Wind Cave

NATIONAL PARK · SOUTH DAKOTA

WIND CAVE

National Park

SOUTH DAKOTA

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UNITED STATES DEPARTMENT OF THE INTERIOR · Harold L. Ickes, Secretary

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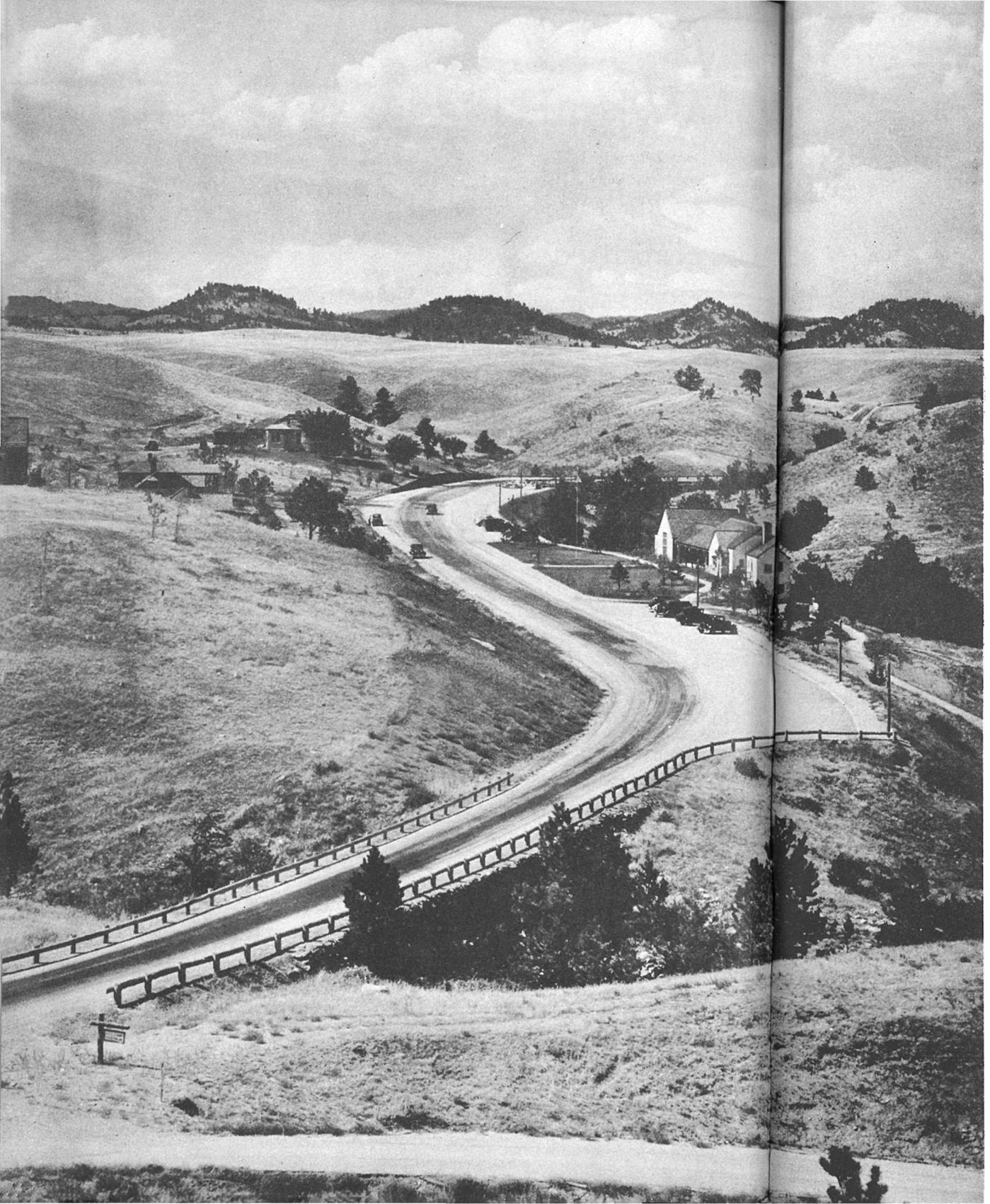


PARK HEADQUARTERS NESTLING
AMONG THE ROLLING HILLS

OPEN ALL YEAR

BLACK HILLS REGION of South Dakota, in which Wind Cave National Park is located, has a fascinating story of earth making to tell. It ranges in interest from ancient fossil deposits buried in the Badlands telling a tale of prehistoric alligators, rhinoceroses, three-toed horses, and other long-extinct animals, to the lofty "needle" formations, which erosion has sculptured from masses of granite high up the forest-clad slopes of the Black Hills.

Wind Cave lies in the great Pahasapa limestone formation which also contains several other large subterranean caverns. The facts about the discovery of the cave are little known, but it is generally believed that it was discovered by Tom Bingham, a Black Hills pioneer, while hunting deer in 1881. He was attracted by a strange whistling and after searching about in the undergrowth, he discovered that it was caused by wind escaping through a small hole in some rocks. This hole, not more than 10 inches in diameter, is the only natural opening to the cave so far discovered. It is located a few steps behind the present cave entrance.

The strong currents of wind that blow alternately in and out of the mouth of the cave suggested its name. This strange phenomenon is believed to be caused by changes in the atmospheric pressure outside. When the barometer is falling, the wind usually blows outward; when it rises, the wind blows in. Many visitors enjoy stopping at the cave entrance to post themselves on weather indications.

The present cavern opening was made by digging down about 6 feet to a long, winding fissure, or tunnel, leading into corridors and galleries decorated with a variety of crystal formations. These formations differ radically from those found in most caverns because

stalactites and stalagmites are practically nonexistent in this cave, a feature that adds to its unique interest. Here the formations are of the unusual boxwork and frostwork type. The boxwork is composed of delicately colored crystals arranged in honeycomb pattern. Tiny white crystals, sometimes superimposed on a pink background, hang in clusters from ceilings and ledges to form a frostwork decoration of rare beauty. The cavern is approximately 10 miles in extent but has not been fully explored.

Wind Cave National Park was created by act of Congress, dated January 9, 1903. Its boundaries were subsequently extended, and it now includes an area of 11,818.94 acres, part of which is used as a game preserve. Buffalo, elk, antelope, and deer range the preserve and are frequently seen from the main highway.

COLORFUL HISTORY

In addition to its natural beauty and scientific interest, the southwestern section of South Dakota has a colorful and picturesque history. Possibly a French explorer made his way into it as early as 1683, and the Verendrye brothers are said to have visited it in 1743.

The Sioux Indians, a tribe conspicuous even among Indians for strength and bravery, long occupied the region and only submitted to white settlement after a bitter and tragic struggle. This tribe is believed to have originated east of the Alleghenies, but as early as 1632 the French found them in Wisconsin and Minnesota. Some of their descendants are today living on the Pine Ridge and Rosebud Indian Reservations, a short drive from Wind Cave Park.

According to an Indian legend, the four winds were major deities of the Plains tribes, and wind was associated in their belief with the breath of life and the vital principle. Hence the Cave of the Winds was a sacred spot to them. Many of the Plains tribes had myths in which the story was told of how the buffalo first came out of a cave (this was an objectification of the fact that all flesh is made of earth), and Chief Joseph White Bull (Pte San Hunka), Sitting Bull's living nephew, has been quoted as saying that the Sioux believed that the Wind Cave in the Black Hills was the cave from which Wakan Tanka, the Great Mystery, sent them out into the Sioux hunting grounds. This was one reason why the Sioux fought so hard for the Black Hills when they were invaded by the whites. The Chief also has said that some of his people still hoped that when they had regained favor of their gods, the buffalo would once more issue from that cave, and fill the plains.[1]

[1] "Warpath," by Stanley Vestal.

ENTRANCE TO WIND CAVE

The war clouds that ended in the conflict of 1861–65 and Indian uprisings under the leadership of Red Cloud, Sitting Bull, Spotted Tail, and other great warriors hampered the development of this region, but in 1874 an expedition through the Black Hills led by Gen. George A. Custer, resulted in the discovery of gold on French Creek and settlement followed rapidly. From 1879 to 1886 were boom days that made legendary figures of such pioneer characters as Wild Bill Hickok, Deadwood Dick, Calamity Jane, and Preacher Smith. All four are buried in Deadwood.

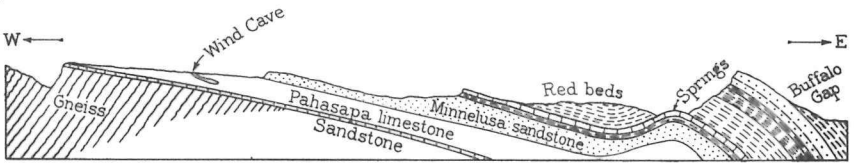
Long before the Black Hills were well known for the scenic beauty that resulted in the establishment of Custer State Park in the heart of this rugged region and construction was begun on the Rushmore Memorial, the region was famous throughout the world for its mineral wealth, especially gold. The Homestake Mine at Lead is the largest gold mine in the United States. In 1933 almost one-fourth of the gold production of the United States came from the Black Hills. Since production began in 1875, gold totaling approximately $300,000,000 in value has been mined in this region. Some of the other minerals found in the region of economic value are silver, lead, copper, iron, tin, and tungsten ores; columbite, tantalite, mica, arsenic, lithia, and cesium minerals; fuller's earth, bentonite, volcanic ash, coal, petroleum, and structural materials.

GEOLOGICAL HISTORY OF WIND CAVE

Caves, in general, may be classified in three divisions, according to the

kind of rock in which they have developed. They may be formed in limestone, in igneous rocks, or in sandstone. Of these, limestone caves are the most important and most frequently attain great size. Wind Cave is a limestone cavern.

The limestone layer in which Wind Cave is formed varies in thickness in the Black Hills region from 300 to 630 feet. It is known as the Pahasapa limestone, a local formation of Mississippian age deposited in a great inland sea some 300 million years ago. Following the deposition of this limestone, it was elevated above the sea. Several such periods of elevation



SECTION ACROSS THE EAST SLOPE OF THE BLACK HILLS UPLIFT THROUGH WIND CAVE LOOKING NORTH

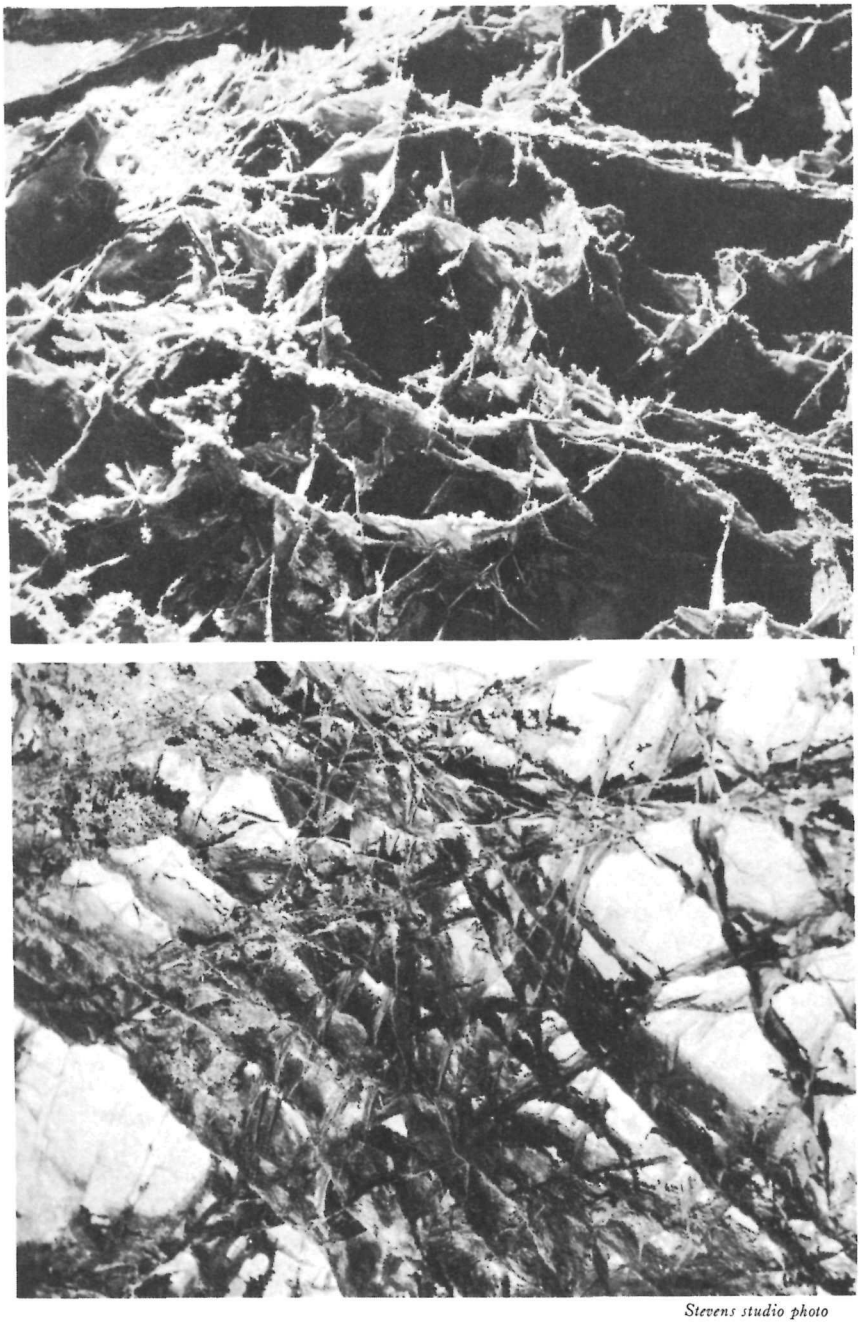
and subsidence occurred during geologic history. During these periods of submergence, the Pahasapa limestone was overlain by other sediments several hundred feet in thickness. The final upthrust of the land probably occurred during the later part of the Cretaceous period, some 60 million years ago. The beginning of the formation of Wind Cave probably dates from that time.

Limestone which has been subjected to several such periods of uplift or warping becomes fractured or broken. These cracks develop in all directions and at all angles. Those close together served as the pattern for the characteristic "boxwork," formed in the following manner: Rain water seeping down from the surface through decaying vegetation absorbed carbon dioxide, which renders the water more soluble for limestone. This carbon dioxide-bearing water takes some of the limestone into solution, then upon evaporation deposits it in the cracks or crevices below. Later the more soluble limestone between the fins of boxwork was dissolved away, leaving the boxwork formation as it is seen today.

Stalactites and stalagmites are common formations in most limestone caves, but these are rarely found in Wind Cave. The boxwork formations which predominate throughout the cave have not been found elsewhere in the United States.

WILDLIFE

Another novel attraction at Wind Cave National Park is a display of

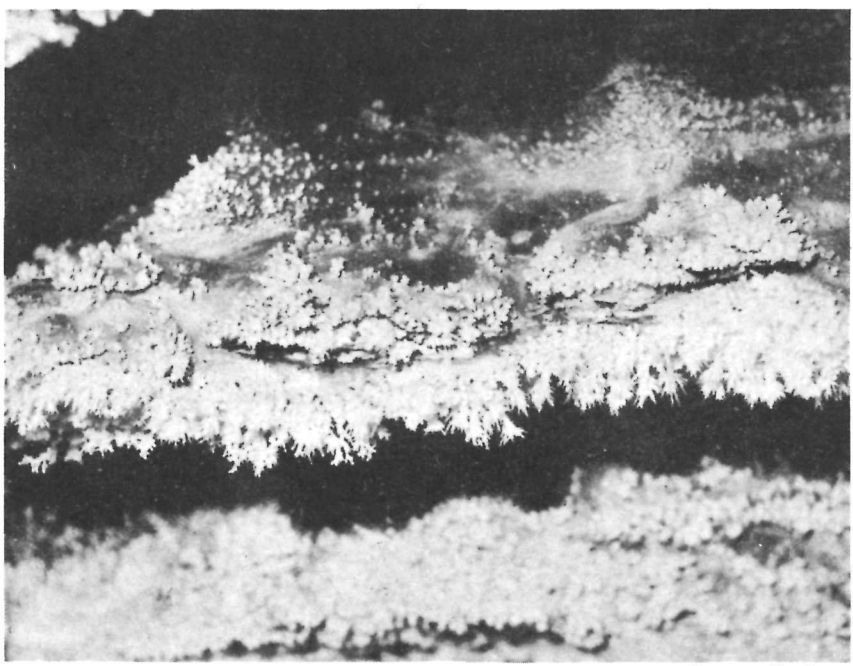


Stevens studio photo

THE CHARACTERISTIC BOXWORK FORMATIONS HAVE NOT BEEN FOUND ELSEWHERE IN THE UNITED STATES

wildlife representative of the type of game that roamed the Dakota hills in the early days. Protected here from the hunter, the traveler will find a large herd of bison and small groups of antelopes, elk, and deer.

Visitors usually can get close, unobstructed views of the bison herd from the main highway which winds through the rolling hills of the park. The whole park area is surrounded by a fence which keeps the animals from straying over the range. It should be remembered that the game is wild and cannot be treated like domestic animals. It is not wise, therefore, to get out of your car or go too near any of the game animals.



Stevens studio photo

SOME OF THE DELICATE FORMATIONS HAVE A PINK BACKGROUND

In this park all the wildlife is shown in its natural habitat giving the onlooker the thrill of seeing wild animals in the open rather than from behind fences or bars.

Small groups of antelopes may often be seen by the careful watcher. The elk frequent the open parts of the park during the night, late afternoon, and early morning. During the day they return to the timbered sections. The deer usually remain in the woods, but may sometimes be seen crossing the grasslands.

GENERAL INFORMATION

Wind Cave National Park is administered by the National Park Service of the United States Department of the Interior, and the representative of this bureau in charge of the park is Edward D. Freeland, superintendent. His address is Hot Springs, S. Dak.

CAVE TRIP

All trips through the cave are under the guidance of competent park rangers. The entrance fees are as follows:

	Cents
Adults	75
Children, 12 to 16 years	25
Children, 5 to 12 years	15

Children under 5 admitted free.

This fee schedule includes the use of the elevator on the outgoing trip. No additional fee is made for the long route trip.

The trip through the Cave is not unlike the average hike over a mountain trail. Comfortable walking shoes should be worn. The temperature is 47°, and does not vary winter or summer. It is advisable to take a light sweater or jacket. The cave is electrically lighted.

ELEVATOR SERVICE

During the year 1935 an elevator was installed in the cave for the convenience of the public. This saves one the necessity of climbing out of the cave.

SPECIMEN DISPLAYS

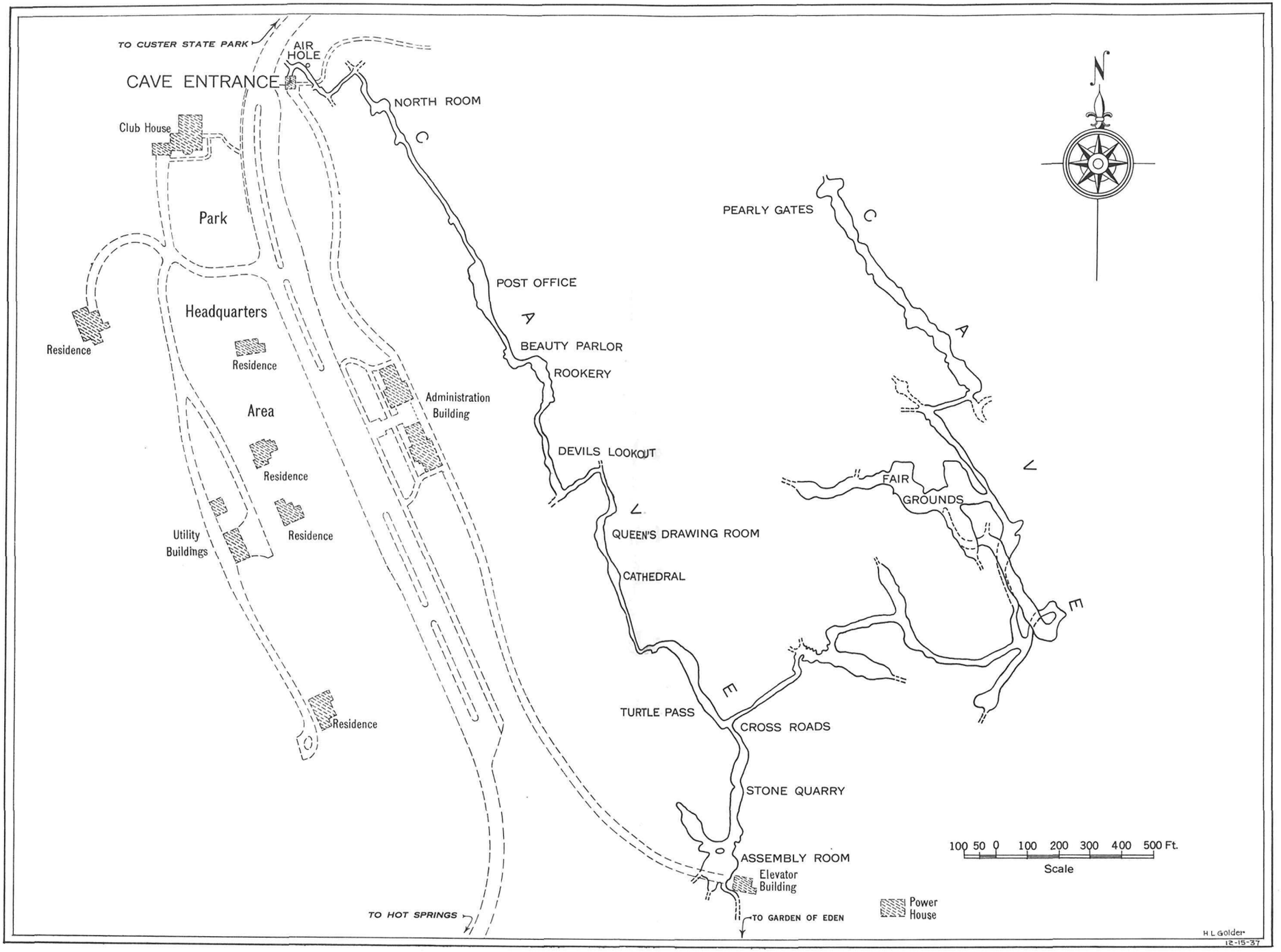
Display specimens of formations from the cave are kept in the headquarters building for study purposes and general inspection by the public. The handling of formations in the cave or the collection of souvenirs is strictly prohibited.

During the summer a wild-flower display is also maintained. It includes all the common species of Black Hills flora for the locality. Flower picking in the park without permission of the superintendent is strictly forbidden.

ACCOMMODATIONS

No hotels or tourist cabins are located in the park, but a public campground with free wood and water is maintained near headquarters. Lunchroom facilities and soda-fountain service are provided. Campers' supplies, curios, and miscellaneous articles are obtainable.

Hot Springs is the southern entrance to the Black Hills. It is 10 miles south of Wind Cave National Park on United States Highway No. 85E. It is the post office for the park and has good hotels, camps, and garages.



UNDERGROUND SURVEY, WIND CAVE NATIONAL PARK

Hot Springs has a national sanatorium and State soldiers' home and is known as the picture town of the Black Hills.

RAILROADS

The park is readily accessible from the following railroad stations: Hot Springs, on the Chicago, Burlington & Quincy and the Chicago & North Western Railroads; Pringle and Custer, on the Chicago, Burlington & Quincy Railroad; and Buffalo Gap, on the Chicago & North Western. Hot Springs is an overnight ride from Sioux City, Omaha, Denver, and Billings. During the summer season round-trip excursion tickets are sold at reduced fares from the Middle West, East, and South to Hot Springs. Choice of routes in each direction is usually offered. Return routes are available, enabling passengers to make circuit trips with stop-over privileges. Passengers wishing to visit Wind Cave National Park as a side trip from Edgemont or Buffalo Gap (28 and 14 miles, respectively, from Hot Springs) may stop over on excursion tickets. From many eastern points tickets to Yellowstone or Glacier National Parks are good for passage through Edgemont.

HIGHWAYS

Wind Cave National Park is on the Atlantic-Yellowstone-Pacific Highway and can be reached by side trip from either the Custer Battlefield route or the Black and Yellow Trail at Rapid City. This side trip also includes the Custer State Park and the Deadwood region. Wind Cave may also be reached from the Park-to-Park Highway by a side trip from Cheyenne or Orin, Wyo.

BUS SERVICE

Hot Springs, the gateway to the park, may be reached through Rapid City, via the Black Hills Transportation Co. from Cheyenne, Wyo., on the South, which is served by the Burlington Transportation Co. and the Interstate Transit Lines. From the East and North, Hot Springs may be reached through Rapid City, via the Red Ball Lines and Palace City Bus Lines from Huron and Pierre, S. Dak., where connections are made with several bus lines.

During the summer months, low round-trip bus fares to Hot Springs are in effect from practically all points in the United States and Canada, with liberal baggage arrangements included. In addition, convenient side trips and stopover privileges may be arranged on bus tickets reading to or via Cheyenne and principal points in South Dakota and Nebraska, so that passengers may make a side trip to the park while en route to other destinations.

Grant photo

HERDS OF BISON ARE OFTEN SEEN FROM THE HIGHWAY

AIR SERVICE

High-speed de luxe airplane service from all points to Cheyenne is available through United Air Lines. Wyoming Air Service, operating from Pueblo, Colo., to Billings, Mont., also stops at Cheyenne. For persons of limited time this service offers a splendid opportunity to visit this park.

NEARBY ATTRACTIONS

Rangers at the park information desk will assist in planning a trip through the Black Hills and also give information about other national parks. In a trip of about 300 miles many interesting reservations, including Devils Tower, Jewel Cave, and Fossil Cycad National Monuments, the proposed Bad Lands National Monument, Custer State Park, two national forests, a fish hatchery, a bird refuge, and a reclamation project may be visited.

Jewel Cave National Monument, transferred to the National Park Service from the Forest Service by Executive order of the President on

April 1, 1934, is open to the public during June, July, and August. It is 14 miles west of Custer on Highway No. 36. The cave is a series of passages and small rooms, the walls of which are lined with calcite crystals.

Fossil Cycad National Monument, created in 1922 to preserve large deposits of fossil remains of fernlike plants that grew many million years ago in the Mesozoic period, is located in the southern edge of the Black Hills, a short distance from Wind Cave. The monument lies several miles from the highway and is not accessible to cars except through private property. As the area is of interest mainly to paleobotanists and geologists, it is not open to the public at the present time. A good specimen of an interesting fossil is on display at Wind Cave National Park headquarters.

Proposed Bad Lands National Monument.—In sharp contrast to the verdant Black Hills country are the White River Badlands, a barren, treeless region a short distance to the southeast of Wind Cave. Here nature has beautified the earth with all shades of buff, cream, pale green, gold, and rose. Fantastically carved erosion forms rise above the valleys, some of them 150 to 300 feet high. The constantly shifting color and the weird formations make this a region of strong imaginative appeal.

Devils Tower National Monument.—Another unusual natural phenomenon of the Black Hills country is the Devils Tower across the State line in Wyoming. This is a great mass of igneous rock towering 600 feet above the Belle Fourche River.

GLOSSARY

A brief description of the technical terms used in this booklet and by rangers guiding visitors through the cave:

ARAGONITE (4 [1])—A mineral which represents one form of calcium carbonate ($CaCO_3$), white or tinted, which frequently occurs as compound or radiating groups of crystals.

BOXWORK (3 [1])—The unique honeycomb formation of Wind Cave, composed of calcite with small amounts of hematite.

CALCITE (3 [1])—A mineral representing the most common form of calcium carbonate, which effervesces in acid. The formations in limestone caverns are composed principally of calcite.

CHERT (7 [1])—A very hard, amorphous form of silica which is frequently found associated with limestone. In Wind Cave the chert is fossil bearing.

CONCRETION—A rounded aggregate of mineral matter formed by precipitation or deposition around some nucleus (not a cave formation).

CONGLOMERATE—A sedimentary rock composed mainly of cemented, rounded gravel.

CRETACEOUS—The last period of the Mesozoic era.

DRIPSTONE (3 [1])—Irregularly shaped deposits of calcium carbonate which is precipitated from evaporating water that seeps through the walls of a cave; stalactites and stalagmites are sometimes called dripstone.

ERA—A major division of recorded geological time.

FAULT—A dislocation or movement in rock masses along a plane of fracture.

FLOWSTONE (3 [1])—Calcium carbonate ($CaCO_3$) deposits formed by deposition from trickling or flowing water chiefly over walls.

FOSSILS—Remains or traces of ancient animals or plants preserved in sedimentary rock, such as shells or tracks of animals or birds.

FROSTWORK (3 [1])—A delicate aggregate of calcite crystals resembling frost; generally pure white.

IGNEOUS ROCKS—Rocks which have been formed by the cooling and hardening of molten rock material.

LIMESTONE (4 [1])—A sedimentary rock composed principally of calcium carbonate. It may be produced by the action of algae and invertebrates or by the precipitation of calcium carbonate from water.

METAMORPHIC ROCKS—Igneous or sedimentary rocks altered by heat and pressure. Slate is metamorphosed shale and marble is metamorphosed limestone.

MISSISSIPPIAN—A period of the Paleozoic era.

OUTCROP—An exposure of rock at the surface.

PALEOZOIC—The third great era of recorded geological time. The time of great development of invertebrates, fish, and fernlike trees. The era is subdivided commonly into seven periods: Cambrian (oldest), Ordovician, Silurian, Devonian, Mississippian, Pennsylvanian, and Permian.

SEDIMENTARY ROCKS—Rocks formed by the accumulation of sediment, either in water or on land; may consist of shale, limestone, sandstone, fossils, gypsum, or loess.

STALACTITES—Calcareous cones that hang from the roofs of limestone caves and are formed from the lime-bearing waters that seep through the roof.

STALAGMITES—Structures similar to stalactites which develop on the floor of limestone caves and grow upward by additions from water dripping upon them from the ceiling of the cave. Usually more blunt than stalactites.

TRAVERTINE (3 [1])—Calcium carbonate ($CaCO_3$) deposited from solution by springs or running water. Embraces many types of deposition.

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[1] Scale of hardness of minerals:

1-Talc	3-Calcite	5-Apatite	7-Quartz	9-Corundum
2-Gypsum	4-Fluorite	6-Orthoclase	8-Topaz	10-Diamond

Grant photo

ADMINISTRATION BUILDING

RULES AND REGULATIONS

THE PARK REGULATIONS are designed for the protection of the natural beauties and scenery as well as for the comfort and convenience of visitors. The following synopsis is for the general guidance of visitors, who are requested to assist the administration by observing the rules. Full regulations may be seen at the office of the superintendent and ranger station.

Guide Service.—No person is permitted to enter the cave unless accompanied by the superintendent or other park employee.

Fires.—Light carefully, and in designated places. Extinguish completely before leaving camp, even for temporary absence. Do not guess your fire is out—know it.

Camps.—Use designated campgrounds. Keep the campgrounds clean. Combustible rubbish shall be burned on camp fires and all other garbage and refuse of all kinds shall be placed in garbage cans or pits provided for the purpose. Dead or fallen wood may be used for firewood.

Trash.—Do not throw paper, lunch refuse, kodak cartons, chewing-gum paper, or other trash over the rim, or walks, trails, roads, or elsewhere. Carry until you can burn in camp or place in receptacle.

Automobiles.—Careful driving is required at all times for protection of yourself and other visitors. Your car must be equipped with good brakes, horn, and lights. Passing on curves is prohibited. Obey traffic rules. Tractors with lugs or vehicles without tires are strictly prohibited.

Park Rangers.—The rangers are here to help and advise you. When in doubt ask a ranger. Rangers at park headquarters will be glad to help you plan your activity while in Wind Cave and to explain the regulations.

Cameras.—Still and motion-picture cameras may be freely used for general scenic purposes.

Wind Cave is open to the public every day throughout the year.

SCHEDULE OF CAVE TRIPS

Trips require from 1 to 2 hours.

From June 1 to September 1—Trips every hour of the day, starting at 7 a. m. and ending at 7 p. m.

September, October, April, and May —8:30 a. m.; 10 a. m.; 1:30 p. m.; 3 p. m.

November, December, January, February, and March—Any time between 8 a. m. and 3 p. m. During these months large parties, such as schools or organizations, should notify the superintendent a few days in advance of intended visits.

GOVERNMENT PUBLICATIONS

Glimpses of Our National Parks. Brief descriptions of national parks. Address Director, National Park Service, United States Department of the Interior, Washington, D. C. Free.

Recreational Map. Shows Federal and State reservations with recreational opportunities. Brief descriptions of principal ones. Free. Address as above.

Fauna of the National Parks. Series No. 1. By G. M. Wright, J. S. Dixon, and B. H. Thompson. Survey of wildlife conditions in the national parks. Illustrated. 157 pages. Superintendent of Documents, Washington, D. C. 20 cents.

Fauna of the National Parks. Series No. 2. Wildlife management in the national parks. By G. M. Wright and B. H. Thompson. Illustrated. 142 pages. Superintendent of Documents, Washington, D. C. 20 cents.

National Parks Portfolio. By Robert Sterling Yard. Cloth-bound and illustrated with more than 300 beautiful photographs of the national parks. Superintendent of Documents, Washington, D. C. $1.50.

Booklets about each of the national parks listed below may be obtained free of charge by writing the Director, National Park Service, Washington, D. C.

Acadia, Maine.
Carlsbad Caverns, N. Mex.
Crater Lake, Oreg.
General Grant, Calif.
Glacier, Mont.
Grand Canyon, Ariz.
Grand Teton, Wyo.
Great Smoky Mountains, N. C.-Tenn.
Hawaii, Hawaii.
Hot Springs, Ark.
Lassen Volcanic, Calif.
Mesa Verde, Colo.
Mount McKinley, Alaska.
Mount Rainier, Wash.
Platt, Okla.
Rocky Mountain, Colo.
Sequoia, Calif.
Yellowstone, Wyo.-Mont.-Idaho.
Yosemite, Calif.
Zion and Bryce Canyon, Utah.

NATIONAL PARKS IN BRIEF

ABRAHAM LINCOLN, KY.—Birthplace of Abraham Lincoln. Established 1916; 0.17 square mile.

ACADIA, MAINE.—Combination of mountain and seacoast scenery. Established 1919; 24.91 square miles.

BRYCE CANYON, UTAH.—Canyons filled with exquisitely colored pinnacles. Established 1928; 56.23 square miles.

CARLSBAD CAVERNS, N. MEX.—Beautifully decorated limestone caverns. Established 1930; 15.75 square miles.

CRATER LAKE, OREG.—Beautiful lake in crater of extinct volcano. Established 1902; 250.52 square miles.

FORT McHENRY, MD.—Its defense in 1814 inspired writing of Star-Spangled Banner. Established 1925; 0.07 square mile.

GENERAL GRANT, CALIF.—General Grant Tree and Grove of Big Trees. Established 1890; 3.98 square miles.

GLACIER, MONT.—Unsurpassed alpine scenery; 200 lakes; 60 glaciers. Established 1910; 1,537.98 square miles.

GRAND CANYON, ARIZ.—World's greatest example of erosion. Established 1919; 1,008 square miles.

GRAND TETON, WYO.—Most spectacular portion of Teton Mountains. Established 1929; 150 square miles.

GREAT SMOKY MOUNTAINS, N. C.-TENN.—Massive mountain uplift; magnificent forests. Established for protection 1930; 643.26 square miles.

HAWAII: ISLANDS OF HAWAII AND MAUI.—Interesting volcanic areas. Established 1916; 248.54 square miles.

HOT SPRINGS, ARK.—Forty-seven hot springs reserved by the Federal Government in 1832 to prevent exploitation of waters. Made national park in 1921; 1.54 square miles.

LASSEN VOLCANIC, CALIF.—Only recently active volcano in United States proper. Established 1916; 163.32 square miles.

MAMMOTH CAVE, KY.—Interesting caverns, including spectacular onyx cave formation. Established for protection 1936; 54.09 square miles.

MESA VERDE, COLO.—Most notable cliff dwellings in United States. Established 1906; 80.21 square miles.

MOUNT McKINLEY, ALASKA.—Highest mountain in North America. Established 1917; 3,030.46 square miles.

MOUNT RAINIER, WASH.—Largest accessible single-peak glacier system. Established 1899; 377.78 square miles.

PLATT, OKLA.—Sulphur and other springs. Established 1902; 1.32 square miles.

ROCKY MOUNTAIN, COLO. — Peaks from 11,000 to 14,255 feet in heart of Rockies. Established 1915; 405.33 square miles.

SEQUOIA, CALIF.—General Sherman, largest and possibly oldest tree in world; outstanding groves of Sequoia gigantea. Established 1890; 604 square miles.

SHENANDOAH, VA. — Outstanding scenic area in Blue Ridge. Established 1935; 282.14 square miles.

WIND CAVE, S. DAK.—Beautiful cavern of peculiar formations. No stalactites or stalagmites. Established 1903; 19.75 square miles.

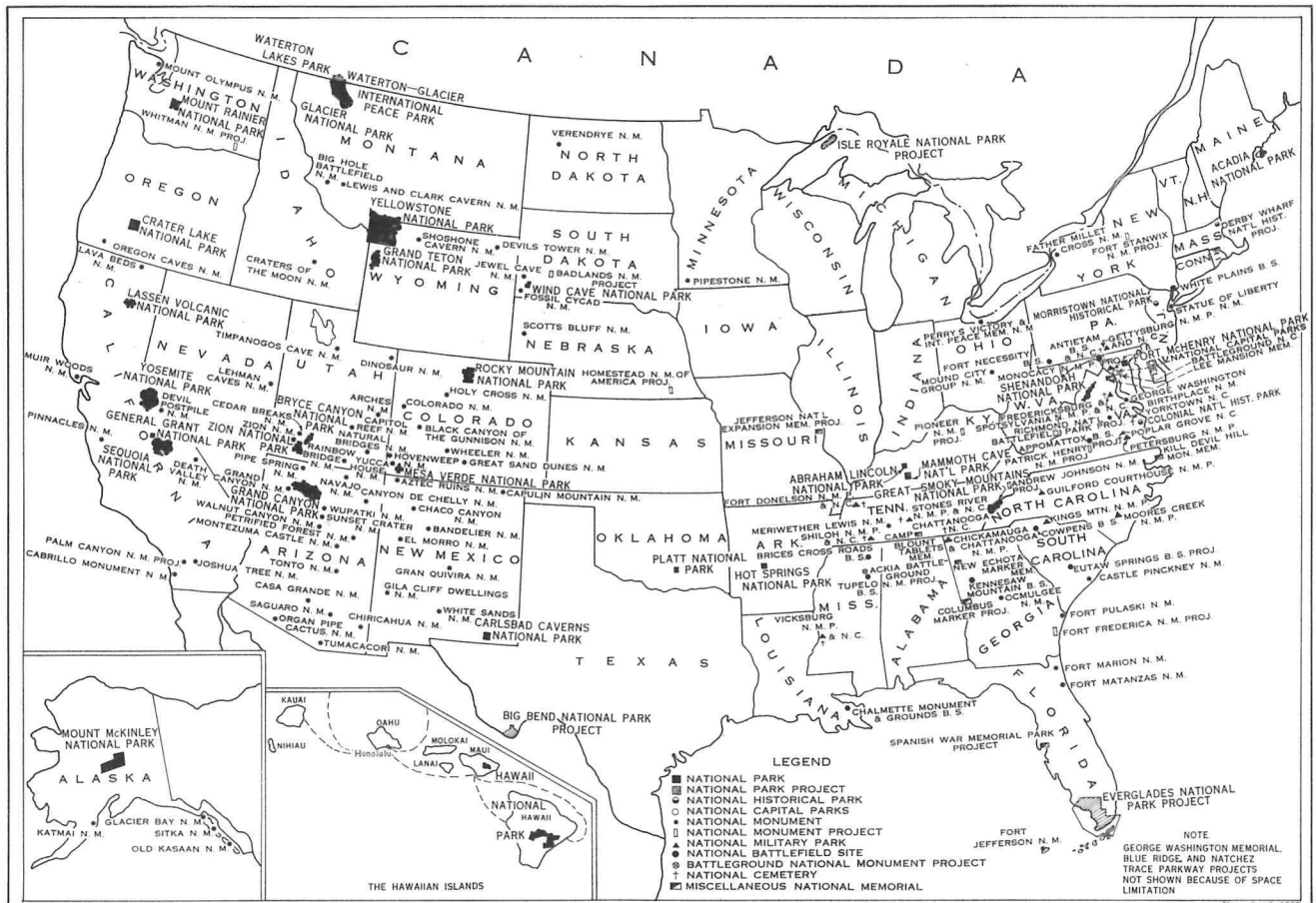
YELLOWSTONE: WYO. - MONT. - IDAHO.—World's greatest geyser area, and an outstanding game preserve. Established 1872; 3,437.88 square miles.

YOSEMITE, CALIF.—Valley of world-famous beauty; spectacular waterfalls; magnificent High Sierra country. Established 1890; 1,176.16 square miles.

ZION, UTAH.—Zion Canyon 1,500 to 2,500 feet deep. Spectacular coloring. Established 1919; 134.91 square miles.

Photo by Grant

PLAINS COUNTRY TYPICAL OF THE SOUTHERN BLACK HILLS



AREAS ADMINISTERED BY THE NATIONAL PARK SERVICE