

L29.21:1196/2/930

-Peter Bagrowski

Clemson University



3 1604 019 685 710

# GLIMPSES

OF OUR

# NATIONAL MONUMENTS



Photo by Grant

HISTORIC OLD TUMACACORI MISSION DATING FROM  
SEVENTEENTH CENTURY



UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

WASHINGTON, D. C.

A publication similar to this, entitled "Glimpses of Our National Parks," may be obtained free of charge upon application to the Director of the National Park Service, Interior Department, Washington, D. C. This publication contains 65 pages, including 26 illustrations.

Another interesting publication on the national parks and national monuments is the National Parks Portfolio, 1928 edition, which contains nine chapters descriptive each of a national park, and one larger chapter devoted to other parks and monuments. This publication, which contains 270 pages, including 310 illustrations, is bound securely in cloth. It is sold by the Superintendent of Documents, Government Printing Office, Washington, D. C., for \$1 a copy.

# THE NATIONAL MONUMENTS AT A GLANCE

ADMINISTERED BY NATIONAL PARK SERVICE, DEPARTMENT OF THE INTERIOR

[Number, 32; total area, 3,724 square miles or 2,383,467 acres]

Name	Location	Area (acres)	Distinctive characteristics
Arches..... 1929	Utah.....	4, 520	Contains extraordinary examples of wind erosion in shape of gigantic arches, windows, and other unique formations.
Aztec Ruins <sup>1</sup> ..... 1923	New Mexico.....	17	Prehistoric ruin of pueblo type containing 500 rooms and other ruins.
Capulin Mountain (kāpū'lin). 1916	-----do-----	680	Cinder cone of geologically recent formation.
Casa Grande (kā'sā grān'dā). 1918 <sup>2</sup>	Arizona.....	473	These ruins are among the most noteworthy relics of a prehistoric age and people within the limits of the United States. Discovered in ruinous condition in 1694.
Chaco Canyon (chā'kō). 1907	New Mexico.....	<sup>3</sup> 21, 512	Numerous cliff-dweller ruins, including communal houses, in good condition, and but little excavated.
Colorado..... 1911	Colorado.....	13, 749	Many lofty monoliths, and is wonderful example of erosion, and of great scenic beauty and interest.
Craters of the Moon..... 1924	Idaho.....	49, 602	Best example of fissure lava flows; volcanic region with weird landscape effects.
Devils Tower..... 1906	Wyoming.....	1, 153	Remarkable natural rock tower, of volcanic origin, 1,200 feet in height.
Dinosaur (dī'nō-sōr). 1915	Utah.....	80	Deposits of fossil remains of prehistoric animal life of great scientific interest.
El Morro..... 1906	New Mexico.....	240	Enormous sandstone rock eroded in form of a castle, upon which inscriptions have been placed by early Spanish explorers. Contains cliff-dweller ruins. Of great historic, scenic, and ethnologic interest.
Fossil Cycad..... 1922	South Dakota...	320	Area containing deposits of plant fossils.
George Washington's Birthplace 1930	Virginia.....	22	Site of home in which George Washington was born. Grounds to be restored and replica of the old homestead to be erected.
Glacier Bay..... 1925	Alaska.....	<sup>3</sup> 1, 164, 800	Contains tidewater glaciers of first rank.
Gran Quivira (grān kē-vē'rē). 1909	New Mexico.....	424	One of the most important of earliest Spanish mission ruins in the Southwest. Monument also contains pueblo ruins.
Hovenweep..... 1923	Utah-Colorado..	286	Four groups of prehistoric towers, pueblos, and cliff dwellings.
Katmai (kā'tmī). 1918	Alaska.....	<sup>3</sup> 1, 087, 990	Wonderland of great scientific interest in study of volcanism. Phenomena exist upon a scale of great magnitude. Includes Valley of Ten Thousand Smokes.
Lewis and Clark Cavern. <sup>1</sup> 1908	Montana.....	160	Immense limestone cavern of great scientific interest, magnificently decorated with stalactite formations. Now closed to public because of depredations by vandals.
Montezuma Castle. 1906	Arizona.....	<sup>3</sup> 160	Prehistoric cliff-dweller ruin of unusual size situated in a niche in face of a vertical cliff. Of scenic and ethnologic interest.
Muir Woods <sup>1</sup> ..... 1908	California.....	426	One of the most noted redwood groves in California, and was donated by Hon. William Kent, ex-Member of Congress. Located 7 miles from San Francisco.
Natural Bridges..... 1908	Utah.....	<sup>3</sup> 2, 740	Three natural bridges, among largest examples of their kind. Largest bridge is 222 feet high, 65 feet thick at top of arch; arch is 28 feet wide; span, 261 feet; height of span, 157 feet. Other two slightly smaller.
Navajo (nāv'-ā-hō). 1909	Arizona.....	360	Contains numerous pueblo, or cliff-dweller ruins, in good preservation.
Petrified Forest..... 1906	-----do-----	25, 908	Abundance of petrified coniferous trees, one of which forms a small natural bridge. Is of great scientific interest.
Pinnacles..... 1908	California.....	2, 980	Many spirelike rock formations, 600 to 1,000 feet high, visible many miles; also numerous caves and other formations.
Pipe Spring..... 1923	Arizona.....	40	Old stone fort and spring of pure water in desert region, serves as memorial to early western pioneer life.
Rainbow Bridge..... 1910	Utah.....	160	Unique natural bridge of great scientific interest and symmetry. Height 309 feet above water, and span 278 feet, in shape of rainbow.

<sup>1</sup> Donated to the United States.

<sup>2</sup> From June 22, 1892, until Aug. 3, 1918, classified as a national park.

<sup>3</sup> Estimated.

## THE NATIONAL MONUMENTS AT A GLANCE—Continued

Name	Location	Area (acres)	Distinctive characteristics
Scotts Bluff----- 1919	Nebraska-----	1,894	Region of historic and scientific interest. Many famous old trails traversed by the early pioneers in the winning of the West passed over and through this monument.
Shoshone Cavern (shō-shō'-nē). 1909	Wyoming-----	210	Cavern of considerable extent, near Cody. Not open to visitors at present.
Sitka----- 1910	Alaska-----	57	Area of great natural beauty and historic interest as scene of massacre of Russians by Indians. Contains 16 totem poles of best native workmanship.
Tumacacori (tū ma-kă'-kô-rē). 1908	Arizona-----	10	Ruin of Franciscan mission dating from seventeenth century. Being restored by National Park Service as rapidly as funds permit.
Verendrye (vér- ron-drē). 1917	North Dakota---	250	Includes Crowhigh Butte, from which Explorer Verendrye first beheld territory beyond Missouri River.
Wupatki----- 1924	Arizona-----	2,234	Prehistoric dwellings of ancestors of Hopi Indians.
Yucca House <sup>1</sup> (yūc-că). 1919	Colorado-----	10	Located on eastern slope of Sleeping Ute Mountain. Is a pile of masonry of great archeological value, relic of prehistoric inhabitants.

<sup>1</sup> Donated to the United States.

## ADMINISTERED BY THE DEPARTMENT OF AGRICULTURE

[Number, 16; total area, 596 square miles or 381,185 acres]

Name	Location	Area (acres)	Distinctive characteristics
Bandelier (Băn-dē- lēr). 1916	New Mexico--	22,075	Vast number of cliff-dweller ruins of unusual ethnological and educational interest, including ruins of Rito de los Frijoles, Otowi, Tsankawi, and others. Some of the tools, implements, and simple household equipment of the former inhabitants have been restored as they were centuries ago.
Chiricahua----- 1924	Arizona-----	4,480	Natural rock formations—pillars, balanced rocks, and formations resembling animals, faces, etc.
Devil Postpile----- 1911	California-----	800	Consists of peculiar hexagonal basaltic columns, like an immense pile of posts. The columns lie in the pile at all angles from vertical to almost horizontal. Said to rank with famous Giant's Causeway of Ireland.
Gila Cliff Dwellings (he'lă). 1907	New Mexico--	160	Cliff-dweller ruins. Four natural cavities in the face of an overhanging cliff 150 feet high, of a grayish-yellow volcanic formation, are divided into small rooms by walls built of adobe and small stones, which are in a good state of preservation. The ruins are situated in rough and broken country and are accessible only by trail.
Holy Cross----- 1929	Colorado-----	1,392	2 crevices on side of Mount of the Holy Cross, which when filled, or partially filled, with snow form a figure in the shape of a Greek cross. Object of much public and religious interest.
Jewel Cave----- 1908	South Dakota--	<sup>1</sup> 1,280	Cavern of limestone formation. Consists of a series of chambers, connected by narrow passages, with numerous side galleries.
Lava Beds----- 1925	California-----	45,967	Unusual and unique exhibits of volcanic action and lava flows in the shape of peculiar lava caves and tunnels in great numbers and of considerable size. In many of these caves rivers of perpetual ice are found and Indian petroglyphs carved and painted upon their walls indicate possible occupancy by early historic and prehistoric races. Battle ground of Modoc Indian war of 1873.
Lehman Caves----- 1922	Nevada-----	593	Caves of light-gray and white limestone, honeycombed by tunnels and galleries of stalactite formations.
Mount Olympus----- 1909	Washington---	298,730	Contains many objects of unusual scientific interest, including numerous glaciers. It is a real wilderness area, having no settlements, no supply points, nor human habitations within it. Bands of the rare Roosevelt elk, numbering several thousand head, of a species native to the region and not found elsewhere, have their summer feeding grounds within the monument area.

<sup>1</sup> Estimated.



## THE NATIONAL MONUMENTS AT A GLANCE—Continued

Name	Location	Area (acres)	Distinctive characteristics
Old Kasaan (kä-sän)..... 1916	Alaska.....	38	Abandoned Haida Indian village in which remain totem poles, grave houses and monuments, and portions of the original framework of the buildings.
Oregon Caves..... 1909	Oregon.....	480	Caves in limestone formation of great variety and beauty. These assume odd, grotesque, and fantastic forms of considerable extent and are situated in an attractive environment.
Sunset Crater..... 1930	Arizona.....	3, 040	A volcanic crater with lava flows and ice caves, near famous San Francisco Peaks.
Timpanogos Cave..... 1922	Utah.....	250	Limestone cavern. The cave is almost 600 feet in length. Many beautiful effects are emphasized by the electric lights installed in the cave.
Tonto..... 1907	Arizona.....	1 640	Two cliff-dweller ruins just off the Roosevelt Globe Highway, one to the southwest of the road and the other on the west side of the canyon. They consist of two and three storied walls of adobe with the supporting beams and lintels of windows and low doors still in place.
Walnut Canyon..... 1915	Arizona.....	960	Contains cliff dwellings of marked scientific and popular interest built in under the outward sloping canyon walls, utilizing the projecting limestone ledges as foundations. Instead of being of the communal type, these cliff houses were apparently built for separate families and contain from six to eight rooms.
Wheeler..... 1908	Colorado.....	300	Volcanic formations of unusual scientific interest as illustrating erratic erosion. Unusual combination of fantastic pinnacles and interesting gorges.

<sup>1</sup> Estimated.

## ADMINISTERED BY THE WAR DEPARTMENT

[Number, 16; total area, 642 acres]

Name	Location	Area (acres)	Distinctive characteristics
Abraham Lincoln's Birthplace..... 1916	Kentucky.....	110	Contains the log cabin and part of the farm where Abraham Lincoln was born.
Big Hole Battle Field..... 1910	Montana.....	5	Site of battle field on which battle was fought Aug. 9, 1877, between a small force of United States troops and a much larger force of Nez Perce Indians, resulting in rout for the Indians.
Cabrillo..... 1913	California.....	. 5	Of historic interest because of discovery of the territory now partly embraced in the State of California by Juan Rodriguez Cabrillo, who at this point first sighted land on Sept. 28, 1542.
Castle Pinckney..... 1924	South Carolina.....	3. 5	Fortification built in 1810 to replace a Revolutionary fort.
Chalmette..... 1907	Louisiana.....	17	Erected in memory of the Battle of New Orleans, which was fought on Jan. 8, 1815.
Fort Marion..... 1924	Florida.....	18	Fort built by Spaniards in 1566.
Fort Matanzas..... 1924	.....do.....	1	Relic of Spanish invasion.
Fort McHenry..... 1925	Maryland.....	47	Restored and preserved as birthplace of "Star-Spangled Banner."
Fort Niagara..... 1925	New York.....	. 0074	Site for erection of cross to commemorate a cross erected by Father Millett in 1688 on what is now the Fort Niagara Military Reservation.
Fort Pulaski..... 1924	Georgia.....	20	Built in 1810 to replace Fort Greene, of the Revolution.
Fort Wood..... 1924	New York.....	2. 5	Site of the Statue of Liberty.
Kennesaw Mountain..... 1928	Georgia.....	60	Site of important Civil War engagement fought June 27, 1864.
Kitty Hawk..... 1927	North Carolina.....	None.	Scene of first sustained flight by heavier-than-air machine.
Meriwether Lewis..... 1925	Tennessee.....	300	Contains grave of Captain Lewis, of the Lewis and Clark Expedition.
Mound City Group..... 1923	Ohio.....	57	Famous group of prehistoric mounds in Camp Sherman Military Reservation.
White Plains Battle Field..... 1926	New York.....	None.	Memorial tablet to indicate the position of the Revolutionary Army under the command of General Washington.

# THE NATIONAL PARKS AT A GLANCE

[Number, 23; total area, 12,431 square miles]

Name of park	Location	Area in square miles	Distinctive characteristics
Acadia..... 1919	Maine coast.....	16	The group of granite mountains upon Mount Desert Island and also bold point on opposite mainland across Frenchmans Bay—Formerly called the Lafayette National Park.
Bryce Canyon..... 1928	Southwestern Utah....	23	Box canyon filled with countless array of fantastically eroded pinnacles—Best exhibit of vivid coloring of earth's materials.
Carlsbad Caverns..... 1930	Southeastern New Mexico.	1½	Beautifully decorated limestone caverns, believed to be largest yet discovered.
Crater Lake..... 1902	Southwestern Oregon....	249	Lake of extraordinary blue in crater of extinct volcano—Sides 1,000 feet high—Interesting lava formations—Fine fishing.
General Grant..... 1890	Middle eastern California.	4	Created to preserve the celebrated General Grant Tree, 40.3 feet in diameter—31 miles by trail from Sequoia National Park.
Glacier..... 1910	Northwestern Montana.	1,534	Rugged mountain region of unsurpassed alpine character—250 glacier-fed lakes of romantic beauty—60 small glaciers—Precipices thousands of feet deep—Almost sensational scenery of marked individuality—Fine trout fishing.
Grand Canyon..... 1919	North central Arizona....	1,009	The greatest example of erosion and the most sublime spectacle in the world.
Grand Teton..... 1929	Northwestern Wyoming.	150	Includes most spectacular portion of Teton Mountains, an uplift of unusual grandeur.
Great Smoky Mountains 1930 (proposed).	North Carolina and Tennessee.	248	This area is not to be developed as a national park until at least 427,000 acres have been donated to the United States, as specified in the organic act. Meanwhile the park area of 158,876.50 acres already in Federal ownership is being protected by the National Park Service.
Hawaii..... 1916	Hawaii.....	245	Interesting volcanic areas—Kilauea and Mauna Loa, active volcanoes on the island of Hawaii; Haleakala, a huge extinct volcano on the island of Maui.
Hot Springs..... 1921	Middle Arkansas.....	1½	46 hot springs said to possess healing properties—Many hotels and boarding houses—19 bath-houses under Government supervision. Reserved by Congress in 1832 as the Hot Springs Reservation to prevent exploitation of hot waters.
Lassen Volcanic..... 1916	Northern California....	163	Only active volcano in United States proper—Lassen Peak, 10,453 feet—Cinder Cone, 6,913 feet—Hot springs—Mud geysers.
Mesa Verde..... 1906	Southwestern Colorado.	80	Most notable and best preserved prehistoric cliff dwellings in United States, if not in the world.
Mount McKinley..... 1917	South central Alaska....	2,645	Highest mountain in North America—Rises higher above surrounding country than any other mountain in the world.
Mount Rainier..... 1899	West central Washington.	325	Largest accessible single peak glacier system; 28 glaciers, some of large size; 48 square miles of glacier, 50 to 500 feet thick—Wonderful sub-alpine wild-flower fields.
Platt..... 1902	Southern Oklahoma....	1	Sulphur and other springs possessing medicinal value.
Rocky Mountain..... 1915	North middle Colorado.	401	Heart of the Rockies—Snowy range, peaks 11,000 to 14,255 feet altitude—Remarkable records of glacial period.
Sequoia..... 1890	Middle eastern California.	604	The Big Tree National Park—Scores of sequoias 20 to 30 feet in diameter, thousands over 10 feet in diameter, General Sherman Tree, 37.3 feet in diameter and 273.9 feet high—Towering mountain ranges—Startling precipices—Mount Whitney and Kern River country.
Sullys Hill..... 1904	North Dakota.....	1	Small park with woods, streams, and a lake—Is a wild-animal preserve.
Wind Cave..... 1903	South Dakota.....	17	Cavern having several miles of galleries and numerous chambers containing peculiar formations.
Yellowstone..... 1872	Northwestern Wyoming, southwestern Montana, and north-eastern Idaho.	3,426	More geysers than in all rest of world together—Boiling springs—Mud volcanoes—Petrified forests—Grand Canyon of the Yellowstone, remarkable for gorgeous coloring—Large lakes—Many large streams and waterfalls—Vast wilderness, one of the greatest wild bird and animal preserves in the world—Exceptional trout fishing.
Yosemite..... 1890	Middle eastern California.	1,139	Valley of world-famed beauty—Lofty cliffs—Romantic vistas—Many waterfalls of extraordinary height—3 groves of Big Trees—High Sierra—Waterwheel Falls—Good trout fishing.
Zion..... 1919	Southwestern Utah....	148	Magnificent gorge (Zion Canyon), depth from 1,500 to 2,500 feet, with precipitous walls—Of great beauty and scenic interest.

## TABLE OF CONTENTS

---

Tables showing the national monuments at a glance:	Page
Administered by the Department of the Interior.....	I
Administered by the Department of Agriculture.....	II
Administered by the War Department.....	III
National parks at a glance.....	IV
General introduction.....	1
National parks and national monuments closely allied.....	1
Types of national monuments.....	2
Administration and protection.....	2
Arches National Monument.....	3
Aztec Ruins National Monument.....	5
Capulin Mountain National Monument.....	7
Casa Grande National Monument.....	8
Chaco Canyon National Monument.....	10
Colorado National Monument.....	14
Craters of the Moon National Monument.....	16
Devils Tower National Monument.....	18
Dinosaur National Monument.....	20
El Morro National Monument.....	22
Fossil Cycad National Monument.....	25
George Washington Birthplace National Monument.....	26
Glacier Bay National Monument.....	27
Gran Quivira National Monument.....	28
Hovenweep National Monument.....	30
Katmai National Monument.....	32
Lewis and Clark Cavern National Monument.....	33
Montezuma Castle National Monument.....	35
Muir Woods National Monument.....	37
Natural Bridges National Monument.....	41
Navajo National Monument.....	45
Petrified Forest National Monument.....	47
Pinnacles National Monument.....	50
Pipe Spring National Monument.....	52
Rainbow Bridge National Monument.....	53
Scotts Bluff National Monument.....	55
Shoshone Cavern National Monument.....	58
Sitka National Monument.....	60
Tumacacori National Monument.....	62
Verendrye National Monument.....	65
Wupatki National Monument.....	67
Yucca House National Monument.....	68
Appendix:	
Rules and regulations governing the national monuments, general...	70
Special Muir Woods regulations.....	72
Act for the preservation of American antiquities.....	72

Appendix—Continued.	Page
Act to establish a National Park Service.....	73
Statement of appropriations made by Congress for the administration and protection of the national monuments.....	74
List of monument custodians.....	Inside back cover
Statement regarding "Glimpses of Our National Parks" and the National Parks Portfolio.....	Inside front cover

## MAPS AND ILLUSTRATIONS

Historic old Tumacacori Mission.....	Front cover
Map showing location of national parks and national monuments.....	34
Totem poles, Sitka National Monument.....	Back cover
One illustration of scene in each national monument run in descriptive text.	

## DEPARTMENT OF THE INTERIOR

RAY LYMAN WILBUR, Secretary

### NATIONAL PARK SERVICE

HORACE M. ALBRIGHT, Director

---

# GLIMPSES OF OUR NATIONAL MONUMENTS

---

## GENERAL INTRODUCTION

In addition to the national parks, the National Park Service of the Department of the Interior has under its jurisdiction a second class of reservations called national monuments. The majority of these national monuments were created by presidential proclamation under the authority contained in the act of Congress of June 8, 1906,<sup>1</sup> entitled "An act for the preservation of American antiquities." This act authorizes the President of the United States "to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments." The newest monument, the George Washington Birthplace National Monument at Wakefield, Va., however, was established by act of Congress, and another congressional act has authorized the establishment of yet another monument when certain conditions specified have been complied with.

## NATIONAL PARKS AND NATIONAL MONUMENTS CLOSELY ALLIED

The national parks and national monuments are so closely allied that it is difficult to draw a hard and fast line between them. Generally speaking, national parks are areas preserved in Federal ownership by act of Congress because of their outstanding scenery, national in character. The national monuments, on the other hand, are reserved because of their historic, prehistoric, or scientific interest.

A list of the various national parks, with their location, area, and most important characteristics, is given on page iv.

---

<sup>1</sup> Text of act given on pp. 72 and 73.



## TYPES OF NATIONAL MONUMENTS

The national monuments may be divided into four general classes—prehistoric, historic, geologic, and biologic. In the first two classes fall the ruins of the homes of the peoples who inhabited the United States before the coming of the white man and whose history is unknown except as it can be pieced together from the type of homes they built and the artifacts found in the ruins; and the ruins of structures built by the early white men, such as the old Spanish missions of the Southwest and the stockade at Pipe Spring, Ariz., built by the first settlers of the region. The geologic monuments contain volcanic phenomena, ledges of rock eroded in striking form, limestone caves, petrified trees and plants, and the fossil remains of prehistoric reptilian life. The biological national monument administered by the National Park Service contains a remarkable growth of trees, while another monument administered by the Department of Agriculture was created to preserve the Olympic or Roosevelt species of elk.

## ADMINISTRATION AND PROTECTION

At the present time<sup>2</sup> there are 64 national monuments. Of these, 32 are administered by the Department of the Interior, 16 by the Department of Agriculture, and 16 by the War Department. The monuments that are placed under the War Department are those of historic interest from the standpoint of military operations, while those under the Department of Agriculture are areas surrounded by national forests, which can be protected by the Forest Service in connection with its forest work. All the other national monuments so far created have been placed under the control of the Department of the Interior and are administered by the Director of the National Park Service in accordance with the act of August 25, 1916,<sup>3</sup> establishing the service. Lists of the national monuments administered by the National Park Service, Department of the Interior, and by the War Department and the Department of Agriculture are given on pages I, II, and III.

In order to coordinate the administration of these various reservations as far as possible, the Secretary of War and the Secretary of the Interior several years ago entered into an agreement for the transfer of certain of the national military and other parks and national monuments under the jurisdiction of the War Department to the Department of the Interior, to be administered by the National Park Service.

---

<sup>2</sup> July 1, 1930.

<sup>3</sup> Text of act given on pp. 73 and 74.

Legislation covering such transfer was introduced in the first session of the Seventieth Congress, but failed of final enactment before the close of that Congress. Should the transfer be made later as proposed, these various reservations would be classified as national historic parks, to distinguish them from the great scenic parks. Under the plan suggested, no active military cemeteries will be considered for transfer to the Department of the Interior from the War Department.

As increasing funds<sup>4</sup> have been made available by Congress for the administration of the national monuments, protection of these areas has been extended. Gradually full-time custodians on Government pay roll are replacing the part-time or volunteer custodians, residents of the localities in which the monuments are located who have so generously in the past devoted a portion of their time to monument affairs. The important southwestern national monuments, many of which have resident custodians, have been grouped under the general field supervision of Frank Pinkley, superintendent of southwestern monuments, who is also in immediate charge of the Casa Grande National Monument. His address is Coolidge, Ariz.

Wherever possible, with the funds available, repair and restoration work has been carried on in the ruined structures within the monuments, and in some cases camp grounds for motorists have been installed and roads and trails improved.

Rules and regulations regarding the government of the various national monuments are printed on pages 70 to 72, inclusive.

In the following short descriptions of the national monuments administered by the National Park Service information regarding rail and automobile approaches to the monuments and the names and addresses of the custodians are given.

#### ARCHES NATIONAL MONUMENT

Superb examples of wind erosion are contained in the Arches National Monument, in Grand County, Utah, which was established by presidential proclamation dated April 12, 1929. It has an area of 4,520 acres.

Utah is noted for its canyons and bridges, cut in the desert sandstone primarily through the erosional effects of running water. In the Arches area, however, the fantastic and bizarre rock creations are not water hewn, but were produced by the hot desert winds, aided by the occasional rains that occur even in this nearly arid country. Arches, caves, castlelike piles, window openings, chim-

---

<sup>4</sup> The annual appropriations made for the administration of the national monuments by the Interior Department are listed on p. 74.

neys, bridges, and walls, all have been carved by nature from the massive red sandstone.

The monument contains two tracts, known locally as the "Devil's Garden" and the "Windows," which are separated by a wide desert valley. A total of 2,600 acres is contained in the Devil's Garden section, with the remaining 1,920 acres in the Windows.

The main feature of the Windows section is an immense sandstone pile, with doors and windows, resembling a huge battlemented castle. Seeing it for the first time, one might almost think it the weathered ruin of some man-built stronghold. There are other smaller castles, windowed cathedrals, walled courts connected by long passageways,



Photo by Geo. L. Beas.

Courtesy Denver & Rio Grande Western R. R. Co.

One of the bridges in the Devil's Garden section.

and everywhere, no matter which way the observer turns, natural window openings and arches. The openings range from windows a foot or two in diameter to natural bridges of a hundred feet or more in diameter. Some are completely formed, while others are still in the making. In the great walls are eight natural arches of enormous size, and at one point a double arch 200 feet high makes an almost perfect circle. There are balanced rocks here, too, in almost every conceivable form and shape; pyramids of sandstone several hundred feet high, and tall, separate, slender sandstone spires.

The Devil's Garden is located in a continuous sandstone ridge, so eroded as to be intensely interesting from both a scenic and a geologic

standpoint. A few natural windows and bridges occur here, but these are the least interesting of this section's formations. Huge amphitheaters, joined by narrow, twisting passageways, are filled with a countless variety of rock formations, some in the form of towers and pyramids, others topped by steeples, turrets, columns, and minarets. In the center of one amphitheater is a high shaft of rock resting on a pedestal composed of layers of sandstone. Some of these courtlike open places are completely surrounded by interesting monoliths. Many of the spires, pinnacles, and sentinels are several hundred feet high.

Both the Windows and the Devil's Garden were discovered by Alex Ringhoffer, a prospector of the region. According to him some of the caves have the appearance of having been artificially closed, and he is inclined to believe that in them may some day be found mummies carefully laid away by some long-vanished race.

The Arches National Monument, which is one of the southwestern group under the general supervision of Superintendent Pinkley, is located near Moab, Utah, and may be reached by horseback from Moab, or by car and horseback from Thompson, Utah.

#### AZTEC RUINS NATIONAL MONUMENT

The Aztec Ruins National Monument, situated near the town of Aztec, N. Mex., contains an interesting cluster of prehistoric ruins. The land included in the monument was donated to the Government in two separate tracts. The first, an area of 4.6 acres containing the remarkable Aztec Ruin, was presented to the United States by deed of gift from the American Museum of Natural History through the generosity of one of its trustees, Mr. Archer M. Huntington. By presidential proclamation dated January 24, 1923, this area was made the Aztec Ruin National Monument. Later the museum donated the land containing the remainder of the ruins, and by proclamation dated July 2, 1928, this new area, approximately 12.6 acres in extent, was added to the reservation and the name changed to Aztec Ruins National Monument. The new plot contains one major ruin about as large in ground plan as the Aztec, several smaller ruins, and a unique, well-preserved circular structure which promises to be of unusual interest.

The Aztec Ruin itself is a large E-shaped pueblo structure containing approximately 500 rooms. In ground plan and structural detail it is closely related to the great ruins of the Chaco Canyon group, and is the most striking and best preserved of the group of ruins near Aztec. The first story of the building is standing and in 24 of the rooms original ceilings are intact. The walls of many of the second-story rooms are standing and in some cases also parts



of third-story rooms. The ceilings, where in place, are supported by large beams, cut and dressed with stone tools, and are interesting exhibits of work done in the Stone Age. The sandstone walls, reasonably plumb and with dressed faces, take high rank as examples of prehistoric masonry. The American Museum of Natural History conducted extensive explorations from 1916 to 1924 under the direction of Earl H. Morris, who was until 1927 custodian of the monument. This work consisted of clearing out the rooms that had been covered by débris and sand for hundreds of years, capping the standing walls to prevent further disintegration, and studying it in an effort to throw light upon its antiquity and place its builders in the aboriginal history of our country. Slightly more than half of



Grant Photo

Aztec Ruin

the ruin has been completely excavated and repaired. The scientific results thus far published comprise Volume XXVI, Anthropological Papers of the American Museum of Natural History.

In one room excavated several years ago were found two levels of occupation. As revealed by the potsherds, the basal fill of refuse 3 or 4 feet in thickness was of the age of the ruins in Chaco Canyon National Monument. Overlying this deposit was a thin adobe floor, and built upon this in the northwest corner was found a masonry bin roofed with mud supported by cross sticks and a reed mat. As a part of the process of rehabilitation the doors in the north and south walls had been blocked with stone, leaving a hatchway in the ceiling as the only means of access. Enough wall débris and drift



sand had worked down through the hatchway to cover the secondary floor to a depth of from 3 to 6 feet. Lying immediately upon the floor were the ladder which originally stood against the western side of the hatch, a hafted axe, Mesa Verde potsherds, and a number of other objects, including the dried body of a canine, apparently a dog, which must have been confined in the room, to judge by the claw marks upon the walls.

An interesting museum collection has been installed in six of the excavated rooms. The nucleus for this museum was material loaned by the American Museum of Natural History, which conducted explorations at the monument, and several hundred specimens have been donated by local people. The manners and customs of the ancient inhabitants as deduced from their artifacts are explained to museum visitors.

The town of Aztec is on a branch of the Denver & Rio Grande Western Railroad's narrow-gage lines extending from Durango, Colo., to Farmington, N. Mex., and also on New Mexico's section of the National Park-to-Park Highway. The monument is within a mile of Aztec and easily reached.

Johnwill Faris, of Aztec, is custodian of the monument.

#### CAPULIN MOUNTAIN NATIONAL MONUMENT

Capulin Mountain, N. Mex., is a magnificent example of a recently extinct volcano. Rising to an altitude of about 8,000 feet above sea level, it stands 1,500 feet above the general level of the surrounding plain. It is a steep-sided, circular cinder cone having a well-marked crater at its summit, with a broad platform at its base built up by successive flows of lava. The mountain is about a mile and a half in diameter at its base. The diameter of the crater from rim to rim is about 1,500 feet and its bottom is about 75 feet below the lowest part of the rim and 275 feet lower than the highest point.

Capulin Mountain is situated in the center of a volcanic region whose western extremity is about 50 miles east of the Rocky Mountains and which extends easterly from Raton Pass on the Santa Fe Trail through southern Colorado and northeastern New Mexico into Oklahoma, a distance of more than 80 miles. Evidence of the tremendous volcanic activity that occurred in this section is to-day disclosed in the mesas built up by layers of successive lava flows of varying thicknesses, separated by long periods of time, and now exposed through the action of erosion. Great cracks in the earth through which the molten rock poured forth are exposed in the eroded areas as dikes of solidified lava. In some places where the lava welled up through relatively small pipes the hardened filling now protrudes from the surface as "plugs," the softer rock around

them having been eroded away. In other places the lava issued through vents, and mountains were built up. The cinder cones represented by Capulin Mountain were the last to be formed and result from the last relatively feeble effort of the dying volcanic forces.

The national monument, created by presidential proclamation August 9, 1916, covers an area of 680.37 acres. Its principal exhibit, Capulin Mountain, is one of the striking features of this region of unique and attractive scenery. It is 6 miles southwest of Folsom, N. Mex., on the Colorado Southern Railroad, and 3 miles north of the town of Capulin, on a branch line of the Santa Fe system. The Colorado-to-Gulf Highway passes south of the monument through Des Moines and Capulin Station, and another road passes east of the



Capulin Mountain

monument through Des Moines and Folsom. Autos can be driven from the base of the volcano to the rim of the crater over a well-packed cinder road built by the National Park Service. The road is approximately 2 miles in length and 15 feet wide and has a 6 per cent grade. Homer J. Farr, the custodian of the monument, lives at the town of Capulin.

#### CASA GRANDE NATIONAL MONUMENT

The Casa Grande National Monument, established to preserve interesting prehistoric ruins, is an area of 472.5 acres of typical desert land, covered with mesquite, creosote, and salt bush, located in the Gila Valley of south central Arizona at an altitude of 1,422 feet.

The Casa Grande, or "Great House," the main feature of this monument, is a burnt-out, dismantled group of solid adobe walls, ruins of a great building which at one time was four stories in height.

The standing walls are 4 feet thick at their base. The first recorded white man to visit the ruin was Father Eusebio Francisco Kino, founder of the Tumacacori Mission, who passed here in 1694 and wrote a description of the ruins, which at the time of his discovery must have been standing for over two centuries in about the same condition that they are to-day. In addition to the great building there are many ruins of other prehistoric dwellings, the whole indicating a remarkable record of advancement in the architecture of the builders at Casa Grande up to the time of its final abandonment.

This area was first established as a national reservation by Executive order of June 22, 1892, under authority contained in the act of Congress approved March 2, 1889, and was classified as a national



Grant Photo

The Casa Grande and near-by ruins

park. Later, on December 10, 1909, the boundaries of the reservation were changed by the elimination of 120 acres on which there were no prehistoric ruins and the inclusion of a tract of 120 acres adjoining the reservation on the east, on which are located important mounds of historic interest. Finally, on August 3, 1918, by presidential proclamation the reservation was given national monument status.

The history of the rise and fall of the civilization which built and inhabited the Casa Grande ruins is only conjectural but the ruins themselves present much interesting material to the student. Undoubtedly when these people came into the valley they were nomads, but the opportunities for a settled life devoted to agricultural pursuits must have appealed to them. Their first step was the construction of an irrigation system, the remains of which are still plainly visible. Then came the problem of housing and finally the need of defensive construction for protection from their enemies. The

multistory house, of which the Casa Grande is the highest development, was probably evolved as a defensive measure. As a watch-tower, it must have proved a good investment, for from its top a guard could cover the country within a radius of 10 miles. This was a great advantage, for if the enemy could be sighted at 10 miles, he, being on foot—the horse was not yet on the American Continent—would need nearly two hours to get to the village, which gave time to get runners out into the fields and gather forces for the defense.

When the valley people were at their most prosperous stage there were probably between 8,000 and 15,000 of them in the Gila and Salt River Valleys. They farmed extensively, raising cotton and corn, made baskets and pottery of a good quality, used stone, wood, and bone tools, used sea shells for decorations and ceremonies, and in general may be said to have lived in the late stages of the Stone Age. No useful metal implements have been found.

It is probable that raiding Apaches became too strong for the valley dwellers, and year after year they lost a larger percentage of their crops and a larger number of warriors than they could afford to lose, until they at last decided to abandon the country. This began possibly 700 or 800 years ago. The improvement in wall construction, as indicated by the ruins, was probably developed over a period of not less than 1,200 years, so that the beginning of this civilization may antedate Christianity.

The national monument can be visited from the Casa Grande station on the Southern Pacific Railroad, 22 miles away, or from Coolidge, which is on the new Southern Pacific Line between Tucson and Phoenix and is 21½ miles from the monument. Accommodations and cars for the trip may be had at either place. Motorists traveling the Old Spanish Trail and Bankhead Highway between Tucson and Phoenix leave the highway at the town of Florence, going southwest to the monument. Frank Pinkley, superintendent of southwestern national monuments, is in immediate charge of the Casa Grande National Monument and maintains his permanent headquarters at this point. His post office address is Coolidge, Ariz.

#### CHACO CANYON NATIONAL MONUMENT

As examples of primitive architectural skill the 18 major ruins of Chaco Canyon National Monument, N. Mex., are without equal in the United States. Together with the cultural material recovered from their abandoned rooms, these ruins represent the very zenith of pueblo civilization in prehistoric times. No other archeological area in the entire Southwest exhibits so high a development. The ancient inhabitants of Chaco Canyon left no written record; no interpretable hieroglyphic system. The first published description of



the Chaco Canyon ruins is that of Lieut. J. H. Simpson, in 1850; the second, that of W. H. Jackson, in 1879. Mexican and Indian guides accompanying Simpson gave the ruins the names by which they are now known.

Pueblo Bonito (beautiful village), the largest of the ruins, is an immense semicircular structure 520 feet long by 310 feet in its greatest north and south depth. Portions of fourth-story masonry are still standing. The older section of Pueblo Bonito appears to be the first terraced communal building erected in Chaco Canyon; the newer sections, built by a different people but occupied contemporaneously with the older, embrace the finest aboriginal masonry north of Mex-



Copyrighted National Geographic Society. Reproduced by special permission

Pueblo Bonito in Chaco Canyon before excavation

ico. The National Geographic Society intensively explored Pueblo Bonito from 1921 to 1927. The cultural material gathered during these investigations has been presented to the National Museum in Washington. The scientific reports recording these seven expeditions are now in preparation.

Pueblo Bonito covers more than 3 acres of ground; in its heyday, it contained about 800 rooms and 32 kivas or ceremonial chambers. Neil M. Judd, of the United States National Museum, who conducted the excavations for the National Geographic Society, characterizes Pueblo Bonito as the largest apartment house built anywhere in the world prior to about 1887, and estimates that at one time it housed



1,200 people. These were peaceful farmer folk who cultivated near-by fields of maize, beans, and squash. The Bonitians had no metal tools, no domestic animals except dogs and turkeys. The society's explorations have fixed the abandonment of Pueblo Bonito at approximately 1,000 years ago.

Pueblo del Arroyo, a few hundred yards west of Pueblo Bonito, has also been explored by the National Geographic Society. It is a compact **E**-shaped structure, 275 feet north and south by 225 feet wide. Its single court is inclosed by a concave series of rooms to the eastward. Unlike its larger, more important neighbor, Pueblo del Arroyo does not evidence successive periods of reconstruction.



Copyright National Geographic Society. Reproduced by special permission

Pueblo Bonito after excavation

Built and abandoned during the decadent years of Pueblo Bonito, the "village by the arroyo" was relatively short lived.

On top of the mesa, about three-fourths of a mile north of Pueblo Bonito, are the ruins of Pueblo Alto (high village), consisting of two community houses, the smaller about 75 feet square.

Chettro Kettle (rain pueblo) measures 440 by 250 feet. Its masonry is exceptionally good and consists of fine-grained sandstone broken into small tabular pieces and laid in thin mortar. As in the other Chaco ruins, courses of heavier stone frequently occur in parallel bands, giving a pleasing ornamental effect.

Hungo Pavi (crooked nose), 2 miles above Pueblo Bonito, is built on three sides of a court, a semicircular row of rooms forming the

fourth side. The main building is 309 feet long and each of the two wings 136 feet.

Una Vida (single [one] life), about 2 miles east of Hungo Pavi, is L-shaped, the extremities of the two wings being connected by a semicircular wall. The ruin is badly demolished.

Wijiji, 1 mile above Una Vida, is rectangular, 225 by 120 feet, built around three sides of a court, with no wall on the fourth.

Casa Rinconada, on the south of the canyon, opposite Pueblo Bonito, is an enormous double-walled kiva or ceremonial room 72 feet in diameter with walls 30 inches thick. The outer wall is 8 feet from the inner, the space between being divided into rooms. Tsin Kletzin is a small communal house on the mesa, a mile to the south.

Kin Kletsoi (yellow house) is a small pueblo half a mile west of Bonito. Another mile down is Casa Chiquita (little house).

Peñasco Blanco (white rock point), situated on a high mesa (west of the arroyo) 3 miles west of Pueblo Bonito, is one of the most striking of the ruins. Elliptical in outline, its long diameter is 500 feet, its short 365 feet. It was originally four stories high. Portions of third-story walls still stand but the lower rooms are almost wholly covered by fallen masonry and the wind-blown débris accumulated about it.

Kin Klizhin (the black house), 3 miles south and 5 miles west of Pueblo Bonito, and Kin Binioli (whirlwind pueblo), 10 miles west and 4 miles south, are well preserved ruins belonging to the principal Chaco Canyon culture. Near each of these the remains of extensive irrigation works are traceable.

Pueblo Pintado (painted village) is the most easterly ruin. It stands on the Continental Divide and overlooks a rolling plateau whereon the Navajo Indians graze flocks of sheep and mottled goats. Casa Morena (brown house) and Kin Yai, near the Indian school at Crownpoint, complete the important ruins in the monument. In addition to these, however, the keen student of archeology can point out the disintegrating remains of hundreds of lesser structures some of which were built after abandonment of Pueblo Bonito while others were constructed at that early date when Pueblo peoples were just coming to adopt reasonably permanent habitations.

The Chaco Canyon is most accessible from Thoreau, on the Santa Fe Railroad and National Old Trails Highway, or U. S. Highway 66, connecting Albuquerque and Gallup, N. Mex. From Thoreau the road passes north through Satan's Pass to Crownpoint, where is located the Eastern Navajo Indian School and Agency. It is about 25 miles from Thoreau to Crownpoint and 40 miles from Crownpoint to the monument. Most travelers prefer to start their

journey from Gallup, where several comfortable hotels are to be found. The road is marked, and during dry weather is always passable. The Chaco Canyon Trading Co. operates a small store near the monument, where a supply of foodstuffs and other tourists' supplies are carried. Gus Griffin, whose address is Crownpoint, N. Mex., operates the Pueblo Bonito Lodge, which has limited accommodations for visitors.

Hilding Palmer, whose address is Crownpoint, is custodian of the monument.

A bridge built in 1928 eliminates the danger formerly experienced in crossing the Chaco arroyo during the summer rainy season.

The State expects to do some work on the road from Crownpoint to the monument during 1930. From the monument north a good graded dirt road 26 miles in length leads to the main highway between Albuquerque and Aztec Ruins National Monument, from which point a graded highway leads to Mesa Verde National Park.

The national monument was created March 11, 1907, and contains 21,512 acres.

#### COLORADO NATIONAL MONUMENT

This monument, near Grand Junction, Colo., is similar to the well-known Garden of the Gods area at Colorado Springs, only much larger in size and more beautiful and picturesque. The area exhibits magnificent examples of erosion, particularly of lofty monoliths, all highly colored. It was created May 24, 1911, and is 13,749.47 acres in extent.

The monument includes a part of the escarpment rising about 1,000 feet above Grand Valley that is seamed with numerous canyons cutting back miles into Uncompahgre Uplands. In these canyons and along the escarpment are hundreds of sandstone monoliths standing out separately from the main ledges like giant sentinels. One of the largest of these is Independence Rock, 500 feet high, 250 feet long, and 100 feet wide at the base. Surrounding it are many others of nearly equal height. Jefferson Monument, near the mouth of Seven Percent Canyon, is over 400 feet high, almost round, with a diameter of 100 feet at its base. Fisherman's Head, nearly 400 feet high, is surmounted by a colossal, yet vivid, presentation of a human countenance with cap tilted down to the eyes.

The monoliths are not the only features of the monument, as there are numerous caves and passageways which honeycomb the region. Great walls and amphitheaters, petrified wood, dinosaur remains, and evidences of early habitations may also be found in many places. Many deer, elk, and buffalo range in the monument, which, like all the national parks and monuments, is a game sanctuary in which no hunting is permitted.

One of the outstanding features of the monument is the Trail of the Serpent, a scenic highway which affords the visitor a trip from the base to the top of the monument, permitting glimpses of the Devil's Kitchen, Cold Shivers Point, Liberty Cap, Miracle Rock, natural bridges, and other attractions at the extreme south boundary of the monument. From the summit of this highway a magnificent panorama may be had. To the north the majestic range of the Book Cliff Mountains towers in the sky; to the east the most famous of all flat-top mountains, the Grand Mesa, stretches as far as the eye can



Monoliths in Colorado National Monument

see; nearer at hand the Colorado River winds and rewinds through the verdant Grand Valley with its countless orchards. At one's feet lies the rugged grandeur of the monument, a veritable forest of towering monoliths brilliantly colored in ever-changing hues of red as becomes its name—the Colorado.

Grand Junction is the principal gateway to the monument, about 8 miles distant, which is reached by automobile road. From this road trails lead to the more scenic sections. Grand Junction is on the main line of the Denver & Rio Grande Western Railroad, on



highways U. S. 40-S and U. S. 50, the National Roosevelt Midland Trail, the Rainbow Route, and the Pikes Peak Ocean-to-Ocean Highway. These roads are featured in an auto highway booklet issued by the Chamber of Commerce of Grand Junction, entitled "Scenic Highways of America."

#### CRATERS OF THE MOON NATIONAL MONUMENT

In the semiarid portion of the Snake River Plateau in south central Idaho, at the foot of the White Knob Mountains, lies the Craters of the Moon National Monument, which was created May 2, 1924, with an area of approximately 39 square miles. The area was increased by proclamation dated July 23, 1928, to 80 square miles. It is a volcanic region, the most recent example of fissure eruption in the United States, and as its name signifies closely resembles the surface of the moon as seen through a telescope. Nowhere else in the United States can so many volcanic features be found in such a small area.

Although in a mountainous country, the monument itself is a vast plain sloping southward from an elevation of about 5,000 feet at the entrance to about 4,000 feet at the south end. The first volcanic features to be noticed as one enters the monument are numerous smooth cinder cones, while beyond is a huge black stream of lava spread out on the plain for miles. From a distance this appears smooth, but upon closer inspection is found to be exceedingly rough and covered with jagged fragments of lava and cinders. Farther south is a profusion of cinder cones, craters, and hornitos. The cones vary in height from 20 feet to 600 feet. On the western border the black lava flooded up against the southern spur of the White Knob Mountains making bays of lava in each valley, with the mountain ridges projecting between the lava bays like peninsulas extending out into a black sea. It is believed by scientists that the volcanic eruptions in this area lasted spasmodically over a period of at least a thousand years, and that the final eruptions may have occurred only a few hundred years ago. The newer lava in the northern part of the monument is devoid of vegetation with the exception of a few lichens, and on the cinder cones occasional tufts of wild barley and a few limber pines. The older lava in the southern part supports a sparse growth of grass, brush, and stunted pines, and in the spring some delicately tinted wild flowers.

The lava tunnels and caves are perhaps the most interesting features to visitors. The tunnels, some of which are 30 feet in diameter and several hundred feet long, were formed by lava flowing out from under an already hardened crust which was strong



enough to remain standing. In them are beautiful blue and red lava stalactites and stalagmites, and other unusual formations.

Although the area is semiarid and the entire rainfall either sinks at once into the ground or evaporates, water is easily available to the visitor in several interesting ways. The springs that exist in some of the volcanic pits furnish one unusual source of water supply. In one of these springs the water has been found to have a temperature of  $34^{\circ}$  F. while the air temperature was  $87^{\circ}$ . Water is also found in the lava tunnels, where it has percolated downward through



Cinder Cones in Craters of the Moon National Monument

the lava cracks. In these tunnels the water collects in pools, and in some places ice is found. Near the Bottomless Pit there is a natural ice well. Here, 30 feet inside the throat of an extinct crater, is a pile of snow about 8 feet high, which owing to its protected location remains unmelted throughout the year. This is not recommended as a source of water supply, however, as the ice over the well is thin at times and the well itself is very deep.

The nearest railroad point to the Craters of the Moon National Monument is Arco, which is reached by a 59-mile ride from Black-

foot over the Oregon Short Line Railroad or by a 63-mile motor trip. Comfortable accommodations are available at Arco. From here 23 miles of good road lead to the monument entrance, which is located on the Idaho Central Highway. As this highway connects Boise and all western points with Yellowstone National Park, motorists visiting the Yellowstone can easily take in the Craters of the Moon at the same time.

A free public camp ground has been provided within the monument. There is also a store, with filling station, and cabins may be rented by visitors who do not care to camp out.

R. B. Moore, of Arco, is custodian of the monument.

#### DEVILS TOWER NATIONAL MONUMENT

The Devils Tower, an extraordinary mass of igneous rock, is one of the most conspicuous features in the Bear Lodge section of the Black Hills region of Wyoming. The tower rises 600 feet above a rounded ridge of sedimentary rocks, which itself rises 600 feet above the Belle Fourche River. Its sides are fluted by great columns which stand nearly perpendicular except near the top, where they round in, and near the base, where they flare out. The base emerges into a talus of broken columns lying on a platform of buff sandstone. The whole presents a never-to-be-forgotten spectacle.

The great columns composing the tower are mostly pentagonal in shape but some are four or six sided. Each column is about 6 feet in diameter, and the whole bunched together like a bundle of matches. In places several columns unite in their upper portion to form a large fluted column. In the lower quarter or third of the tower the columns bend outward and merge rapidly into massive rock which toward the base shows little trace of columnar structure. This structure is due to jointing that develops in igneous rocks as they cool. The diameter at the base of the tower is about 1,700 feet.

The Devils Tower was useful to the aborigines as a landmark from which to direct their courses across the plains. The Indian legend of its origin has it that one day three Sioux maidens while out gathering wild flowers were beset by three bears. The maidens took refuge upon a large rock, which the bears were also able to climb because they had long sharp claws. The gods, seeing the maidens about to be devoured, caused the rock to grow up out of the ground. As the rock grew the maidens climbed, but the bears followed. At last, becoming exhausted, the bears could climb no farther and fell to their death on the rocks below. The maidens then took the flowers they had gathered and made them into a rope with which they safely lowered themselves to the ground below. The columnar structure is supposed to have been caused by the

marks of the bears' claws. The Indians also say that during thunderstorms the Thunder God beat his mighty drum on the top of the tower, thus causing thunder.



Devils Tower

The white pioneers of civilization later on used the tower as a landmark in their exploration of the great Northwest. Still later the military leaders in the Sioux and Crow Indian country during the Indian wars of the last century directed their marches by the aid



of this ever-present tower, for it is visible in some directions for nearly a hundred miles.

The area including the tower, 1,152.91 acres in extent, was made a national monument by presidential proclamation dated September 24, 1906.

The Devils Tower is reached by a side trip of 7 miles from the Custer Battlefield Highway and Black and Yellow Trail, two signed highways, which follow practically the same route through northeastern Wyoming. The former is a direct route to Glacier National Park, the latter to Yellowstone National Park. Moorcroft, 35 miles distant, on the Chicago, Burlington & Quincy Railroad, is the nearest railroad point. The nearest settlement is Carlile. A fine camp ground, shelter cabin, and pure spring water are provided at the monument for the tourist. Inquiry regarding the road approach to the monument should be made by the tourist in near-by towns.

Access to the tower at all times has been made possible through the construction by the National Park Service of a bridge across the Belle Fourche River.

John M. Thorn, of Hulett, Wyo., is custodian of the monument.

#### DINOSAUR NATIONAL MONUMENT

In no other part of the world has there been found such a deposit of dinosaurian and other prehistoric reptilian skeletons as have been taken from lands embraced in the Dinosaur National Monument in northeastern Utah.

Prof. Earl B. Douglass, of the Carnegie Museum, at Pittsburgh, is credited with the discovery of this most remarkable fossil field in 1909, and from then until 1923 the Carnegie Museum was at work uncovering its fossil remains. The Smithsonian Institution and the University of Utah also have carried on quarrying work, obtaining excellent material.

Perhaps the most remarkable prize secured was the complete skeleton of the largest Brontosaurus known to science—"the *Apatosaurus Louisae*," as it has been christened in honor of Mrs. Andrew Carnegie. It is 100 feet long and 20 feet high and stands in the Hall of Vertebrate Paleontology in Pittsburgh. Probably in life it weighed 20 tons. Compared with such an animal the largest elephant would be as a dog to a horse.

Altogether more than 400,000 pounds of material, including bones and matrix, have been taken from the quarry, and many skeletons, some of which are practically complete, have been secured. There has been very little duplication, with the result that many strange



and gigantic animals that inhabited the earth in the dim past have been made known.

It is hoped that the skeleton of a dinosaur may be worked out in relief, protected from the elements and left in position for the enlightenment and entertainment of the general public. One can conceive of no more impressive and instructive project than to permit the visitor to see partly uncovered and protruding from the surface and edges of the strata the skeleton of a monster lying where it was buried millions of years ago in deposits of mud and sand which are now shale or sandstone beneath thousands of feet of other beds from which the mountains and mesas of the region have been carved. Such a project was contemplated in a bill which Congress-



Taking down the skeleton of a dinosaur

man Colton, of Utah, introduced in the Sixty-eighth Congress, but which failed of passage.

The quarry is on top of a sharp ridge between two gulches. According to the theory advanced by most scientists who have visited the region many dinosaurs and other prehistoric animals must have floated down some ancient river, from a source unknown and become embedded in a sand bar. They lay for countless years until they were covered to great depth in the mud and sand. Then came an upheaval which forced the fossil bed to an upright position where it outcrops on the mountain tops.

From the quarry at the top of Dinosaur Peak and from the peaks and ridges near by the view is of much interest to the lover of the picturesque. The rock formations, upended, aggregating about 3 miles in thickness and representing deposits of millions of years, lie open to view, stratum on stratum of various colors and shades.

High, rugged hills, deep gulches, sharp ridges, in the distance a picturesque river valley, rolling plains, bad lands, and many other physical features add to the attractions of the scene.

The proclamation creating this monument, which is 80 acres in extent, was dated October 4, 1915.

The Dinosaur Monument is easily reached by private automobile from Jensen, Utah, on the Victory Highway between Denver, Colo., and Salt Lake City. It is only a short side trip of 6 miles to the monument. The town of Vernal is located 12 miles west. The nearest rail approach is Watson, Utah, on the Unitah Railroad, a narrow-gage line connecting at Mack, Colo., with the main line of the Denver & Rio Grande Western. It is 54 miles by auto stage from Watson to Vernal.

#### EL MORRO NATIONAL MONUMENT

The El Morro National Monument, in west central New Mexico, contains an enormous varicolored sandstone rock rising about 300 feet out of a lava-strewn valley and eroded in such fantastic forms as to give it the appearance of a great castle. On its smooth sides are the inscriptions of five of the early Spanish governors of New Mexico, as well as of many intrepid padres and soldiers who were among the first Europeans to visit this part of the world. Lying as it did on the first highway in New Mexico, the Zuni-Acoma Trail, this rock sheltered as a true fortress many parties whose course took them this way. The shape of the giant monolith is such that an expedition of soldiers could find protection within the cove on the south side, in which was located the water so necessary to the traveler in those days. Here, with a few outguards on the one exposed side, no successful surprise attack could have been made by hostile Indians.

The earliest inscription on the rock is that of Don Juan de Oñate, governor and colonizer of New Mexico, and founder of the city of Santa Fe, who in 1606, on his return from a trip to the head of the Gulf of California, passed by El Morro and carved a record of his visit. The inscription of Gov. Manuel de Silva Nieto, who succeeded Oñate, and who took the first missionaries to Hawiku, where a mission was established, reads: "I am the captain-general of the provinces of New Mexico for the King our Lord. Passed by here on return from the towns of Zuni on the 29 of July of the year 1620 and he put them in peace upon their petition, asking him his favor as vassals of his Majesty, and anew they gave their obedience all of which he did with clemency, zeal, and prudence as such most Christian (not plain here) most extraordinary and gallant soldier of unending and praised memory."

The party accompanying Silva Nieto was made up of 400 cavalry and 10 wagons.

"They passed on the 23 of March of 1632 year to the avenging of the death of Father Letrado."—Lujan. Lujan, who signed this inscription, had reference to his trip with other soldiers from the garrison in Santa Fe to Hawiku, where the padre was scalped and murdered by Zuni Indians February 22, 1632, just 100 years before George Washington was born.

The De Vargas inscription of 1692 is of historical importance. Translated it reads, "Here was the General Don Diego de Vargas who conquered for our Holy Faith and Royal Crown all of New



Photo by Grant

El Morro

Mexico at his own expense year 1692." De Vargas reconquered the Pueblo Indians after their bloody rebellion in 1680 and succeeded in bringing many colonists from Spain to take up homes in this country. He lies buried under the altar of the parish church in Santa Fe.

Lieut. J. H. Simpson, afterwards General Simpson, and the artist, R. H. Kern, were the first Americans to see these inscriptions and bring them to the attention of the public. They visited El Morro and copied the inscriptions in 1849, leaving a record of their own visit on the rock.

The last Spanish inscription, of which there are over 50, was dated 1774. Thus for 168 years El Morro was a regular camping place for parties engaged in maintaining Spanish rule over the Pueblo



Indians of this section. Carving of names by present visitors is strictly prohibited, with a heavy fine and imprisonment provided by law for violations, in order that the historic and prehistoric records may be preserved.

Although to Governor Oñate belongs the credit of placing the first Spanish inscriptions on the walls of El Morro, it contains hundreds of Indian glyphs, which were carved many years before the Castilians first camped here. In fact Oñate's inscription was placed over the work of a prehistoric scribe. While these pictographs appear on both sides of the cliff, the best work of the Indians appears on the south side, some of the carvings being so high that it is believed ladders must have been used in making them. These pictographs have never been deciphered, and there is some doubt as to whether they really were intended to tell a story or were merely symbols representing various clans of the Pueblo Indians.

Apparently these pictographs were made by the Indians who lived long ago on top of the mesa and whose ruined terraced homes can be seen there to-day. An ancient carved hand and foot trail used centuries ago by these early inhabitants of New Mexico leads up the side of El Morro from near the water cove. Two other trails, one from the east side of the rock and the other from the west, lead up to the south rim. The trails have been plainly marked, so that travelers to-day may reach the top of the mesa without difficulty. Some of the old village walls still stand from 4 to 6 feet high.

The lands surrounding Inscription Rock were reserved from settlement or entry by order of the Secretary of the Interior June 14, 1901, and on December 8, 1906, shortly after the passage of the antiquities act, the El Morro National Monument was created. June 18, 1917, the monument was enlarged to its present area (240 acres) by the addition of 80 acres containing ruins of archeological interest.

The monument is easily reached from Gallup over a well-posted road which is usually in good condition. Westbound tourists, if they wish, can leave the Santa Fe Railway and National Old Trails Highway at Grants and motor through San Rafael (a strictly Spanish-American settlement of farmers and sheepmen), then on along the foothills of the Zuni Mountains over a road which is posted with signs. Thirty miles from Grants, in a beautiful pine forest, is located the Perpetual Ice Cave. A sign on a pine tree marks the spot of departure for the cave. From here a 400-yard walk takes the visitor to one of the most puzzling spectacles in America. Twenty miles farther on one enters El Morro National Monument, where there are inviting places to camp, with a shelter house in case of storm.

From El Morro the road leads to Ramah, 11 miles away. The custodian of the monument is Evon Z. Vogt, who lives at his ranch, 1 mile south of Ramah. From Ramah the traveler can go direct to



Gallup, 38 miles, or by an additional 23-mile drive he may visit the famous pueblo of Zuni before going to Gallup over an equally good road.

#### FOSSIL CYCAD NATIONAL MONUMENT

In an accessible and picturesque part of the Black Hills Rim in South Dakota, just at the south entrance to the hills, is the Fossil Cycad National Monument, an area of 320 acres reserved by presidential proclamation October 21, 1922, to protect its large deposits of the fossil remains of fernlike plants of the Mesozoic period, which are of intense interest to scientists. This is probably one of the most interesting fossil-plant beds yet discovered, with the most perfectly



A reconstructed fossil cycad flower

preserved specimens, and is known to scientific people throughout the world. These cycads were really of a tree-fern type, and it is the fossil tree trunks that first attracted attention about 30 years ago. Later investigations and discoveries, however, brought out the fact that these trunks, millions of years ago in the age when egg-laying monsters were still extant, actually bore flowers. While no actually open fossil flowers have been found, many of the trunks contain unexpanded buds, and in other instances fruits that had begun to mature before fossilization began. Undoubtedly the open flowers were so delicate in structure that when the events leading up to fossilization started they wilted and were destroyed. The flowering must have been profuse, as some of the trunks preserved

show nearly 500 buds. Some interesting specimens of the fossil cycad are to be found in the National Museum in Washington.

The Denver-Deadwood Highway passes along the southwestern portion of the monument, making it accessible for motorists, while it can be reached either by the Chicago & North Western Railway from Hot Springs, S. Dak., or the Chicago, Burlington & Quincy Railroad from Minnekahta on the north or Edgemont on the south. A visit to this monument could be planned in connection with a trip to Wind Cave National Park, which is on the Burlington Railroad.

#### GEORGE WASHINGTON BIRTHPLACE NATIONAL MONUMENT

In the George Washington Birthplace National Monument, at Wakefield, Va., established by act of Congress, approved January 23,



Sketch of old homestead to be restored at Wakefield

1930, the Nation has a historical shrine of first importance. Immediately upon the establishment of the reservation, approximately 12 acres of land in Federal ownership were turned over by the War Department to the National Park Service for administration and protection, and the donation of additional lands now in private ownership has been pledged for inclusion in the monument.

At Wakefield Augustine Washington built the home in which his son George was born. The old homestead was burned on Christmas Day, 1780, but parts of its foundations are in place. It was built of handmade brick burned at Wakefield, with a central hall and four rooms on the first floor and an upper story of the same size. A replica of this house is to be built on the old site and the grounds restored, this work to be completed by 1932, when the bicentennial of

the birth of George Washington will be celebrated. Here, too, is the old family burial ground, located in the midst of cultivated fields, where are the graves of George Washington's father, grandfather, and great-grandfather.

Recognizing the patriotic service performed by the Wakefield National Memorial Association in obtaining 100 acres of the Wakefield estate and in arousing public opinion as to the importance of preserving this historic old spot, Congress has appropriated \$80,000 for expenditure at the monument during the coming fiscal year. Of this amount \$30,000 will be used in moving the memorial monument now on the site of the old house to a suitable location close by and in other improvement work, and the remaining \$50,000, together with an approximately equal amount obtained by the Wakefield National Memorial Association, is available for expenditure in restoring the house under the direction of the association.

The Wakefield Memorial Association also brought to the attention of Mr. John D. Rockefeller, jr., the danger of commercialization threatening a portion of the area. Mr. Rockefeller thereupon patriotically took over approximately 254 acres of these historic lands at a cost of \$115,000, and at the request of the association has given assurance that this also will be given to the United States Government as an integral part of the historic shrine. When all this land has been transferred and consolidated, the total area of the monument will be approximately 365 acres.

Wakefield is located southeast of Mount Vernon, near the outlet of Popes Creek in the historic Northern Neck of Virginia. It is 35 miles from Fredericksburg and may be reached by State Highway No. 37 (Kings Highway).

#### GLACIER BAY NATIONAL MONUMENT

The Glacier Bay National Monument, located on the southeast coast of Alaska, was created February 26, 1925, and has an area of approximately 1,820 square miles. It includes a number of tidewater glaciers of first rank in a magnificent setting of lofty peaks.

Creation of the monument was on the petition of the Ecological Society of America and the indorsement of the National Geographic Society, these organizations pointing out that the Glacier Bay district presents a unique opportunity for the scientific study of glacial action, of resulting movements and development of flora and fauna, and certain valuable relics of ancient interglacial forests.

The region also contains a great variety of forest covering consisting of mature area, bodies of youthful trees which have become established since the retreat of the ice, and great stretches, now bare,



that will become forested in the course of the next century. These should be preserved in their natural condition. The new monument is also of historic interest, having been visited by explorers and scientists since the early voyage of Vancouver in 1794, who left valuable records of such visits and explorations.

The boundaries of the monument include a part of the coast line of North Marble Island, Bear Track Cove, Bartlett Cove, Excursion Inlet, Glacier Bay, Lynn Canal, and extend to the international



Courtesy National Geographic Society

Glacier Bay

boundary line between Alaska and British Columbia, including the summits of Mount Fairweather, Mount Lituya, Mount La Perouse, and several other mountain tops.

#### GRAN QUIVIRA NATIONAL MONUMENT

Long recognized as one of the most important of the earliest Spanish church or mission ruins in the Southwest, the Gran Quivira was set aside as a national monument November 1, 1909, with an area of 160 acres. On November 25, 1919, the monument reser-



vation was increased to 423.77 acres to protect the numerous Indian pueblo ruins situated near by.

The Gran Quivira stands upon an eminence of about 7,000 feet altitude, and commands a wide view of the surrounding country. The old church, of which only a few ruined walls remain, was established about the time the Pilgrim Fathers landed at Plymouth Rock. The "new" church was built about 1649, of blue-gray limestone laid in mud mortar in the form of a cross, with the short arms forming the side chapels. Its walls, in places nearly 40 feet high and 4 to 6 feet thick, roofless and ragged at the top, indicate a floor space of 4,978 feet. The extensive monastery and convents attached are plainly indicated by ruined walls. Excavations car-



Photo by Grant

Ruins of Gran Quivira Mission and some neighboring pueblos

ried on by the School of American Research of Santa Fe, under permit from the Interior Department, during several years past, have resulted in cleaning up the ruins and revealing many interesting details of the Indian pueblos. Both churches are said to have been built by the women and children of the Piro Tribe of Indians.

These important ruins of dual interest can be reached by automobile from Mountainair, N. Mex., a station on the Santa Fe Railroad about 25 miles distant from the monument. It is a small town but has a good auto camp ground and well-stocked stores. There are several good roads to the monument. Going by one and returning by another, the visitor is afforded an opportunity to see much of the beautiful scenery of the adjacent country. In addition to the ruins of the Gran Quivira National Monument, the ruins

of Cuarai and Abo, neighboring mission churches, may be reached from Mountainair. Cuarai, the largest, and Abo, the mother church, built of native red sandstone, present picturesque scenes among the cedar-lined hills.

The motorist traveling the National Old Trails road may visit this section by a side trip from Socorro, N. Mex. A few miles east of Socorro, which might have been transplanted bodily from Old Mexico, the Rio Grande is crossed and then after ascending a sharp grade the road continues across a level plain for 20 miles before coming into a mountain country with cedar forests and wonderful views. W. H. Smith, who lives at Gran Quivira, is custodian of the monument.

### HOVENWEEP NATIONAL MONUMENT

Four groups of remarkable prehistoric towers, pueblos, and cliff dwellings are contained in the Hovenweep National Monument, which was created March 2, 1923. Two of these groups in Hackberry and Keely Canyons are in Colorado; the Ruin and Cajon Canyon groups are across the State line in Utah. Hovenweep is an Indian word meaning "deserted valley." The area of the monument is 286 acres.

In the Ruin Canyon cluster there are 11 different buildings, the largest of which, Hovenweep Castle, has walls that measure 66 feet long and 20 feet high. Besides towers and great rooms, this building has two circular kivas, or men's ceremonial rooms, on the east end, identical in construction with those in ruins on the Mesa Verde National Park. The towers, distinctive features of the Hovenweep ruins, are rectangular, circular, semicircular, D-shaped, and oval, and generally are two or three stories high. Some have single rooms while others have multiple chambers, the latter being a unique type not found elsewhere. Unit Type House, a pueblo, having a single centrally placed kiva, compactly surrounded by rectangular rooms, is a pure type pueblo.

In the Keely Canyon group five large buildings cluster around the rim of a spur of the canyon or are perched on angular rocks at its base. Even to-day, after centuries of wear, they show fine masonry, although some of the mortar between the courses of stones has been washed out. There are small cliff houses in the walls of the canyons below most of the great houses.

One of the buildings in the Hackberry Canyon group is called the Horseshoe House by reason of its shape. The ruin has two concentric walls, a curved outer wall on the north separated by about 4 feet from an inner circular one and united to it by two radial partitions forming compartments still well preserved. The height of the outer wall is 12 feet; that of the inner somewhat less. Half-

fallen walls of a cliff dwelling of considerable size are found in a cave situated below this building, and upon a neighboring point stands a square tower with high walls and carved corners.

The Cajon Canyon group includes a number of important antiquities. The several multiple-chambered towers of the Hovenweep Monument belong to a prehistoric type distinct from pueblos, for nothing is found in modern pueblos comparable to them. They do not suggest habitations, for they would hardly accommodate the number of workmen necessary to build them. Their general ap-



Photo by George L. Beam.

Hovenweep ruins

pearance suggests granaries, forts, castles, or some communal use, possibly religious. Then, too, they are sometimes too shut in by surrounding cliffs to serve as watch towers and are accompanied by cliff dwellings which show evidences of habitation. Whatever their use, they are a specialized architectural type and apparently localized to this section.

The Hovenweep Monument lies about 50 miles west of the Mesa Verde National Park, and since there is no resident custodian the superintendent of that park assists in its administration. It is,



however, under the general supervision of the superintendent of southwestern monuments. Each of the four groups of ruins is situated within a mile of the main-traveled road between Dolores, Colo., on the Denver & Rio Grande Western Railroad, and Bluff, Utah. The ruins are accessible by automobile, and a side trip may be easily made to them in connection with a visit to Mesa Verde Park.

#### KATMAI NATIONAL MONUMENT

Katmai National Monument, situated near the base of the Alaska Peninsula on the southern shore of Alaska, bordering Shelikof Strait, lies midway of a volcanic belt which has shown extraordinary activity during recent years, and is the largest and most spectacular member of the monument system, with an area of over a million acres. Here is located Mount Katmai, which in 1912 gave vent to a violent eruption, the initial stage lasting three days, during which several cubic miles of material were emitted. This eruption was of such violence as to rank in the first order of volcanic explosions. The crater left by the explosion, measured along the highest point of the rim, has a circumference of 8.4 miles. The volcano is now quiet, and in its crater lies a lake of milky blue water over a mile long and nearly a mile wide, in which is a little crescent-shaped island measuring 400 feet from tip to tip.

The most spectacular feature of the monument is the mountain-encircled "Valley of Ten Thousand Smokes" in the northwestern portion of the reservation. For over 15 miles down this valley, which measures 9 miles at its greatest width, the ground is broken open, giving vent to several million fumaroles or little volcanoes, from which rise jets of steam. Some of the jets throw their steam over a thousand feet into the air, and hundreds of others go up to a distance of 500 feet, all merging above the valley into one titanic cloud. These fumaroles are surrounded by deposits tinted in all the shades of the rainbow, and present an incomparably beautiful and awe-inspiring spectacle. The "Valley of Ten Thousand Smokes" was first discovered in 1916 and was explored in 1917 by the National Geographic Society's fourth expedition to this region. The explorers had many thrilling adventures. They cooked their meals over the nearest hot vent wherever they happened to be, and their tent, heated by the steam, was much too warm for comfort. In many places they found the ground far too hot to walk upon. Scientists say that this astounding valley is an example of what the geyser basins of Yellowstone Park were at the time when Yellowstone's volcanoes first ceased their activity, and they predict that in the course of time, probably taking many centuries, the surface here will cool sufficiently for the vents to retain water some distance down. When this happens the



steam below, pressing against the water near the surface, will force this water upward into the air, and a new geyser field will come into existence.

In addition to the volcanic phenomena, the surrounding region contains some magnificent lake and mountain scenery. Waterfowl and fish are abundant, as are the great Alaskan brown bears, the largest of carnivorous animals.

The land was set aside as a national monument by presidential proclamation dated September 24, 1918, and on September 5, 1923, the area was reduced by the elimination of 10 acres, leaving a total of 1,087,990 acres.

At present the Katmai National Monument is comparatively inaccessible, but the last expedition party of the Geographic Society



Photo by D. B. Church. Courtesy National Geographic Society

"Valley of Ten Thousand Smokes"

in 1919 discovered Geographic Harbor at the head of Amalik Bay, previously uncharted, which may in the future afford a fine entrance to the region. When this harbor can be developed and an automobile road about 30 miles in length constructed into the area it will be readily accessible and will undoubtedly draw many visitors. Until this development takes place none but the most experienced and hardest of mountain climbers and explorers should attempt a visit to the region.

#### LEWIS AND CLARK CAVERN NATIONAL MONUMENT

The Lewis and Clark Cavern National Monument was established May 11, 1908, to preserve the limestone cave discovered in 1895 by D. A. Morrison, of Whitehall, Mont. It was so named because it

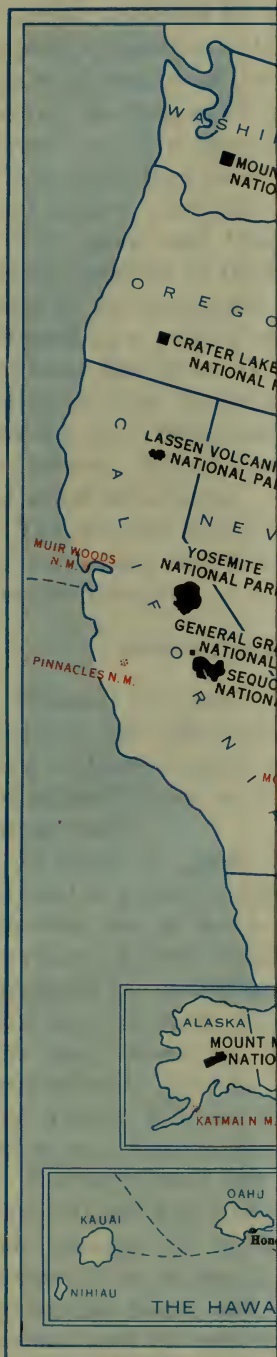
overlooks, for a distance of over 50 miles, the trail of Lewis and Clark along the Jefferson River. At the time the monument was established the land reserved was unsurveyed and its location within the section, township, and range therefore not conclusively determined. After the survey of the land another presidential proclamation, dated May 16, 1911, was issued definitely delimiting the reservation. The total area of the monument is 160 acres.



Stalagmites in Lewis and Clark Cavern

The entrance to the cavern is about 1,300 feet above the river and about 500 feet below the rim of Cave Mountain. The general appearance of the cave is that of a fissure in a steeply inclined bed of limestone. Its maximum measurements are 600 feet long and 400 feet deep, but its numerous passages and rooms make it appear miles in extent rather than hundreds of feet.

The walls of the cave are decorated with marvelous stalactites and the floor with corresponding stalagmites. Huge fragments of limestone, some as big as the ordinary house room, have fallen from the roof in many places. In places the stalactites are found in terraces; a fringe of delicately carved forms, swelling at different







LOCATIONS OF 22 NATIONAL PARKS AND 36 NATIONAL MONUMENTS ADMINISTERED BY THE NATIONAL PARK SERVICE



levels, gives the appearance of cascades. Many of the stalagmite columns, encircled by horizontal rings with pendent stalactites, are superbly beautiful. All manner of curious drip formations add to the wild beauty of the cave. Eight or ten chambers have been explored, the largest of these being 105 by 135 feet and 100 feet high. From the main entrance a stairway leads irregularly down about 175 feet and then small tortuous passages, opening into the chambers, and ladders, carry the venturesome visitor into the depths.

The Lewis and Clark Cavern is located in Montana about 45 miles northeast of Butte, and about 60 miles as the crow flies northwest of the northwest corner of Yellowstone National Park. It is situated at a point about 5 miles from the popular transcontinental highway known as the Yellowstone Trail, near Cardwell and about 14 miles from Whitehall on the Northern Pacific Railroad. After leaving the Yellowstone Trail a poor road ascends part way up the mountain. A trail then leads to the cave entrance requiring a climb of about 45 minutes.

The cave has been closed to the public for several years on account of vandalism and lack of funds to put in a lighting system and ranger protection.

#### MONTEZUMA CASTLE NATIONAL MONUMENT

Situated in a cavity in the face of a vertical cliff about 80 feet above its base, Montezuma Castle, in Arizona, is a true cliff dwelling. The building is about 40 feet from bottom to top and is overhung by at least 30 feet of cliff, which has kept the ruin in a good state of preservation.

It needs no great stretch of imagination when one is on the ground to picture a day many centuries ago when some patriarch led his clan up or down the stream, now called Beaver Creek, and rounding a great bend saw this cliff with its deep recesses as if prepared by nature for housing his people in safety. Thus it was that the clan must have halted here, built in the cliff and cultivated the land formed by the bend in the stream and lived for many generations. But these ruins were abandoned many years ago, for the Apache Indians, who occupied the valley on the advent of the white man, have no tradition concerning its origin.

The castle itself was not all erected at one time, but shows at least three stages of building. Neither was it built under the direction of one manager or foreman, for various methods were used in the construction of the different rooms. It was in all probability a communal house, and each family or unit, in erecting its room or rooms, used its own methods applied with its best skill and judgment. There is a very wide difference in the plastering of various

rooms, ceiling construction, and wall and door construction. In those days each man was his own builder, plasterer, roofer, and interior decorator.

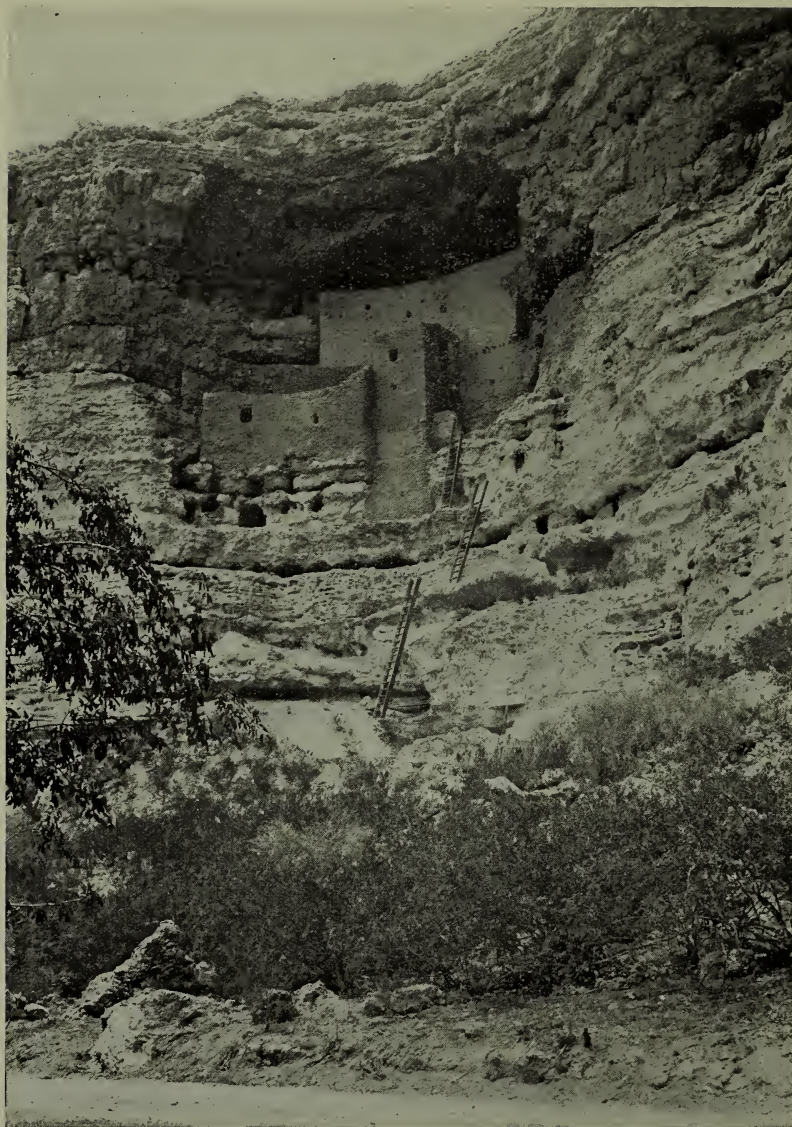


Photo by Grant

Montezuma Castle

Near the castle are many smaller structures of from one to four or five rooms and 200 or 300 persons may have had their homes in this section. They used pottery of a fair quality, some of it decorated in 2-color work with symmetrical designs. They raised

corn and were in a fairly advanced stage of the Stone Age and depended for their living on agriculture and partly on hunting. They had enemies who strove to steal their crops and to kill them, and it is entirely probable that these enemies finally overcame them to a point where they became discouraged and moved on to other places, where they would not be harassed.

On December 8, 1906, about 160 acres of ground containing the Montezuma Castle, were set aside as the Montezuma Castle National Monument. The monument is about 3 miles east of Camp Verde in the northeastern part of Yavapai County, Ariz. It can be reached from Flagstaff, Ariz., on the Santa Fe Railroad and National Old Trails Road by way of the Mormon Lake Road, a run of about 80 miles through a highly scenic section. It is also reached from Prescott on the Santa Fe System and State highway between Ashfork and Phoenix. From Prescott one can go to the monument via the Jerome-Prescott Road, a beautiful scenic ride, and return by the Cherry Creek Road, another beautiful drive. The distance from Prescott is about 54 miles. Martin L. Jackson is custodian of the monument and lives close by. Visitors are asked to use great care in climbing the ladders and walking through the ruins, and are warned not to push or lean on the outside walls, as accident and damage might result.

#### MUIR WOODS NATIONAL MONUMENT

The Muir Woods, Calif., named in honor of the late John Muir, explorer, naturalist, and writer, was established as a national monument by presidential proclamation of January 9, 1908. The monument was created to preserve a remarkable grove of *Sequoia sempervirens*, commonly known as redwood trees, on a tract of land containing about 295 acres presented to the Government for this purpose by the late William Kent, ex-member of Congress from California, and his wife, Elizabeth Thacher Kent, of Kentfield, Calif. On September 22, 1921, this acreage was increased by a further gift of 77.90 acres from Mr. Kent, with an additional tract of 50.24 acres donated at the same time by the Mount Tamalpais & Muir Woods Railroad, known the world over for more than a quarter of a century as "the crookedest railroad in the world."

Thus it was that this famous forest, containing trees centuries old, escaped destruction through condemnation proceedings contemplated in 1907 by private interests so that the canyon could be cleared of its priceless timber and the site be utilized for a reservoir for domestic water supply.

This grove of redwoods has grown more beautiful with the years. Thousands of visitors travel each year from far and near



to look upon these great trees, which, with their cousins, the *Sequoia gigantea*, are the greatest and oldest of all living trees. While the latter, commonly called the sequoias, are the larger, the redwoods are unusually graceful and impressive.

The botanical name *Sequoia* was derived from "Sequoyah," the name of the Cherokee chief who gave the Indians their first alphabet.

Nestling in a sheltered canyon on the lower western slope of Mount Tamalpais, in Marin County, Muir Woods is ideally situated less than a score of miles in a northerly direction from the city of San Francisco, thus affording unusual and easy access for even the most hurried visitor to view these most amazing trees.

Imposing heights are attained by the trees in Muir Woods, many reaching a maximum height of 240 feet. A circumference of 46 feet is not at all rare, nor is a diameter of 15 feet the exception. They vary all the way from tiny sprouts and saplings to mature trees 10 and 15 centuries old.

Devastating fires have marred many of the older trees in the grove. These fires occurred in days long preceding the coming of the white man. Evidences of the ancient fires may be seen even to-day, especially where the older stumps remain standing and the newer generations of young trees have sprouted about the parent root.

The thick, spongy bark of the redwood is peculiarly resistant to flame. Apparently it is almost impossible to destroy totally a mature redwood by burning. A tree badly charred and hollowed by fire at its base is likely to be as green and luxuriant as to foliage and high, green crown as any unharmed sapling of a more fortunate era.

A most persistent quality of the genus is its habit of sprouting from the original root rather than from seed. Although the largest of all the world's trees, the sequoias, strangely enough, bear the smallest seed cone among conifers. In the redwoods, propagation from seed is negligible, the tiny seeds rarely finding conditions ideal enough on the thickly matted floor of a redwood forest to grow from seed. A badly charred stump will immediately lend its underground energy to the sprouting of new trees about the parent stump. This accounts for the circular grouping of individual redwoods usually so characteristic of the species wherever fires or other destructive agencies, such as sawmills, have occurred.

Plant life in Muir Woods is luxuriant—almost exotic. Bay trees grow in profusion, and some fantastic growths abound along the trails. The madrone is plentiful in the loftier, more sunny, boundaries of the canyon, with here and there an isolated California nut-



meg tree. There are a number of Douglas firs, some of them formidable in size, the Douglas fir and the redwood being the only two conifers occurring in the park in numbers. In Fern Canyon a Douglas fir 8 feet in diameter has been dedicated to the memory of Mr. Kent.



Photo by H. C. Tibbets

The Redwoods of Muir Woods

Many wild flowers have their brief season, including pansies, violets, the strangely spotted deer-tongue, shooting stars, the *trillium* (coast wake-robin), and a variety of shy blossoms of the wood. *Oxalis* thrives, a green carpet, about the base of the redwood, its

pale-pink blossoms adding a bit of color to the spring greenery. Gigantic ferns of several varieties and a thick growth of huckleberry transform the canyon walls and the banks of Sequoia Creek. From May to July the forest is doubly fragrant when the azalea (great western honeysuckle) blooms in abundance. Sweet vernal, or vanilla grass, adds to the fragrance of the trails, especially in the spring and early summer months.

Animal life is plentiful, also. Deer wander freely into the canyon from the upper slopes at dusk and at dawn. They are very tame. Raccoons and wildcats are abundant, and the long blue-gray Douglas squirrels scamper everywhere gathering their winter stores of bay and hazel nuts.

The chatter of blue jays echoes up and down the canyon, their scoldings seldom silenced except at night, and the tiny humming-bird also is found here. There is a singular absence of other birds.

During the spawning season in the winter months salmon trout and steelhead run up Sequoia Canyon. Fishing, however, is strictly prohibited in the Muir Woods National Monument.

Outdoor fireplaces and picnic tables are provided for those who may bring or wish to prepare their lunch. Drinking water is piped throughout the woods. Overnight camping is prohibited, and all visitors must leave before dark. Fires may be built only during daylight hours in the fireplaces provided for such purpose.

Muir Woods may be reached from San Francisco via ferry boat and electric train to Mill Valley, thence by automobile over the Muir Woods Toll Road, a splendid scenic boulevard leading directly to the monument. Cars are not allowed inside the monument, but adequate parking space is provided outside its boundaries.

John B. Herschler is custodian of Muir Woods National Monument, with headquarters at Mill Valley, Calif.

Many people have evinced interest in the correspondence that took place between President Theodore Roosevelt and William Kent regarding the naming of the new monument. This correspondence, which is characteristic of the writers, is quoted below:

THE WHITE HOUSE, WASHINGTON.

MY DEAR MR. KENT: I thank you most heartily for this singularly generous and public-spirited action on your part. All Americans who prize the natural beauties of the country and wish to see them preserved and undamaged, and especially those who realize the literally unique value of the groves of giant trees, must feel that you have conferred a great and lasting benefit upon the whole country.

I have a very great admiration for John Muir; but after all, my dear sir, this is your gift. No other land than that which you give is included in this tract of nearly 300 acres, and I should greatly like to name the monument the Kent Monument, if you will permit it.

Sincerely yours,

THEODORE ROOSEVELT.

To the PRESIDENT,

*Washington.*

MY DEAR MR. ROOSEVELT: I thank you from the bottom of my heart for your message of appreciation, and hope and believe it will strengthen me to go on in an attempt to save more of the precious and vanishing glories of nature for a people too slow of perception.

Your kind suggestion of a change in name is not one that I can accept. So many millions of better people have died forgotten that to stencil one's own name on a benefaction seems to carry with it an implication of mundane immortality as being something purchasable.

I have five good, husky boys that I am trying to bring up to a knowledge of democracy and to a realizing sense of the rights of the "other fellow," doctrines which you, sir, have taught with more vigor and effect than any man in my time. If these boys can not keep the name of Kent alive, I am willing it should be forgotten.

I have this day sent you by mail a few photographs of Muir Woods, and trust that you will believe, before you see the real thing (which I hope will be soon), that our Nation has acquired something worth while.

Yours truly,

WILLIAM KENT.

THE WHITE HOUSE,

*Washington.*

MY DEAR MR. KENT: By George! you are right. It is enough to do the deed and not to desire, as you say, to "stencil one's own name on the benefaction."

Good for you, and for the five boys who are to keep the name of Kent alive! I have four who I hope will do the same thing by the name of Roosevelt. Those are awfully good photos.

Sincerely yours,

THEODORE ROOSEVELT.

### NATURAL BRIDGES NATIONAL MONUMENT

Three natural rock bridges of great size and beauty, occurring within a few miles of one another near the head of White Canyon, are included in this monument located in San Juan County, Utah. The monument was created by presidential proclamation dated April 16, 1908, and was enlarged and the boundaries defined by proclamations of September 25, 1909, and February 11, 1916. The total area of the Natural Bridges National Monument at present is about 2,740 acres.

The Owanchomo (Rock Mound Bridge), so called from the conical rock mound upon it, is probably the oldest, for it has been carved and chiseled by erosion until its span is comparatively a narrow strip of rock. Viewed at a distance, one is surprised that it supports its own weight. It is the smallest of the three bridges, and yet it has a span of 194 feet, being 35 feet wide on top but only 10 feet thick in the center. It rises 108 feet above the stream bed of a short, unnamed canyon at its confluence with Armstrong Canyon. This is locally known as the Edwin Bridge.



Three miles down Armstrong Canyon, at its junction with White Canyon, the Kachina or, as it is better known, Caroline Bridge, is reached. A symbol carved on this bridge, recognized as that of the Kachina, the sacred dancers of the Hopi Indians, gives it its name. This is the most massive of the bridges; rough hewn, it gives an impression of great weight and strength. The huge fragments of rocks and piles of sand and gravel in the canyon in the immediate vicinity are in harmony with the bridge, as if the master workman, not yet having finished his work, had not thought it necessary to clear away the débris. This bridge has a span of 186 feet, a width of 49 feet, and a thickness of 107 feet at its smallest part. It rises to a height of 205 feet above the stream bed.

About  $2\frac{1}{2}$  miles above the Kachina in White Canyon is the Sipapu, the Portal of Life. All Pueblo Indians believe they come into this



Photo by A. E. Demaray

The Edwin Bridge

world from a lower world through a hole or opening, called by the Hopi, "Sipapu." After death, they return through the opening to the lower world, where they remain a period before going to the sky to become "rain gods." The Sipapu, or as it is also known, Augusta Bridge, is the largest. It has a span of 261 feet, is 128 feet wide, and 65 feet thick at its smallest part, and rises to a height of 222 feet above the stream bed. It has been so carved and smoothed and is so beautifully proportioned that it is difficult to realize its great size. Nature has carried out the general scheme by providing a more beautiful setting than in the case of the other two bridges.

There are numerous ruins of cliff dwellings in the vicinity of the bridges perched in the canyon walls in almost inaccessible places. The monument also includes two large caves which are



separated some little distance from the bridge region. The larger, Cigarette Spring Cave, is in the face of a cliff under the rim rock of a canyon wall. It is about 150 feet wide, 20 feet high, and gracefully decreases to a terminus about 50 feet from the entrance, forming a sort of half dome. There is a spring in the farther recess of the cave which forms a stream that winds its way around the edge of the cave and sinks into the sand at its mouth. The vista looking into the canyon from the depths of the cave is a magnificent one.

The natural bridges are the result of stream erosion in an elevated region. Doubtless thousands of similar bridges have been formed and destroyed in past ages, and many more will be made and later destroyed in the ages to come.

The sandstone in which these bridges were cut resulted from a great sand deposit laid down long ago near sea level, and later covered with thousands of feet of sediments of various kinds. After being buried for millions of years, this sandstone and the overlying rocks of the plateau were raised and the elevated surface exposed to erosion. Then, as now, the rain formed rills, rivulets, and rivers. These cut into the slowly rising surface of the rocks, and valleys of various kinds were developed. In general, where the rise was slow, and especially where soft rocks were present, broad shallow valleys were eroded; and where the rise was relatively rapid, or the rocks hard, deep narrow canyons were cut. The form was also influenced by the rate of elevation of the region, which varied from time to time, and when the uplift was slow or had ceased the streams tended to broaden their valleys and to meander widely over the evenly graded bottom lands.

In this way White Canyon was eroded, and as the surface rose these streams cut their channels deeper and removed the rocks at the sides. During the long ages that these processes were acting thousands of feet of rock were removed from the plateau region.

In the course of its down-cutting the little stream which carved White Canyon meandered widely, carrying away the soft material of the red rocks that once covered the white sandstone. When in its downward course it reached this hard sandstone it found erosion more difficult. But its meandering course was established, and it cut its trench into the sandstone along its previously determined course. Its lateral cutting continued, but little headway was made toward broadening the canyon in the hard rock. Thus were formed the entrenched meanders, such as those at Caroline and Augusta Bridges.

At each of these two bridges the stream in its meandering course formed a loop resembling an oxbow and flowed about a peninsula of rock which had a narrow neck. This neck was at the point where the stream was obliged to turn sharply in order to flow around the

end of the peninsula. Also on its return to the other side of the neck, it made a sharp turn in the opposite direction. It is the law of streams that they cut into their banks on the outer side of curves. Thus the neck of the peninsula was undermined by the floods that surged against it from both sides. In time they broke through the neck and took the short cut through the hole thus formed. The end of the peninsula was left as an island, and the upper part of the neck remains as a bridge binding the island to the mainland.

The natural bridges lie about 55 miles west of the town of Blanding, Utah. Blanding is reached by automobile road from Colorado points via Mesa Verde National Park and from Thompson, Utah, on the Pikes Peak Ocean-to-Ocean Highway and the main line of the Denver & Rio Grande Western Railroad. There is automobile stage service from Thompson to Blanding, a distance of about 130 miles.

A road leads from Blanding to within a short distance of the Edwin Bridge, so that private motorists may make the entire trip to the monument by automobile. The road extends west across a series of canyons and, climbing a high mesa, passes through Elk Ridge between two buttes called the Bear's Ears, altitude 9,040 feet. Elk Ridge is heavily timbered with giant western pine and makes an ideal camping country. The road then swings south and ends on the south side of Armstrong Canyon, about a quarter of a mile from the Edwin Bridge. The most spectacular scenery passed en route is the head of Arch Canyon, seen from the Bear's Ears.

As the three bridges are located about 4 miles apart, saddle horses or mules will be needed by those not accustomed to hiking if they wish to go on to the Augusta and Caroline Bridges. Zeke Johnson, of Blanding, custodian of the monument, is an excellent outfitter and guide. From him may be obtained saddle horses to make trips to the other two bridges, and he also furnishes meals and accommodations for those who wish to stay overnight. These facilities are available after May 1.

Visitors coming to Blanding by stage or train may make the entire trip from there to the monument either by stage or saddle horse, both of which are furnished by Mr. Johnson. The trail and road follow the same route until a point about 6 miles southwest of the Bear's Ears. Here the trail branches off and descends the west face of Elk Ridge to the head of White Canyon, where the bridges are located. White Canyon enters the Colorado River about 38 miles west at Dandy crossing. On the opposite bank is the town of Hite, which has one lone resident. From Hite it is 50 miles by trail to the nearest settlement, Hanksville, Utah, from which point a road may be traversed by automobile to the main road system of western Utah.

## NAVAJO NATIONAL MONUMENT

The Navajo National Monument is in northeastern Arizona, within the great but little known Navajo Indian Reservation. It was created March 20, 1909, and the area reduced by presidential proclamation of March 14, 1912, to three small areas totaling about 360 acres. Each separate tract contains the ruins of a remarkable prehistoric cave pueblo or cliff dwelling in good state of preservation. These are known as Betatakin, a Navajo name meaning sidehill house, Kitsil (meaning broken pottery), and Inscription House. The latter ruin derives its name from an inscription scratched into the clay plaster of a wall. It reads, "S-hapeiro Ano Dom 1661." An intrepid early Spanish explorer or missionary, probably on his way to or from the Colorado River, must have entered the canyon in which this ruin is located and paused at the long-abandoned pueblo to scratch a record of his visit. So far as recorded it was not visited again until June, 1909.

Betatakin, the only ruin in the monument which has been excavated and restored, was discovered by Prof. Byron Cummings in 1909. It is situated at an elevation of 7,000 feet, in a great cave 450 feet long with a maximum depth of 150 feet, in the side of a soft, red sandstone cliff which forms the north wall of a most picturesque and beautiful canyon. The cave roof projects far out over the village, which originally contained more than 130 ground-floor rooms and occupied every foot of available building space. Sand storms had piled among the central rooms an accumulation in which oaks 4 inches in diameter and varied shrubbery had taken root. In the canyon fronting Betatakin are tall, slender quaking aspen, alder, and birch; pines deck the talus slopes; cedar and piñon cap the bordering cliffs. Betatakin was restored for the Interior Department in the spring of 1917 by Neil M. Judd, of the Smithsonian Institution.

Kitsil, the largest of the three cave pueblos, is appropriately named, as the open spaces between the apartments are strewn with broken pottery of the finest type produced by the ancient cliff dwellers. The village completely filled a cave 350 feet long and 50 feet deep and included over 250 rooms. Several circular ceremonial chambers or kivas at the front of the cave and below the general building level indicate the clans occupying it differed from those living at Betatakin, as in the latter ceremonial rooms are square or rectangular. Kitsil is situated in a wooded canyon, the walls of which are warmly colored. The rich greens of the foliage and bright flowers create a picturesque setting in an atmosphere of peace and simplicity. Within recent years, however, floods have so eroded the canyon that the horseback trip to Kitsil from Kayenta should



be made only under guidance of one thoroughly familiar with the trail and its quicksands.

Nitsie Canyon, in which Inscription House is located, is formed by a series of deep-cut canyons, whose courses zigzag in every direc-



Part of Betatakin ruin before excavation

tion like the tentacles of some huge devilfish, their rounded points and sides shimmering in the sunlight as though pulsating with life. At the rim one pauses in astonishment at this riot of color and form spread out below.



Just below the cave in which Betatakin is located is a spring of excellent water, rediscovered in 1917 and now used by all visitors to the ruin.

The Navajo Monument is reached from Flagstaff, Ariz., on the Santa Fe Railroad and National Old Trails Highway, by a fair dirt road running northeasterly and crossing the Little Colorado River on a suspension bridge into the Navajo Indian Reservation. Just before the bridge crossing, a new road from the left comes from Grand Canyon National Park, which is now also a point of departure. The Navajo Indian School at Tuba City and the near-by Hopi pueblo of Moencopi are reached 80 miles from Flagstaff and about the same distance from Grand Canyon Village. Sixty-five miles farther takes one to Marsh Pass and 18 miles farther to Kayenta, a post office and trading post, which is an outfitting point for the saddle and pack horse trip to the monument. John Wetherill, of Kayenta, is custodian of the monument and a reliable outfitter. Indian guides are engaged for the trips. Betatakin ruin is 8 miles north of Marsh Pass; Kitsil is about 7 miles from Betatakin; and Inscription House, in Nitsie Canyon, about 40 miles to the west of Kitsil.

The Navajo Monument ruins are more recent than those of the Mesa Verde National Park and Chaco Canyon National Monument.

#### **PETRIFIED FOREST NATIONAL MONUMENT**

The deposits called the Petrified Forests of Arizona extend over an area of more than 100 square miles and present great variety both in structure of the log-bearing strata and in characteristics of the petrified wood. Of this area about 40 square miles have been set aside as the Petrified Forest National Monument. When the monument was established in 1906 it contained about 90 square miles, but was reduced to its present size in 1911.

The term "petrified forest" has occasioned much misunderstanding. Many persons having heard of the forests expect to see a large group of standing petrified trees, more or less intact, or at least standing trunks or stumps as they occur in the petrified forest of Yellowstone National Park. No standing petrified trees can be seen in the Petrified Forest National Monument, however. The petrified tree trunks, more or less fractured, dismembered, and lacking the branches, all lie prostrate on or in the ground. It happens that there are a few upright stumps, but they belonged originally to horizontally embedded trunks and have been tipped to their present standing position. The region may be properly described as an eroded deposit of petrified drift logs, or the buried, petrified, and resurrected remains of a forest that grew somewhere else millions of

years ago. Scientists place them as belonging to the Triassic period, making their age approximately 200,000,000 years.

The monument contains three principal districts, called the First, Second, and Third Forests. Geologically they belong to the same layer, but erosion has produced different results in the three areas; also the color and texture of the wood varies considerably, so that a visit to each place is well worth while.

The First Forest, the smallest of the three, contains sections and fragments of logs that were once bedded in the upper layers of clay and sandstone which have now crumbled away with the exception of some knolls and spurs. Enough of the sandstone capping re-



Sections of petrified tree trunks

mains to indicate the continuity of the original mesa in which the logs were entombed. In this cap rock can be seen many remnants of logs still firmly held in place, awaiting the erosion of coming milleniums, while their ends, divided in many sections, adorn the gullied slopes below. The fantastically carved escarpments, with banded colors, form a picturesque setting for this deposit.

The Natural Bridge is found about one-half mile to the east. This bridge is a petrified log about 100 feet long, originally incased entirely in sandstone. The crumbling of this stone has exposed the largest part of the trunk and, beginning with a small channel under the central portion, erosion has carved an arroyo under the log, so that it now forms a bridge of about 50-foot span. The length of

the span and the immense weight of the trunk made it necessary several years ago to reinforce it with a concrete beam.

It should not be supposed that this tree grew on the rocky ledge, fell across the arroyo, and petrified. Instead, picture this region as the center of a vast basin overflowed by running water and gathering silt and gravel from surrounding higher elevations. Then imagine this tree, water-logged and no longer able to float, settling to its resting place on a sand bar, next being covered with more sand and pebbles that formed sandstone and covered by thousands of feet of clay and sand, then subjected to the ages upon ages of chemical action called petrification, which changed it from a wooden trunk to a mass of agate and carnelian (silica) without affecting its shape. Then picture the slow upheaval that drained the water from this basin; the gnawing of erosion through many thousands of years to remove the layers above this trunk; and the final crumbling of the immediately surrounding sandstone to expose the log and form the gully. Such in short is the story of this natural bridge.

The Second Forest lies about 2 miles south and a little to the east of the First Forest. It contains, in addition to the chips and scattered sections that are so abundant in the region, some rather well-preserved logs, a few of which are not entirely uncovered. The striking feature here is a number of logs of yellowish gray color and dull texture, quite a contrast to the more flinty and brightly colored specimens that prevail in the First Forest. This gray petrification shows under the microscope the minutest details of the original wood.

The Third or Rainbow Forest lies about 6 miles south and west of the first one. It surpasses the first two deposits in size, number of logs, and brilliancy of coloring. Here are found hundreds of logs in a good state of preservation. Stripped of branches, roots, and most of their bark, these huge trunks lie in great profusion, pointing in all directions. Many exceed 100 feet in length. If the missing tops were reconstructed they would indicate that the trees in their growth often reached 200 feet or more in height. The outer surface is generally a reddish brown, while the cross sections reveal every tint of the rainbow.

The west portion of the Third Forest is the place directly responsible for the name "Rainbow Forest." Here the colors of the wood reach their greatest intensity. The cap rock was partly worn away in the early stages of erosion and many deep ravines trenched through this bed of logs, after which the destructive agencies of weather through many thousands of years have reduced these trees to piles of fragments. The ground in every direction is literally paved with chips of agate, onyx, carnelian, and jasper.



A small museum housing some of the most rare and remarkable specimens of wood has been built in the Third Forest. A number of these specimens have been polished, and they exhibit in the greatest possible degree the wonderful coloring of the wood. No visitor should neglect the opportunity to see this collection. There is no charge for admission. At the museum is a registration book for visitors to sign.

Camp ground and water supply are within a short distance of the museum. The water supply, however, depends on the yearly rainfall, which is scant, and therefore can not fully take care of the demands made upon it by the great number of visitors. Tourists who intend to camp in the forest should preferably fill their canteens beforehand at Holbrook, Hunt, or Adamana.

The main point of departure for rail visitors to the monument is Adamana, on the Atchison, Topeka & Santa Fe Railway, although, if preferred, visitors may leave the train at Holbrook. From both of these points motor transportation to the monument may be secured. Occasionally heavy rains cause flood waters in the Rio Puerco and temporarily make the approach through Adamana impassable, as there is no bridge at this point. The monument can be reached at all times from Holbrook, but the distance is considerably longer than from Adamana.

During the summer season the Santa Fe Railway holds an eastbound and westbound train at Winslow two hours to give transcontinental passengers an opportunity to visit the monument. Eastbound passengers leave their train at Winslow and rejoin it at Holbrook. Westbound passengers reverse this procedure.

Motorists coming over the north branch of the National Old Trails Road may take the road through Adamana and the forest to Holbrook going west, or detour through the forest to Adamana going east. Traveling over the south branch of the National Old Trails Road there is a convenient detour  $1\frac{1}{2}$  miles long and well marked with signs, 77 miles from Springerville and 18 miles from Holbrook. The winters are generally mild and this monument may be visited any day in the year.

It is unlawful to gather specimens of petrified wood of any size whatsoever within the monument boundaries. The penalty provided for violation of this regulation is a fine of not more than \$500 or six months' imprisonment, or both.

Charles J. Smith, of Holbrook, Ariz., is custodian of the monument.

#### PINNACLES NATIONAL MONUMENT

The spires, domes, caves, and subterranean passages of this extraordinary area of California are awe inspiring and are well worth a visit by tourists and lovers of nature in its primitive state.



The name is derived from the spirelike forms developed from rocks of volcanic origin which rise from 600 to 1,000 feet above the floors of its several canyons. They form a landmark visible many miles in every direction. Many of the rocks are so precipitous that they can not be scaled. A series of caves, opening one into the other, lies under each of the groups of rocks. These have been connected by trails with other vantage points so that the visitor may now get a comprehensive view of the monument.



Photo by H. C. Ryker.

Pinnacles National Monument

The wild life on the reservation is not only protected by Federal authority but by special State laws, having been also created a State game preserve in 1909. Aside from its geological and scenic interest, it is important as one of the last strongholds and breeding places of the California condor, the largest and one of the most characteristic birds of the State. The other bird life is abundant, due to the protection given. A species of black-tailed deer, first described by Dr. C. Hart Merriam in 1898, is often seen in bands of 50 or more.

There are now 2,980 acres in the monument, which was first set aside January 16, 1908, and subsequently added to in 1923 and 1924.

The original reservation embraced a patented tract of 160 acres at the extreme northern end of the monument, the owners of which, having improved it for camping purposes, charge each person entering thereon a fee of 50 cents. The Department of the Interior desires it to be known that, while some of the natural formations are on this privately owned tract, the main scenic attractions of the area are a considerable distance away, and it is not necessary for visitors to cross any private lands where fees may be exacted by the owners in order to view the Pinnacles National Monument. No fee is charged visitors entering the monument lands, and camping space is available without charge.

The monument is reached from Hollister or King City and is about 35 miles distant from either town. In each case the road is macadam for the first 31 miles, then 3 miles of good dirt road. The last mile is under control, machines entering during the first 20 minutes of each hour.

The main entrance is through Bear Gulch, a beautiful canyon with a stream of water. There are two systems of trails within the monument, one through the caves, the other to the highest pinnacles.

The services of authorized guides, under the direction of Ranger Z. N. Marcott, are available for parties desiring to make the many interesting trail trips into the monument.

W. I. Hawkins, of Hollister, Calif., is custodian of the Pinnacles National Monument.

#### PIPE SPRING NATIONAL MONUMENT

Pipe Spring is famous in Utah and Arizona history. In 1858 William Hamblin was sent by President Brigham Young, of the Mormon Church, to visit the Hopi Indians in northern Arizona. His party consisted of 10, including a Piute Indian guide, and, so the story goes, they camped by a marvelous spring in the midst of the desert. Hamblin was a noted rifle shot and the conversation turned on the question of marksmanship. A wager was made that he could not shoot a hole through a handkerchief at 20 yards. Hamblin fired several shots at the square of silk hung by the upper two corners, but the force of the bullet only swept the handkerchief back without penetrating it. Stung by his failure and his friend's laughing remark that he could not shoot straight, Hamblin declared that if he would stick his pipe up as a target he would shoot the bottom out without breaking the bowl. Up went the pipe and crack the rifle. Hamblin made good his word and from that time on the spring has been called Pipe Spring.

The monument, about 40 acres in extent, was created May 31, 1923, to preserve the ruined old stone fort, a relic of pioneer days. In the

early sixties the Mormons established a cattle ranch here, and the fort was erected as a protection against marauding Indians. It consisted of two houses of two stories each, built facing each other across a courtyard which was closed at both ends by heavy double gates. The spring came up in the courtyard and flowed out through the lower of the two houses through a stone-paved room.

In the heart of the desert, Pipe Spring, with its wonderful spring of cold, pure water flowing at the rate of over 100,000 gallons a day, its great cottonwoods affording abundant shade and associations of



Ruins of old stone fort at Pipe Spring

early western pioneer life, is a refreshing oasis and scenic accent on the way of the main-traveled road between Zion's colorful canyon and the mighty chasm of the Colorado.

Charles Leonard Heaton, whose address is Moccasin, Ariz., is custodian of Pipe Spring Monument, and resides within the reservation.

#### RAINBOW BRIDGE NATIONAL MONUMENT

The existence of this natural wonder was first disclosed to Prof. Byron Cummings, then of the University of Utah, in the early summer of 1908, by Mrs. John Wetherill, who related to him vague descriptions she had obtained from a Piute Indian. During the winter of 1908-9 Mrs. Wetherill found two Piutes, Nashja and his son, Nashja-bega, who actually had seen the bridge. Acting upon Professor Cummings's request, Mrs. Wetherill engaged these men to



serve as guides for the following summer. Under guidance of John Wetherill and Nashja-bega, a party consisting of Professor Cummings and three student assistants, and W. B. Douglass, surveyor of the General Land Office, and his four assistants, reached the bridge on August 14, 1909—the first white men to behold this most colossal of known natural arches. The following year, on May 30, 1910, it was made a national monument upon the recommendation of Mr. Douglass. It embraces an area of 160 acres.

Rainbow Bridge is the greatest among the known natural bridges of the world, and is unique in that it is not only a symmetrical arch below but presents a curved surface above, thus roughly imitating the arch of the rainbow, for which it is named in Piute mythology. Thus to the Piutes the bridge is known as "Barahoini"; but the



Photo by Carson.

The Rainbow Bridge

Navajos call it "Nonnezoshi," meaning "hole in the rock," or "arch." It is also referred to as "Nageelid Nonnezoshi"—"rainbow arch."

The bridge partly spans Bridge Canyon, which extends from Navajo Mountain northwestward to the Colorado River. The dimensions are 309 feet in the clear from the bottom of the gorge and 278 feet from pier to pier. If it could be arched over the Dome of the Capitol at Washington there would still be room to spare. Of salmon pink sandstone, its proportions are so nearly perfect it dwarfs all human architecture of the sort.

The Rainbow Bridge Monument is situated a little north of the Arizona line in Utah within the Piute Indian Reservation.

The nearest railroad station is Flagstaff, Ariz., on the Atchison, Topeka & Santa Fe Railway. From here the trip is made by auto-



mobile to the foot of Navajo Mountain, where Rainbow Lodge is operated by Hubert Richardson, of Winslow, Ariz., a licensed Indian trader. From the lodge at Navajo Mountain the trip to the Rainbow Bridge must be made by pack train, at least three days being required for the round trip. By making advance arrangements with Mr. Richardson an automobile can be engaged to make the trip from Flagstaff to the lodge at Navajo Mountain.

John Wetherill, of Kayenta, Ariz., custodian of the Navajo National Monument, also is prepared to take parties by pack and saddle horses to the Rainbow Bridge, a 10-day round trip. From Kayenta trips may also be made to the beautiful Monument Valley, with its brilliant crimson buttes towering 500 feet and more above the shifting desert sands.

The Fred Harvey Co., operating hotel and transportation service at the Grand Canyon National Park, has installed automobile transportation service from the Grand Canyon to Rainbow Lodge and return. The round trip will consume five days. The route lies across the Painted Desert, the home of the Navajo Indians. Along the way are found dinosaur tracks and petrified trees. Some of the finest and most rugged scenery in Arizona is encountered in this region.

Private motorists can reach Rainbow Lodge, at the foot of Navajo Mountain, either from the Grand Canyon or from Flagstaff, which is on the National Old Trails Road.

The ruins of the Navajo National Monument can be visited by short trips from Rainbow Lodge.

The Rainbow Bridge National Monument belongs to the group of southwestern monuments under the supervision of Superintendent Pinkley. There is no local custodian.

#### SCOTTS BLUFF NATIONAL MONUMENT

This celebrated landmark of the old Oregon Trail is rich in historic interest and scenically worthy of national notice. Each summer thousands of persons make the ascent to its summit for the magnificent views from its elevation of 4,662 feet. Nestled in the North Platte Valley, six towns with many miles of surrounding irrigated acres of green alfalfa, golden grain, and other crops greet the eye. This promontory and the hills adjoining on the west are remnants of the general high plains constituting much of the western part of the State of Nebraska. In the Bad Lands at the north base of Scotts Bluff, and between it and the North Platte River, erosion has bared the fossil remains of mammoth turtles, the three-toed horse, the Miocene camel, and various other mammals of prehistoric age.

The first white men to observe and use this landmark were the returning Astorians under Robert Stuart, who in 1812 established a winter camp near by. It is presumed this camp was about 4 or 5 miles north of the bluff in Cottonwood Grove on what was then the north side of the river but which later became an island. A hand-forged ax, presumed to have been used by the Astorians, was found buried here in the sand near cottonwoods of the third generation, the stumps of the first and second growth trees attesting to the use to which man put them. The Astorians remained in camp here from December 29, 1812, until March 9, 1813.

In 1822 General Ashley, of St. Louis, with a party of a hundred men, started on a hunting and trapping expedition into the Rocky Mountains. Privations and dangers reduced the number of fol-



Scotts Bluff

lowers to 40 before the foothills were reached, but these 40 included some of the history makers of the West, among whom was Hiram Scott. General Ashley later released his trappers and Scott became a "free trapper," meaning that he gathered hides and fur for Hiram and not for a fur company. In the mountains Scott met Narcisse Le Clerc, a kinsman of Francis Le Clerc, who was with the Astorians, and they organized the second Northwestern Fur Co., the first one having been merged into the Hudson Bay Co.

On their way to St. Louis in 1828 with their fellow pioneers, to formally launch their company and to dispose of their first collection of peltries, Scott was taken ill with mountain fever. Two companions, Roi, "the man of the desert," and Bissonette, "the squaw man," remained with him, the three planning to float down

the North Platte River, joining the rest of the party at the bluff about a hundred miles below. Their moose-hide boat was upset about 20 miles west of the point where Fort Laramie now stands, and provisions, powder, and guns were lost. The men, however, reached shore safely.

At this spot Scott was deserted by his companions and left to die. Washington Irving, in his "Adventures of Captain Bonneville," tells that Scott crawled over hills, sagebrush, and gullies for about 70 miles, only to die at the foot of the bluff where he had expected to rejoin his party. Before Scott reached the bluff the party had moved on, having been informed by the men who deserted him that he had died. The following summer part of the same party visited the bluff and found Scott's skeleton. Thus "the wild and picturesque bluffs in the neighborhood of his lonely grave have ever since borne his name." His grave has been entirely obliterated in the lapse of years.

After the naming of the bluff came the pilgrimages of the missionaries, and then the thousands of people on their way to settle the Willamette Valley and Puget Sound region in Oregon and Washington, the vast concourse that trailed overland to the golden coast in California, and the numbers that were driven on by religious zeal to establish the Mormon colonies in Utah. Then came the pony express with its myriad dangers and Indian wars. During the summer months there were so many wagons along this trail that an average of one wagon every five minutes passed through Mitchell Pass in Scotts Bluff Monument. Father De Smet said the Indians wondered if there was a great void in the East, so many white people had gone West over the Great White Medicine Road.

Mitchell Pass was the scene of many Indian battles, one, particularly, with a convoy when General Harney was in charge of the western military forces. About 1847 or 1848 Fort Fontenelle was established at the foot of Scotts Bluff. It was later rebuilt during the Indian wars, and although named Camp Shuman by its builder, Eugene Ware, it is known in the archives of the War Department as Fort Mitchell, a substation of Fort Laramie, in honor of Gen. D. D. Mitchell.

A modern foot trail on a 12 per cent grade has been constructed to the top of Scotts Bluff, so that visitors after a climb of 480 feet may obtain a magnificent panoramic view of the surrounding country.

The monument was created December 12, 1919. Its total area is 1,893.83 acres.

Recently a tunnel penetrating part of the monument was completed by the Bureau of Reclamation of the Interior Department. It is 10 feet 3 inches in diameter after being lined with concrete, and

is 6,600 feet long. It carries the Fort Laramie Canal of the North Platte project, which waters approximately 107,000 acres of irrigable farm land.

The national monument is reached from the city of Gering on a branch of the Union Pacific System and from the city of Scottsbluff on the Chicago, Burlington & Quincy Railroad. Gering is located on the south side of the North Platte and is nearest the monument. Scottsbluff is situated on the north side of the river, which is bridged at this point. Good automobile roads extend through the North Platte Valley connecting the Lincoln Highway on the east and the National Park-to-Park Highway in Wyoming on the west. Motorists may still follow the route of the old Oregon Trail through Mitchell Pass, where a stone marker has been placed by the Nebraska State Historical Society. Much of the historical data regarding the Scotts Bluff Monument has been gathered and made available by Grant L. Shumway in his volume entitled, "History of Western Nebraska." A. N. Mathers, custodian of the monument, resides in Gering.

#### SHOSHONE CAVERN NATIONAL MONUMENT

The entrance to Shoshone Cavern, high up near the summit of Cedar Mountain, overlooking the Shoshone River and the Cody entrance road to Yellowstone National Park, is very picturesque. It is the sort of cave opening that one reads about in story books, being located among rugged cliffs, with pine trees scattered here and there among the rocks. The entrance is about 20 feet wide and 6 feet high, and is in a fractured zone in a massive bed of limestone.

The main cavern follows a fairly straight course, as though located in a large fault in the rock and extends into the mountain about 2,500 feet. There are a few side passages, but all are believed to be short, although as yet these have not been fully explored. Entering the cavern, one soon comes to two descending ladders; then after following the descending floor of the cave, two more ladders are reached, and finally a fifth ladder. At the foot of this ladder the passage turns toward the slope of the mountain, but still continues to descend. The air is very clear and the ventilation is good throughout.

The walls of the cavern are well covered by incrustations of crystals and dripping formations, mostly white, but some brownish or reddish in color. Some of the crystals are sharp and pointed, others resemble rock candy, and some of the formations are curious. The cavern is lacking in large stalactites and stalagmites, but is extremely interesting, as is any large subterranean passage. The rooms of the cave are not of great size, the largest being perhaps 40 feet wide, with a low ceiling about 8 feet high. At other points the openings run up to 50 feet or more, but the walls are only a few feet apart.



The Shoshone Cavern is located about 4 miles from Cody, on the south side of the Shoshone River. The automobile road from Cody to Yellowstone National Park passes within about a mile of the

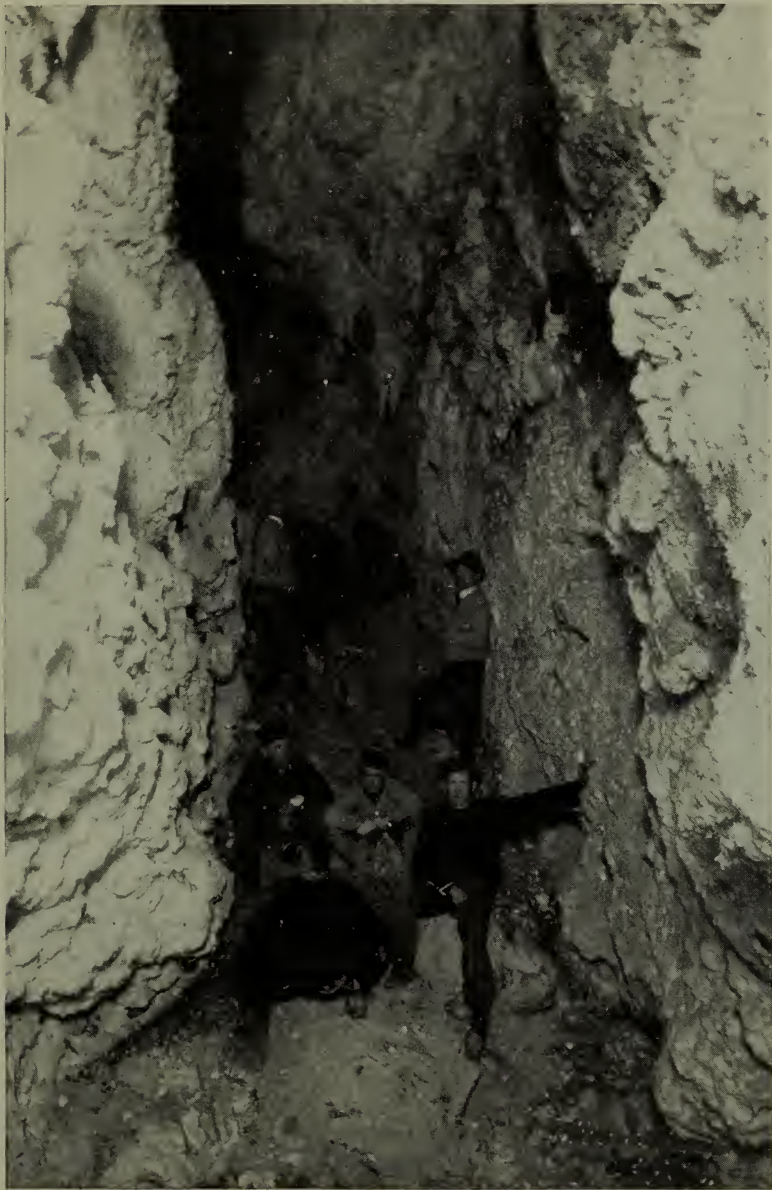


Photo by F. J. Hiscock

Shoshone Cavern

cavern. From this road visitors proceed for half a mile along a level trail on the rim of the river canyon, and then a switchback trail is

reached leading up the mountain. The trail traverses a picturesque canyon, narrow and wooded, and ends at the foot of two ladders which reach the entrance of the cave. The length of the switch-back trail is about a half mile and the elevation climbed is nearly a thousand feet. A visit to the cave may be made in from four to six hours from Cody, and the visitor is well repaid for the time and effort. Cody is reached by the Burlington Railroad, and is on the direct route of the National Park-to-Park Highway. The Cody or eastern entrance is perhaps the most popular automobile entrance to Yellowstone.

The monument, which covers an area of 210 acres, was created September 21, 1909.

At present the monument is not open to visitors.

#### SITKA NATIONAL MONUMENT

Sitka National Monument is an area of great natural beauty in southeastern Alaska, about 57 acres in extent, located on Sitka Bay. Although reserved as a public park by President Harrison in 1890, it was not until March 23, 1910, that it was established a national monument by presidential proclamation.

This monument includes the site of the ancient village of a warlike tribe, the Kik-Siti Indians, who in 1802 fortified themselves here at the old village after their massacre of the Russians and defended themselves until the decisive "Battle of Alaska" in 1804, when the Russians established their supremacy over the Indian tribes in southeastern Alaska. Had the Russians not been successful in their attempt to subdue these Indians undoubtedly Alaska would have been settled by the English soon afterwards, and been retained by them, instead of coming into the possession of the United States through purchase from Russia. The graves of a Russian midshipman and six sailors killed in this battle are within the monument boundaries.

The principal objects of interest in the Sitka National Monument are the 16 totem poles, relics of the aboriginal life of the region. Silently they stand, sentrylike, each telling its own story. To understand them, however, one must be familiar with the history of the family each totem represents. Under the primitive social system of the native Alaskan Indians the family was an important unit, and each family had its emblem—a bear or frog, or other animal—which was carved on the family totem pole. These poles had a very important function, having carved on them, in addition to the family emblem, figures to immortalize any historic events in the family life as well as the noble deeds of its members. It was a custom of these Indians that the members of any family were bound to provide shelter for any traveling member of the same family,

and the totem pole before the door of a cabin told the traveler whether or not he would find a welcome there.

The totem poles in the Sitka National Monument were collected at different points on Prince of Wales Island, from two different tribes—the Thlingits and Hydahs. Each totem of the Thlingits was hollowed out in back to receive the charred bones of the friends and ancestors of the man who raised it, as these Indians were in the



Photo by E. W. Merrill

Site of old Indian stockade at Sitka

habit of burning their dead. The bones were first wrapped in a new blanket and then incased in the poles.

The Hydahs did not burn their dead but buried them, usually in the butt of a great cedar tree raised on end. Sometimes, however, the burials were made at the base of a totem pole, and when some of the poles now in the monument were removed from their original locations the remains of several persons were discovered.

Several of these totem poles are unequaled as relics of the work of the savage genealogists of the Alaskan tribes. They are of red cedar, gayly painted. The Interior Department is making every effort to preserve the poles, having the carvings restored by Indian workmen where vandalism has occurred, and repainting them as nearly as possible in their original colors.

Another interesting feature of the monument is the witch tree, an object of awe and veneration to present-day Indians. It was here that the Indians of other days held their weird trials for witchcraft, and on this tree the victims were hanged.

The monument contains some beautiful forests, and upon entering it the road plunges at once into the shadows of the trees.

Sitka National Monument is reached by road from the town of Sitka, a mile away, which is the port of call for steamships from Seattle.

Peter Trierschild, located in the town of Sitka, is custodian of the monument.

#### TUMACACORI NATIONAL MONUMENT

This monument embraces 10 acres of land in Santa Cruz County, Ariz., about 49 miles south of Tucson and 19 miles north of Nogales. It was created September 15, 1908. Upon the tract is located a very ancient Spanish mission ruin, dating, it is thought, from the latter part of the seventeenth century, built by Jesuit priests from Spain and operated by them for nearly a hundred years. The most authentic information is that this mission, known as the Mission San Jose de Tumacacori, was founded by the Jesuit priest, missionary, and explorer, Father Eusebio Francisco Kino, about 1691.

After the year 1769 priests belonging to the order of Franciscan Fathers took charge of the mission and repaired its crumbling walls, maintaining peaceable possession thereof for about 60 years. In the early part of the nineteenth century the mission was attacked by Apache Indians, who drove the priests away and disbanded the peaceable Papago Indians residing in the vicinity of the mission. When found by Americans, about the year 1850, the mission was in a condition of ruin.

The ruins as they stand consist of the walls and tower of an old church building, the walls of a mortuary chamber at the north end of the church building, and a court or churchyard, surrounded by an adobe wall  $2\frac{1}{2}$  feet thick and 6 feet high.

The walls of the church building are 6 feet thick, built of adobe and plastered both inside and outside with lime mortar 1 inch thick. The inside walls of the main church building received two coats of this plaster, a first or inner coat being of a rather coarse character



and the finishing coat being of a very fine, hard, and lasting type. The dome over the sanctuary and the belfry tower are constructed of burned brick, this being one of the characteristics of the architecture of the mission, in which respect the construction differs from many other early Spanish missions. Inside, the dimensions of the church are 18 feet wide by 75 feet in length. The part used for the altar is situated at the north end. It is 18 feet square, surmounted with a circular dome, finished on the inside with white plaster decorated or frescoed in colors. The plaster and decorations are in a good state of preservation, but the altar is entirely gone. To the east of the sanctuary there is a sacristy, 16 by 20 feet, 20 feet high, covered with a barrel-vaulted roof built of



Photo by Grant

Tumacacori Mission

burned brick. The sanctuary and sacristy are the only parts of the mission which are now roofed over. In the south end of the church there was a choir loft carried on an arch. This loft and arch are now broken down. The outside wall of the north end of the church building is decorated with white plaster studded at regular intervals with clusters made of fragments of broken slag and broken brick.

About 25 feet north of the church building, and in the center of the churchyard, there is a circular mortuary chamber. The wall is  $3\frac{1}{2}$  feet thick by 16 feet high, built of adobe, surmounted on the top with a row of ornamental cornice brick (made of burned brick). The chamber has one entrance. The walls were originally decorated on the outside with white plaster studded with fragments of red brick.

The entrance to the church is at the south and has an arched doorway. To the east of the entrance there is a room, about 18 feet square, with a winding stairway inside leading up to the belfry. Access to the belfry is gained by means of this old stairway. This room is surmounted by the belfry tower, which is constructed of burned brick. The walls supporting the tower are adobe. Through action of the elements the church, appurtenant buildings, and inclosing walls were in a very bad state of ruin when the monument was created. Most of the roofs had long since fallen in and portions of the main building had become undermined. Since that time as rapidly as limited funds have permitted the mission has been placed under roof and in good state of preservation by Superintendent Pinkley, of Southwestern National Monuments.

The restoration of the double doors between the sanctuary and sacristy was an especially interesting piece of work. The original doors were torn out and carried away many years ago, and it was impossible to find anyone who could describe them from personal observation. Picks and bars had been used to tear out the old frame, with resultant destruction to the surrounding plastering, and all that was left to start with was a gaping hole in the wall. The wall at this place, however, was some 6 feet thick, with an arched opening carried from the square frame of the doorway on through to the sacristy side, and the original south door of the double doors, in swinging back into this arched opening, had made a small mark in the plaster. This mark was about 2 inches long and a quarter of an inch deep, and was quite clearly cut by the upper and outer corner of the original door. From this the size of the doors and width and thickness of the frames were figured out. The details of the doors, such as number and placing of panels, etc., had to be guessed at, but in this the doors of the San Xavier Mission, which had been built a little earlier than those of the Tumacacori, and probably by the same workmen, were used as a guide. The doors were made of Spanish cedar, with the aid of a Mexican carpenter. No nails were used, the stiles and rails being mortised together and held with wedges driven home in the tenons. Six hinges were needed, and these were made in a near-by blacksmith's shop from old quarter-inch wagon tires. When the doors were completed and hung in place it was found that the outer and upper corner of the south door, when swung open, fitted into the little broken place in the plaster of the arch which had been made by the original door. After the doors were in place the broken places in the wall around the door frame were filled in with mortar and the doors and frame stained with a mixture of crude oil and gasoline to take off the new look.

In the work of restoration Superintendent Pinkley has had financial assistance from the Arizona State Legislature, the Chambers of Commerce of Tucson and Nogales, and other organizations. In its present condition the mission is equally as interesting as any of the famed California missions, and is historically important to the student of the early history of the State.

The State highway between Tucson and Nogales passes the mission and is a good automobile road. Tucson is on the main line of the Southern Pacific Railroad and the Bankhead and Old Spanish Trail highways. Nogales is the terminus of the Southern Pacific, Tucson-Nogales branch. There is auto stage service between Tucson and Nogales, and the round trip to the monument can be made from either city in a day.

George L. Boundey, of Tubac, Ariz., is the local custodian of the monument.

#### VERENDRYE NATIONAL MONUMENT

The significance of this national monument, established June 29, 1917, with an area of 250.04 acres, is that it marks the spot on the left bank of the upper Missouri River where the sons of the celebrated French explorer, Verendrye, camped during their explorations in 1742, more than 60 years prior to the expedition of Lewis and Clark. It is associated with the first explorations of North Dakota and the interior of the Northwest. The records of their journeys are the subject of conflicting interpretations, but there is no question that the elder Verendrye was the first to enter North Dakota, this being in 1738, when he approached within a day's journey of the upper Missouri. Thus it is that picturesque Crow-high Butte, rising 565 feet above the river on its left bank and the central feature of the monument, is one of the most important landmarks associated with the Verendrye explorations.

Starting from his trading post on the Assinniboine River, Fort La Reine, the site of the present city of Portage la Prairie, Manitoba, Canada, the elder Verendrye and one son started on an overland journey to reach the western sea. Going southwest to Turtle Mountains and continuing the party arrived in December at an Indian village a day's journey from the Missouri, the residents of which he called the Mantannes. This was the terminus of the 1738 journey, as the whole party returned to Fort La Reine the following February. It was, however, the first recorded visit of white men in North Dakota.

In 1742 two sons of Verendrye led another exploring expedition, leaving Fort La Reine in April and reaching a Mantanne Indian village on the Missouri in less than a month at the point where is now located the town of Sanish, N. Dak. Here they remained for



two months before crossing. Journeying westward and southwestward between the Yellowstone and Little Missouri Rivers, they were finally turned back by a range of mountains, which in all probability was the Big Horn Range of the Rocky Mountains in northern Wyoming. Their return has resulted in conflicting interpretations of the route followed, but they reached the Mantanne village in May, 1743, rejoining their father at Fort La Reine on July 2. Like La Salle's imperial dream of French colonization, Verendrye planned and partly completed a fur-trade empire of continental dimensions, but like La Salle's it crumbled away to nothing. But Verendrye's journeyings, his discoveries, his plans and failures have an abiding place in western history.

Old Crossing at the Mantanne village became one of the most important fords of the Missouri and a highway of exploration and



West view of Verendrye

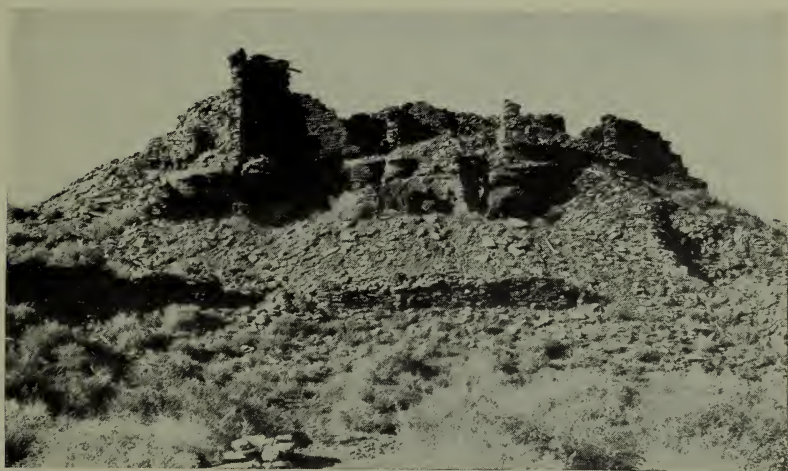
early trade. The monument lands were formerly included in the Fort Berthold Indian Reservation, the eastern part of which was opened to settlement in 1911. Payment for the lands included in the monument was made in 1921, when Congress appropriated funds to reimburse the Indians. The State Historical Society of North Dakota was largely instrumental in having the monument established to commemorate the Verendrye expedition to the upper Missouri. The new and growing town of Sanish, which adjoins the monument, is the terminus of a branch line of the Chicago, Milwaukee & Sault Ste. Marie Railroad. Sanish may be reached by motorists from the Theodore Roosevelt International Highway crossing the northern part of the State by a side trip from Stanley, N. Dak.

Adolph Larsen, of Sanish, is custodian of the monument.



## WUPATKI NATIONAL MONUMENT

The Wupatki National Monument, in Arizona, contains two tracts of land lying west of the Little Colorado River, about 35 miles northeast of Flagstaff. Here are located interesting ruins of prehistoric pueblos supposedly built by the ancestors of one of the most picturesque tribes of Indians still surviving in the United States—the Hopi, or People of Peace. It is believed the buildings were constructed by the Snake family of the Hopi in their migration from the Grand Canyon of the Colorado, where, according to their mythology, their ancestors came upward from the Underworld. They were abandoned as the Snake families traveled east and, before the days of the white men, finally settled at the Hopi Mesa where their descendants live to-day.



South Building of the Wupatki ruin

There are about 35 ruins in the monument, some of them reduced by the action of the elements to little more than heaps of clay and stone.

The two groups of ruins, known as the Citadel and Black Falls ruins, are divided by a distance of 5 to 6 miles. The Black Falls group takes its name from the neighboring falls of the Little Colorado, while the Citadel group is so named because of the remnants of a massive structure that occupy the entire crest of a ragged, truncated lava cone.

The materials used in constructing these prehistoric structures were red sandstone and lava. Those structures built of sandstone have weathered far better than those constructed of lava.

The majority of the buildings are rectilinear in shape, except where the walls followed closely some curvature in the edge of the rocky site. Some of them contain 20 or more rooms.

The ruins indicate that the buildings were originally one, two, or three stories in height, and had much in common with some of the older structures still found in Hopi villages.

The monument is on the Tuba City road from Flagstaff, which also connects with the road to the Grand Canyon National Park. Flagstaff, which is the nearest railroad station, is on the Atchison, Topeka & Santa Fe Railway, and is also reached by the National Old Trails Highway. Jesse C. Clarke, of Flagstaff, is the custodian of the monument.

The total area of this monument, which was established December 9, 1924, is 2,234 acres.

#### YUCCA HOUSE NATIONAL MONUMENT

This monument, established December 19, 1919, preserves the ruins of a prehistoric village in southwestern Colorado a few miles



Mounds covering Yucca House ruins

west of Mesa Verde National Park. The site chosen by its builders is on the gently sloping base of Sleeping Ute, a mountain so named because from one point of view, when silhouetted against the horizon, it resembles the outline of a sleeping Indian. The village is now a cluster of mounds with no sign of a wall rising above their surfaces, but on account of their large size and extent there is every reason to believe that when excavated they will prove of great archeological interest and educational value. The land upon which the ruins are situated, approximately 10 acres, was the gift of the late Mr. Henry Van Kleeck, of Denver, Colo.

The ruins have been known for many years and were first described by Prof. William H. Holmes in 1877, the two most conspicuous mounds being designated by him as the "Upper House" and the "Lower House." The former is the most prominent of all the mounds of the ancient village, rising to a height of from 15 to 20 feet above its foundation, and dominating the many smaller mounds by which it is surrounded. The Lower House in its essential features is different and stands isolated by a hundred yards from the cluster of mounds that compose and include the Upper House.

The stone used in the buildings is chiefly of the fossiliferous limestone that outcrops along the base of the Mesa Verde a mile or more away, and its transportation to the site of the village must have entailed a great work for people so totally without facilities.

The name Yucca House was selected for the monument because the Indians of Montezuma Valley called Sleeping Ute Mountain by a name meaning Yucca, which they gave to it on account of the abundance of the Yucca plant which grows on the mountain sides.

The monument is located a little off the well-traveled road from Cortez, Colo., to Shiprock, N. Mex., about 15 miles south of Cortez. It is under the supervision of the superintendent of Southwestern Monuments. No custodian has yet been appointed.

## APPENDIX

---

### RULES AND REGULATIONS FOR THE GOVERNMENT OF THE NATIONAL MONUMENTS

#### GENERAL REGULATIONS

The following rules and regulations for the use and management of the various national monuments under the jurisdiction of the National Park Service are hereby established and made public pursuant to authority conferred by the acts of Congress approved June 8, 1906 (34 Stat. 225), and August 25, 1916 (39 Stat. 535), as amended June 2, 1920 (41 Stat. 731, 732) :

1. *Preservation of natural features and curiosities.*—The destruction, injury, or disturbance, except as herein provided, of any ruins and other works and relics of prehistoric or primitive man on Government lands within any national monument is prohibited; as is also the destruction, injury, defacement, or disturbance in any way of buildings, signs, equipment, and other property or of caves or other natural formations, trees, flowers, or other vegetation, rocks or minerals, animal, bird, or other life within any monument area.

The marking of any buildings, ruins, trees, or other property, or natural formations with autographs, dates, initials, drawings, or other pencilings, or carvings of any kind whatsoever is prohibited.

2. *Examination of ruins.*—Permits for the examination and restoration of ruins, the excavation of archeological sites, and the gathering of objects of antiquity or scientific interest may, upon application to the Director of the National Park Service, be granted to accredited representatives of reputable museums, universities, colleges, or other recognized scientific or educational institutions, with a view to increasing the general knowledge on such objects and thereby aiding the general advancement of science, under the conditions and restrictions contained in present or future regulations promulgated to carry out the provisions of the act of Congress approved June 8, 1906 (34 Stat. 225), entitled "An act for the preservation of American antiquities."

The custodian of any national monument is authorized, in his discretion, to close to visitors any ruin on Government lands within such monument when it shall appear to him that entrance thereto would be dangerous to visitors or might result in injury to walls or other insecure portions thereof, or during repairs, reporting same promptly to the Director of the National Park Service.

No person shall be permitted to enter any cave or cavern on Government lands within any national monument unless accompanied by the custodian or other National Park Service employee or by competent guide.

3. *Camping.*—No camp shall be made along roads except at localities designated by the custodian or his representative, and when made must be kept neat and orderly.

Camp grounds must be thoroughly cleaned by the occupants before they are abandoned. Cans, bottles, cast-off clothing, and all other débris or refuse shall be placed in garbage receptacles or buried in pits provided for the purpose. Should camps be permitted in localities where pits or cans are not provided,



all refuse shall be burned or hidden by the camper where it will not be offensive to the eye.

Campers and others shall not wash clothing or cooking utensils in springs, streams, lakes, or other natural waters of any monument or in any way pollute them.

Campers may use dead or fallen timber only for fuel.

4. *Fires*.—Fires constitute one of the greatest perils to some of the monuments. They shall be lighted only when necessary, and when no longer needed shall be completely extinguished, all embers and ash beds being smothered with earth or water so that no possibility remains of their again becoming alive.

No lighted match, cigar, or cigarette shall be dropped in grass, twigs, leaves, or tree mold or thrown away unextinguished.

5. *Hunting*.—The national monuments are sanctuaries for wild life of every sort, and the hunting, killing, wounding, capturing, or frightening of any bird or wild animal in any monument is strictly prohibited, except poisonous snakes or dangerous animals when it is necessary to prevent them from destroying life or inflicting injury.

6. *Private operations*.—No person, firm, or corporation shall reside permanently, engage in any business, or erect buildings in any monument without permission in writing from the Director of the National Park Service, Washington, D. C. Applications for such permission may be addressed to the director through the custodian or other officer in charge of the monument. Still and motion picture cameras may be freely used in the monuments for general scenic purposes. For the filming of motion pictures requiring the use of artificial or special settings, or involving the performance of a professional cast, permission must first be obtained from the custodian or the Director of the National Park Service.

Campers and all others, save those holding licenses from the Director of the National Park Service, are prohibited from renting their horses, trappings, vehicles, or any other possession to tourists or visitors in any monument.

All persons, firms, or corporations holding franchises or operating permits in any monument shall keep the grounds used by them properly policed and shall maintain the premises in a sanitary condition to the satisfaction of the custodian. No operator shall retain in his employment a person whose presence may be deemed by the custodian, or other officer in charge, subversive of good order and management of the monument.

7. *Gambling*.—Gambling in any form, or the operation of gambling devices, whether for merchandise or otherwise, is prohibited.

8. *Advertisements*.—Private notices or advertisements shall not be posted or displayed within any area set apart as a national monument, except as authorized by the National Park Service.

9. *Grazing*.—The running at large, herding, or grazing of livestock of any kind on the Government lands in a monument, as well as the driving of livestock over same, is prohibited, except where authority therefor has been granted by the custodian in charge of such monument or by the Director of the National Park Service. Livestock found improperly on the monument lands may be impounded and held until claimed by the owner and trespass adjusted.

10. *Mining*.—The location of mining claims or the carrying on of any mining operations within the national monuments is prohibited.

11. *Fines and penalties*.—Persons who render themselves obnoxious by disorderly conduct or bad behavior shall be subjected to the punishment hereinafter prescribed for violation of the foregoing regulations, or they may be

summarily removed from any monument by the custodian, or other officer in charge thereof.

Any person who violates any of the foregoing regulations shall be deemed guilty of a misdemeanor and shall be subject to a fine of not more than \$500, or imprisonment not exceeding six months, or both, and be adjudged to pay all costs of the proceedings.

12. *Lost and found articles.*—Persons finding lost articles should deposit them with the custodian or his official representative, leaving their own names and addresses, so that if not claimed by owners within 60 days articles may be turned over to those who found them.

#### SPECIAL MUIR WOODS REGULATIONS

In addition to the foregoing general regulations governing the national monuments, the following special regulations governing Muir Woods have been promulgated:

Fishing in the Muir Woods National Monument is hereby prohibited.

All hikers and visitors must leave the monument before dark.

---

### AN ACT FOR THE PRESERVATION OF AMERICAN ANTIQUITIES

[PUBLIC—No. 209]

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That any person who shall appropriate, excavate, injure, or destroy any historic or prehistoric ruin or monument, or any object of antiquity, situated on lands owned or controlled by the Government of the United States, without the permission of the Secretary of the department of the Government having jurisdiction over the lands on which said antiquities are situated, shall, upon conviction, be fined in a sum of not more than five hundred dollars, or be imprisoned for a period of not more than ninety days, or shall suffer both fine and imprisonment, in the discretion of the court.

SEC. 2. That the President of the United States is hereby authorized, in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and may reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected: *Provided*, That when such objects are situated upon a tract covered by a bona fide unperfected claim or held in private ownership, the tract, or so much thereof as may be necessary for the proper care and management of the object, may be relinquished to the Government, and the Secretary of the Interior is hereby authorized to accept the relinquishment of such tracts in behalf of the Government of the United States.

SEC. 3. That permits for the examination of ruins, the excavation of archaeological sites, and the gathering of objects of antiquity upon the lands under their respective jurisdictions may be granted by the Secretaries of the Interior, Agriculture, and War to institutions which they may deem properly qualified to conduct such examination, excavation, or gathering, subject to such rules and regulations as they may prescribe: *Provided*, That the examinations, excavations, and gatherings are undertaken for the benefit of reputable museums, universities, colleges, or other recognized scientific or educational institutions,

with a view to increasing the knowledge of such objects, and that the gatherings shall be made for permanent preservation in public museums.

SEC. 4. That the Secretaries of the departments aforesaid shall make and publish from time to time uniform rules and regulations for the purpose of carrying out the provisions of this act.

Approved, June 8, 1906.

---

AN ACT TO ESTABLISH A NATIONAL PARK SERVICE, AND FOR OTHER PURPOSES, APPROVED AUGUST 25, 1916 (39 STAT. 536), AS AMENDED BY THE ACTS APPROVED JUNE 2, 1920 (41 STAT. 731), AND MARCH 7, 1928 (45 STAT. 200, 235)

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That there is hereby created in the Department of the Interior a service to be called the National Park Service, which shall be under the charge of a director, who shall be appointed by the Secretary and who shall receive a salary of \$4,500 per annum. There shall also be appointed by the Secretary the following assistants and other employees at the salaries designated: One assistant director, at \$2,500 per annum; one chief clerk, at \$2,000 per annum; one draftsman, at \$1,800 per annum; one messenger, at \$600 per annum; and, in addition thereto, such other employees as the Secretary of the Interior shall deem necessary: *Provided*, That not more than \$8,100 annually shall be expended for salaries of experts, assistants, and employees within the District of Columbia not herein specifically enumerated unless previously authorized by law. The service thus established shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations hereinafter specified by such means and measures as conform to the fundamental purpose of the said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.

SEC. 2. That the director shall, under the direction of the Secretary of the Interior, have the supervision, management, and control of the several national parks and national monuments which are now under the jurisdiction of the Department of the Interior, and of the Hot Springs Reservation in the State of Arkansas, and of such other national parks and reservations of like character as may be hereafter created by Congress: *Provided*, That in the supervision, management, and control of national monuments contiguous to national forests the Secretary of Agriculture may cooperate with said National Park Service to such extent as may be requested by the Secretary of the Interior.

SEC. 3. That the Secretary of the Interior shall make and publish such rules and regulations as he may deem necessary or proper for the use and management of the parks, monuments, and reservations under the jurisdiction of the National Park Service and any violation of any of the rules and regulations authorized by this act shall be punished by a fine of not more than \$500 or imprisonment for not exceeding six months, or both, and be adjudged to pay all cost of the proceedings. He may also, upon terms and conditions to be fixed by him, sell or dispose of timber in those cases where in his judgment the cutting of such timber is required in order to control the attacks of insects or diseases or otherwise conserve the scenery or the natural or historic objects in any such park, monument, or reservation. He may also provide in his discretion for the destruction of such animals and of such plant life as may be detrimental to the use of any of said parks, monuments, or reservations. He may

also grant privileges, leases, and permits for the use of land for the accommodation of visitors in the various parks, monuments, or other reservations herein provided for, but for periods not exceeding twenty years; and no natural curiosities, wonders, or objects of interest shall be leased, rented, or granted to anyone on such terms as to interfere with free access to them by the public: *Provided, however,* That the Secretary of the Interior may, under such rules and regulations and on such terms as he may prescribe, grant the privilege to graze livestock within any national park, monument, or reservation herein referred to when in his judgment such use is not detrimental to the primary purpose for which such park, monument, or reservation was created, except that this provision shall not apply to the Yellowstone National Park: *And provided further,* That the Secretary of the Interior may grant said privileges, leases, and permits and enter into contracts relating to the same with responsible persons, firms, or corporations without advertising and without securing competitive bids: *And provided further,* That no contract, lease, permit, or privilege granted shall be assigned or transferred by such grantees, permittees, or licensees, without the approval of the Secretary of the Interior first obtained in writing: *And provided further,* That the Secretary may, in his discretion, authorize such grantees, permittees, or licensees to execute mortgages and issue bonds, shares of stock, and other evidences of interest in or indebtedness upon their rights, properties, and franchises for the purposes of installing, enlarging, or improving plant and equipment and extending facilities for the accommodation of the public within such national parks and monuments.

SEC. 4. That nothing in this act contained shall affect or modify the provisions of the act approved February 15, 1901, entitled "An act relating to rights of way through certain parks, reservations, and other public lands."

#### STATEMENT OF APPROPRIATIONS MADE BY CONGRESS FOR THE ADMINISTRATION AND PROTECTION OF THE NATIONAL MONUMENTS

Year	Name	Amount	Year	Name	Amount
1890	Caso Grande <sup>1</sup> .....	\$2, 000	1920	National monuments.....	\$8, 000
1904	do <sup>2</sup> .....	900	1921	do.....	8, 000
1905	do.....	900	1922	do.....	12, 500
1906	do.....	900	1923	do.....	12, 500
1907	do.....	3, 900	1924	do.....	12, 500
1908	do.....	3, 900	1925	do.....	21, 980
1909	do.....	900	1926	do.....	46, 980
1910	do.....	900	1927	do.....	21, 270
1911	do.....	900		Carlsbad Cave National Monument.....	15, 000
1912	do.....	900	1928	National monuments.....	25, 000
1913	do.....	900		Carlsbad Cave National Monument.....	30, 000
1914	do.....	900	1929	National monuments.....	35, 000
1915	do.....	900		Carlsbad Cave National Monument.....	70, 000
1916	do.....	900		National monuments.....	46, 000
1917	do.....	900		Carlsbad Cave National Monument <sup>4</sup> .....	100, 000
	National monuments.....	3, 500			
	Zion National Monument.....	15, 000	1930	National monuments.....	617, 530
	Navajo National Monument <sup>3</sup> .....	3, 000		Carlsbad Cave National Monument.....	83, 900
1918	National monuments.....	5, 000			
	Casa Grande.....	900			
1919	National monuments.....	10, 000		Total appropriated for expenditure on the national monuments.....	
	Casa Grande.....	900			
1919	Sieur de Monts National Monument.....	10, 000	1931	National monuments.....	

<sup>1</sup> Appropriated in act of Mar. 2, 1889, giving President authority to create reservation.

<sup>2</sup> \$900 per annum from 1904 to 1919 expended under direction of Commissioner of General Land Office for custodian's salary; \$3,000 per annum for 1907 and 1908 expended under direction of Smithsonian Institution.

<sup>3</sup> Expended under direction of Smithsonian Institution.

<sup>4</sup> Carlsbad Cave National Monument was made a national park May 14, 1930, and its name changed to the Carlsbad Caverns National Park.





3 1604 003 823 046

DATE DUE

Ret'd JUL 03 1992

## CUSTODIANS

ans	Post-office addresses
-----	None.
-----	Aztec, N. Mex.
-----	Capulin, N. Mex.
Superintendent) <sup>1</sup>	Coolidge, Ariz.
-----	Crownpoint, N. Mex.
-----	Grand Junction, Colo.
-----	Arco, Idaho.
-----	Hulett, Wyo.
-----	None.
-----	Ramah, N. Mex.
-----	None.
-----	None.
-----	Gran Quivira, N. Mex.
-----	None.
-----	None.
-----	None.
-----	Camp Verde, Ariz.
-----	Mill Valley, Calif.
-----	Blanding, Utah.
-----	Kayenta, Ariz.
-----	Holbrook, Ariz.
-----	Hollister, Calif.
aton	Moccasin, Ariz.
-----	None.
-----	Gering, Nebr.
-----	None.
-----	Sitka, Alaska.
-----	Tubac, Ariz.
-----	Sanish, N. Dak.
-----	Flagstaff, Ariz.
-----	None.

EMCO, INC. 38-2931

Swan Lake Cavern (Wyoming)-----	None-----
Sitka-----	Peter Trierschild-----
Tumacacori-----	George L. Boundey-----
Verendrye-----	Adolph Larsen-----
Wupatki-----	J. C. Clarke-----
Yucca House (Colorado)-----	None-----

<sup>1</sup> As superintendent of Southwestern Monuments, Mr. Pinkley is in charge of all monuments in New Mexico, Arizona, Colorado, and Utah, with the exception of the Dinosaur and Colorado National Monuments. His headquarters are at Coolidge, Ariz.



Totem poles, Sitka National Monument, Alaska