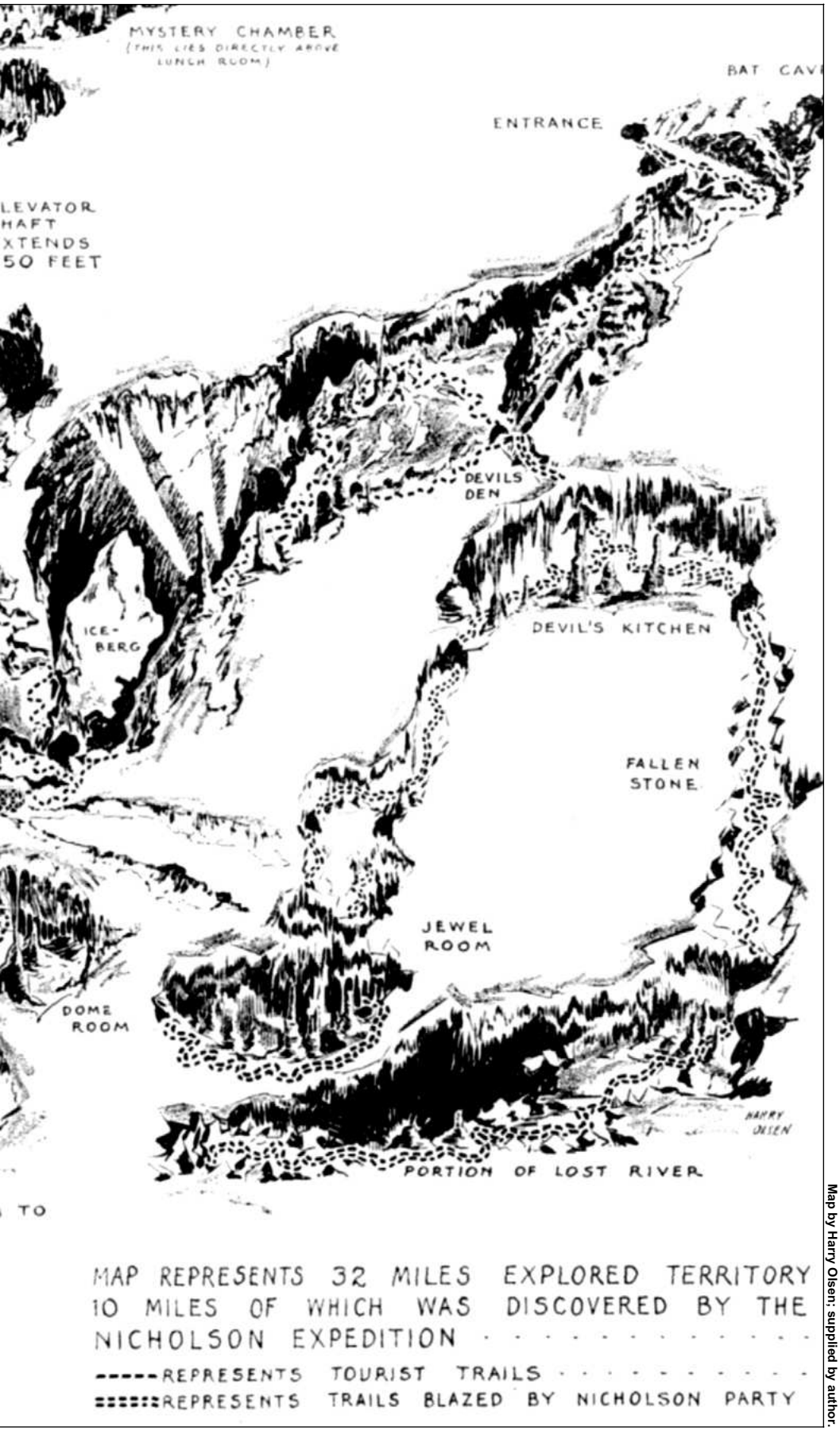
With the Lake of the Clouds having been known only a week at most at that time, estimates before surveying tied the lake to the known system suggested it could be from 1,220 feet to 1,300 feet below the cave's entrance. If this was so, Nicholson's discovery would establish a new depth.

Alone at the bottom of the virgin shaft, Nicholson took to exploration:

> The room I found was a fantastical chamber filled with mammoth formations that resembled huge monsters lying about the floor, grotesque, eerie things like one sees in the gap between the consciousness and the semi-consciousness of a dream.
>
> The descent had been an exhaustive one and I stooped down to drink from a cool pool of water. The bottom of the pool held a large deposit of the most perfect cave pearls I have ever seen. Gradually I became conscious of a chirping noise beside a nearby fountain. It proved to be a nest of crickets, white as milk and strange to say they were not eyeless, and I am at a loss to explain their source of food.
>
> I was exhausted from the strenuous climb down the rope. The heat here was stifling and there seemed not enough air to breathe. I glanced back up the shaft to where the remainder of my party stood, 250 feet above, equal in height to a 30-story building.
>
> I dared stay no longer in this chamber that seemed lacking of air and began climbing the long rope, swaying from



Fanciful diagram of Carlsbad Cavern by Brooklyn artist Harry Olsen showing the explorations of the Nicholson expedition in 1930.



Map by Harry Olsen; supplied by author.

side to side against sharp formations on the walls of the pit that brought blood. After what seemed to be an eternity, but what in fact was a matter of hours, I pulled myself over the edge of the pit and was back with my companions.

Bruised and battered from his exploration of the lowest level of the cave, Nicholson continued explorations with his colleagues for several more days. They explored other regions of the Lower Cave level, as well as passageways higher in the extensive system.

The expedition fell apart by mid-March, with increasing dissension and argument among its members, ridicule from writers not included in the explorations, and increasing dissatisfaction from the New York Times Feature Syndicate, which abruptly ceased funding when no major discoveries had been reported.

Although surveyors did not follow Nicholson down the shaft to the chamber with the crickets, many authorities nonetheless accepted his estimated depth of 1,350 feet as fact. Boles apparently was skeptical of the mysterious chamber, though he did appreciate the excitement and enthusiasm of the expedition in increasing public awareness of the cave.

On May 14, 1930, in the national excitement following the Times expedition, Congress passed an Act designating Carlsbad Caverns National Park. A month later, on June 17, President Herbert Hoover added more land to the park by executive order.

For retired Carlsbad Cavern explorer Jim White, Nicholson served as ghost writer for his autobiography, "Jim White's Own Story," published in 1932. The booklet was apparently written to satisfy unpaid expedition bills at the La Caverna Hotel. Nicholson continued his cave explorations elsewhere, including an expedition to the famous Devil's Sinkhole in Texas, and exploration leading to the commercialization of Cascade Cavern. Nicholson died in Harlingen, Texas on May 12, 1957 at age 56. The location of his ashes after cremation is unknown.

"Room 350 Feet"

The founder of the Colorado Grotto, William R. Halliday, M.D., visited with the then-retired Assistant Chief Ranger Carroll Miller in 1965. In discussions with Halliday about Nicholson's pit in lower Carlsbad Cavern, then suspected to have existed only in Nicholson's imagination, Miller confirmed that Nicholson had descended a shaft while he and others waited above.

He was doubtful, however, that the bottom of the shaft was deeper than the Lake of the Clouds, which Miller helped discover days prior to Nicholson's arrival. The question remained as to the depth of the pit, in that surveyors had never ventured to its bottom.

In February, 1968, the 42-year-old doctor was permitted to visit Carlsbad's Lower Cave to search for the lost pit with the goal of surveying it. Tom Meador agreed to participate in the trip, but became ill and was unable to join Halliday and Carlsbad Caverns National Park Naturalist Neal R. Bullington. The two headed into the cave skeptical that the pit was of any consequence, but were determined to find it.

Investigating every side lead in the general vicinity of the lost pit, all were found to be blind or shallow. Finally, they reached the ascending passage to the Mystery Room, where power cables were strung by the Park Service from the Queen's Chamber to illuminate the cave below the Jumping Off Place in the Big Room.

"Below the cable route was a minor slope to a small natural bridge which arched above a hole about three feet in diameter," Halliday reported later. "Beyond, we stood erect again, then gawked at a narrow passage with no discernible bottom. On the right hand wall were pencil marks we did not then notice." Halliday and Bullington had rediscovered Nicholson's Pit.

Halliday continued in his report of his exploration, published in the Spring, 1971 edition of *Spelean History*, the newsletter of the American Spelean History Association:

> The black pit was about two feet wide. With a little effort, we could see that about 20 feet directly beneath us was a floor that slanted steeply down and away from us. Coralloidal projections made the descent interesting; we fixed a 120-foot length of 7/16-inch rope for direct aid in the ascent.
>
> Proceeding down the steep, narrow slope we soon encountered large globular and nodular calcite masses. About 50 feet down, the passage was almost blocked, but a small hole permitted us to pass to what was an increasingly vertical pitch. The width continued to be about two feet, and numerous irregularities made climbing so easy we felt no need of a belay.
>
> The 120-foot rope ended a few yards past the constriction; we tied on a 30-foot cable ladder. It hung free a few feet short of the vertical pitch but the descent was easy. Below, a sloping floor led deeper into the fissure-like passage.
>
> Within a few yards, a duckunder to the right opened into a small, complexly shaped chamber. Breakdown and walls alike were thickly coated with glistening calcite masses. At the lowest point was a very tight tube that echoed resoundingly. After about ten feet I got stuck. No one has gone more than a foot or two farther.
>
> In the main part of the complex chamber we spotted some bat bones and also noted to our great surprise evidence of previous exploration by a 1951 Texas party including the McClungs and Carroll Slemaker.
>
> By judging body lengths along the slope, I estimated our depth below station ZY2 to be 162½ feet ± 12½ feet, and so reported at the 1970 National Speleological Society Convention History Session.

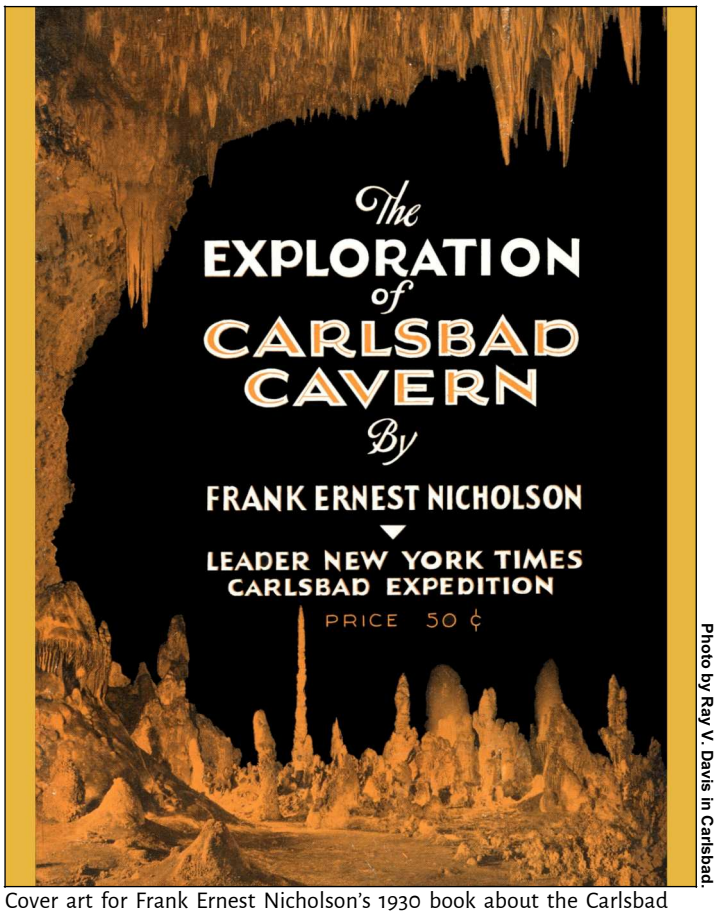


Photo by Ray V. Davis in Carlsbad.

Cover art for Frank Ernest Nicholson's 1930 book about the Carlsbad Caverns expedition.

Was this Nicholson's pit? It seemed half as deep as Nicholson's claim, which was more than we had been expecting – and certainly impressive enough. His 'cricket nest' could well have been crickets scavenging a dead bat. There might have been a pool in the little crawlway in 1930; the cave is drying rapidly and the coralloids were clearly subaqueous. His description of a huge chamber . . . well, his expedition was falling apart and he needed some great discovery:

> We wearily climbed back to the top of the initial drop and rested gratefully. As we sat, we spotted some pencil marks: three faint lines. At the top was the word **ROOM**. The middle line was an arrow pointing to the pit. The bottom line was the faintest but the figures **350 FT** could be discerned and there was a faint suggestion of a figure 1 before them. We were convinced.

Halliday called Texan Carroll Slemaker following the trip, who confirmed his 1951 visit. In the March, 1952 *National Speleological Society News*, John L. Riggs had reported on the Texas Grotto exploration on December 28 that examined the mysterious pit.

> Joe [McClung] found a deep pit with the sign 'Room 350 feet' marked on the wall. We let out 200 feet of the half-inch manila rope and safetied him down. It seemed that more rope and safety line might be required, so Slemaker and [John] Riggs set out for the cars while Jim [McClung], Mackie [Brown] and Mr. [J. D.] McClung went down as far as they could.
>
> Slemaker and Riggs made their way back through the lower cave to the trapdoor and on to the elevators. There was a long line of people waiting for the ride to the surface and the sight of the two explorers emerging from the darkness with carbide lights, flashlights and other odds and ends caused quite an uproar.
>
> At the elevator they were ushered ahead of the crowd and surprised an unbelieving guide when they told him they

had come from the lower cave by themselves. After getting the ropes and taking a special ride down, the tourists were again thrown into an uproar by the sight of the long coil of rope which almost reached the floor.

After making their way down through the trapdoor and through the passages to the spot where the others were waiting, they found that the rope being used lacked only about 25 feet of touching the bottom of the hole and that the fellows already lowered had gotten to the bottom without need of the extra rope.

Soon the explorers found that the passage at the bottom stopped but were surprised to find a note by Dr. Frank Nicholson scribbled on an old telegram envelope stating that there was a room 360 feet long further on. They had descended about 226 feet and could go no further, so they returned and delivered the note to Black [Assistant Park Naturalist], who seemed quite glad to get it. After coiling up the rope, we wandered through a few more passages, then returned to the surface.

Halliday returned to Nicholson's Pit on January 23, 1971, accompanied by Tom Meador and Claude Smith. Using a tripod-mountain Brunton compass, the team surveyed the pit and found it to be 162 feet deep. This placed its elevation at 950 feet below the entrance, about 85 feet above the level of the Lake of the Clouds.

Though it is not the deepest point in the cave, "it's quite a pit," reported Halliday. "I have considerably more respect for Frank Nicholson than before."

The Lost Chamber

Although Nicholson's Pit in Carlsbad Cavern is known to exist, it does not have the depth or the extent reported by the 1930 newspaper man. Was Nicholson exaggerating in his report for a better story? Or, could the tight, echoing tube Halliday examined in 1968 be the route to a chamber that only Nicholson has seen?

Only a few years after Halliday surveyed the pit to Nicholson's "second ledge," Colorado caver Donald G. Davis visited the pit on a Cave Research Foundation visit to Lower Cave. A strong climber, Davis was able to carefully descend the pit to the chamber reached by the Texas cavers in 1951, and Halliday in 1968, without the use of a rope or a cable ladder. Recalling the visit during a mid-1980s CRF trip to Lower Cave, Davis pointed out the shaft and noted it was Nicholson's fabled pit. He did not recall any extension leading from the bottom.

Carlsbad at the time was being systematically resurveyed by CRF, in preparation for a series of detailed map quadrangles that were published at the end of the 1980s. In May, 1986, however, Colorado cavers led by John Patterson and Dave Allured completed an excavation at nearby Lechuguilla Cave, discovering a much grander and extensive cave system that greatly decreased interest and caver exploration within Carlsbad Cavern.

Still, those cavers continuing work in Carlsbad found the Quintessential Right in the Left Hand Tunnel, Chocolate High above the New Mexico Room, Halloween Hall above the Big Room, and more recently, high passageways leading above the Mystery Room.

Could Halliday's tight tube lead to Nicholson's private chamber? At Lechuguilla, very tight squeezes have led to significant new discoveries. Davis notes that if Oz, a huge chamber in Lechuguilla's western branch, would have served as the main passage leading into the cave, the route to the main system below the chamber would have been through a tight descending hole.

Rod Horrocks, the Chief of Resources Stewardship and Science at Carlsbad Caverns National Park, notes it is theoretically possible that a tight pit in Carlsbad might lead to additional passage. He reports that "most pits in Carlsbad dead-end and are thought to be rising tubes where hydrogen sulfide rose up from the Castille Formation to the water table."

This ascending gas "then mixed with oxygenated water and formed sulphuric acid, which then created the cave just above the water table as the limestone was replaced by gypsum and spalled off into the water, ever expanding the large rooms. The boneyards were made as water carrying the degassing hydrogen sulfide moved through the porous bedrock between passages, condensing on the walls and forming sulphuric acid, which then ate out the mazes." As much as he is aware, no one has tried pushing the tight tube in Nicholson's Pit.

It is possible that Nicholson, at 29 years of age and being a small and thin man, was able to squeeze down the tube, which Halliday, at 42 years of age and more experienced, backed away from, despite the intriguing echoing sound issuing from below. Although a member of Nicholson's team descended to the second ledge to bring him another rope for safety, this unnamed colleague did not accompany Nicholson as he continued his exploration.

It was on this second ledge that the 1951 Texas team found Nicholson's message of additional passage below. If the discovery of a lower chamber was a hoax, designed to sell additional newspapers, would Nicholson have taken the time to write the note on a telegram envelope for some future visitor?

Nicholson by his own report indicated it took "hours" to return to the top of the pit, a trip which from the second ledge was simple enough that Davis was able to ascend unaided by rope. Could Nicholson have spent much of the time climbing hand over hand from the bottom chamber to the beginning of the tight tube, then forcing and squeezing his way back up to the second ledge, knowing that no other team member would be able to assist him?

Nicholson's lowest chamber is presumably only 80 or so feet vertically below the second ledge, but no detailed description of the route is provided. Halliday and Davis both reported that much of the pit is developed along a fissure, so it is likely that the remainder of a potential route could be along a similar narrow fissure.

Ideally, a team of experienced cavers who can squeeze through very tight spaces should re-examine the tube to see if it is passable. Halliday may have been correct that it is impassable, but if he simply was too large to fit, Nicholson may yet be the only visitor to the mysterious lower chamber, which could be at about the same elevation as Lake of the Clouds.

Perhaps someday soon, a fortunate caver will squeeze through the echoing tube and enter Nicholson's lost chamber. It's been 90 years since his expedition, and more than six decades since his death. Adventure awaits.

Bibliography

Carlsbad Cavern: The Early Years, by Robert Nymeyer and William R. Halliday, M.D. Carlsbad Caverns Guadalupe Mountains Association, 1991.

The Exploration of Carlsbad Cavern, by Frank Ernest Nicholson. Railey Printing Company, 1930.

The National Speleological Society News, National Speleological Society. March, 1952.

The Journal of Spelean History, American Spelean History Association, Spring, 1971.

Rocky Mountain Caving
P. O. Box 101091
Denver, CO 80250-1091

Address Service Requested