

UNITED STATES DEPARTMENT OF THE INTERIOR HAROLD L. ICKES, Secretary NATIONAL PARK SERVICE ARNO B. CAMMERER, Director

# DEATH VALLEY

## NATIONAL MONUMENT

## CALIFORNIA



OPEN ALL YEAR

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## DEATH VALLEY NATIONAL MONUMENT

DEATH VALLEY, celebrated in history for its tragic episode in the California gold-rush drama of '49 and famed throughout the scientific world as a region of weird natural wonders, became a national monument on February 11, 1933, by Presidential proclamation.

The 2,500 square miles included in the monument embrace Death Valley itself and parts of the rough-hewn mountains that rise abruptly on all sides to guard its colorful desolation. The Amargosa River provides the only natural entrance. To the west towers the Panamint Range and to the east the Amargosas, with the Last Chance Range pinching the north and the Avawatz Mountains blocking the south.

Death Valley National Monument lies in the southeastern corner of Inyo County and borders the California-Nevada boundary line. It forms the northern point of the great Mojave Desert region. Approximately 400 square miles of the floor of the valley lie below sea level, and Bad Water, 276 feet below mean tide, is the lowest point in the United States.

In addition to its record for low altitude, Death Valley also holds the record for high temperatures. In a standard instrument shelter at Furnace Creek 134 degrees have been recorded. Out on the salt beds without benefit of shade, it undoubtedly is much higher. However, Death Valley is not always hot. The winter season, which begins the latter part of October, is ideal. The days are warm and sunny, the nights cool, clear, and invigorating. The majority of the areas under the jurisdiction of the National Park Service are best known for their summer attractions. Death Valley rounds out the system by providing a vast recreational area with a mild winter climate.

For consistent fair weather, the valley has an outstanding reputation. One record for an entire year showed only 14 days out of the total 365 as not clear. Few regions in the world can boast of such a record. Because of the extreme dryness of the atmosphere, Death Valley has the same sort of climate that has made other desert regions famous as health resorts.

### HISTORICAL INTEREST

The Indians were undoubtedly the first to look upon Death Valley, and probably the Spaniards were next, but it remained for the Forty-niners

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to bestow the first publicity. The Jayhawkers and the Manly party, seeking a shorter route to the gold fields of California, made the first recorded crossing of Death Valley. Weakened by their long journey from their homes in the East, during which they fought their way at first doggedly and then despairingly, blazing their trail with abandoned equipment and bleaching bones, they ventured into Death Valley to find their way shut off by the towering Panamints. Camping at Bennetts Well, named for 1 of the party, they sent 2 of their number ahead to seek a route through the mountains that would lead them out of this valley of despair. After many weary days the scouts returned with the necessary information and the pioneers started on the last lap of their long journey in search of riches. As they topped the crest of the mountains they paused and gazed back over the vast wasteland which, to them was synonymous with tragedy and suffering, and uttered a farewell: "Good bye, Death Valley." It has never known any other name.

After these pioneers came others. Seekers of gold paused and prospected the valley and the surrounding mountains. Precious minerals were uncovered and hundreds flocked to the find. Location monuments still mark the claims they staked. Ruins of buildings still stand, marking a measure of success. Dotting the landscape are elongated mounds of earth and rock, some with crude wooden headboards, silently proclaiming the resting place of those who tried and failed.

Borax is chiefly responsible for the taming of Death Valley, for it was borax that brought in men and their families as permanent residents. Eagle Borax Works, the first, is now a watering place for man, bird, and beast. The Harmony Borax Works with a few 'dobe cabins surrounding it bears mute testimony to the activity that once flourished there.

The abandoned mining towns of Leadfield and Skidoo lend color to the history of the region.

Nearby are other ghost towns such as Rhyolite, Bullfrog, Panamint City, Wildrose, and Ballarat.

The mining operations and scattered buildings made but small marks upon Death Valley and the surrounding region enclosed in the national monument. It is today much as it was when white men first saw it. The visitor can see without the exercise of imagination, the grim and forbidding barrier that demanded and collected toll from the early travelers. Though the danger is held in check today by easy and rapid transportation, the threat remains, and unless the visitor is familiar with and prepared for desert travel, he is advised to stay on the main roads.



#### COLORFUL SCENERY

The Death Valley country is often favorably compared with Grand Canyon, and justly so. From such points as Dante's View, Chloride Cliffs, and Grand View the panoramas unfolded before the incredulous visitor are characterized by blazing color. From Dante's View at an elevation of 5,160 feet one looks down at the glistening white salt beds of the Bad Water region that are below sea level. Across the crystallized floor of Death Valley, the eye sweeps up the red and purple slopes of the Panamints to the summit of Telescope Peak, a majestic elevation of 11,045 feet. Shift the gaze to the north and just over the crest of this range to where Mount Whitney thrusts its rugged head into the sky a distance of 14,496 feet. Here, within sight of each other, are the highest and lowest points in the United States.

Ubehebe Crater is the chief natural attraction in the northern part of Death Valley. A car may be driven to its rim where the crater, shaped like a huge funnel, yawns at the skies with its mile-wide mouth. The bottom is 780 feet below the rim.



Ubehebe Crater.

Frasher Pomona, Calif.

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Sand dunes from Stovepipe Wells.

Titus Canyon, entered from the east side of the Grapevine Mountains through Leadfield, is a one-way canyon by reason of its very narrow floor. Traffic is not permitted up this canyon. The walls rise sheer for hundreds of feet and colors run riot. Designs in contrasting shades and forms support the belief of the imaginative that Mother Nature was in a playful mood when she carved this serpentine canyon.

The Devil's Golf Course, lying south of Furnace Creek, is an expanse of salt, crystallized into weird and fantastic shapes varying from an inch to more than 3 feet in height. These dwarfed and twisted pinnacles cover the area so closely that a flat space large enough to lay one's hat cannot be found. The salt is not just thin surface strata; a well reached a depth of over a thousand feet, and except for a few thin layers of clay the rest was salt. This area is well named, for only the devil could play golf on such a course.

The sand dunes, while not unusual in desert country, are nevertheless a notable attraction. Occupying some 60 square miles of the center of the valley near Stovepipe Wells, their surfaces rippled and their contours gracefully curved and rounded by the whimsical winds, they present an ever-changing picture of beauty. Bad Water, lowest point in America, is an open pool of water on the eastern side of the valley, 18<sup>1</sup>/<sub>2</sub> miles south of Furnace Creek. The water, a saturated solution of various salts, is the terminal of the Amargosa River. Amargosa, Spanish for "bitter", is used advisedly, for the waters, when flowing, are as bitter as gall.

Mosaic Canyon opens into Death Valley from the Panamint Range and is so named because of its vari-colored rocks, polished and set in the walls.

There are far too many natural wonders in Death Valley to describe them all, even briefly. The valley is a strange and beautiful land, enhanced by sudden, colorful sunrises and smouldering sunsets. Everywhere one looks a colorful fantasy greets the eye. The color chart ranges from brilliant reds, greens, yellows, and all the intermediate tints to somber black.



Easter sunrise service in the desert.

Frasher, Pomona, Calif.

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#### GEOLOGICAL STORY

An investigation of the geology of Death Valley by the United States Geological Survey is now in progress, and the following information about this picturesque region was furnished by L. F. Noble, who is carrying out the work for the Government.

The Death Valley region contains rocks of all the great divisions of geologic time but earth movements in the area have been so profound and so recurrent that the rock masses form a complex mosaic of crystal blocks isolated one from another by folding, faulting, tilting, erosion, and burial under alluvium. Consequently the sequence is not complete at any one locality and can be learned only by examining many different parts of the area.

The oldest rocks to be seen are among the oldest known on earth. They are chiefly schists and gneisses but include bodies of limestone and have all been recrystallized by heat and pressure so that they contain no recognized traces of life. They greatly resemble the rocks of the granite gorge in the bottom of the Grand Canyon. They may best be seen from the road that follows the base of the steep mountain wall along the east side of Death Valley between Bad Water and Mormon Point.

The next oldest group of rocks is separated from the underlying oldest and from the overlying Paleozoic rocks by unconformities that represent long periods of erosion. They consist of limestones, shales, and sandstones that in places contain bodies of dark igneous rocks now altered to greenstones. They are interesting for their vivid coloring and conspicuous banding and for the deposits of talc that they contain along the contacts of greenstone and limestone. Some of the limestone beds contain abundant remains of primitive plants (algae). In many of these respects they resemble the group correspondingly situated in the Grand Canyon. The most complete section of them is exposed near Beck Spring in the Kingston Range but exposures may be seen along the mountain front about a mile south of the mouth of Ashford Canyon and on the divide where the road from Furnace Creek to Baker crosses the county line.

#### FOSSILS INDICATE MARINE LIFE

The Paleozoic rocks which are later than either of the groups described above consist chiefly of limestone and quartzites and contain a great abundance and variety of fossils indicative of former marine life. Their dominant color is somber gray but their zebra-like banding makes them conspicuous from a distance. All the great systems of the Paleozoic are represented. The best continuous section to be seen within the national



Salt pool in the lowest area in the United States.

monument is along the north side of the road between Death Valley Junction and the Furnace Creek Inn, where they form the southwest slopes of the Funeral Mountains. The beds here are successively older from east to west.

The Mesozoic is represented only by granite which cuts the Paleozoic and older rocks and is overlain unconformably by the Tertiary rocks. No exposures are crossed by the main roads but large bodies may be seen at the head of Cottonwood Canyon north of Emigrant Wash and in Warm Springs and Anvil Canyons in the southern Panamint Range, where its relations are best seen.

The Tertiary rocks overlie unconformably all older rocks. They are nonmarine and include much volcanic rock in different forms as well as shale, limestone, sandstone, and conglomerate. In general, they were formed in broad valleys and on mountain slopes much like the playas and adjacent slopes today, but volcanic activity at that time was abundant and diversified in comparison with its quiescence now. The Tertiary rocks are interesting for their unusual and, in places, brilliant colors. No animal remains have yet been found in them but some contain boron minerals, salt, and other minerals. The beds are widely and irregularly distributed through the Death Valley region. The largest area lies along the Furnace Creek Road, but more strikingly colored rocks of this age may be seen from the road that leads southward from Furnace Creek Inn to Bad Water.

The Quaternary or youngest rocks of the region include all the alluvial fans, the great salt deposits at the bottom of Death Valley, many dissected gravel terraces, and other dissected lake beds in Amargosa Valley near Shoshone. Bones and teeth of the elephant or mammoth have been found in a bed of volcanic ash overlying these lake beds at Shoshone. The salt deposit (Devil's Golf Course) on the floor of Death Valley represents the saline residue of an evaporated lake. Wells 1,000 feet deep drilled in the deposit have gone through alternating beds of clay and salt without reaching bedrock. Each salt and clay bed probably represents the drying up of a Quaternary lake, the uppermost representing the latest. Sets of faint terraces here and there, as at Mormon Point, may mark the shores of this lake. The Ubehebe craters in the northern part of Death Valley are cinder cones of very late Quaternary (recent) age. Some of them are probably not over a few hundred years old.

#### HOW WAS THE VALLEY FORMED?

Structural studies of Death Valley are incomplete, but it is known that Death Valley and the bordering mountain ranges owe their existence primarily to dislocation of the earth's crust and not, like the Grand Canyon,



Entrance to Golden Canyon.

Courtesy Santa Fe Railway.

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to stream erosion. It is also evident that the region has undergone many periods of profound disturbance, including both folding and faulting, from earliest to most recent times. Long periods of erosion have intervened between successive disturbances.

The steep scarp of the Black Mountains that borders the deepest part of Death Valley on the east, and makes the major line of faulting upon which Death Valley has sunk, has been deeply battered by erosion but it is still perhaps the freshest and most spectacular feature of its kinds in the United States. It is here called the Death Valley fault. It is not a simple, continuous rectilinear break but is rather a complex zone of discontinuous roughly parallel faults, each of which follows the base of the range for a short distance and then runs into the range at an angle and dies out. Hence the pattern of the mountain front is irregular in detail. A good place to see one of these faults is about 3 miles north of Bad Water. Here Tertiary beds form the hanging wall through a vertical distance of many hundreds of feet, but the foot wall is seen to be continuous with the sloping gneiss surface, which therefore represents the fault plane upon which the Tertiary beds have been dropped toward Death Valley. The Death Valley fault zone, of which the one just described is a member, resembles other faults that border valleys in the region but is on a larger scale. Its nearest counterpart is the fault bordering Panamint Valley on the east.

An interesting fault borders Furnace Creek on the north and separates the Paleozoic rocks of the Funeral Mountains from the Tertiary beds of the Furance Creek area. This is called the Furance Creek fault. It has not been studied enough to disclose its character, but there is some evidence that it is a thrust fault, unlike the Death Valley fault, which is normal; that horizontal as well as vertical movement has taken place upon it; and that it is older than the Death Valley fault.

#### ANIMAL AND PLANT LIFE

Life in surprising abundance is found below sea level. Desert coyote, kit fox, wild cat, and Mexican badger are to be seen by the careful observer. The Nelson bighorn, still found in the mountains, has been known to visit the valley floor. The smaller mammals of the region are the jack rabbits, Arizona cottontail, 2 species of ground squirrels, the kangaroo rat, wood or trade rat, several smaller rodents, and 6 varieties of bats. Among the permanent bird residents of the valley are the road runner, prairie falcon, raven, LeConte thrasher, burrowing owl, and the rock wren. The winter bird visitors are several species of ducks and geese, a number of the wading birds, hawks, and owls. Of the smaller migrants, there are warblers,





sparrows, blackbirds, flycatchers, bluebirds, doves, and robins. The horned toad and chuckwalla, interesting lizards, are rarely seen because of their protective coloring.

Strangely enough, there are fish in Death Valley. At Salt Creek and Saratoga Springs one may see the small "desert sardine", so called locally because the only other known name is *Cyprinodon macularius*, in reality a small killifish. It is a "relict" fish—all that is left of the once abundant ichthyological life of the great inland sea that is now Death Valley.

Of all the plants growing on the floor of the Valley, the thorny mesquite has played the most important part. It furnished food for the Indians and the birds, as well as forage for the stock. The screwbean, a near relative, was useful in the same manner but to a lesser degree. The arrowweed was formerly of economic importance to the Indian. It furnished strong, straight shafts for arrows and it was used in the construction of their dwellings. Desert cane served in a like capacity. Other plants in the valley are the beautiful desert holly with pale foliage and red flower buds, the iodine bush growing at the very edge of the salt beds, and desert heather characterized by purple foliage.

Higher along the washes and in the mountains are many other examples of plant life, foremost of which are several species of the cactus family. The sting-bush, derives its name from the "stinging hairs" that cover the leaves and stems, and the wet-leaf is so called because the under surfaces of the large leaves are always wet. Of particular interest to scientists are two plants with very localized distribution—Death Valley sage and an astragalus or loco weed. The location of the various plants in the valley is controlled largely by two factors, the plant's water requirements and tolerance or intolerance of salts.

#### DEATH VALLEY SCOTTY'S CASTLE

Scotty's Castle is the most impressive example of man's handiwork to be found in the Death Valley region. Located near the mouth of Grapevine Canyon and built by Walter Scott, ex-cowboy of Buffalo Bill fame, and his partner, A. M. Johnson, the castle is an unforgettable sight. Nestled against the dark sun-baked hills, with massive gates blocking the bridge that gives entrance to the grounds over the wash, it has the appearance of a medieval stronghold guarded by its moat and portcullis. All that is lacking is the drawbridge. Of concrete construction in Spanish-style architecture, with towers and gardens, pools and plazas, it is as fantastic as the country around it.

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Cactus garden at Scotty's Castle.



An Indian resident of Death Valley.

#### ACCOMMODATIONS

Living in Death Valley National Monument can be as modern or as primitive as the visitor desires. Furnace Creek Inn in the northern part part of the valley provides up-to-date hotel accommodations in a weird setting at \$8 a day and up, American plan, or \$4 a day and up, European plan. More moderately priced accommodations may be had at Stovepipe Wells Hotel, where the rates are \$4 a day and up, American plan, and \$1.50 a day and up, European plan. Housekeeping camps may also be rented here for \$1.50 a day and up.

Housekeeping camps are available at Furnace Creek Ranch, where the rate is \$2 a day and up, and there is also a restaurant. Groceries and other travelers' supplies may be purchased at the general store, and there is also a general store at Death Valley Junction. The aforementioned operations are all private enterprises over which the National Park Service exercises no control.

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Palm gardens at Furnace Creek Inn.

#### PUBLIC CAMP GROUNDS

The National Park Service, which began the development of Death Valley National Monument for the use of visitors in the fall of 1933, has provided sanitary public camp grounds near Furnace Creek and at Stovepipe Wells, Mesquite Springs, and Bennett Wells, where travelers carrying their own equipment can make themselves very comfortable. Additional camp grounds are under construction.

The establishment of Civilian Conservation Corps camps in the valley greatly expedited the development of this desert region for the safe use of visitors. In addition to providing free camp grounds, rapid progress is being made in building roads and trails and providing a system of wells to insure a water supply adequate for safe travel over the regular road and trail system. Good signs point to these watering places. Death Valley is perhaps the best watered region in the Mojave.

#### HOW TO REACH DEATH VALLEY

Good desert roads, well signed, lead into Death Valley National Monument from all directions, and the road system within the area is being rapidly improved and extended. Automobile travelers are directed to enter by one of the following routes:

By United States Highway No. 66 to Barstow, thence United States Highway No. 91 (Arrowhead Trail) to Baker, thence north on a good desert road through Shoshone and Death Valley Junction to Death Valley at Furnace Creek. The driving time to Furnace Creek from Los Angeles by this route is from 7 to 8 hours.

From the vicinity of Bakersfield: Over either Walker Pass or Tehachapi Pass and into Owens Valley. Leave the Owens Valley Road at Olancha or Lone Pine, and go to Darwin and over Towne's Pass into the valley over the Richbaum toll road. The driving time from Los Angeles to Stovepipe Wells Hotel is from 7 to 8 hours.

From the east on United States Highway No. 91 to Las Vegas, thence by Indian Springs to Death Valley Junction and on into the valley; or on United States Highway No. 50, south from Ely, Nev., to Beatty, thence over Daylight Pass and down Boundary Canyon to the valley.

Service stations are to be found en route, and, though it is not necessary, it is wise for the automobile traveler to carry reserve supplies of gasoline, oil, and water, particularly if leaving the main highway.

Airports are located near Furnace Creek Inn and Stovepipe Wells Hotel. Leaving the Union Pacific Railroad at Crucero, Calif., this railroad provides passenger service three times weekly to Death Valley Junction, and there stage service may be arranged.

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Corkscrew Canyon, Funeral Mountains.

Frasher, Pomona, Calif.

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A desert sentinel.

Frasher, Pomona, Calif.

#### DO YOU KNOW ALL THE NATIONAL PARKS

- Acadia, Maine.—Combination of mountain and seacoast scenery. Established 1919; 19.51 square miles.
- Bryce Canyon, Utah.—Canyons filled with exquisitely colored pinnacles. Established 1928; 55.06 square miles.
- Carlsbad Caverns, New Mexico.—Beautifully decorated limestone caverns believed largest yet discovered. Established 1930; 15.56 square miles.
- Crater Lake, Oregon.—Astonishingly beautiful lake in crater of extinct volcano. Established 1902; 250.52 square miles.
- General Grant, California.—Celebrated General Grant Tree and grove of Big Trees. Established 1890; 3.96 square miles.
- Glacier, Montana.—Unsurpassed alpine scenery; 250 lakes; 60 glaciers. Established 1010; 1.533.88 square miles.
- Grand Canyon, Arizona.—World's greatest example of erosion. Established 1919; 1,009.08 square miles.
- Grand Teton, Wyoming.—Most spectacular portion of Teton Mountains. Established 1929; 150 square miles.
- Great Smoky Mountains: North Carolina, Tennessee.—Massive mountain uplift covered with magnificent forests. Gorgeous wild flowers. Established for protection 1930; 465.18 square miles.
- Hawaii: Islands of Hawaii and Maui.—Volcanic areas of great interest, including Kilauca, famous for frequent spectacular outbursts. Established 1916; 245 square miles.
- Hot Springs, Arkansas.—Forty-seven hot springs reserved by the Federal Government in 1832 to prevent exploitation of waters. Made national park in 1921; 1.48 square miles.
- Lassen Volcanic, California.—Only recently active volcano in United States. Established 1916; 163.32 square miles.
- Mesa Verde, Colorado.—Most notable cliff dwellings in United States. Established 1906; 80.21 square miles.
- Mount McKinley, Alaska.—Highest mountain in North America. Established 1917; 3,030.46 square miles.
- Mount Rainier, Washington.—Largest accessible single-peak glacier system. Third highest mountain in United States outside Alaska. Established 1899; 377.78 square miles.
- Platt, Oklahoma.-Sulphur and other springs. Established 1902; 1.32 square miles.
- Rocky Mountain, Colorado.—Peaks from 11,000 to 14,255 feet in heart of Rockies. Established 1915; 405.33 square miles.
- Sequoia, California.—General Sherman, largest and oldest tree in the world; outstanding groves of Sequoia gigantea. Established 1890; 604 square miles.
- Wind Cave, South Dakota.—Beautiful cavern of peculiar formations. No stalactites or stalagmites. Established 1903; 18.47 square miles.
- Yellowstone: Wyoming, Montana, Idaho.—World's great geyser area, and an outstanding game preserve. Established 1872; 3,437.87 square miles.
- Yosemite, California.—Valley of world-famous beauty; spectacular waterfalls; magnificent High Sierra country. Established 1890; 1,176.16 square miles.
- Zion, Utah.—Beautiful Zion Canyon 1,500 to 2,500 feet deep. Spectacular coloring. Established 1919; 148.26 square miles.



LOCATION OF RESERVATIONS ADMINISTERED

THE NATIONAL PARK SERVICE

### **RULES AND REGULATIONS**

The monument regulations are designed for the protection of the natural features and scenery as well as for the comfort and convenience of visitors. The following synopsis is for the general guidance of visitors, who are requested to assist the administration by observing the rules. The monuments belong to the future generations as well as the present. Help us take care of them. Complete regulations may be seen at the superintendent's office.

The disturbance, destruction, and injury of any ruins, relics, buildings, signs, or other property are prohibited.

Camps may be made at designated localities and must be kept clean. Where possible, garbage should be burned on camp fires. Place tin cans in receptacles provided for that purpose. Do not throw refuse or trash on roads, trails, or elsewhere. Carry it until you can burn in camp or deposit in receptacle.

Fires shall be lighted in designated places only, and carefully extinguished when no longer needed.

Hunting, killing, wounding, capturing, or attempting to capture any wild bird or animal in the monument is prohibited, except in cases of poisonous snakes or dangerous animals, and then only to prevent them from destroying life or inflicting injury.

Gambling in any form is prohibited.

Private notices or advertisements shall not be posted or displayed in the monument except when authorized.

Lighted matches, cigars, cigarettes, or other burning refuse shall not be thrown away unextinguished.

The penalty for the violation of any of these regulations is a fine not exceeding \$500, or 6 months imprisonment, or both.

The Government is not responsible for accidents of any nature.