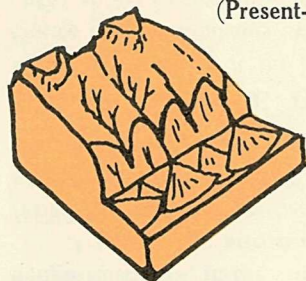


DEATH VALLEY

NATIONAL MONUMENT • CALIFORNIA

ERA
CENOZOIC

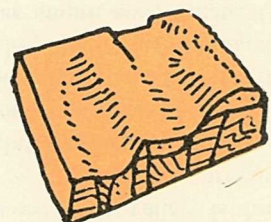
(Present-60 million years)



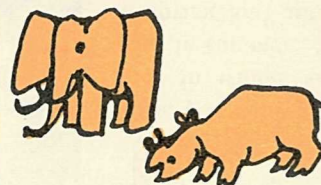
period: TERTIARY
(1-60 million)



Extensive volcanic activity, volcanic rocks on Black Mountains, Artist's Drive, Panamints.



ORIGIN OF THE VALLEY . . . folding and faulting, sinking of great block, raising of mountains.



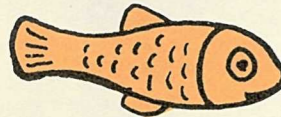
crustal movements . . . basins of water. Many now extinct animals: mastodons, titanotheres.

period: QUATERNARY
(Present-1 million years)

epoch: Recent
(Present-25,000 years)

warming and drying, evaporation of Lake Manly, very deep fill covered by thick salt deposits at Devils Golf Course . . . Ubehebe Crater.

epoch: Pleistocene (Ice Age)
(25,000-1 million years)

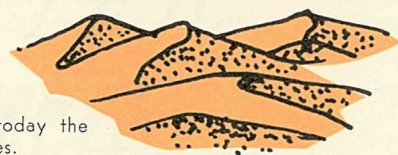


climate cool and wet; Lake Manly: 100 miles long, 600 feet deep—shoreline still visible. Heavy erosion of mountains.

ERA
MESOZOIC

(60-180 million years)

formation of granites: today the quartz sands of the dunes.



ERA
PALEOZOIC

(180-510 million years)



mid-Paleozoic: light and dark rock, exposed in Funeral and Grapevine Mountains . . . seas . . . great deposits of lime, sand, gravel, mud . . .

ERA
PRE-CAMBRIAN

(510-2,000 million years)



earliest rock formation: schists, gneisses, marbles, granites of the Panamints and Black Mountains.



Salt Flats from Dantes View

LAND AND LIFE

Death Valley is a vast geological museum. All of the great divisions of geologic time, called *eras*, and nearly all of their subdivisions, or *periods*, are represented. If the layers of rock were pieced together and restored to their proper sequence, their total thickness would probably exceed 12 miles. However, the strata have been so greatly distorted, broken, and jumbled that the story is difficult to read.

Over a period nearly as old as the earth itself, rock materials have been deposited by wind, water, and volcanoes, and rocks have been formed from masses of molten magma.

Death Valley was created by faulting, the slow collapse of a great section of land. At the same time, the mountain ranges thrust up east and west, virtually cutting the valley off from the outside.

Short but violent summer thunderstorms are largely responsible for the rock-fragment cover that today greatly modifies the appearance of the original fault basin. Moisture brought by winds is borne upward by hot air currents, where it cools, condenses, and then drops rapidly. The rainfall is much greater in the mountains than in the valley. Here rain may even evaporate before it reaches the ground. Sand, gravel, and boulders—washed in raging torrents from slopes at the wide upper ends of canyons—are funneled through deep, constricted gorges. As the debris-laden water breaks out of the confines of these "hourglass" canyons, it spreads out, loses speed, and abruptly deposits the rock debris. In this manner the large, gently sloping alluvial fans that flank the valley's sides have been formed.



Sunrise at Zabriskie Point

Wind, as well as water, has been active in producing other Death Valley features. As the softer material eroded away, the resistant quartz, left exposed to the wind, was reduced to sand and then blown into piles that eventually became dunes. With every wind, the contour of the sand dunes is changed. Winds deflected by mountain ridges blow the sand in one direction, then another—trapping the dunes where they stand.

Death Valley, as we know it today, represents one of many stages in the intricate geological story whose beginning was in the dim remote past. The varied geological forces, relentless in their action, but scarcely perceptible in the short span of man's lifetime, are still at work, writing the present chapter of a narrative whose end may be as far in the future as its beginning was in the past.

Animal life is common in the monument, despite the popular belief that little lives or grows in Death Valley. A variety of habitats exist between Badwater and Telescope Peak, a vertical distance of more than 2 miles. True, the casual visitor sees few animals. Most travel and feed by night when it is cooler, and they are less exposed. Many are so adapted to desert conditions that they obtain all the moisture they need from their food; consequently, only the central salt flats, without vegetation, are barren of animal life.

The antelope ground squirrel is the most commonly seen rodent. Kangaroo rats, wood rats, and rabbits live in the mesquite thickets, and the scantily vegetated alluvial fans. Kit fox, coyotes, and bobcats are occasionally seen along the roads in the evening. Desert bighorns inhabit the rocky slopes and gorges. Wild burros, descendants of those of the prospectors, frequent the Panamint mountains.



Sand and shale

Lizards of a dozen species are often seen except during a short hibernation period in winter. They range in size from the large but harmless chuckwalla to the tiny, banded gecko. Snakes are comparatively rare; the valley floor is too hot for them during the summer.

More than 230 kinds of birds have been recorded. Many are migrants or winter visitors—including a number of water birds. Some make the valley floor their permanent home, and others live all year in the adjacent mountains.

Even fishes are not left out of the wildlife picture—two species of pupfish, or "desert sardines," live in certain desert springs. Their ancestors lived in Lake Manly, during the ice age.

Death Valley plants possess strange and marvelous mechanisms by which they keep alive in the burning heat and dryness of summer. Small leaves or none at all, development of varnished or fuzz-covered leaf surfaces, or summer shedding of leaves—all are features which conserve water. Some plants combine two or more of these adaptations—plus others—and almost all of them have roots that either penetrate deeply or spread far from the plant base to tap a wide area.

When winter rains have been sufficient and the temperatures are favorable, the Death Valley flower show in spring is superb. Myriads of desert flowers transform the alluvial fans, washes, and canyons from dull gray and somber brown into a riot of color. Desert sunflowers rise gracefully and turn their golden heads to the sun;



Devils Golf Course

white and yellow primroses create colorful patterns on the browned surface of the fans spreading lazily from mountain to salt beds; splashes of purple enhance the magnificence of the spring picture. Golden primrose shine like minted gold, and the brilliant flowers of the cactuses delight the eye. Some sturdy blossoms stand for days, but others burst their buds in a blaze of splendor and are gone with the setting sun. Scattered seeds lie in the dust-dry soil to await the favoring rains of some following year.

Before White Man Came

For centuries, the Death Valley region has been inhabited by the Panamint Indians, a small offshoot of the Yuma-Shoshone speaking people. Capable of great endurance, ingenious in the utilization of every edible or otherwise useful plant, eating any animals they could catch, following the seasons in incessant migration between valley floor and mountain crest, they managed to exist. They called Death Valley "Tomesha," which means "ground afire." Before the Shoshone, the valley was occupied by Indians who lived by hunting with spear and atlatl—or throwing stick—as well as by gathering plants. They were here when big game was plentiful, and when ancient Lake Manly lapped at mountainous shores covered with pine. Since the coming of white men, the Indian population has greatly diminished and customs and arts have been largely lost. Some 50 descendants of those Indians who saw the covered wagons of the pioneers live at Indian Village near Furnace Creek in winter.

Visiting DEATH VALLEY



Desert scene

The Indians lived in Death Valley through all the seasons. Like them, you can enjoy the valley floor in winter and the mountains in summer. For a few weeks in spring and autumn the weather is equally pleasant throughout the monument. The season is at its height in winter when the weather in the valley is finest, with warm days and cool, bracing nights. In summer,

the heat in the valley becomes so intense that some of the side roads are closed for public safety. However, the main roads are patrolled frequently, and you can drive safely and comfortably to the valley and into the mountains.

Summer travel to Death Valley National Monument is on the increase; there are now about 15,000 visitors per month even during the hottest weather. You are advised to visit the lower elevations before noon and the higher elevations, which are delightfully cool, in the afternoon.

During the summer pick up the mimeographed sheet **HOT WEATHER HINTS**—at distribution boxes at the entrances to the National Monument, or at the visitor center. These hints will help make your summer visit a safe and pleasant one.

SIGHTS AND SIDE TRIPS

■ **Park Village** at the Furnace Creek oasis is the main center of visitor activity and includes accommodations at Furnace Creek Inn and Ranch, bar, grocery store, service station, curio shop, Borax museum, the National Monument headquarters and visitor center, and two campgrounds. During the summer, only the campgrounds, gas station, and visitor center are open in this area.

The visitor center museum gives you a survey of the natural history and the history of Death Valley National Monument. Publications, including trail guides, are sold at the information desk in the lobby. Evening programs are offered in the auditorium in winter.

The Borax Museum, operated by the U.S. Borax and Chemical Corporation, presents the story of mining in Death Valley. Mining machinery and equipment are on display outside.

■ **Dantes View** is 60 miles round trip from Park Village, including three side trips on the way. Allow 2 or 3 hours. Going east on Calif. 190 you come to a short spur road to Zabriskie Point. The overlook offers a view of the valley and a study of colorful lake sediments.

A few miles further southeast brings you to the one-way entrance to the loop through **20-Mule Team Canyon**. Beyond this, the side trip to **Ryan** will provide you with a good view of the Furnace Creek Wash area and the colorful foothills. At Ryan you will also have a chance to see a mining town in moth balls.

Another 12 miles of climbing will take you up to **Dantes View**. The great expanse of the valley extends north and south, nearly 6,000 feet below you. Directly across from Dantes View, the Panamint mountains build up to Telescope Peak, a mile higher than where you stand. Directly below is Badwater, the lowest point in the United States.

■ The **Eastside Valley Road** extends from 1 mile south of the visitor center to Saratoga Springs. The Badwater Self-guiding Auto Tour Booklet covers the trip from the visitor center to Badwater, including side trips to Golden Canyon, Artists Drive, Devils Golf Course, and Natural Bridge.

The road from **Badwater** to **Ashford Mill**, the ruin of a former gold mill, carries you into the harrowing south end of the valley. (Figure on driving 20 miles per hour over broken pavement.) The hills draw closer to you here, and near the end you get a good view of the several ancient lake levels marked on the side of **Shoreline Butte**.

Below Ashford junction the Eastside Road is seldom patrolled. Unless your car and tires are in good condition and is well serviced for gas, oil, and water, do not attempt it. Be prepared to drive over soft, sandy stretches where the road follows the bed of the sometimes flooded Amargosa River.

■ You can reach **Saratoga Springs** by making a side trip off Calif. 127, about 17 miles south of Shoshone. Saratoga Springs, and the wild desert scenery along the way are well worth your time. Often during migration there will be 15-20 species of water birds and as many song birds in and around the several acres of ponds.

■ **Westside Valley Road** provides a beautiful and interesting return trip from Ashford Mill. The graded dirt and natural gravel road is generally smooth driving. About 11 miles north you will come to a major road fork on your left. This is the **Warm Springs Canyon** road. It is 40 minutes to the Warm Springs talc mine and return. You drive over a huge, high bajada, or alluvial fan, and have a fine panoramic view of the mountains and the valley.

Back on the Westside Road, going north, you are traveling the historic route of the 20-mule team borax wagons and part of the pioneer route of the Bennett-Arcane party. You will find turn-outs to Bennett's Well, the great spring with 50-foot-high tamarisk trees at the ruins of Eagle Borax Works; Shorty's Well; the Bennett-Arcane Long Camp at Tule Spring (pictured and described in the visitor center museum); and the Dayton-Harris grave.

The Eastside-Westside road round trip from the visitor center is about 125 miles, with side trips. You should allow 8 hours for the full trip—and take lunch.

■ **Harmony Borax Works and Mustard Canyon** are 5 miles round trip from the visitor center. This side trip can be made from Park Village, or on the way north to Stove Pipe Wells.

■ **Stove Pipe Wells** has overnight accommodations, restaurant, bar, curio shop, bookstore, and service station.



Aguereberry Point



Salt Creek



LEGEND

- Ranger Station
- Campground
- Secondary Campground
- Paved Road
- Gravel or Dirt Road

Adapted with permission of Stanford University Press from DEATH VALLEY: THE FACTS, by W. A. Chalfant. Original cartography by C. H. Owens.

From Stove Pipe Wells Hotel some places in the valley can be enjoyed in a leisurely half-day of sightseeing. However you plan your valley trip, try to see the **Sand Dunes** either in the early morning or late afternoon when shadows are long. Near the Sand Dunes is the **Devils Cornfield**, and 6 miles south you come to the turn-off to Salt Creek—one home of the curious pupfish.

The side road to **Mosaic Canyon** is just beyond the hotel. After several miles of driving you can park and walk up the canyon. If you arrive when the sun is high, you will get a clearer impression of the mosaic effects and the rock patterns.

■ The road to **Skidoo**, an old mining town, is about 19 miles from Stove Pipe Wells Hotel. From the Wildrose road, you turn left onto a stretch of good dirt-gravel road that gets narrower and a little bumpy as you go farther into the mountains. The scenery is not spectacular, but this historic spot may give you a sense of the desolation and silence which greeted the early prospectors.

A couple of miles farther on the Wildrose road, you come to the turnoff to **Aguereberry Point**. From the parking area, it is a short walk up the trail to the lookout point (elevation 6,279 feet). Park Village is almost due east across the valley; on a clear day you can see this green oasis with naked eye.

At **Aguereberry Point** you are standing above the base of one of the great alluvial fans you have seen from the valley floor, and you can easily pick out the mountains to your left from which the raging waters of the past have excavated the materials laid down in the fan.

Wildrose Station was the historic stop on the old freight and stage route from the mining towns, like Skidoo, to the Panamint Valley and southern California. Here is a good place to break your sightseeing for lunch. Food and overnight accommodations are available all year.

The **Charcoal Kilns and Mahogany Flat** are near Wildrose. Watch for wild burros; they are descendants of animals that escaped from the prospectors and are a living reminder of those historic days. Because they breed too rapidly and threaten their own well being and the ruin of the vegetation on which they browse, the National Park Service controls the surplus stock.

The road climbs steeply from the kilns to **Mahogany Flat** campground and picnic area, at an elevation of 8,133 feet. You can park here and walk up the 6-mile trail that leads to **Telescope Peak**. Except when windy, it is pleasant walking, especially in summer, and affords good views of the valley framed by trees and shrubs. In winter, check at the ranger station before attempting the trip.

■ **Titus Canyon**, with side trips to Rhyolite and Beatty, Nev., is an adventure in geology and scenery. Allow yourself a full day and take lunch with you. You will be driving through the canyon from east to west, so it is best to have the sun behind or on your left. This means an early morning start.

On the road to Beatty, Nev. 58, you pass Hell's Gate Junction, and climb to **Daylight Pass**. Seven miles beyond, a 3-mile loop off the main road travels to the ruins of the mining town of Rhyolite. Several buildings of this ghost town are still standing.

The entrance to the one-way Titus Canyon road is close by. It takes you over flat desert country, rising gradually toward the east slopes of the Grapevine Mountains. These eroded slopes display a variety of yellows, oranges, reds, and even some bright areas of green. The road itself often changes color as you drive deeper in the mountains.

About halfway on your trip winds up to **Bloody Gap**. To the east you look down on the road you have just traveled; below you to the west are the ruins of Leadville and the drainage basin that fed the waters that created Titus Canyon.

Twisting down through the erosion-marked basin you come to a narrow gap through which torrents found a way to the valley. You drive on the floor of the wash between walls hundreds of feet high and so close you feel you can reach out and touch them from your car. The limestone walls show a smooth surface at turnings in the course where they have been polished by sand and gravel borne along by the rushing waters.

■ **Scotty's Castle** is the famous desert mansion of Death Valley Scotty and his millionaire friend, A. M. Johnson. It is a good jumping-off place for visiting the northern section of the monument. Tours of the castle are conducted hourly.

■ **Ubehebe Crater** is only a short drive from Scotty's Castle. This colorful, 800-foot deep crater was caused by a tremendous volcanic explosion.

The **Racetrack** lies below Ubehebe Peak (5,673 feet), 27 miles south of the crater. The road follows a valley winding between the Last Chance Range and the Cottonwood Mountains of the Panamint Range. The Racetrack itself is mud playa, and occasionally is subject to high winds.

■ **Back-country roads**—some maintained by the National Park Service, others by mining companies—are patrolled infrequently. All are open for public travel, but drive carefully and keep under 25 miles per hour.

Always stop at a ranger station or the visitor center to check road conditions before starting your trip. Points of interest can often be brought to your attention for the trip you plan. It is also wise to inform the desk at your hotel where you are going.

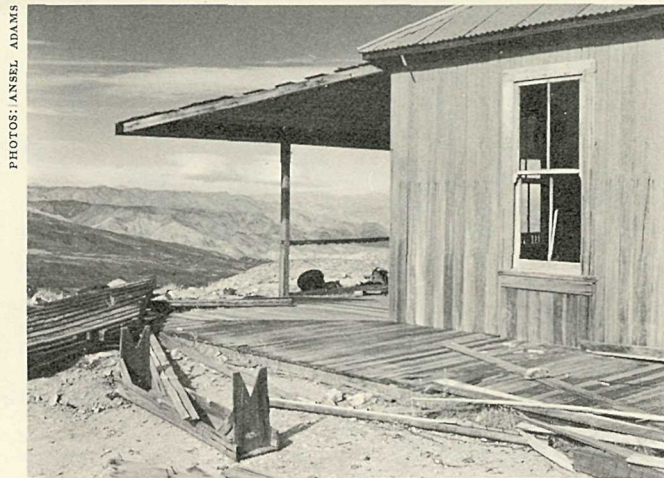
If you do have a breakdown—STAY WITH YOUR CAR. It will be seen and help sent.



Titus Canyon



Desert grave



Skidoo

PHOTOS: ANSEL ADAMS

The Intruders

A wagon train of half-starved emigrants, pushing westward on a supposed shortcut to the newly discovered gold fields in California, entered Death Valley in the winter of 1849. They had deserted their guide and were lost in the wilderness, hungry and tired, their animals exhausted. The wide salt floor of the valley, with the towering Panamints beyond, was the last blow to their morale. The train separated into seven groups, each seeking its own escape. One group, known as the Jayhawker Party, abandoned almost all of its equipment, made its exit through a canyon later named the Jayhawker Canyon, and crossed Panamint Valley and the Mojave Desert. After suffering tremendous hardships, the Jayhawkers finally reached Sutter's Fort.

Another group, the Bennett-Arcane party, crossed the salt flats. They camped for 26 days at Tule Spring. Overwhelmed by the vastness and loneliness, they nearly starved. William Lewis Manly and John Rogers were sent ahead in a desperate attempt to find a way to civilization and to bring aid. After a trip of terrific hardship, they finally returned and led their group to safety. Manly said that the weary emigrants looked back across the valley—the tremendous barrier that had caused so much privation and suffering—and cried, "Goodby, Death Valley."

While several lives were lost along the trail, a "Captain" Culverwell was the only emigrant of 1849 to die within Death Valley. In the next few years some of the "Forty-niners," undaunted, returned as guides or on their own to prospect or search for the legendary Lost Gun-sight silver lode.

Gradually the country became better known. In the mountains around Death Valley, mining towns mushroomed. Panamint City, then Skidoo, Greenwater, Rhyolite, and Chloride City lived their short lives and died, leaving only tumbled shacks, weathered timbers, and broken bottles to mark their sites.

Itinerant prospectors prodded their burros from one waterhole to the next, following Indian trails or beating out new tracks. Occasionally, the prospectors made a strike in the rugged peaks and barren canyons which isolated the valley from the surrounding, less-forbidding desert. They crossed and recrossed the ranges from one end of the valley to the other. Some of them were careless or unacquainted with the country—they missed springs, lost their burros, or lingered too long on the floor of the valley in summer. Their remains, dried and picked clean by coyote and raven, were eventually found and buried beside the trail.

Borax was finally responsible for the partial taming of the valley. In the 1880's, "cottonball" borax was refined at the Harmony Borax Works and freighted over agonizing miles of desert in huge high-wheeled wagons drawn by 20-mule teams. In 1907, the Tonopah and Tidewater Railroad was built to the edge of the valley, but was abandoned when a richer deposit of borax was discovered in the Mojave Desert.

Death Valley was also brought to the attention of the public through the exploits of Walter Scott, ex-cowboy of Buffalo Bill's Wild West show. Prospector, and the most colorful resident of the valley for many years, he became known as Death Valley Scotty. It was he who, with his millionaire friend A. M. Johnson, built the fabulous castle which bears his name.

In time, adventurous visitors drove their cars into the valley, cursed its then abominable roads, but came again. With better roads, and all America on wheels, it was inevitable that Death Valley would come into its own.

INTERPRETIVE SERVICES

The visitor center is the focal point for the Death Valley story. There is a park naturalist at the information desk in the lobby, and a series of exhibits tell you about Death Valley's natural and human history. An illustrated slide program is given daily throughout the year. *During the winter season*, naturalist programs are presented every evening. Guided walks and trips are conducted on weekends. Descriptions of the current program are available at ranger stations, campgrounds, and hotels in Death Valley. These services are free.

A self-guided auto tour leaflet is available in the visitor center for the trip to Badwater and return. Also available are sales publications on the history and natural history of the area. Write superintendent for titles and prices.

HOW TO GET TO DEATH VALLEY

By Automobile. Death Valley National Monument is clearly marked on most maps.

By Bus. Service from Las Vegas, Nev., via Las Vegas-Tonopa Stage Lines, October 15 to May 1.

WHERE TO STAY IN DEATH VALLEY

Campgrounds. The National Park Service maintains nine campgrounds in the monument. Six of these are in the valley; five are open from about November 1 to April 30; Furnace Creek is open all year. Three are in the mountains and are open from March through November depending on snow conditions. You may stay a maximum 4 to 14 days in the campgrounds during the busy season. *Wildrose Station*, a year-round operation under Government franchise, has overnight cabins, dining room, store, and service station. Write Wildrose Station, Box 397, Trona, Calif. 93562.

Furnace Creek Inn and Ranch. The inn (American plan) is open from early November to mid-April. The ranch is a motel with lower rates and cafeteria service; open from early November to late April. During the season write to Furnace Creek Inn or Furnace Creek Ranch at Death Valley, Calif. 92328. From March through October write to Fred Harvey, 80 East Jackson St., Chicago, Ill. 60604.

Stove Pipe Wells Hotel (European plan) is open from September 15 to May 15; off-season rates September, October, and May. Write to Stove Pipe Wells Hotel, Death Valley, Calif. 92328.

Scotty's Castle (European plan) has overnight accommodations, at the guest houses where friends of Scotty and Johnson used to stay. It is at an elevation of 3,000 feet in Grapevine Canyon, and open all year. Write to Scotty's Castle, Goldfield, Nev. 89013.

Communications. Telephone and telegraph services are available only at Park Village and the visitor center.

HELP PROTECT THIS NATIONAL MONUMENT

Death Valley National Monument has been preserved for you and future generations to enjoy. Use it wisely.

Please do not disturb, destroy, remove, or deface ruins, historical and archeological remains, geological formations, buildings, or signs.

Picking or injuring plants detracts from the natural beauty of the monument and is not permitted. Please leave all living things for everyone to enjoy.

Prospecting and mining are allowed only under mining laws. Before starting any operation, you must personally check with the chief ranger at monument headquarters. Collecting rocks and minerals is prohibited.

Camp in designated localities. Receptacles are provided for the disposal of refuse; please use them. Trees growing in the campground are not to be cut. Purchase firewood at Furnace Creek Ranch or Stove Pipe Wells Hotel.

Please carry any refuse you may have to a disposal can. Help keep the roadsides beautiful and clean.

Pets must be under physical restraint at all times.

Death Valley National Monument is a sanctuary. Firearms, unless cased, sealed, broken down, or otherwise packed to prevent use, are not permitted.

Drive Carefully! Report all accidents to the nearest ranger station. Traffic on Calif. 190 and 58 within the monument is governed by the California Vehicle Code.

A complete set of regulations may be seen at monument headquarters.

Park rangers are stationed at various points throughout the monument for the purpose of protecting it and you, and giving information. They patrol the roads, enforce regulations, and render all possible aid to visitors.

ADMINISTRATION

Death Valley National Monument, established on February 11, 1933, and containing 1,907,760 acres, is administered by the National Park Service, U.S. Department of the Interior.

A superintendent, whose address is Death Valley, Calif., 92328, is in immediate charge. He and his staff have offices in the visitor center, open 8 a.m. to 5 p.m., Monday through Friday, except holidays.

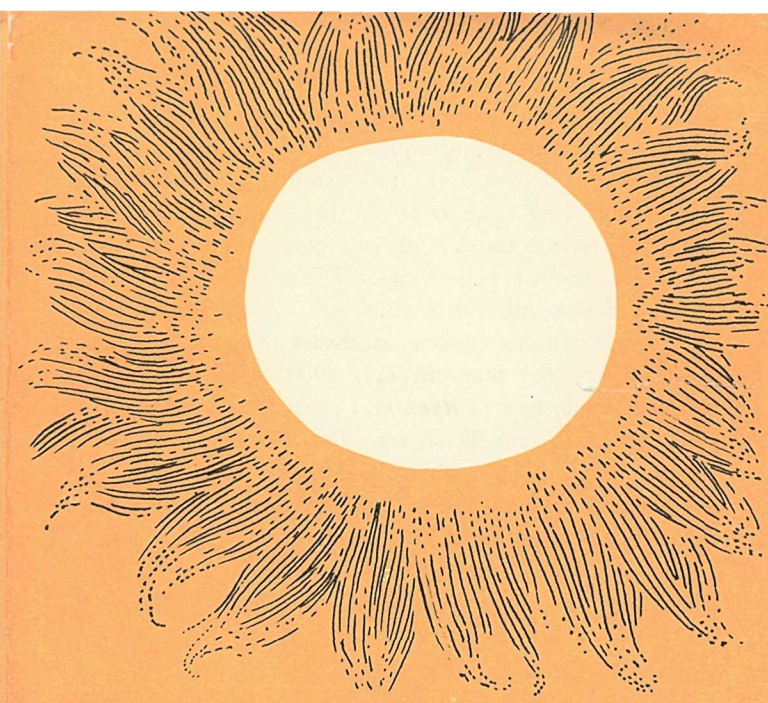
THE DEPARTMENT OF THE INTERIOR—the Nation's principal natural resource agency—bears a special obligation to assure that our expendable resources are conserved, that our renewable resources are managed to produce optimum benefits, and that all resources contribute their full measure to the progress and prosperity of the United States, now and in the future.



U.S. DEPARTMENT OF THE INTERIOR
National Park Service

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