

# Carlsbad Caverns

NATIONAL PARK

New Mexico





# Carlsbad Caverns

## NATIONAL PARK

Open All Year

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*The National Park System, of which this park is a unit, is dedicated to conserving the scenic, scientific, and historic heritage of the United States for the benefit and enjoyment of its people.*

CARLSBAD CAVERNS are renowned throughout the world for their magnificence, the spaciousness of their rooms and passages, and the number and dimensions and variety of their stalactites and stalagmites. To illustrate, a single room within the caverns has a floor as expansive as 14 football fields and a ceiling as high as a 22-story building.

Although many miles of passages have been explored, other passages remain unexplored, and so the full extent of the caverns is not known. Development has been limited to the 750- and 829-foot levels, which you can reach by trail through a natural entrance or by elevator. You can see parts of an undeveloped section from certain places along the trail. A passage (not open to the public) that extends eastward from the lunchroom has been explored to a depth of 1,100 feet.

The National Park Service administers Carlsbad Caverns National Park and other areas of the National Park System for you and all Americans and your guests from other countries. The superintendent and his staff are eager to do what they can to make your visit enjoyable, asking only that you cooperate with them in an effort to protect the natural features so that they will remain unimpaired for the use and enjoyment of future generations.

The visitor center is the hub of activities within the park. If you will go first to the visitor center, have a seat in the lobby, and take a few minutes to read this booklet before you enter the caverns or explore the surface features, you should then have a better understanding of what you see.

In the exhibit room you can study a scale model of the caverns that give an overall picture of them and an idea of their size and direction with relation to surface features. A series of other exhibits shows how the caverns were formed, why and how stalactites and stalagmites appear and grow, and the record of man in the caverns from the time of prehistoric Indians. Exhibits describing the plants and animals to be found below and above ground explain the biological story of the park.

When you are ready to enter the caverns, you may purchase your ticket at the booth in the lobby. All tours end in the visitor center building after an elevator ride from the caverns.

### WHAT TO WEAR IN THE CAVERNS

Although the temperature remains constant at 56° F. within the caverns, the surface temperature ranges from nearly zero in winter to more than 100° in summer. At all times of the year, therefore, you should wear warm clothing in the caverns and clothing that is suitable for the season at the surface. Comfortable walking shoes are recommended for the underground tour.

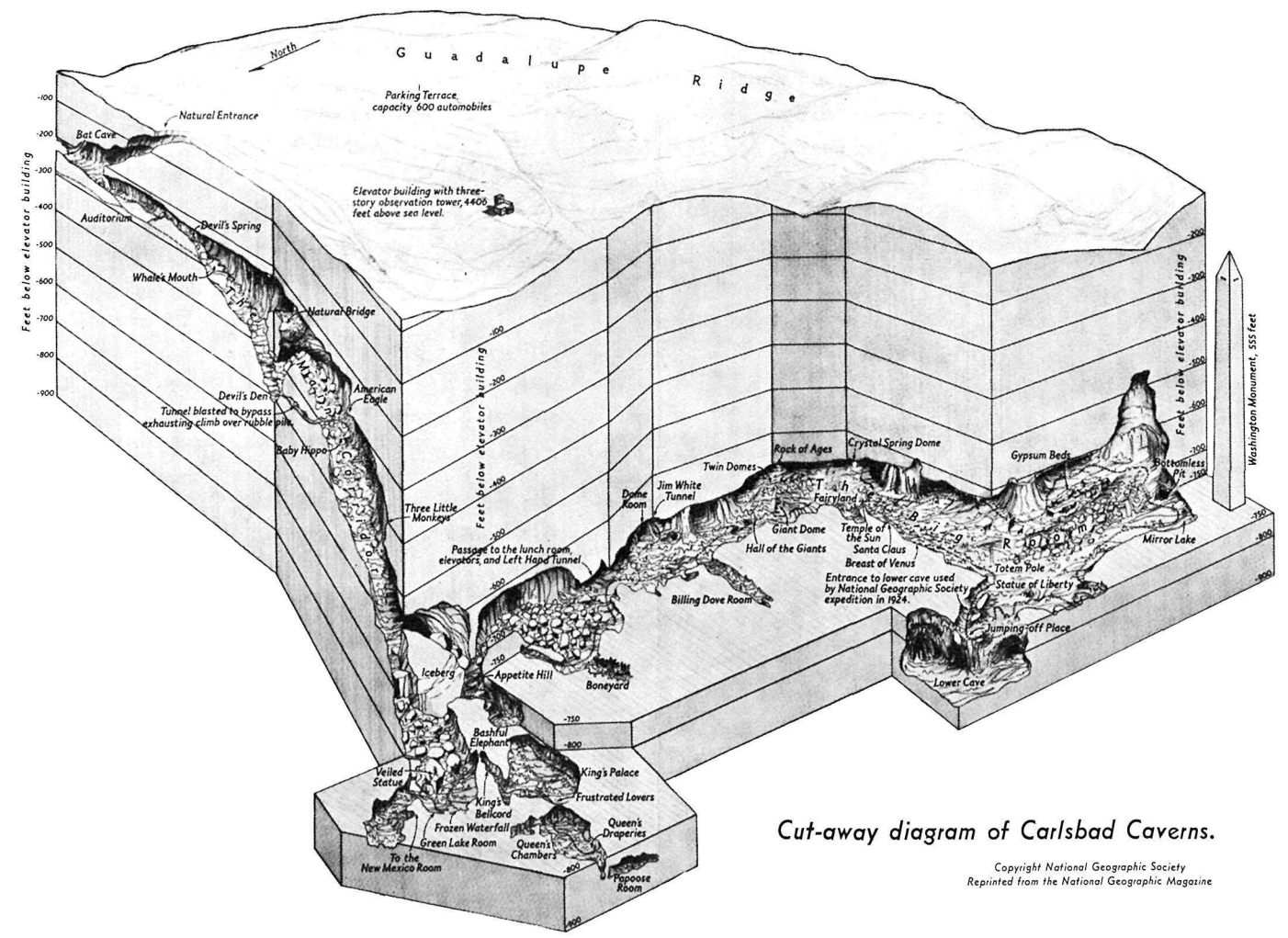
### THE UNDERGROUND TRIP

Every day, morning through early afternoon, conducted 4-hour complete tours start at the natural entrance. Shorter trips—the Big Room tours—start at the elevators in the visitor center. The uniformed members of the National Park Service accompanying your group invite you to ask questions pertaining to the things that you see along the route.

Walking distance of the complete tour, beginning at the natural entrance, is 3 miles. The most strenuous part is the first 1¾ miles, over which the trail descends 829 feet and then climbs 80 feet to the underground lunchroom. If you do not wish to take this part of the tour, you may enter the caverns by elevator and join those who have walked in as they reach the lunchroom 1¾ hours after the start of their trip. The Big Room tour, while less strenuous, enables you to visit only a part of the underground chambers.

The main corridor of the caverns, beneath the entrance, is immense, with high ceilings and large passages, but its beauty does not compare with that of the chambers beyond. These chambers (the Green Lake Room, the King's Palace, the Queen's Chamber, and Papoose Room (the scenic rooms)) are the lowest on the caverns tour, and they are unparalleled in their splendor. If you take the complete tour, you may see all these rooms before you reach the underground lunchroom, the central point of the caverns, where you may stop for food and rest. If you take the Big Room tour, you will miss these scenic rooms, but there is much else to be seen.

After lunch, you can visit the Big Room, the most majestic of the caverns' many chambers. The trail around its perimeter, 1¼ miles long, encompasses a floor space of 14 acres. At one place the ceiling arches 285 feet above the trail.



Cut-away diagram of Carlsbad Caverns.

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Magnificent formations here range in structure from delicate to massive; some resemble needles, and others resemble huge chandeliers. Also in the Big Room are the famed Rock of Ages and the Giant Dome, the latter bearing a striking resemblance to the Leaning Tower of Pisa.

Upon returning to the lunchroom, you will board an elevator and ride smoothly back to the surface. The elevators can transport 1,200 people per hour.

HOW THE CAVERNS WERE FORMED

These caverns were hollowed out of two rock formations, the Tansill formation and Capitan limestone, by the dissolving action of underground water. All large caverns in limestone are products of similar processes.

The limestones here originated as an organic reef around the edge of a warm shallow sea during the Permian period, about 200 million years ago. During subsequent periods, other seas brought in sedimentary material that covered the reef. About 60 million years ago, earth movements, which were responsible for the uplift of the Rocky Mountains, fractured the reef and permitted surrounding ground water to

enter along fracture lines and begin work in fashioning the caverns. The water at first dissolved small crevices in the limestone. As more water came in, the crevices enlarged to cavities, called solution pockets. Then the walls, floors, and ceilings of the pockets dissolved and collapsed, joining the pockets, while the solution process continued, eventually forming the huge rooms that you see today.

About 3 million years ago, another series of earth movements, the Guadalupe Mountain uplift, raised the area above the ground water level. Water that had been inside the caverns drained away and was replaced by air. Most solution stopped, but large sections of partially dissolved walls and ceilings collapsed under their own weight. Stability was finally achieved, however, and probably no rock has fallen within the caverns during the past several thousand years.

But even before collapsing had ended, another phase of cavern development had already begun. Rainwater and snowmelt slowly seeped into the caverns. Droplets of water, each holding quantities of dissolved limestone in solution, appeared upon the ceilings. Exposed to the air, the droplets evaporated and left their mineral content as calcite and

aragonite—crystalline forms of limestone. Over centuries of time, this process of evaporation and deposition has built a myriad of crystalline stalactites of all shapes and sizes. Water that dripped to the floor evaporated and deposited the calcite and aragonite to build stalagmites. These, too, are in large number and of varied shapes and sizes. When joined together, stalactites and stalagmites become columns, or pillars. In the scenic rooms, you will see helictites—twisted formations that seem to defy gravity in their growth.

The caverns today are a natural wonderland of formations, variously colored to shades of brown, red, and yellow by the presence of small amounts of iron oxide and other minerals. When saturated with water, the formations glisten and appear translucent. When dry, they appear dull and assume a powdered look. The variety and color of the stalactites and stalagmites and the vastness of the underground chambers make Carlsbad Caverns outstanding among the known caverns of the world.

HISTORY OF THE CAVERNS

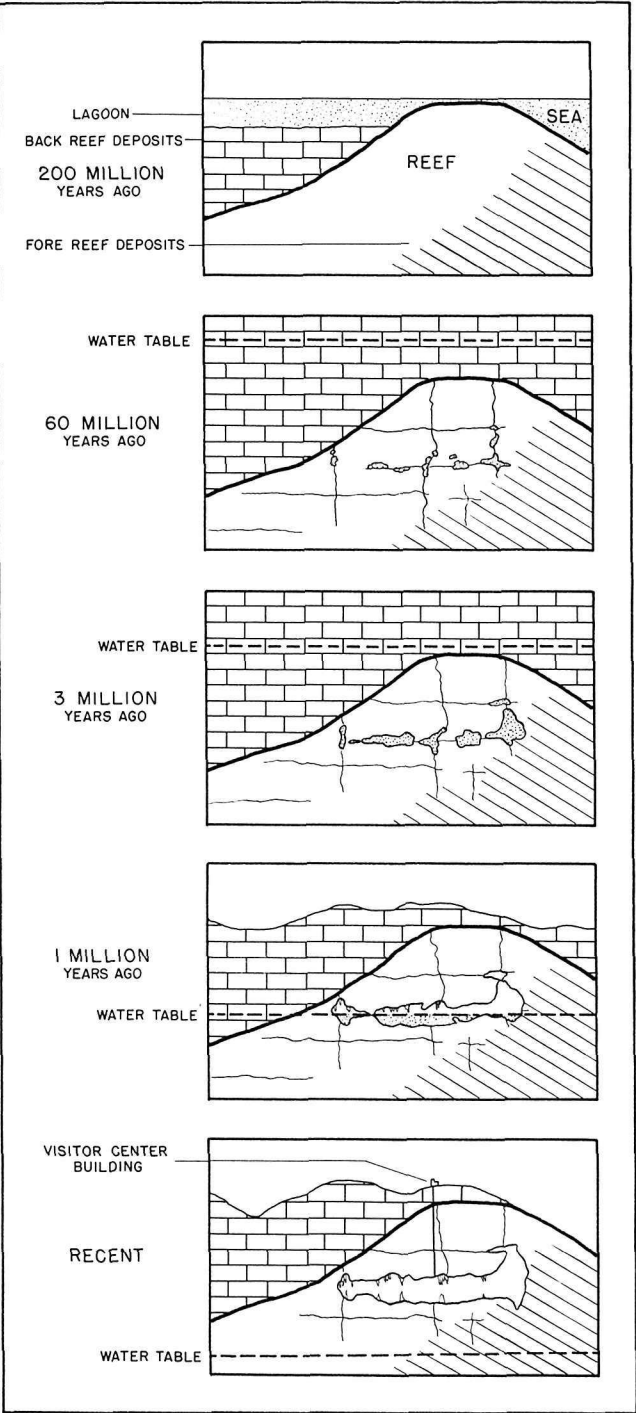
Bones of an extinct giant ground sloth and of an ancestral jaguar that were found in the caverns tell us that an opening into the caverns existed at least 10,000 to 15,000 years ago. Evidence of man in the area at that time has been suggested by studies in other parts of the Guadalupe Mountains.

The first real evidence of man visiting the caverns' entrance dates back more than 1,000 years. At that time, a group of Indians with an archaic culture roamed throughout the Guadalupe Mountains. That this nomadic group of hunters and gatherers used the entrance is indicated by the cooking pits above the entrance and pictographs (picture writings) on the south wall of the entrance. It is doubtful that these early people ventured into the dark recesses of the caverns.

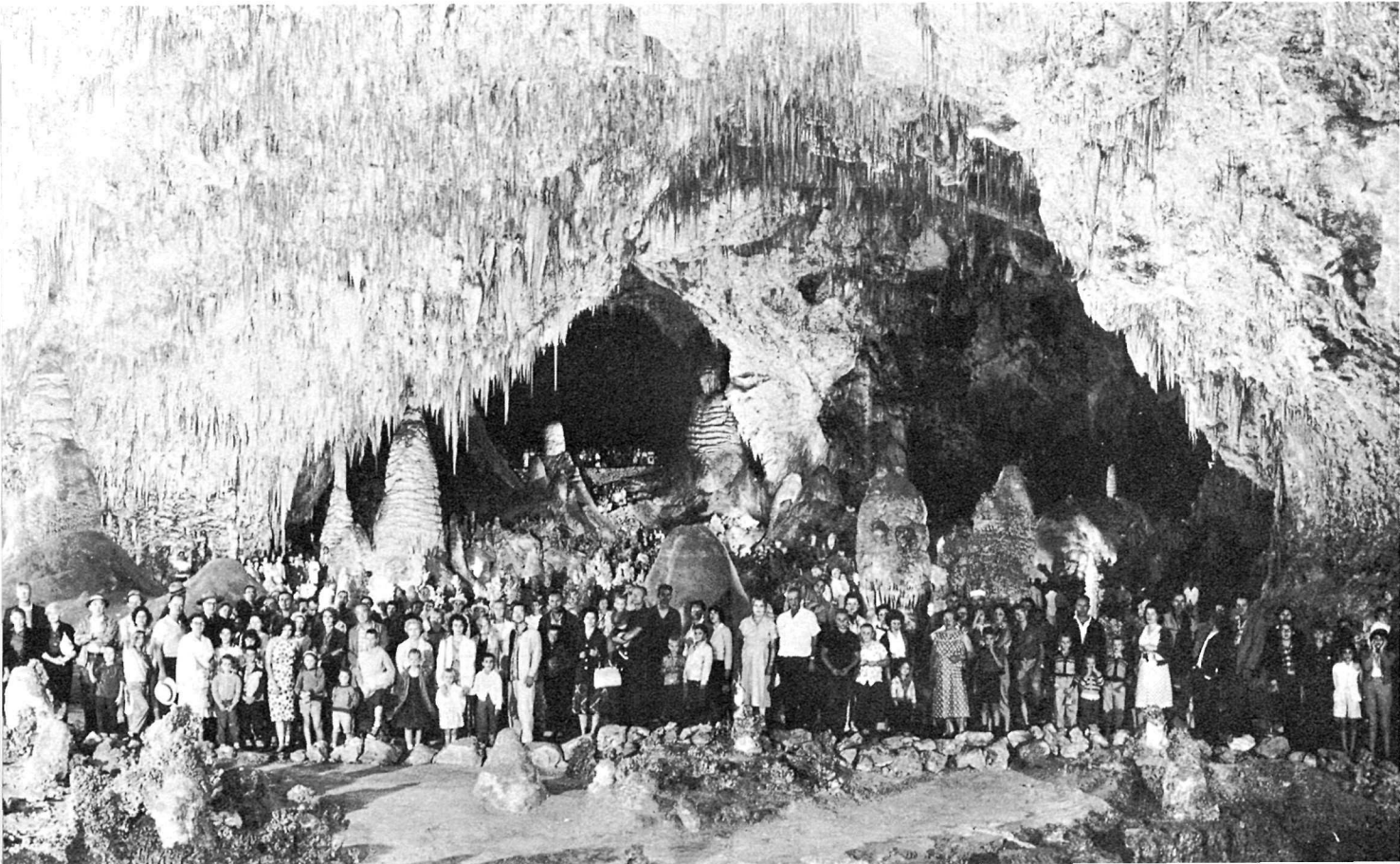
Another tribe of Indians, the fierce nomadic Apaches, apparently moved into this area about 500 years ago. If the earlier Indians were still here, they were either driven out or absorbed by the Apache group. Because of their nomadic ways, the Apaches might have used the caverns' entrance for shelter.

Spanish conquistadores, the first white men to enter this part of New Mexico, journeyed northward along the nearby Pecos River in the late 1500's. Later, pioneers continued to use the Pecos River valley, but not until the 1880's did ranchers venture into the mountainous area in the vicinity of the caverns. One ranch headquarters was established within a mile of the caverns' entrance.

The settlers, who referred to the caverns as the Bat Cave, might have explored parts of the passages. Later, the caverns became known as Carlsbad Cave.



Formation of the caverns: geologic sequence.



Visitors pause in the Big Room to hear the explanation of the wonders of nature's architecture.



The first real interest in the caverns, however, resulted from the finding of the valuable deposits of bat guano, a nitrate-rich fertilizer much in demand. At the turn of the century, mining of the guano began.

Among the miners was a local youth, James Larkin White, who became curious about what might lie beyond his lantern's dim light and took every opportunity to explore the caverns.

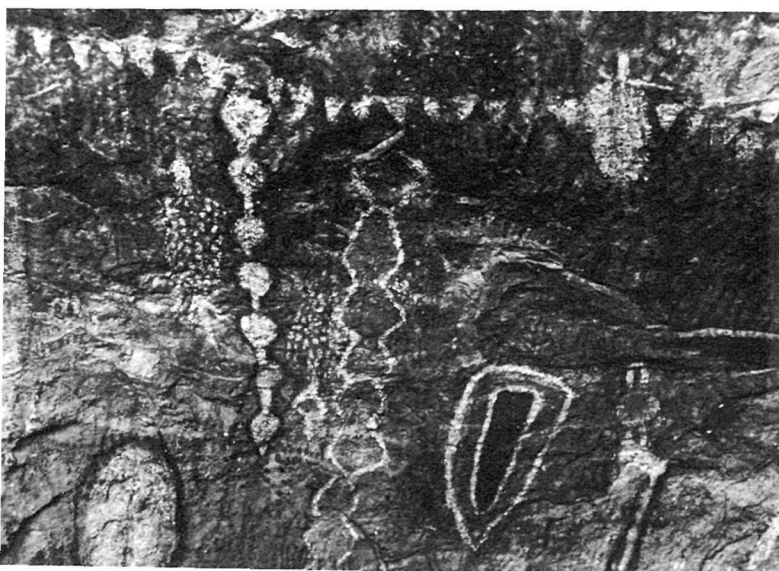
Through White's efforts, the significance of the caverns was brought to public attention. A report in 1923 by Robert Holley, of the General Land Office, U.S. Department of the Interior, so stressed the beauty of the caverns that Carlsbad Cave National Monument was established, on October 25, 1923, by Presidential proclamation. People throughout the country learned of the size and magnificence of the caverns when the National Geographic Society published findings of comprehensive explorations made in 1923 and 1924 by Dr. Willis T. Lee, of the Geological Survey, U.S. Department of the Interior. These explorations were conducted under the sponsorship of the National Geographic Society.

By act of Congress, approved May 14, 1930, the area became Carlsbad Caverns National Park.

And what became of Jim White? At first he was an unofficial guide for the visitors who came to the caverns. Later, under the National Park Service, he became a park ranger and finally the chief ranger. His name and his memory will endure as long as people come to gaze in awe at the sights that he first beheld in the flickering light of a kerosene lantern.

Within the present boundaries of the park, which enclose more than 77 square miles of surface area, are many other

*Pictographs at Painted Grotto.*



caves of either scenic or archeological interest that have not yet been developed.

Summarizing then, Carlsbad Caverns owe their discovery to American Indians, their extensive early exploration to Jim White, and their preservation and development for your enjoyment to the National Park Service.

### THE BAT FLIGHT

The bat flight is one of the park's greatest attractions. Flying from the caverns each evening from April through October, bats in incredible numbers spiral upward out of the entrance and fly southward over the rim of the escarpment to feed in the valleys of the Black and Pecos Rivers below. They may range as far as 50 miles away.

Size and density of the flight varies according to the availability of food. When night-flying beetles and moths are abundant, millions of bats are in flight; but during the winter, when no insects are available, most of the bats of Carlsbad Caverns migrate to warmer regions.

The bats return from their nocturnal feeding just before dawn, diving swiftly and from high altitudes into the entrance. Flying directly to the bat cave, they spend the day hanging head downward in dense clusters from the walls and ceilings.

Probably because they are nocturnal and seem to prefer dark, damp places, bats have been maligned in folklore as evil creatures. The many species in Carlsbad Caverns are quite harmless, however, and are actually beneficial to man because they feed on destructive insects.

Of the 14 species of bats found in the caverns, the most numerous are the Mexican free-tailed bats, so called because they are abundant in Mexico and because they have a tail that projects about an inch beyond the tail membrane. This species migrates to semitropical locations in winter and is more prone to colonize than other species.

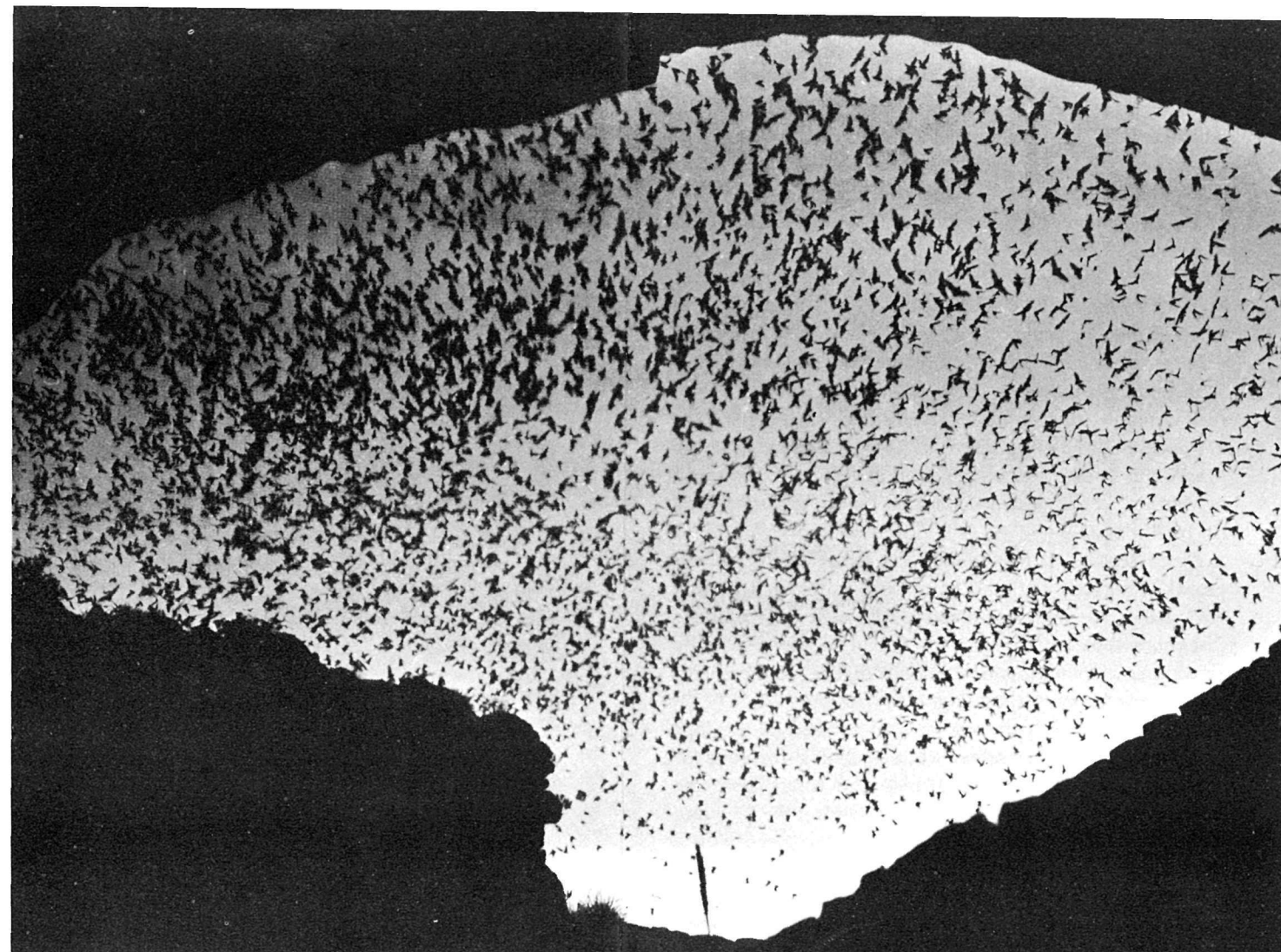
Included among the other more common species are the fringed myotis, the lump-nosed, the western pipistrel, and the pallid bats.

A park naturalist explains the bat flight and discusses the bats themselves in more detail in a talk given at the entrance to the caverns each evening just before the flight begins.

### OTHER ANIMALS

Contrary to the popular belief that desert areas are practically devoid of wildlife, the desert around Carlsbad Caverns abounds with animals. Because most species are nocturnal or are burrowers or are well camouflaged, they are seldom seen.

But you may see mule deer, largest mammals in the park, at almost any time. Watch for the fawns in late June and



*The evening bat flight.*

early July, for the young are born late—later than the young of the white-tailed deer. Twins are common.

You may see pronghorns in the valley flats and lower canyons. These graceful antelope-like creatures are the swiftest of all North American mammals. The pronghorn, not a true antelope, is the only species in its family.

Unless you are from the West, the black-tailed jackrabbits may seem strange to you, but you should have no trouble in identifying them by their long legs, long ears, blackish ear tips, and blackish tail tops. The desert cottontails, which are found here, closely resemble the widespread eastern cottontails.

Most prevalent of the two species of ground squirrels found in the park is the rock squirrel. You may see these cunning little animals busily scurrying about the rocks near the entrance to the caverns.

Among the night-foraging mammals that live in the park are skunks (spotted, striped, and hog-nosed), raccoons, foxes (kit and gray), and ringtails. You'll have to see the ringtail to believe them, and not many people are lucky enough to see them. They have faces like tiny foxes, bodies like squirrels, tails like raccoons, and very short legs like weasels.

The presence of pocket gophers is indicated by their mounds of dirt, and several species are represented within the park. These short-tailed vegetarians do their harvesting from below, as they feed on the roots of plants.

The long list of birds common to the park throughout the year includes the black-throated sparrow, ladder-backed woodpecker, scaled quail, mourning dove, cactus and rock and canyon wrens, and great horned owl. During the summer, the blue grosbeak, black-chinned hummingbird, Scott's



oriole, western tanager, and Audubon's warbler add colorful species. In winter the summer birds are replaced by the white-crowned sparrow, brown towhee, and the beautiful pyrrhuloxia. Turkey vultures and occasionally golden eagles circle high above the desert floor. On warm summer evenings, common nighthawks and poor-wills flit overhead in their quest for insects.

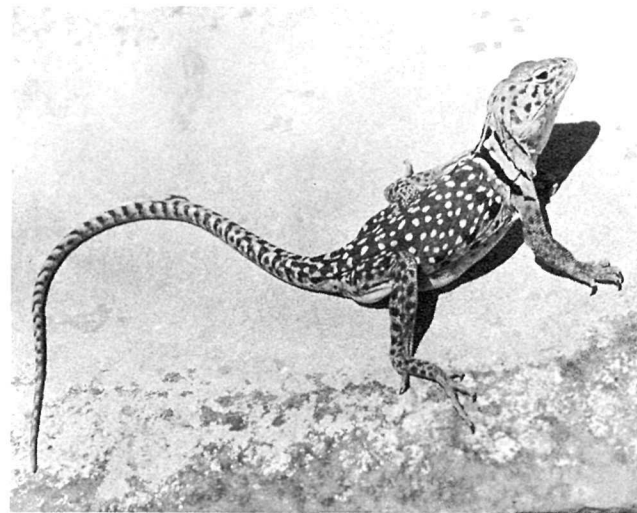
An interesting swallow, the cave swallow, plasters its nest high up on the walls of a number of caves within the park, where it rears its young.

Perhaps the most amusing bird in the park is the road-runner, the State bird of New Mexico. A member of the cuckoo family, this strong-legged bird seldom flies; instead it walks or runs among the rocks and cactuses in search of lizards and insects. You can get an idea of its ground speed by watching it sprint away from your car as you drive along the park roads.

Desert reptiles are numerous. The term "desert reptiles" probably suggests rattlesnakes to you, and it is true that rattlesnakes are not uncommon. Although it is unlikely that you will see any of them, you should be wary, especially on warmer winter days and on summer nights. Other desert reptiles may be more appealing.

Lizards of many types may be seen perched on the tops of rocks sunning themselves while watching for food or enemies. Among the most striking and colorful are the collared lizards and the racerunners. During the breeding season, the collared lizards are bright bluish-green with a black collar. The racerunners are noted for their blotched coloration and extremely long tails. Another species, the earless lizard, uses its black and white banded tail as a warning signal, waving it back and forth at any sign of danger.

*A gray fox leaves its camouflaged den.*



*Collared lizard. On occasion, this lizard runs upright on its powerful hind legs, using its long tail for balance.*

Both the collared and earless lizards will, on occasion, run on their strong hind legs, using their tails for balance.

Insects, which are numerous, are best represented in summer by brightly colored butterflies and by crickets and cicadas—more apt to be heard than seen.

Of seemingly special interest are the long yellow and black millepedes, or "thousand-leggers," and the fearful-looking, but harmless, bird spiders, which are often mistakenly called "tarantulas."

Though animal life is plentiful in the desert, it is by no means restricted to the surface. Underground, and deep within the caverns, is a multitude of other types. It is difficult to imagine life without sunlight and existing in absolute darkness. Yet, the cave environment supports many organisms.

There are generally three types of cave animals. One type, such as the various bats, leaves periodically to feed outside. Another type—such as certain mice, crickets, and beetles—feeds either outside or inside the caverns. The third type, however, spends its entire life span in the darker recesses of the caverns. Members of the third type are the true cave animals, and in Carlsbad Caverns they are best represented by certain species of isopods (small crustaceans), fungus gnats, and certain small wingless insects.

## PLANTS

From the observation tower above the visitor center, you can see the desertlike flatlands sweeping away to remote horizons, the canyon through which you passed on your way upward to the caverns' entrance, and endless ranks of other mountaintops. Over it all, flatlands and mountains and

canyons and valleys, a grayish-green veneer of low-growing desert plants softens the outlines and emphasizes the great distances. If you could instantly transport yourself to one of the faraway spots that you can see, what would you find?

Descend from the tower. Stroll along the self-guiding nature trail and you will be among the kinds of plants that grow in that untrodden, isolated spot. You can smell the same faint mustiness of the sage, the same delicate perfume—especially during April and May—of flowers whose sweetness is not being wasted on the desert air. The solitude, alas, will be missing, but you may find some compensation for this lack.

You may get to meet the plants, to learn their names. And strange names they are, too: ocotillo, sotol, creosotebush, agave. The variety and shapes of cactuses in the cactus garden, all identified by label, will seem even stranger to you, but you will soon be able to call them by name.

## THE SEASONS

### Spring

This is the time when color comes to the desert. By the end of May, the hillsides are bright with the red and yellow blossoms of claretcup and pricklypear. Brilliant yellow bladderpod and evening-primrose blend with purple verbenas and whitish pepperweed. Phlox and mallow bring forth their delicate shades of pink and orange. Brilliant red blossoms cap the thorny, whiplike stems of the ocotillo, and the yucca blooms full with white flowers.

Migrant birds and bats arrive. The phoebe builds its nest along a ceiling ledge high inside the caverns' entrance.

The return of the bats is heralded by their foraging flights each evening at sunset.

### Summer

As summer progresses, the young bats begin to fly, and the flights become cloudlike in their density.

The yellow blossoms of the century plant burst forth in July. Bees, wasps, and hornets buzz around the desert plants, and the black-chinned hummingbird hovers above and sips the nectar from the flowers.

The colorful fruit of the pricklypear is ripe in August, while the verbena and pepperweed continue to bloom profusely throughout the summer.

Daytime temperatures may be high, but you can get relief in the constant coolness of the caverns and in the visitor center, conditioned with air from the caverns. During the pleasantly cool evenings, even as early as the bat-flight program, you'll probably feel comfortable in a sweater.

### Autumn and Winter

The hillsides lose their flowered color as summer wanes, taking on a drab, greenish-brown appearance. Squirrels fatten themselves on fruits and seeds in preparation for a long winter sleep. Reptiles go into hibernation beneath the rocks. Bats migrate southward in November, when frosty nights kill their insect food.

Winter temperatures are rather mild, and snow and ice are rare. You may see deer along the roadsides and near the entrance to the caverns. Juncos, towhees, pyrrhuloxias, and other winter birds are much in evidence.

*Pricklypear in spring.*





But regardless of the season, the scenic beauty of the caverns themselves is the same the year around. And the temperature inside remains constant at 56°, so that winter tours are as comfortable as those in summer.

### HOW TO REACH THE PARK

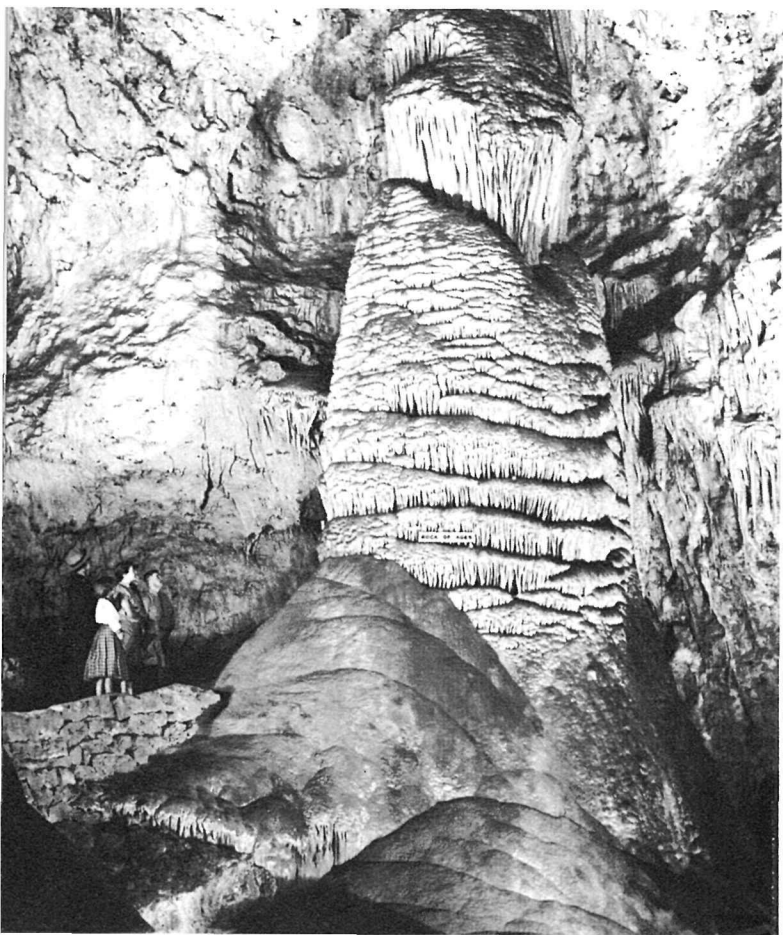
The Santa Fe Railway System serves the city of Carlsbad, N. Mex., about 27 miles north of the park; the Texas and Pacific Railway, Rock Island Lines, and Southern Pacific Lines serve El Paso, Tex., about 150 miles west of the park. Carlsbad Caverns Coaches serve the park from both cities. Continental Airlines provides daily airplane service to the airport at the city of Carlsbad.

By automobile, you can reach the park by U.S. 62-180 from Carlsbad and El Paso. And you can reach the city of Carlsbad from the north and south by U.S. 285.

### ACCOMMODATIONS

There are no overnight accommodations within the park, but there are modern motels, hotels, and trailer courts in nearby towns along the approach highways.

*The Rock of Ages.*



Adjoining the visitor center at the park are a restaurant, curio shop, nursery, and kennel. Moderately priced lunches may be purchased in the cavern lunchroom. The nursery charge of \$1.50 a day for each child includes lunch. The kennel charge is 50 cents for each pet. These concessions are operated by the Cavern Supply Company, Carlsbad, N. Mex., under Government supervision. Rates and services are approved by the National Park Service.

### HOW YOU CAN HELP PROTECT THIS PARK

Park regulations are designed to protect the scenic and historic objects, the plant and animal life, and to provide for your safety, comfort, and convenience.

Uniformed employees of the National Park Service are here to help and advise you. Call on them if you need information or have any difficulty. The following synopsis of the regulations is for your convenient reference and guidance.

*Preservation of natural features.* Trees, cactuses, wildflowers, and all other vegetation, rocks, minerals, and animal life may not be disturbed, injured, or destroyed. Walls and formations within the caverns may not be handled in any manner or defaced by writing, carving, or otherwise marring them. Canes, umbrellas, tripods, or sticks may not be taken into the caverns unless permission is granted by the superintendent or one of his representatives; this permission is given only when a cane or stick is necessary for you to make the caverns trip. Tossing or throwing rocks or other material inside the caverns is prohibited.

*Camping.* There are no campgrounds within the park, and camping and campfires are not permitted. Lunches may be eaten only in designated places, and all trash must be placed in cans provided for the purpose.

*Fires.* Special care must be taken not to dispose of lighted matches, cigars, cigarettes, or pipe ashes in vegetation or other flammable materials.

*Hunting.* The park is a sanctuary for wildlife, and hunting, killing, wounding, frightening, capturing, or attempting the capture of any wild animal is prohibited.

*Pets.* No dogs or other pets are allowed in the caverns or public buildings within the park. In other areas, pets must be on leash or otherwise physically restrained at all times. During warm weather, it is advisable not to leave pets inside closed automobiles. Kennel service is available.

*Cameras.* Still and motion-picture cameras may be used freely on the surface. Inside the caverns, however, their use is restricted. Professional photographers must obtain a permit from the superintendent when special equipment is required. Visitors may use still cameras on regular tours



*Late afternoon sunlight in the caverns' entrance.*

for simple snapshots only. Time exposures and flash pictures may be taken only on the special photographic tours. Details concerning photographic tours may be obtained from uniformed personnel.

*Prospecting and mining.* Prospecting and the location of mining claims are prohibited on all Federal lands within the park.

*Firearms.* The use or display of firearms is prohibited.

*Traffic.* The speed limit within the park is 35 miles per hour, unless otherwise posted. Park rangers, who enforce this and other regulations, are in charge of traffic control, and they investigate all accidents.

*Exploring.* Entrance into other caves inside the park is prohibited without prior permission from the superintendent, and then only in the company of one of his representatives.

### ADMINISTRATION

Carlsbad Caverns National Park is administered by the National Park Service of the U.S. Department of the Interior. The superintendent, whose address is Box 111,

Carlsbad, N. Mex., is in immediate charge. Inquiries or comments about the park should be addressed to him.

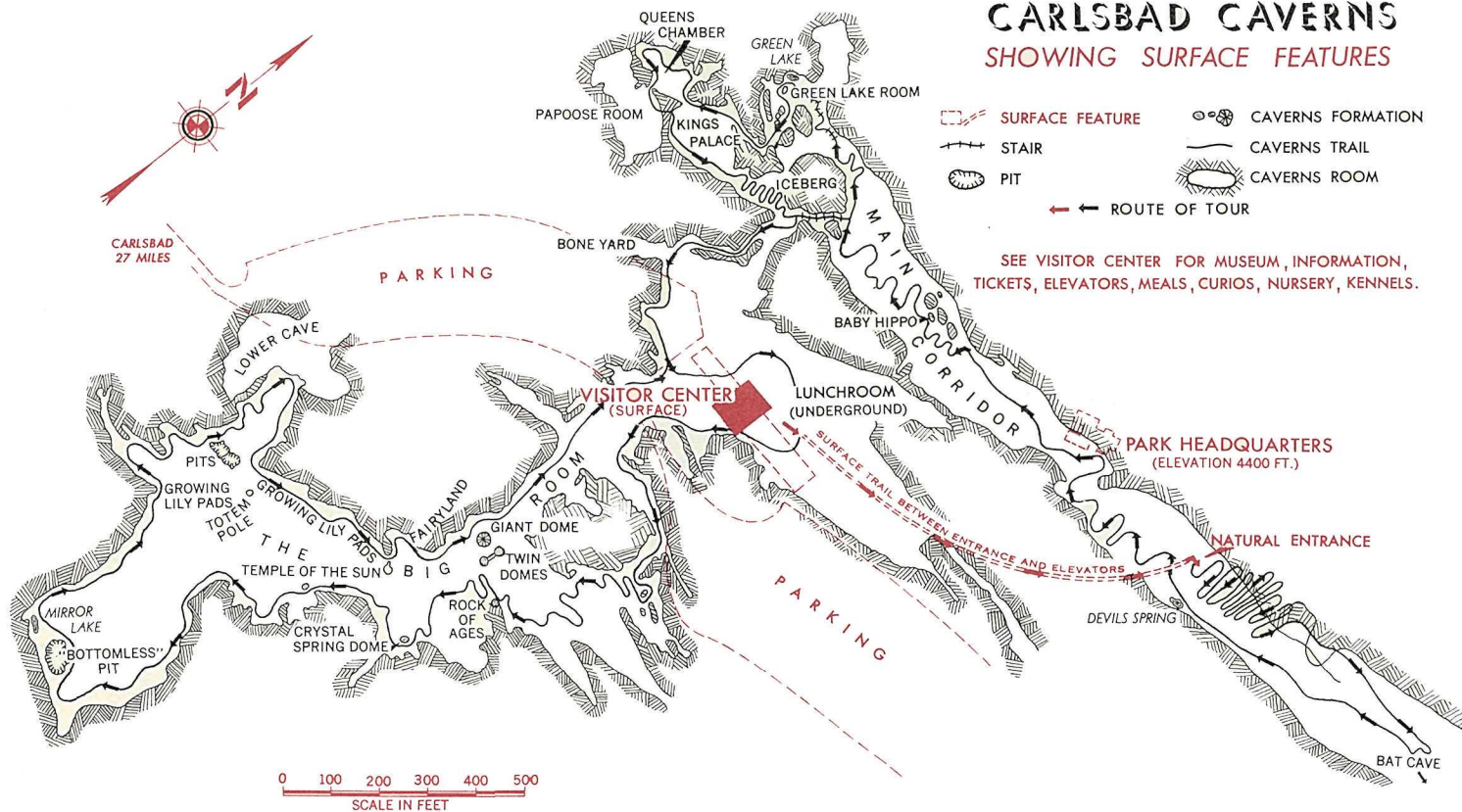
### MISSION 66 AT CARLSBAD CAVERNS

MISSION 66 is a 10-year conservation, development, and improvement program of the National Park Service. It is scheduled for completion in 1966, the 50th anniversary of the establishment of the National Park Service. The program is concerned with developing, staffing, and improving the areas that are managed by the National Park Service in such a way that their wisest possible use is assured. For you, this means that work is being done that will permit your maximum enjoyment and understanding of the areas; for the areas themselves, it means the maximum preservation of the scenic, scientific, and historic resources that give them their distinction.

MISSION 66 projects completed at Carlsbad Caverns include the construction of the visitor center and improvements to the entrance road. Other projects are planned for the future.

# CARLSBAD CAVERNS

## SHOWING SURFACE FEATURES





## VISITOR-USE FEES

There is a nominal fee for guide service, which includes the use of the elevator. Children under 12 years of age and organized groups of elementary and high school children, regardless of age, and accompanying adults who are responsible for their safety and orderly conduct are admitted free. Handling of school groups will be facilitated if arrangements are made in advance.

Fees collected at the visitor center are deposited as revenue in the U.S. Treasury. They offset, in part, appropriations made for operating and maintaining the National Park System.

# Carlsbad Caverns

## NATIONAL PARK

### New Mexico



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DEPARTMENT OF THE INTERIOR

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