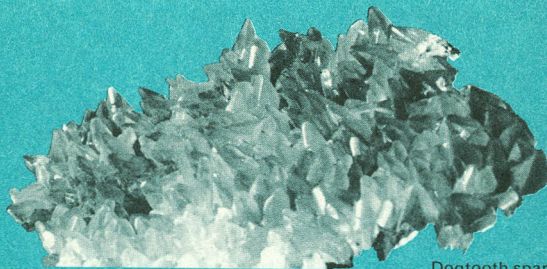


Jewel Cave

NATIONAL MONUMENT • SOUTH DAKOTA



Dogtooth spar

In the lovely hill country of western South Dakota, in a fragrant green setting of ponderosa pine, is a glittering underground world—Jewel Cave.

The small opening to this cool subterranean realm is in the depths of Hell Canyon. It was the sound of cool air rushing out of a hole in the cliffs into a hot summer day that attracted two brothers to Jewel Cave. Prospectors Albert and Frank Michaud originally recorded it as a mining claim, known as Jewel Lode, after its discovery on August 18, 1900.

In the hope of finding valuable minerals, they, with the help of Charles Bush, enlarged the small opening in the limestone on the east side of Hell Canyon.

They explored the cave but did not unearth any minerals of great monetary value. However, they did find jewel-like calcite crystals of great esthetic value, and the Michaud brothers decided to turn their efforts toward developing a tourist trade. A log building was constructed for visitors near the cave entrance on the rim of Hell Canyon.

At that time, frequent and reliable transportation in the West was in its infancy. The population was sparse and scattered. Today, trips that we consider just afternoon drives were major journeys. The brothers were unable to attract enough people to the cave to show a profit and were forced to abandon the venture.

The 1,275-acre park area was included in the Black Hills National Forest when it was established in 1908. The parkland remained under the administration of the U.S. Forest Service until August 10, 1933, when President Franklin D. Roosevelt, by executive order, transferred the cave area to the National Park System.

Systematic exploration of Jewel Cave continues. So far, spelunkers have explored, surveyed, and mapped more than 40 miles of passageways on four different levels.

ON THE SURFACE

The park's terrain is basically rough and rocky with two dominating canyons. Hell Canyon, the larger of the two, runs southeast, while Lithograph Canyon trends southwest. The two join just inside the park's southern boundary.

Several small springs provide water for animals and people all year. The thin soil is a mixture of sand and clay, well drained and quick drying.

The climate is relatively stable; winters are moderate and summers are cool. Average annual precipitation is 17 inches. Average high and low temperatures are 65° and 22° F. with a mean temperature of 43° F. The air temperature in the

cave averages 47° F. with 88 percent relative humidity. This cool, damp atmosphere is remarkably constant regardless of the season. A sweater or light jacket is desirable while on the cave tours.

Jewel Cave National Monument and the Black Hills are ecologically significant. There is a mingling of both eastern and western and prairie and mountain species of plants and animals.

Ponderosa, or western yellow, pine is the climax forest in the Black Hills region. Within the park is a 40-acre virgin stand of this species. Young ponderosa have a characteristic dark bark and are sometimes given the nickname "blackjack pine." The overall appearance of the dense ponderosa forests, when seen from a distance, is responsible for the name "Black Hills."

Scattered clumps of boxelder and snowberry grow in several ravines. Mountain-mahogany and other shrubs thrive on the dry hillsides.

Wildflowers bloom profusely during spring and early summer. The first to appear are pasqueflower (crocus), shooting-star, and phlox. The evening primrose, kinnikinnick, western wallflower, and anemone are the next to bloom.

In early June the roadsides and meadows are filled with the segolily, scarlet globemallow, white penstemon, and bluebell. Later in the summer coneflower, daisy, aster, goldenrod, and common sunflower may be seen.

Animals characteristic of the Transition Life Zone, between plains and mountains, are native to the park. Mule deer, white-tailed deer, coyotes, bobcats, weasels, porcupines, marmots, ground and tree squirrels, chipmunks, cottontails, and wood, or pack, rats and other common rodents are to be seen.

Birds are abundant and include the golden eagle, wild turkey, great horned owl, hawks, woodpeckers, crossbills, Clark's nutcrackers, juncos, sparrows, warblers, nutatches, chickadees, jays, flycatchers, and turkey vultures.

CAVES ARE FORMED . . .

The Black Hills, an eroded dome approximately 120 miles long and 60 miles wide, rises above a "sea of plains." The long axis of the dome runs north-south along the western boundary of South Dakota and extends into northeastern Wyoming. The weather-resistant granite and schist of the central hills have been etched by wind and water through eons. This granitic core culminates in Harney Peak, which is just southwest of Mount Rushmore National Memorial. At 7,242 feet above sea level, Harney Peak is the highest point in the United States east of the Rocky Mountains.

Around this central highland lies a peripheral mantle of limestone. This Pahasapa (Sioux Indian name for Black Hills) Limestone covered the entire region and is believed to have been deposited in an ancient inland sea about 300 million years ago. Uplift associated with the formation of the Rocky Mountains and subsequent erosion have exposed the igneous interior of the hills and left the remnant sedimentary cover tilted, cracked, and gouged. Jewel, Wind, and numerous other caves were formed by acidic surface and ground water seep-

ing into cracks and crevices. The acidic water, by solution, dissolved the limestone and formed caves. Later the water table lowered, the caverns drained, and some of the ceilings collapsed. Rooms, corridors, and the crystal lining remained.

... AND DECORATED

Water then began to decorate these voids. The process usually goes like this: precipitation, passing first through the air and then through decaying vegetation on the ground, combines with small quantities of carbon dioxide to form carbonic acid. The slightly acidic water dissolves small amounts of limestone (calcium carbonate) as it percolates downward through cracks and crevices and carries the calcium carbonate in solution into the air-filled cavities of caves. A very thin film of solid calcium carbonate is deposited on the ceilings, walls, or floor of the cave. As long as water seeps in, the cave remains "wet"—the crystals and formations continue to grow. When the water source dries, the crystals stop growing and the cave is considered "dry." Some parts of Jewel Cave are wet and other parts are dry.

Globulites



The cave derives its name from the myriads of jewel-like calcite crystals called dogtooth spar. Dripstone stalactites hang from the ceilings; when joined with stalagmites "growing" up from the floor, columns or pillars are formed. "Frozen waterfalls" or flowstone cover the wall below some fissures. Numerous other interesting, often minute, cave formations may be seen. Among these are:

Boxwork—Thin calcite fins were once deposited in fractures in the limestone. Later, the limestone was dissolved away and left the veins standing in sharp relief.

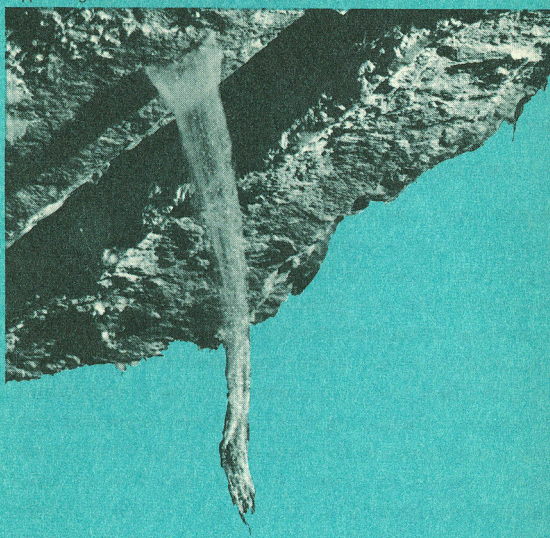
Globulites—Bunchlike, knobby nodules of calcite commonly called "popcorn."

Frostwork—Clusters of needlelike crystals of calcite, aragonite, and, rarely, gypsum.

Helictites—Calcite formations of varying shapes and sizes, all exhibiting a disregard for gravity and which assume twisted, spiraled, and curved shapes.

Gypsum "flowers"—Rare flowerlike growths of parallel gypsum crystals.

Hydromagnesite bubbles—Bubbles which have a wall about three- to four-thousandths of an inch thick.



Many parts of the cave display a variety of natural colors: shades of brown, red, orange, yellow, green, and lavender. The black of manganese dioxide contrasts with the white of gypsum in some passageways and chambers.

Some sections of the cave have measurable air currents. These are believed to be caused by differences in atmospheric pressure. The air moves from areas of higher pressure to areas of lower pressure. A 30-mile-per-hour wind blows through one constricted area, called "The Horn."

Many people who visit caves for the first time are surprised that animals and plants live in the cave. Five species of bats, the bushy-tailed wood rat, the white-footed mouse, and some cave crickets and several other types of invertebrates inhabit Jewel Cave. Plantlife is limited, but some species of algae and fungi live in this cool, damp, and artificially lighted environment.

ACCOMMODATIONS AND FACILITIES

The visitor center, open every day except Thanksgiving and December 25, has an information and sales counter, an exhibit room, restrooms, a visitor lobby, and administrative offices.

The park is strictly a day-use area; it has no overnight accommodations or camping facilities. Overnight parking is not allowed. Motels, restaurants, service stations, and garages are available in Custer, S. Dak., Newcastle, Wyo., and other outlying communities. There are several campgrounds near these towns. The park does not have dining facilities but does maintain a small picnic area with water, tables, and pit toilets.

UNDERGROUND TOURS

Two portions of the cave are open to the public and interpretive tours are conducted daily from Memorial Day through Labor Day. Tour schedules, if any, during the remainder of the year are irregular and subject to change without notice.

Neither the Historic (Primitive) Tour nor the Scenic (Modern) Tour is recommended for individuals who have heart trouble or respiratory ailments, or for those who are recovering from a recent operation or hospitalization. Consider each tour description carefully *before* making a choice.

Bare feet, sandals, and high-heeled or leather-soled shoes are safety hazards. Low-heeled, rubber-soled, comfortable shoes are strongly recommended.

A guide fee is collected for each tour. This fee is waived for persons under 16 years of age or members of educational groups and those adults responsible for their safety and conduct.

Children under 5 years of age are not allowed in the cave.

For your safety and the cave's protection, no one is permitted in the cave unless accompanied by a park ranger. Tours are limited to 25 persons. Reservations cannot be made; tickets are sold on a first-come, first-served basis.

Smoking is not permitted in the elevators or in the cave. Umbrellas and tripods may not be taken into the cave. Permission to carry a cane or walking stick is granted by the superintendent or one of his representatives only to those who cannot make the trip without one.

Leave such unneeded items as handbags and cameras without flash attachments in your *locked* car.

On the *Historic (Primitive) Tour*, you enter and leave the cave through the natural entrance in Hell Canyon. It is an unimproved trail with steep, wooden, ladderlike steps and does not have elec-

tric lighting. Visitors may be asked to carry a gasoline lantern. Old clothes are appropriate. The trail is quite strenuous and requires much climbing, bending, stooping, and sometimes crawling. Individuals who have a fear of narrow spaces may become uncomfortable. Colors and formations are not as apparent as on the Scenic Tour.

The *Scenic (Modern) Tour* is moderately strenuous. You enter and leave the cave by elevator in the visitor center lobby. Some uphill walking and climbing long flights of steps are necessary. The trail is paved and has aluminum stairs and handrails. Indirect electric lighting provides illumination and emphasizes the countless colors seen along the tour route.

Here is an opportunity to see the cave's natural colors, different types of crystals and formations, and large rooms that are connected by long passageways.

LEAVE NO TRACES

Rules and regulations were designed for your safety, the preservation of natural features, and the protection of personal and public property.

All animate and inanimate features of the park are integral parts of a complex ecosystem. The possession, destruction, injury, defacement, removal, or disturbance of any of them is illegal.

The park is a wildlife sanctuary. Firearms, traps, or any other implements or devices designed for or capable of destroying or capturing animal life are prohibited.

Pets must be leashed and under physical restraint at all times. Pets are not permitted in public buildings or the cave.

Never leave a child or a pet locked in a sealed vehicle.

Fire is a constant threat to the Black Hills. Please report all of them and start none of them.

Operating any vehicle off parking areas or roads destroys scenery and contributes to soil erosion. Drive carefully at all times to protect yourself, other visitors, and wildlife.

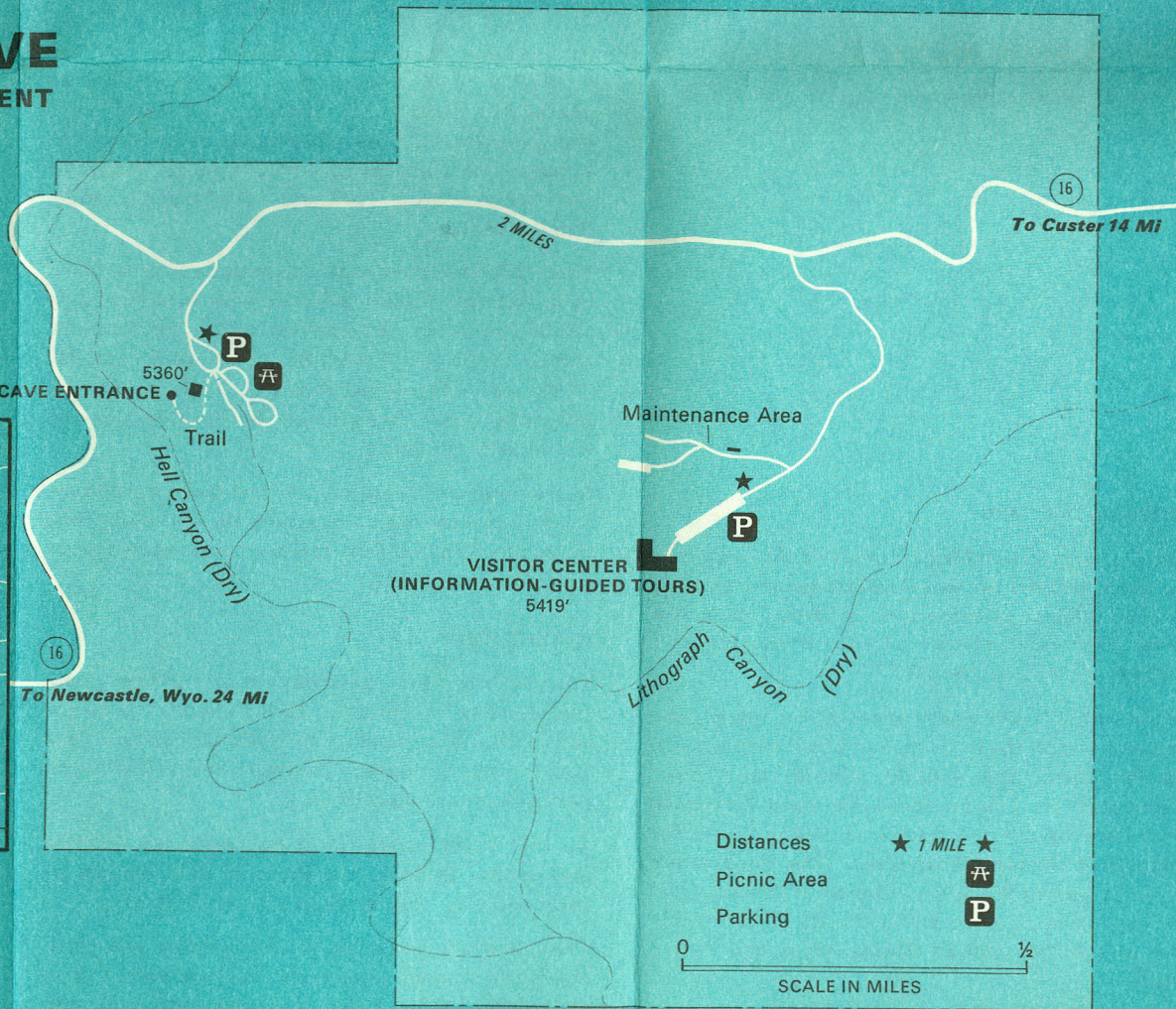
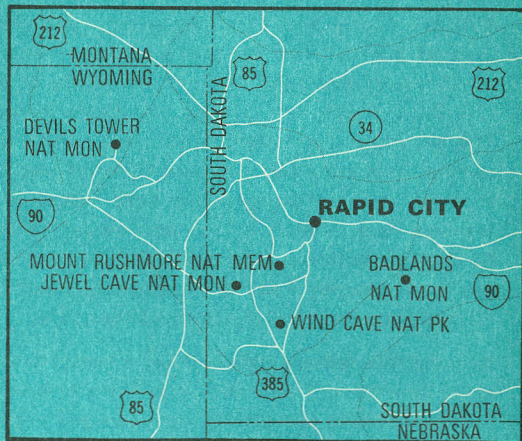
Enjoy your park, but keep in mind an old Indian proverb: *Where I go I leave no sign.*

ACCESS

There is no regularly scheduled public transportation to Jewel Cave. The area is accessible by U.S. 16, which crosses the northern part of the park between Custer, S. Dak., (14 miles east) and Newcastle, Wyo. (24 miles west). Both towns are served by Continental Trailways buses. Rapid City, S. Dak., 60 miles northeast of Jewel Cave, is served by both air and bus transportation.

JEWEL CAVE

NATIONAL MONUMENT



ADMINISTRATION

Jewel Cave National Monument is administered by the National Park Service, U.S. Department of the Interior. The superintendent of Wind Cave National Park is in charge of the monument. His address is Hot Springs, SD 57747.

As the Nation's principal conservation agency, the Department of the Interior has basic responsibilities for water, fish, wildlife, mineral, land, park, and recreational resources. Indian and Territorial affairs are other major concerns of America's "Department of Natural Resources." The Department works to assure the wisest choice in managing all our resources so each will make its full contribution to a better United States—now and in the future.

National Park Service
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