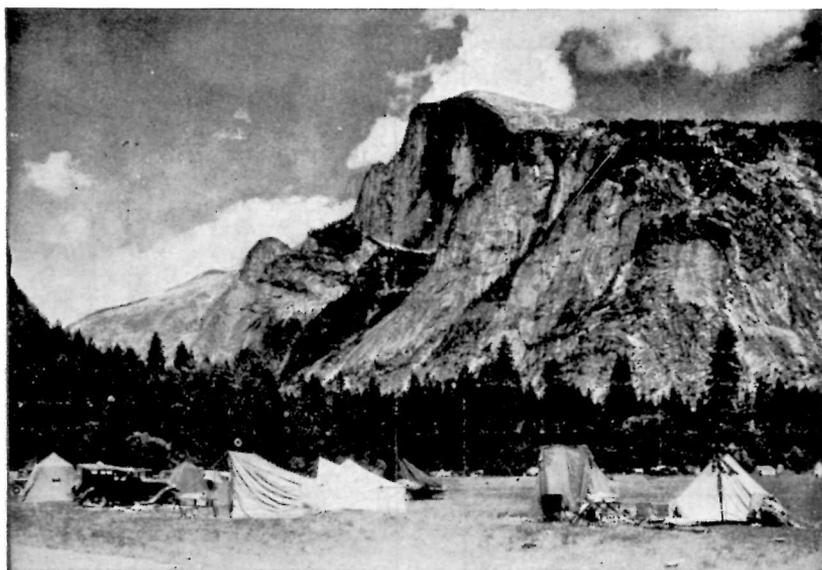


UNITED STATES
DEPARTMENT OF THE INTERIOR
RAY LYMAN WILBUR, SECRETARY
NATIONAL PARK SERVICE
HORACE M. ALBRIGHT, DIRECTOR

GLIMPSES *of our* NATIONAL PARKS



CAMPING SCENE, YOSEMITE NATIONAL PARK



UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1931

THE NATIONAL PARKS AT A GLANCE

[Number, 22; total area, 12,531 square miles]

Name of park	Location	Area in square miles	Distinctive characteristics
Acadia..... 1919	Maine coast.....	18	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....	55	Box canyons filled with countless array of fantastically eroded pinnacles—Best exhibit of vivid coloring of earth's materials.
Carlsbad Caverns.... 1930	Southwestern New Mexico.	1	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—35 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	North Carolina-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 recently 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.	378	Largest accessible single peak glacier system; 28 glaciers, some of large size; 48 square miles of glacier, 50 to 500 feet thick—Wonderful subalpine wild-flower fields.
Platt..... 1902	Southern Oklahoma....	1½	Sulphur and other springs possessing healing properties.
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 50 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 Canyon.
Wind Cave..... 1903	South Dakota.....	19	Cavern having several miles of galleries and numerous chambers containing peculiar formations.
Yellowstone..... 1872	Northwestern Wyoming, southwestern Montana, and northeastern 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.	1,151	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.

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A publication similar to this, entitled "Glimpses of Our National Monuments," may be obtained free of charge upon application to the Director of the National Park Service, Interior Department, Washington, D. C.

Another interesting publication on the national parks and national monuments is the National Parks Portfolio, which contains nine chapters, each descriptive of a national park, and one larger chapter devoted to other parks and monuments. This publication, which contains approximately 275 pages, including more than 300 illustrations, is bound securely in cloth. It is sold by the Superintendent of Documents, Government Printing Office, for \$1 a copy.

DEPARTMENT OF THE INTERIOR
RAY LYMAN WILBUR, Secretary
NATIONAL PARK SERVICE
HORACE M. ALBRIGHT, Director

Glimpses of our National Parks

I

THE NATIONAL PARKS

THE national parks are areas which Congress has set apart, because of extraordinary scenic beauty, remarkable phenomena, or other unusual qualification, for the use and enjoyment of the people for all time. They are administered by the National Park Service.

These are not parks in the common meaning of the word. They are not beautiful tracts of cultivated country with smooth lawns and winding paths like Central Park in New York, or Lincoln Park in Chicago, or Golden Gate Park in San Francisco. They are, on the contrary, large areas which nature, not man, has made beautiful and which the hand of man alters only enough to provide roads to enter them, trails to penetrate their fastnesses, and hotels and camps to live in.

Secretary Work defined the national park system in the following words:

Our existing national park system is unequalled for grandeur. Additional areas when chosen should in every respect measure up to the dignity, prestige, and standard of those already established. Proposed park projects should contain scenery of distinctive quality or some natural features so extraordinary or unique as to be of national interest and importance, such as typical forms of natural architecture as those only found in America. Areas considered for national parks should be extensive and susceptible of development so as to permit millions of visitors annually to enjoy the benefits of outdoor life and contact with nature without confusion from overcrowding.

(This circular was originally prepared by Robert Sterling Yard while editor, National Park Service, and has been revised and brought up to date by Isabelle F. Story, the present editor.)

There are now 22 national parks. Every person living in the United States ought to know about his national parks and visit them when possible, for, considered together, they contain more features of conspicuous grandeur than are readily accessible in all the rest of the world together; while, considered individually, there are few, if any, celebrated scenic places within easy reach abroad which are not equaled or excelled in America; even the far-famed Swiss Alps are equaled, and, some travelers believe, far excelled, by the scenery of several of our own national parks.

SCENERY OF THE FIRST ORDER

At the same time there are many features of American scenery which are not to be found anywhere else, or, if found, are unequaled abroad in sublimity or beauty. There are more geysers of large size in our Yellowstone National Park, for instance, than in all the rest of the world together, the nearest approach being the geyser fields of Iceland and far New Zealand. Again, it is conceded the world over that there is no valley in existence so strikingly beautiful as our Yosemite Valley, and nowhere else can be found a canyon of such stupendous size and exquisite coloring as our Grand Canyon of the Colorado. In the Sequoia and General Grant National Parks, grow trees so huge and old that none quite compare with them. Mount McKinley, in Alaska, rises 17,000 feet from the ground on which the observer stands to its ice-clad summit among the clouds. These are well-known facts with which every American ought to be familiar.

EACH A PERSONALITY OF ITS OWN

One of the striking and interesting features of the national parks of our country is that each one of them is quite different from all the others; each has a marked personality of its own.

Mount Rainier, in Washington, for example, is an extinct volcano, down the sides of which flow 28 glaciers, or rivers of ice.

Crater Lake, in Oregon, fills with water of astonishing blue the hole left when the top of Mount Mazama, another volcano in the same chain as Mount Rainier, was swallowed up in some far distant past.

The Yosemite National Park, in California, in addition to its celebrated Yosemite Valley and lofty waterfalls, has in the north a river called the Tuolumne which spouts wheels of water 20 feet and more into the air. It has great areas of snow-topped mountains.

The Sequoia National Park, also in California, contains great numbers of sequoia trees, of which scores are from 20 to 30 feet in

diameter and some even larger, while thousands are over 10 feet. Measure 30 feet on the sidewalk and see what that means. The General Grant Park preserves the celebrated General Grant tree.

The Glacier National Park, in Montana, was made by the earth cracking in some far-distant time and one side thrusting up and



Photograph by Pillsbury

SPECTACULAR YOSEMITE FALLS, YOSEMITE NATIONAL PARK

The Upper Yosemite Fall drops 1,430 feet sheer, nearly as high as 9 Niagaras piled one above the other. The Lower Yosemite Fall drops 320 feet. Their combined height, including intermediate cascades and rapids, is half a mile.

overlapping the other. It has cliffs several thousand feet deep, and more than 60 glaciers feed hundreds of lakes. One lake floats icebergs all summer.

The Yellowstone National Park, in Wyoming, besides its geysers, has many hot springs which build glistening plateaus of highly colored mineral deposits. It has a canyon gorgeous with all the colors and shades of the rainbow, and it is one of the greatest wild-animal sanctuaries.

The Rocky Mountain National Park, in Colorado, straddles the Continental Divide at a lofty height, with snow-capped mountains extending from end to end. Its glacier records are remarkable.

The Mesa Verde National Park, in Colorado, hides in its deep-cut canyons the well-preserved ruins of a civilization which passed out of existence so many centuries ago that not even tradition recalls its people.

The Mount McKinley National Park, in Alaska, incloses a mountain higher above the near observer than any other mountain in the world; its caribou run in herds of a thousand or more.

The Hawaii National Park, Hawaiian Islands, besides its three volcanic peaks, possesses, the greater part of the time, a lake of boiling lava which may be photographed at night by its own light.

The Grand Canyon National Park, in Arizona, exhibits the mightiest chasm by far in the world. It is one of the world's great wonders.

The Acadia National Park, in Maine, formerly called the Lafayette, exhibits some of the oldest granite mountains in America. It is remarkable for its exquisite beauty, combining sea and land, and for its remarkable variety and luxuriance of trees and shrubs.

The Lassen Volcanic National Park, in California, includes Lassen Peak, the only recently active volcano in Continental United States, excluding Alaska.

The Hot Springs National Park, in Arkansas, contains 46 hot springs whose waters are said to possess healing properties. It is the Spa of America.

The Zion National Park, in southwestern Utah, exhibits in Zion Canyon a canyon of vivid coloring not dissimilar in conformation to the Yosemite Valley. It is in truth the Rainbow of the Desert.

Bryce Canyon National Park, also in Utah, contains an amphitheater filled with fantastically eroded pinnacles vividly colored.

Carlsbad Caverns National Park, in southeastern New Mexico, has stupendous caverns, not yet wholly explored, with magnificent limestone decorations.

The Grand Teton National Park in northwestern Wyoming includes the most spectacular portion of the Teton Mountains, an uplift of unusual grandeur.

The Wind Cave National Park, with its limestone cavern of large size and interesting decorations, is one of the notable attractions of the Black Hills of South Dakota.

The Platt National Park, in southern Oklahoma, contains curative springs.

AN ECONOMIC ASSET

It is plain that our national parks, with very few exceptions, have a quality so unusual that they are destined some day to become more celebrated internationally than the Swiss Alps are to-day. When that time comes they will constitute an economic asset of incalculable value; they will become a maker of much good business in many lines of industry besides transportation, and a source of enormous national income; they already are entering this era. The Alps exhibit only granitic scenery, while our national parks show the full range of granitic, volcanic, and sedimentary scenery in world-famous examples.

HOTELS, LODGES, AND CAMPS

The map on the inside back cover will show where the national parks are located. All of those in the United States proper are accessible by rail and are easily reached by automobile over good roads from any part of the country. Each of them is in charge of a resident superintendent, who has under his charge enough park rangers to protect the forests from fire, the wild animals from hunters, and the visitors from harm. There are good roads in the parks, and hotels or lodges, or both, where visitors may stay to enjoy the scenery and study nature. Free camp grounds are provided for motorists and others who bring their own camp equipment. Trails are built to the waterfalls, up the highest mountains, and, in short, wherever especially fine views may be found. Over these trails visitors may walk or ride on horseback as they prefer.

Many of the hotels are fine ones where every luxury may be had by those who insist upon luxuries even in the wilderness. Then there are the simpler, less expensive lodges, where visitors may live very comfortably indeed and quite economically. One may go to these lodges just as to a hotel, only he is assigned a comfortable tent or room in a cabin instead of a hotel room, and eats his meals in a big central building, which also contains a general living room. At night a camp fire is built, and all gather around it to sing and tell stories. Many persons who can easily afford the luxury of hotels live in the lodges from preference.

Free public automobile camps also have been provided for motor campers. In some of these camp grounds housekeeping cabins may be rented and cafeteria service is available. Water, electric lighting, and sanitary conveniences are furnished, as well as firewood and in some places open fireplaces for cooking.

The National Park Service, which has supervision over the national parks, is trying to make them popular and comfortable and available for people of all degrees of income.

Not only are these parks the outstanding health and pleasure resorts in the United States but they are also becoming great centers of nature study. In the national parks only is nature most carefully conserved exactly as designed. No trees are cut down for lumber. Rather they are allowed to reach their utmost size and age. No animals are killed except occasionally mountain lions and other predatory beasts which destroy the deer and young elk. Here, then, the student and the lover of nature may study nature in her pristine beauty and under conditions which elsewhere exist only in the few remote lands not yet invaded by man.

To these national parks, then, the National Park Service invites students, amateur and professional alike.

NATIONAL PARKS AND NATIONAL FORESTS

One must not confuse the national forests with the national parks. The national forests aggregate many times the area of the national parks. They were created to administer lumbering and grazing interests for the people; the lumbering, instead of being done by private interests often ruthlessly for private profit, as in the past, is now done under regulations which conserve the public interest. The trees are cut in accordance with the principles of scientific forestry, which conserve the smaller trees until they grow to a certain size, thus perpetuating the forests. Sheep, horses, or cattle graze in all pastures under governmental regulation, while in national parks cattle may be admitted only where not detrimental to the enjoyment and preservation of the scenery. Regular hunting is permitted in season in the national forests, but never in the national parks. In short, the national parks, unlike the national forests, are not properties in a commercial sense, but natural preserves for the rest, recreation, and education of the people. They remain under nature's own chosen conditions. They alone maintain "the forest primeval." The national forests are administered by the Forest Service of the Department of Agriculture. Congress has placed the national parks and national forests under the control of different executive bureaus in order that two services dealing with areas so similar in kind and location may the more surely maintain their individualities and often widely different points of view.

THE NATIONAL MONUMENTS

In addition to the national parks, there are a number of other reservations called "national monuments." Most of these are cre-

ated by presidential proclamation under the American antiquities act because they contain "historic landmarks" or "prehistoric structures," or because they possess "historic or scientific interest."

National parks, on the other hand, are preserved primarily for their unusual scenery, and are created only by Congress to be developed for the use of the people. The majority of the national monuments are conserved and protected only. Most of the national monuments are under the jurisdiction of the Department of the Interior, although some are in charge of the Department of Agriculture and the War Department.

HUNTING WITH THE CAMERA

Lovers of sport also find their national parks rich fields of pleasure, provided they do their hunting only with the camera. This is encouraged, and there are no other places in the world where wild animals may be approached so closely. In the Yellowstone, where shooting has been strictly prohibited since 1894, one may with reasonable care and precaution photograph deer at close quarters, and approach elk and antelope, and even moose and bison, near enough for good pictures.

BIRDS AND WILD ANIMALS

The lesson of the Yellowstone is that wild animals greatly fear man only when man is cruel and murderous. Another lesson from national parks' experience is that practically no wild animal will injure human beings except in self-defense. The monster cat of our rock fastnesses—the mountain lion—big enough and powerful enough to drag down a full-grown elk, is one of the most timid of all the beasts in the national parks, fleeing at great speed at the first sight or scent of man.

The national parks cover a great area, 8,016,783 acres in all. If all were put together it would mean an area of 12,531 square miles.

EDUCATIONAL AND INSPIRATIONAL VALUE

It will be apparent that our national parks serve other and far nobler purposes than merely to contribute importantly to the recreational opportunity of the people. Of course, they are playgrounds of high order—the highest order, in fact. But also, and more importantly, they are museums of the mighty past of the earth's making; exhibits upon an enormous scale of the operation of the titanic forces which shaped and still are shaping this land; areas for the conservation of the native wild life, animal and vegetable, of America; and, because of these functions, and of their attributes of

majesty and sublimity besides, they are fountains of inspiration alike to education, patriotism, and the impulses to art and literature. Men return from our mountain tops better shopkeepers and tailors, as well as better teachers, lawyers, and painters.

One's enjoyment of the national parks, and in fact of all natural scenery, depends to some extent on one's knowledge of the elementary facts of geology and biology. Nothing is more easily and pleasantly acquired, for what most persons suppose are dull sciences are, in their simplified outlines, most interesting to study and fascinating to apply to nature's tremendous examples.

A corps of naturalists is maintained in a number of the parks for the express purpose of aiding visitors in understanding the manifestations of nature exhibited in the area.

THE ANATOMY OF SCENERY

Geology is the anatomy of scenery. It is as necessary for the comprehension and appreciation of scenery as a general knowledge of anatomy is to the painter of the human figure in action and to the critic of his painting. Therefore take with you to your national parks some knowledge of the great forces which nature uses in world making and how she applies them to the shaping of the several great classes into which scenery is divided, and your enjoyment will be increased manifold. Consider this knowledge as a necessary part of your equipment, to be carefully acquired in advance, as your shoes and khaki and contour map.

CONTOUR MAPS

The United States Geological Survey has made admirable contour maps of nearly all of the national parks within the borders of the United States. It is easy to learn to read these maps. Every mountain, lake, and stream which has an authoritative name is there named and the contour lines conform accurately with the surface, enabling the traveler instantly to reckon any altitude for himself. The contour-map habit is easy to acquire and is the source of keen enjoyment and of intimate knowledge which may be obtained in no other way.

These maps may be had from the superintendent of the park, but it will save time and trouble to write in advance for them to the United States Geological Survey, at Washington, D. C. There is a small charge.

INFORMATION CIRCULARS

The following descriptions of our national parks are not intended to be exhaustive. In each, those characteristics are emphasized

which individualize the park, distinguishing it from others. Any person who wishes to know the particular traveling and living facilities in any national park and the expense of a visit therein, should write to the Director, National Park Service, Washington, D. C., for the information circular of the particular national park in which he is interested. It will be sent free.

Those who want information about reaching the national parks by rail, fares, etc., should apply to local railroad ticket offices or to any tourist agency. Those wanting information about reaching the parks by automobile should apply to national, State, or local automobile associations.

II

THE YELLOWSTONE NATIONAL PARK

Special Characteristics: Geysers and Hot Springs; Wonderfully Colored Canyon; Large Wild Bird and Animal Refuge

THE Yellowstone National Park, which lies principally in Wyoming, is the most widely celebrated of all our national parks because it contains more and greater geysers than all the rest of the world together. The geyser fields next in size are in Iceland and New Zealand. The rest are inconspicuous.

To comprehend the Yellowstone we must begin with its making. The entire region is of volcanic origin. The mountains around it on both sides and the mountains within it are products or remainders of great volcanoes of the far past; and the great plateaus, from which spring its geysers and hot springs and through whose forests now roam so many wild animals, are composed of the ash and disintegrated lavas which were once ejected from these volcanoes.

One peculiarly fascinating glimpse of Yellowstone's tempestuous past is afforded in the petrified forest of the Specimen Ridge neighborhood, where many levels of upright petrified trunks may be found alternating, like the layers in a cake, with levels of lava; which plainly shows that after the first forest grew on the volcano's slope and was engulfed by a fresh run of lava, enough time elapsed for a second forest to grow upon that level, and that this in turn was engulfed with new lava to make the level for another forest, and so on. There is a cliff 2,000 feet high composed wholly of these alternate levels of engulfed forests and the lavas which engulfed them.

THE GEYSERS

Geysers are, roughly speaking, water volcanoes. They occur only at places where the internal heat of the earth approaches close to the surface. Their action, for so many years unexplained and even now

regarded with wonder by so many, is simple. Water from the surface trickling through cracks in the rocks, or water from subterranean springs collecting in the bottom of the geyser's crater, down among the strata of intense heat, becomes itself intensely heated and gives off steam, which expands and forces upward the cooler water that lies above it. This makes room for the more rapid formation of steam which immediately gathers under enormous pressure.

It is then that the water at the surface of the geyser begins to bubble and give off clouds of steam, the sign to the watchers above that the geyser is about to play.

At last the water in the bottom reaches so great an expansion under continued heat that the less heated water above can no longer weigh it down, so it bursts upward with great violence, rising many feet in the air and continuing to play until practically all the water in the crater has been expelled. Spring water, or the same water cooled and falling back to the ground, again seeps through the surface to gather as before in the crater's depth, and in a greater or less time, according to difficulties in the way of its return, becomes reheated to the bursting point, when the geyser spouts again.

THE HOT-WATER PHENOMENA

Nearly the entire Yellowstone region, covering an area of 3,426 square miles, is remarkable for its hot-water phenomena. The more important geysers are confined to three basins lying near each other in the middle west side of the park, but other hot-water manifestations occur at more widely separated points. Marvelously colored hot springs, mud volcanoes, and other strange phenomena are frequent. At Mammoth Hot Springs the hot water has brought to the surface quantities of white mineral deposits which build terraces of beautifully incrustated basins high up into the air, often engulfing trees of considerable size. Over the edges of these carved basins pours the hot water. Microscopic plants called algæ grow on the edges and sides of these basins, assisting the deposition of the mineral matter and painting them hues of red and pink and bluish gray. At many other points lesser hot springs occur, introducing strange, almost uncanny, elements into wooded and otherwise quite normal landscapes.

A tour of these hot-water formations and spouting geysers is an experience never to be forgotten. Some of the geysers play at quite regular intervals. The celebrated Old Faithful, the tourists' friend, plays often and with regularity. It had the honor of welcoming the first explorer, and never since that day has it failed any tourist. Some of the largest geysers play at irregular intervals of days, weeks, or months. Some very small ones play every few minutes. Many

bubbling hot springs, which throw water 2 or 3 feet into the air once or twice a minute, are really small, imperfectly formed geysers.

The hot-spring terraces are also a rather awe-inspiring spectacle when seen for the first time. The visitor may climb upon them and pick his way around among the steaming pools. In certain lights the surface of these pools appears vividly colored. The deeper hot pools are often intensely green. The incrustations are often beautifully crystallized. Clumps of grass, and even flowers, which have been submerged in the charged waters become exquisitely plated, as if with frosted silver.

But the geysers and hot-water formations are by no means the only wonders in the Yellowstone. Indeed, the entire park is a wonderland. The Grand Canyon of the Yellowstone affords a spectacle worthy of a national park were there no geysers. But you must not confuse your grand canyons, of which there are several in our wonderful western country. Of these, by far the largest and most impressive is the Grand Canyon of the Colorado River, in the Grand Canyon National Park, Ariz. That is the one always meant when people speak of visiting "the Grand Canyon," without designating a location. It is the giant of canyons.

GRAND CANYON OF THE YELLOWSTONE

The Grand Canyon of the Yellowstone is altogether different. What makes it a scenic feature of the first order is its marvelously variegated volcanic coloring. It is the cameo of canyons.

Standing upon Inspiration Point, which pushes out almost to the center of the canyon, one looks almost vertically down upon the foaming Yellowstone River. To the south a waterfall nearly twice the height of Niagara rushes seemingly out of the pine-clad hills and pours downward to be lost again in green.

From that point 2 or 3 miles to where you stand and beneath you widens out a glorious kaleidoscope of color. The steep slopes dropping on either side a thousand feet and more from the pine-topped levels above are wondrously carved and fretted by the frost and the erosion of the ages. Sometimes they lie in straight lines at easy angles, from which jut high rocky prominences. Sometimes they lie in huge hollows carved from the side walls. Here and there jagged rocky needles rise perpendicularly for hundreds of feet like groups of gothic spires.

And the whole is colored as brokenly and vividly as the field of a kaleidoscope. The whole is streaked and spotted and stratified in every shade from the deepest orange to the faintest lemon, from deep crimson through all the brick shades to the softest pink, from black

through all the grays and pearls to glistening white. The greens are furnished by the dark pines above, the lighter shades of growth caught here and there in soft masses on the gentler slopes and the foaming green of the plunging river so far below. The blues, ever changing, are found in the dome of the sky overhead.

It is a spectacle which one looks upon in silence.

There are several spots from which fine partial views may be had, but no person can say he has seen the canyon who has not stood upon Inspiration Point. Remember this when you visit the Yellowstone.



Photograph by Hillers

GRAND CANYON OF THE YELLOWSTONE

WILD ANIMALS LIVING NATURALLY

Another interesting feature of the Yellowstone National Park is its wild-animal life. It is one of the largest and most successful preserves in the world. Its 3,426 square miles of mountains and valleys remain nearly as nature made them, for the more than 350 miles of roads and the 4 hotels and 6 lodges are as nothing in this immense wilderness. No tree has been cut except when absolutely necessary for road or trail or camp. No herds of domestic cattle invade its valleys. No rifle has been fired at a wild animal since 1894, except by occasional poachers along the border and by the official destroyers of predatory beasts.

Visitors for the most part keep to the beaten road, and the wild animals have learned in the years that they mean them no harm. To be sure they are not always seen by the people filling the long trains of motor busses which travel from point to point daily during the season; but the quiet watcher on the trails may see deer and bear and elk and antelope to his heart's content, and he may even see mountain sheep, moose, and bison by journeying on foot or by horseback into their distant retreats. In the fall and spring, when the crowds are absent, wild deer gather in great number at the hotel clearings to



Photograph by Cribbs

YOUNG MULE DEER IN YELLOWSTONE NATIONAL PARK SO TAME THEY
EAT FROM THE HAND OF A CHILD

crop the grass. One of the diversions at the road builders' camps in the wilderness is cultivating the acquaintance of the animals.

Thus one of the most interesting lessons from the Yellowstone is that wild animals are fearful and dangerous only when men treat them as game or as enemies.

BEAR, ELK, MOOSE, DEER, ANTELOPE, AND BISON

The grizzly bear, for instance, is one of the shiest of wild animals, and may be seen only with difficulty. It lives principally on roots, berries, nuts, and honey—when honey may be had. It can not climb trees like the brown bears. Its little ones are born in caves where

the bears hibernate through the winters and are little larger than squirrels when they first come into the world.

The brown, cinnamon, and black bears, which, by the way, are the same species only differently colored—the blondes and brunettes, so to speak, of the same bear family—are quite different. They are playful, comparatively fearless, sometimes even friendly. They are greedy fellows and steal camp supplies whenever they can.

This wild-animal paradise now contains great herds of elk, several hundred moose, innumerable deer, many antelope, and a large and increasing herd of bison.

More than 200 species of birds live natural undisturbed lives in Yellowstone. Eagles abound among the crags. Wild geese and ducks are plentiful. Hundreds of large white pelicans add to the picturesqueness of Yellowstone Lake.

TROUT FISHING

Trout fishing in Yellowstone waters is unexcelled. All three drainage basins abound in trout, which often attain large size. Yellowstone Lake is the home of large trout, which are freely taken, and the Yellowstone River and its tributaries yield excellent catches to the skillful angler. There is good fishing in the other rivers and also in many lesser lakes. The more accessible waters, however, are fished so steadily that the trout in them become educated and wary. Back in the depths of the mountain fastnesses are fish that are much less disturbed and therefore can be caught more readily. The native fishes of the park represent only a few species which have been supplemented by a number of others planted by the Government in barren waters. Park waters now contain some of the best game species.

DISCOVERY OF THE YELLOWSTONE

The first recorded visit to the Yellowstone was made by John Colter in 1807. Having been released as a private soldier from the Lewis and Clark expedition, Colter, in 1807, joined the expedition of Manuel Lisa, a celebrated trader. Later, while returning alone to Lisa's fort at the mouth of the Bighorn from a dangerous mission, probably to the Three Forks of the Missouri, Colter, seeking a route safe from hostile Indians, traveled through the Yellowstone country. His story of its wonders was discredited.

The next recorded visit was by a trapper named Joseph Meek in 1829, who described it as "a country smoking with vapor from boiling springs and burning with gases issuing from small craters." From some of these craters, he said, "issued blue flame and molten brimstone," which, of course, was not true, though doubtless Meek fully believed it to be the truth.

Between 1830 and 1840 Warren Angus Ferris, a clerk in the American Fur Co., wrote the first description of the Firehole Geyser Basin, but it was not until 1852 that the geyser district was actually defined and the geysers precisely located. This was done by Father De Smet, the famous Jesuit missionary, who drew much of his information about the Yellowstone country from James Bridger, the famous frontiersman whose strange yarns of the marvels he had there beheld remained discredited or tabooed by other writers as late as 1860.

The first Government expedition was sent out in 1859 under command of Capt. W. F. Reynolds, but yielded little of accurate information about the central glories of the Yellowstone. Several private explorers followed, but so great was public incredulity as to the marvels they described that they did not dare tell their experiences before any general audiences, for several lecturers had been stoned in the streets as impostors. The large exploring expedition under Henry D. Washburn and N. P. Langford, in 1870, finally established the facts to the public belief and led to the creation of the Yellowstone National Park.

III

THE YOSEMITE NATIONAL PARK

Special Characteristics: Unique Valley of Unusual Charm; Spectacular Waterfalls; an Outlying Granite Wilderness of Marvelous Beauty

THE Yosemite National Park lies west of the crest of the Sierra Nevada Mountains in middle eastern California. The famous Yosemite Valley is a small part of this extraordinary holiday garden—a mere crack 7 or 8 miles long by less than 1 mile wide in 1,139 square miles of scenic wilderness so beautiful and varied that adequate description reads like romance.

The irregular eastern boundary is the crest of the Sierra, a rampart of tremendous granite peaks buttressed by pinnacled spurs of nature's noblest gothic, spattered by snow fields and mimic glaciers, a mountain barrier uncrossable by road except at one point, lofty Tioga Pass. Westward from the perpetual snows of this stupendous wall flow a million streams, which converge in two river systems watering and beautifying the inimitable pleasure ground. One of these streams passes through that gorge of great celebrity, the Hetch Hetchy Valley; the other flows through that gorge of greatest celebrity, the Yosemite Valley.

The park includes, in John Muir's words, "the headwaters of the Tuolumne and Merced Rivers, two of the most songful streams in the world; innumerable lakes and waterfalls and smooth, silky lawns; the noblest forests, the loftiest granite domes, the deepest ice-sculptured canyons, the brightest crystalline pavements, and snowy mountains soaring into the sky twelve and thirteen thousand feet, arrayed in open ranks and spiry pinnacled groups partially separated by tremendous canyons and amphitheatres; gardens on their sunny brows, avalanches thundering down their long white slopes, cataracts roaring gray and foaming in the crooked rugged gorges, and glaciers in their shadowy recesses working in silence, slowly completing their sculptures; new-born lakes at their feet, blue and green, free or encumbered with drifting icebergs like miniature Arctic Oceans, shining, sparkling, calm as stars."

This land of enchantments is a land of enchanted climate. Its summers are warm, but not too warm; dry, but not too dry; its nights cold and marvelously starry.

THE VALLEY AND ITS WATERFALLS

Most persons, even visitors, know only the Yosemite Valley. And, indeed, were there nothing else, the valley itself, small though it is, would stand in the first rank of national parks. It was discovered in 1851 by mounted volunteers pursuing Indians into their fastnesses. Because of its extraordinary character and quite exceptional beauty, it quickly became celebrated; but it was not until 1874 that a road was built into it. Until then it was approached only by trail.

No matter what their expectation, most visitors are delightfully astonished upon entering the Yosemite Valley. The sheer immensity of the precipices on either side of the valley's peaceful floor; the loftiness and the romantic suggestion of the numerous waterfalls; the majesty of the granite walls; and the unreal, almost fairy, quality of the ever-varying whole can not be successfully foretold.

After the visitor has recovered from his first shock of astonishment—for it is no less—at the supreme beauty of the valley, inevitably he wonders how nature made it. However did it happen that walls so enormous rose so nearly perpendicular from so level a floor?

It will not lessen wonder to learn that it was through the slow, persistent wear of running water and glacier ice that the chasm was

formed. Recently investigations by the United States Geological Survey have made clear that the valley was cut by the Merced River to a depth of 2,000 feet before the ice age began, and that the glaciers then added about 1,000 feet to its depth.

The tremendous amount of work performed by the river was made possible by the torrential speed to which it was again and



Photograph by Hillers

EL CAPITAN, YOSEMITE NATIONAL PARK

again accelerated by the successive uplifts of the Sierra Nevada, which range grew in a relatively short period, as time is reckoned by geologists, from a height of only 2,000 feet to its present height of 14,000 feet. The great width of the chasm and the remarkable verticality of its walls, on the other hand, are distinctly the work of the glaciers. The ancient Yosemite Glacier, as it forced its way slowly through the narrow, stream-worn gorge, quarried away and steepened the sides, thereby producing towering cliffs and trans-

forming the cascades that poured from the mouths of the lofty hanging valleys to leaping waterfalls.

The manner of its making explains the extreme loftiness of the waterfalls which pour over the rim into the valley.

The Yosemite Fall, for instance, drops 1,430 feet in one sheer fall, a height equal to 9 Niagara Falls piled one on top of the other. The Lower Yosemite Fall, immediately below, has a drop of 320 feet, or 2 Niagaras more. Vernal Fall has the same height, while Illilouette Fall is 50 feet higher. The Nevada Fall drops 594 feet sheer; the celebrated Bridalveil Fall 620 feet, while the Ribbon Fall, highest of all, drops 1,612 feet sheer, a straight fall ten times as great as Niagara. Nowhere else in the world may be had a water spectacle such as this.

Similarly the sheer summits. Cathedral Rocks rise 2,500 feet perpendicular from the valley; El Capitan, 3,604 feet; Sentinel Dome, 4,157 feet; Half Dome, 4,892 feet; Clouds Rest, 5,964 feet.

Among these monsters the Merced sings its winding way.

The falls are at their fullest in May and June while the winter snows are melting. They still have volume in July, but after that they decrease rapidly. But let it not be supposed that their beauty depends upon the amount of water that pours over their brinks. It is true that the rush of water in the Yosemite Falls is even a little appalling in May, that sometimes the ground trembles half a mile away. But it is equally true that in September when, in specially dry seasons, much of the water of the great fall reaches the bottom in the shape of mist, the spectacle still possesses a filmy grandeur not comparable, perhaps, to any sight on earth. The one inspires wonder by its immensity and power; the other uplifts by its intangible spirit of sheer beauty.

ABOVE THE VALLEY'S RIM

The enormous park area above the valley's rim is less celebrated principally because it is less known. The acquisition and repair by the Government in 1915 of the Old Tioga road across the park and over the Sierra through Tioga Pass made it accessible, and now trails lead from public camps into the fastnesses of the High Sierra, making available to the camper-out hundreds of limpid lakes and rushing trout streams set in a land of delight.

And thus is added to the amazing water spectacle for which the valley is famous still another kind of Yosemite waterfall destined to world-wide celebrity. The Tuolumne River, descending sharply to the head of the Hetch Hetchy Valley, becomes, in John Muir's phrase, "one wild, exulting, onrushing mass of snowy purple bloom spreading over glacial waves of granite without any definite channel, gliding in magnificent silver plumes, dashing and foaming through

huge boulder dams, leaping high in the air in wheellike whirls, displaying glorious enthusiasm, tossing from side to side, doubling, glinting, singing in exuberance of mountain energy."

The crowning feature of this mad spectacle are the water wheels which rise 20 feet or more into the air when the slanting river strikes obstructions.

In addition to its many other attractions, the Yosemite National Park contains three groves of sequoias, the celebrated "Big Trees of California." One of these trees, the Grizzly Giant, has a base diameter of 29.6 feet and a height of 204 feet. It is more than 3,000 years old. The automobile road passes through an opening in the trunk of another, the Wawona tree. Still another living tree is hollow from bottom to top, so that one may step within it and, gazing upward, see the sky as through a tube. A few hours in the red silence of the Mariposa Grove is an experience never to be forgotten.

Living in the Yosemite is extremely comfortable. There are three hotels and several permanent lodges and camps. There are camp grounds where thousands of persons camp out. The valley is the northern terminus of the John Muir Trail which California has built southward along the crest of the Sierra as a memorial to her famous man of letters.

IV

THE SEQUOIA AND GENERAL GRANT NATIONAL PARKS

Special Characteristics: Magnificent Conifer Forests and Many Groves of California Big Trees (*Sequoia gigantea*); Mountain Ranges with Highest Mountain in the United States Proper, Mount Whitney, 14,496 Feet; Mighty Canyons; Over 300 Lakes

On the western slopes of the Sierra Nevada in central California the finest of remaining stands of the Big Trees (*Sequoia gigantea*) are forever protected within the Sequoia and General Grant National Parks.

The California Big Tree or *Sequoia gigantea* must not be confused with the smaller species of the sequoia genus, the Coast Redwood or *Sequoia sempervirens*. The Big Tree occurs only in the Sierra Nevada Mountains; the Coast Redwood occurs only in the Coast Range. They are widely separated geographically and in characteristics and appearance. Bret Harte in his Ode to a Cone of the Big Tree speaks of the *sempervirens* as the "poor relation" of the *gigantea*. While this is poetic license it may be said in a general way that the Big Tree is larger and more colorful than the Coast Redwood; individual specimens are more majestic. On the other hand, the Coast Redwood is taller and more graceful at maturity. Visitors to California should by all means see both species and compare them.

In the Sequoia and General Grant National Parks are thousands of Big Trees, of which several hundred are more than 10 feet in diameter and 300 feet in height, while some have base diameters between 25 and 37 feet. The oldest of these giants are undoubtedly between 3,000 and 4,000 years old—perhaps even more ancient—the oldest and largest living things in the world.

There are *Sequoia gigantea* at other places in the California Sierra, but by far the greatest number and the largest individual trees are in the Sequoia National Park and its little neighbor, General Grant. It is scarcely an exaggeration to say that many of the other groves of Big Trees might be dropped down into the Sequoia National Park and only the rangers would know that they had arrived. There are groves innumerable; and also almost pure stands of Big Trees in the conifer forests.

It is difficult to grasp the immense size of these giants. For instance it is estimated that in the General Sherman Tree, the largest of them all, 37.3 feet in diameter at the base, 18.7 feet in diameter 100 feet from the ground, and 273.9 feet in height, there is over a half million board feet of lumber in the trunk; enough material to build 500 5-room houses. Automobiles and teams have been driven up and down the trunks of several prostrate Big Trees.

THE OLDEST LIVING THING

But the age of the Big Tree is still more difficult to realize. It is beyond compare the oldest living thing.

Several of the trees now growing in their prime in the Sequoia National Park were vigorous youngsters before the pyramids were built in Egypt and before Babylon was at its zenith. Hundreds of them were thriving before the heroic ages of ancient Greece, while, in fact, the rough Indo-Germanic ancestors of the Greeks were still swarming from the north. Hundreds were lusty youngsters through all the ages of Greek art and Roman wars. Thousands were flourishing trees when Christ was born in Bethlehem.

Despite its vast age, the mature Big Tree is the embodiment of serene vigor. No description, says Muir, can give adequate idea of its majesty, much less of its beauty. He calls it nature's forest masterpiece. He dwells on its patrician bearing, its suggestion of ancient stock, its strange air of other days, its thoroughbred look inherited from the long ago. "Poised in the fullness of strength and beauty, stern and solemn in mien, it glows with eager enthusiastic life to the tip of every leaf and branch and far-reaching root, calm as a granite dome, the first to feel the touch of the rosy beams of morning, the last to bid the sun good night."



Photograph by H. W. GLEASON

THE LARGEST AND OLDEST LIVING THING IN THE WORLD—THE GENERAL SHERMAN TREE IN THE SEQUOIA NATIONAL PARK, DIAMETER, 37.3 FEET

The *Sequoia gigantea* are the glory of the Sequoia and General Grant National Parks. Scattered here and there over large areas, they cluster chiefly in 13 separate groves, and it is in these groves that they attain their greatest size and luxuriance.

But these forest monarchs are by no means the only attractions of the Sequoia National Park, which many frequenters declare nature has equipped best of all for the joys and pleasures of mountain living.



Photograph by Geo. F. Belden

ONE OF THE TRUE GLACIAL-HEWN CANYONS FOUND WITHIN SEQUOIA

MOUNTAIN AREA OF WILD BEAUTY

For to the east of the big tree groves of the Sequoia National Park extends an area of unsurpassed mountain grandeur, rising along the eastern boundary of the park to the crest of the High Sierra, and including Mount Whitney (14,496 feet in elevation), the highest peak in the United States exclusive of Alaska. Within this wild area of castellated peaks, and innumerable lakes and streams, including the magnificent Kern River Canyon, and embracing more than 40 peaks over 13,000 feet in height, is the ideal vacation land for the mountaineer, camper, and fisherman. There are 314 lakes within the park.

Innumerable other attractions invite the visitor to these parks, including magnificent panoramas of mountain, stream, and forest, glorious flower fields and meadows, tame deer and bear, and an unexcelled climate.

V

THE MOUNT RAINIER NATIONAL PARK

Special Characteristic: Complicated Glacial System Flowing From One Peak

IN THE northwestern corner of the United States rises, from the Cascade Mountains, a series of extinct volcanoes, ice clad the year around. Foremost among them, counting from south to north, are Mount Shasta in California; Mount Hood in Oregon; Mount St. Helens, Mount Adams, Mount Rainier, and Mount Baker in Washington. Once, in the dim ages, when America was making,



MOUNT RAINIER, WITH SOUTH MOWICH GLACIER IN CENTER—AT TIMBERLINE
IN SUNSET PARK

they blazed across the sea like huge beacons. To-day, their fires quenched, they suggest a stalwart band of knights of the ages, helmeted in snow, armored in ice, standing at parade upon a carpet patterned gorgeously in forests and wild-flowered meadows.

Easily chief of this knightly band is Mount Rainier, a giant towering 14,408 feet above tidewater in Puget Sound. Home-bound sailors far at sea mend their courses from his silver summit. Travelers overland catch the sun glint from his shining sides at a distance of more than 150 miles.

This mountain has a glacier system far exceeding in size and impressive beauty that of any other in the United States. From its

summit and cirques 28 named rivers of ice pour slowly down its sides. There are others unnamed. Seen upon the map, as if from an airplane, one thinks of it as an enormous frozen octopus stretching icy tentacles down upon every side among the rich gardens of wild flowers and splendid forests of fir and cedars below.

BIRTH OF THE GLACIERS

Every winter the moisture-laden winds from the Pacific, suddenly cooled against its summit, deposit upon its top and sides enormous snows. These, settling in the mile-wide crater which was left after a great explosion in some prehistoric age carried away perhaps 2,000 feet of the volcano's former height, press with overwhelming weight down the mountain's sloping sides.

Thus are born the glaciers, for the snow under its own pressure quickly hardens into ice. Through 28 valleys, self-carved in the solid rock, flow these rivers of ice, as they may be roughly called, now turning, as rivers of water turn, to avoid the harder rock strata, now roaring over precipices like congealed waterfalls, now rippling, like water currents, over rough bottoms, pushing, pouring relentlessly on until they reach those parts of their courses where warmer air turns them into rivers of water.

There are 48 square miles of these glaciers, ranging in width from 500 feet to a full mile, and in thickness from 50 feet to many hundreds, perhaps even more than a thousand feet.

ONCE WAS 2,000 FEET HIGHER

Mount Rainier is nearly 3 miles high, measured from sea level. It rises nearly 2 miles above its immediate base. Once it was a complete cone like the famous Fujiyama, the sacred mountain of Japan. Then it was probably 16,000 feet high. "Then," says F. E. Matthes, "a great explosion followed that destroyed the top part of the mountain and reduced its height by some 2,000 feet. The volcano was left beheaded."

Indian legends tell of a great eruption.

The national park, which incloses Mount Rainier, contains 378 square miles. It is easily reached by railroad and automobile from neighboring cities. An automobile road enables stages to bring visitors to beautiful Paradise Valley, whose flowered slopes are bordered by the great Nisqually, Paradise, and Stevens Glaciers. One may reach this point in four hours from Tacoma and return the same day. But it is a spot where the visitor may well spend weeks. A road recently completed opens up the northwest section in the Carbon Glacier region.

The Nisqually Glacier is the best known, though by no means the largest of the glaciers. It is 5 miles long and at Paradise Valley is half a mile wide. Glistening white and fairly smooth at its shining source on the mountain's summit, its surface here is soiled with dust and broken stone and squeezed and rent by terrible pressure into fantastic shapes. Innumerable crevasses or cracks many feet deep break across it, caused by the fact that the middle of the glacier moves more rapidly than its edges. Glaciers, again like rivers of water, develop swifter currents nearer midstream.

Professor Le Conte tells us that the movement of Nisqually Glacier in summer averages, at midstream, about 16 inches a day. It is far



AUTOMOBILE ROAD AT BASE OF MOUNT RAINIER

less at the margins, its speed being retarded by the friction of the sides.

It is one of the great pleasures of a visit to Mount Rainier National Park to wander over the fields of snow and climb out on the Nisqually Glacier and explore its crevasses and ice caves.

Like all glaciers, the Nisqually gathers on its surface masses of rock with which it strews its sides, just as rivers of water strew their banks with logs and floating débris. These are called lateral moraines, or side moraines. Sometimes glaciers build lateral moraines miles long and many feet high, as you will see when you visit the Mount Rainier National Park.

The rocks which are carried in midstream to the end of the glacier and dropped when the ice melts form a terminal moraine.

The end, or snout, of the glacier thus always lies among a great mass of rocks and stones. The Nisqually River flows from a cave in the end of the Nisqually Glacier's snout, for the melting begins miles upstream under the glacier. The river is the color of the rock when it first appears, because it carries sediment and powdered rock, which, however, it deposits in time, becoming quite clear.

There are many glaciers as large and larger than the Nisqually, but they are little known because so hard to reach. The National Park Service has now completed trails around the great ice mountain and all of these glaciers are now accessible.

CREATURES LIVING IN THE ICE

Many interesting things might be told of these glaciers were there space. For example, several species of minute insects live in the ice, hopping about like tiny fleas. They are harder to see than the so-called sand fleas at the seashore because much smaller. Slender, dark-brown worms live in countless millions in the surface ice. Microscopic rose-colored plants also thrive in such great numbers that they tint the surface here and there, making what is commonly called "red snow."

GORGEOUS CARPETING OF FLOWERS

But this brief picture of the Mount Rainier National Park would miss its loveliest touch without some notice of the wild-flower parks lying at the base, and often reaching far up between the icy fingers of Mount Rainier. Paradise Valley, Indian Henrys Hunting Ground, Spray Park, Summerland—such are the names given to some of these beauty spots.

Let John Muir, the celebrated naturalist, describe them here.

"Above the forests," he writes, "there is a zone of the loveliest flowers, 50 miles in circuit and nearly 2 miles wide, so closely planted and luxuriant that it seems as if nature, glad to make an open space between woods so dense and ice so deep, were economizing the precious ground and trying to see how many of her darlings she can get together in one mountain wreath—daisies, anemones, geraniums, columbine, erythroniums, larkspurs, etc., among which we wade knee-deep and waist-deep, the bright corollas in myriads touching petal to petal. All together this is the richest subalpine garden I have ever found, a perfect floral elysium."

VI

THE CRATER LAKE NATIONAL PARK

Special Characteristic: Lake of Great Depth Filling Collapsed Volcanic Crater

IN THE heart of the Cascade Mountains of our Northwest, whose volcanoes were in constant eruption in the ages before history, and now, extinct and ice plated, shine like huge diamonds in the sunlight, there lies, jewel-like in a setting of lava, a lake of unbe-



© Fred H. Kiser

CRATER LAKE AND WIZARD ISLAND

lievable blue. The visitor who comes suddenly upon it stands silent with emotion, overcome by its quite extraordinary beauty and by a strange sense of mystery which even the unimaginative feel keenly and which increases rather than decreases with familiarity.

This is Crater Lake.

One of the very largest of these ancient volcanoes was Mount Mazama. It stood in the southwestern part of what is now Oregon, 200 miles south of Mount Rainier and nearly as lofty. It was about the height of Mount Shasta, in plain sight of which it rose nearly a hundred miles to its north.

But this was ages ago. No human eyes ever saw Mount Mazama. Long before man came the entire upper part of it in some titanic cataclysm fell in upon itself as if swallowed by a subterranean cavern, leaving its craterlike lava sides cut sharply downward into the central abyss.

What a spectacle that must have been!

The first awful depth of this vast hole no man can guess. But the volcano was not quenched; it burst up through the collapsed lavas in three places, making lesser cones within the greater, but none so high as the surrounding rim.

Then the fires ceased and gradually, as the years passed, springs percolated into the vast basin and filled it with water within a thousand feet of its rim. As you see it to-day one of these cones emerges a few hundred feet from the surface. The lake is 2,000 feet deep in places. It has no inlet of any sort nor is there any stream running out of it; but the water is supposed to escape by underground channels and to reappear in the Klamath River, a few miles away.

Geologists find Crater Lake of special interest because of the way nature made it. Many volcanoes have had their tops blown off. Mount Rainier was one of these. But no other in the United States has fallen into itself, like Mount Mazama.

The evidence of this process is quite conclusive. The lava found on the slopes that remain was not blown there from an exploding summit but ran, hot and fluid, from a crater many thousands of feet higher. The pitch of these outer slopes enables the scientist to tell with reasonable probability how high the volcano originally was.

ITS MANY ATTRACTIONS

The park embraces 249 square miles of high cascade country, a rugged picturesque area. About 80 per cent of its acreage is beautifully forested, principally with yellow pine, mountain hemlock, fir, and lodgepole pine. During the spring and summer the exhibit of wild flowers typical of high altitudes is very interesting. While the lake, with its inclosing crater wall, is the great central attraction, there are numerous other points of interest, including canyons, waterfalls, and some vast panoramas obtainable by ambitious hikers from the tops of park summits, the highest of which reaches an altitude of 8,938 feet. The pinnacles, in the canyon of Wheeler Creek near the east entrance, are annually visited by thousands. Wild life is abundant and in the main friendly, particularly the native black bear.

The Rim Road is unlike anything else in the world, being 34 miles of highway that completely encircles the rim, offering incomparable views of the lake and the crater, with occasional glimpses of a vast panorama of southern Oregon and northern California.

The park lies in the center of the great recreational area of southern Oregon, being a hub from which some of America's most famous fishing streams and lakes may be reached by automobile within two hours.

PHANTOM SHIP AND WIZARD ISLAND

Crater Lake is one of the most beautiful spots in America. The gray lava rim is remarkably sculptured. The water is remarkably blue, a lovely turquoise along the edges, and, in the deep parts, seen from above, extremely dark. The contrast on a sunny day between the unreal, fairylike rim across the lake and the fantastic sculptures at one's feet, and, in the lake between, the myriad gradations from faintest turquoise to deepest Prussian blue, dwells long in the memory.

Unforgettable also are the twisted and contorted lava formations of the inner rim. A boat ride along the edge of the lake reveals these in a thousand changes. At one point near shore a mass of curiously carved lava is called the Phantom Ship, because, seen at a distance, it suggests a ship under full sail. The illusion at dusk or by moonlight is striking. In certain slants of light the Phantom Ship suddenly disappears—a phantom, indeed.

Another experience full of interest is a visit to Wizard Island. One can climb its sides and descend into its little crater.

VII

THE MESA VERDE NATIONAL PARK

Special Characteristic: Prehistoric Cliff Dwellings

WHERE did the Indians come from? That is one of the innumerable questions which anthropologists have not yet solved. Some suggest that they came from Asia by way of Alaska, because the Eskimo seems somewhat to resemble Mongolians. Others think they came from Europe by way of Greenland; others that they came from the South Sea Islands by way of South America.

Perhaps all these theorists are right. In one thing only do they agree, and that is that, from the Arctic to the Antarctic no matter

what their tribal or other differences due to varying conditions of climate and surroundings, all American Indians are of one physical type with similar mental characteristics and cultural tendencies.

The highest civilization undoubtedly developed in Peru, Central America, and southern Mexico, where architectural ruins of quite astonishing beauty are to-day crumbling under the jungle. This civilization was ruthlessly destroyed during the Spanish conquest following the discovery of America.

The next highest prehistoric civilization was in our own Southwest, and the remains of its highest special development are the cliff dwellings of the Mesa Verde in southwestern Colorado, to preserve which Congress has set apart the Mesa Verde National Park.

When one speaks of the Pueblo Indians he does not mean an Indian stock or tribe, but merely Indians, possibly of various stocks and many tribes, who used to live, and a few of whose modern descendants still live, in pueblos or community houses of many rooms holding entire tribes or villages under one roof. The builders of Mesa Verde's prehistoric dwellings were of the pueblo type.

BURROWING INTO THE MESAS

Those who have traveled through our Southwestern States have seen from the car window innumerable mesas or isolated plateaus rising abruptly for hundreds of feet from the bare and often arid plains. The word mesa is Spanish for table, and indeed many of these mesas when seen at a distance may suggest tables to the imaginative mind.

Once the level of these mesa tops was the level of all of this vast southwestern country, but the rains and floods of centuries have washed away all the softer earth down to its present level, leaving standing only the rocky spots or those so covered with surface rocks that the rains could not reach the softer gravel underneath.

All have heard of the Enchanted Mesa in New Mexico which the Indians of recent times considered sacred. The Mesa Verde, or green mesa (because it is covered with stunted cedar and pinyon trees in a land where trees are few), is the next most widely known.

The Mesa Verde is one of the largest mesas. It is 15 miles long and 8 miles wide. At its foot are masses of broken rocks rising from 300 to 500 feet above the bare plains. These are called the talus. Above the talus yellow sandstone walls rise precipitously two or three hundred feet higher to the mesa's top.

It stands on the right bank of the Mancos River, down to which a number of small, rough canyons, once beds of streams, slope from the top of the mesa. It is in the sides of these small canyons that the most wonderful and best preserved cliff dwellings in America, if not in the world, are found to-day.

LIVING HARD IN PREHISTORIC TIMES

In prehistoric times a large human population lived in these cliff dwellings, seeking a home there for protection. They obtained their livelihood by agriculture on the forbidding tops of the mesa, cultivating scanty farms which yielded them small crops of corn.

Life must have been hard in this dry country, when the Mesa Verde communities flourished in the side of these sandstone cliffs. Game was scarce and hunting arduous. The Mancos yielded a few fishes. The earth contributed berries or nuts. At that time, as at present, water was rare and found only in sequestered places near the heads of the canyons, but notwithstanding these difficulties the



Photograph by Jesse L. Nusbaum

CLIFF PALACE IN WINTER, MESA VERDE NATIONAL PARK

inhabitants cultivated their farms and raised their corn, which they ground on flat stones called metates, and baked their bread on a flat stone griddle. They boiled their meat in well-made vessels, some of which were artistically decorated.

Their life was hard, but so confidently did they believe that they were dependent upon the gods to make the rain fall and the corn grow that they were a religious people who worshipped the sun as the father of all, and the earth as the mother who brought them all their material blessings. They possessed no written language, and could only record their thoughts by a few symbols which they painted on their earthenware jars or scratched on the sides of the cliffs adjoining their habitations.

As their sense of beauty was keen, their art, though primitive, was true; rarely realistic, generally symbolic. Their decoration of cotton fabrics and ceramic work might be called beautiful, even when judged by the highly developed taste of to-day.* They fashioned axes, spear points, and rude tools of stone; they wove brightly patterned sandals and made attractive basketry.

They were not content with rude buildings, and had long outgrown caves or earth homes that satisfied less civilized Indians farther north and south of them. They shaped stones into regular forms, ornamented them with designs, and laid them one on another. Their masonry resisted destructive forces of centuries of rain and snow beating upon them.

The Mesa Verde tribes probably had little culture when they first climbed these precipitous rocks and found shelter, like animals, in the natural caves under the overhanging floor of the mesa. These caves were shelters not only from the storm of winter and the burning sun of summer, but from rapacious human enemies as well; for there are evidences of determined warfare among the prehistoric tribes of our southwest lands.

But with the generations, perhaps the centuries, they made forward strides. Ladders were substituted for zigzag trails, making their retreats more inaccessible, adobe supplemented caves, brick and stone succeeded adobe, culture succeeded savagery.

DISCOVERY OF THE SUN TEMPLE

A great mound on the top of the mesa which Doctor Fewkes unearthed in the summer of 1915 shows that, probably about 1300 A. D., they had begun to emerge from the caves to build upon the surface, still a further advance in civilization. It is significant that this building is partially sculptured and architecturally ambitious. It is still more significant that it was not a house for temporal needs nor a fortress, but a religious structure. It was a temple to their god, the sun.

The following year Doctor Fewkes unearthed another great building on the surface in what is known as the Mummy Lake region of the park. This was a pueblo, or community living house, and apparently belongs to the period of Sun Temple. This is called Farview House, because of its commanding situation. There are other similar mounds.

The remains of this advanced civilization, of quality so greatly beyond its neighbors, may be seen and studied by all who choose to visit the Mesa Verde National Park. It is an experience full of interest and pleasure. There are many canyons, and many ruins in

each canyon. There are ruins yet unexplored. There are several mounds, like that under which Sun Temple was discovered, yet unearthed.

EXPLORATION OF THE MESA VERDE

Two herdsmen, Richard and Alfred Wetherill, while hunting lost cattle one December day in 1888, discovered these ruins. Coming to the edge of a small canyon, they saw under the overreaching cliffs of the opposite side, apparently hanging above a great precipice, what they thought was a city with towers and walls. They were astonished beyond measure—and, indeed, even the expectant visitor of to-day involuntarily exclaims over the beauty of the spectacle.

Later they explored it and called it Cliff Palace—an unfortunate name, for it was not a palace at all, but a village with 200 rooms for family living, with 22 kivas, or sacred rooms, for worship. Later on they found another similar community dwelling, which once sheltered 350 inhabitants. This they called Spruce Tree House, because a large spruce tree grew near it. These names have remained.

Other explorers followed and many other ruins were found. This is not the place to name or describe them, but it may be said that here may be seen the oldest and most fully realized civic-center scheme in America. City planning, of which we hear so much now, as if it were a new idea, began in America many centuries ago under the cliffs of the Mesa Verde.

Antiquities are not the only attractions in the Mesa Verde National Park. Its natural beauties should not be overlooked. In winter it is inaccessible on account of the deep snows; in some months it is dry and parched, but in June and July, when rains come, vegetation is in full bloom, the plants flower, and the grass grows high in the glades; the trees put forth their new green leaves. The Mesa Verde is attractive and full of interest for those who love the unusual and picturesque of mountain scenery.

VIII

THE GLACIER NATIONAL PARK

Special Characteristics: Unsurpassed Romantic Scenery; 250 Lakes of Particular Beauty

THE Glacier National Park is so named because in the hollow of its rugged mountain tops lie more than 60 small glaciers, the remainders of ancient monsters which once covered all but the highest mountain peaks. It is in northwestern Montana right up against the Canadian boundary line, from which, on the map, it appears to

hang down like a boy's pocket full of the sort of things boys usually carry there. It is a richly colored land of gigantic cirques, ruggedly modeled mountains, enormous twisting glacier-scooped valleys, precipices thousands of feet high, innumerable rushing streams, and hundreds of lakes of unusual romantic beauty. Though all the national parks have these general features in addition to the ones which differentiate each from the other, the Glacier National Park possesses them in unusual abundance and especially happy combination. In fact, the almost sensational massing of these scenic features is one of the elements of its marked individuality.

Its geological history is identical with that of the Canadian Rockies, but the region lies in a much older rock formation. There is



PHOTOGRAPH BY KISER

LAKE McDONALD, GLACIER NATIONAL PARK

no other scenic area in the world to compare it with except the far less colorful, much snowier, and much less accessible Canadian Rockies. In richness of beauty it stands alone.

A ROMANCE OF GEOLOGY

How nature made this remarkable area far back in the dim ages long before man is a stirring story.

In an age of the earth's making which some geologists estimate at 80,000,000 years ago, before the Continent of North America had emerged in its present outlines from the sea, the shales which now loom so loftily in Glacier National Park were deposited as sediments in the waters. Over these muds thick beds of ooze solidified into limestones, and over the limestones more sediments deposited and turned to shales. It is these very strata, now hardened into rocks, that streak so picturesquely the sides of Glacier precipices thousands

of feet above us. The story of their elevation from deep-sea bottoms to these giddy heights is a romantic chapter in the making of America.

The earth has assumed its present proportions through the settling of its masses, and this settling caused great internal pressures.

Often the earth's skin has broken as the skin of the squeezed orange breaks; and that is what must have happened where Glacier National Park now lies. The bottom of the sea, under the enormous pressure against its sides and from below, gradually rose and became dry land.

Then the land at this point, probably because it was pushed hard by the contracting land masses on both sides of it, rose in long irregular wavelike masses, forming mountains. Then, when the rock could no longer stand the awful strain, it cracked, and one edge was thrust upward and over the other edge and settled into its present position.

The edge that was thrust over the other was thousands of feet thick. It crumbled into peaks, precipices, and gorges.

Upon these mountains and precipices the snows and the rains of uncounted centuries have since fallen, and the ice and the waters have worn and carved them into the area of distinguished beauty that is to-day the Glacier National Park.

But mark this: When the western edge of the earth's cracked skin overthrust the eastern edge, it brought its bottom surface over and on top of the eastern edge; and this bottom surface was the oldest sedimentary rock known, the very same strata of mud and limestone ooze which were deposited in the sea 80,000,000 years ago. And mark this also, that the erosion of the years following has washed away all the deposits of the later geological ages that lay on the top of these strata, so that this ancient rock here lies fully exposed in all the glory of its greens and reds and grays, and all the fantastic carvings of the countless years. Of course, the pressures which made the earth's skin rise and buckle and break made the Rocky Mountains, which at this point carry the Continental Divide. It is the same process which has made most of the mountain systems throughout the world, though there are few overthrusts so great as Glacier's.

The fantastic carving of Glacier National Park was principally the work of glaciers in the soft rock. Three times did great ice sheets, wooed south by falling temperatures, descend upon this region to dig the mighty cirques and scoop the immense valleys, and, between these visitations and since the last, frost and rain have chipped and washed and polished. Eating backward into the rocks from both sides, the glaciers nearly met a thousand times, leaving a

land of enormous hollows separated by gigantic walls twisting and winding in all directions.

By these processes during uncountable years nature has created and decorated this marvelously beautiful region for our enjoyment to-day.

SCENES OF EXQUISITE BEAUTY

To picture to yourselves this region, imagine a chain of very lofty mountains twisting about like a worm, spotted everywhere with snow fields and bearing glistening glaciers in 60 or more hollows. Imagine these mountains crumbled and broken on their east sides into precipices sometimes 3,000 or 4,000 feet deep and flanked everywhere by castellated walls, lesser peaks, and tumbled



Photograph by Hilenran

TWO MEDICINE LAKE FROM OUTLET, GLACIER NATIONAL PARK

mountain masses of smaller size in whose hollows lie the most beautiful lakes you have ever dreamed of.

Down from the Continental Divide descend 19 principal valleys, 7 on the east side and 12 on the west. Of course there are very many smaller valleys tributary to each of these larger valleys. Through these valleys run the rivers from the glaciers far up on the mountains.

PURCHASED FROM THE INDIANS

Many of these valleys are not yet thoroughly known. It is possible that some of them have never been even entered unless by Indians. The great Blackfeet Indian Reservation, one of the many tracts of land set apart for the Indians still remaining in this country, adjoins

the Glacier National Park on the east. Northward the park adjoins the Waterton Lakes Park in Canada.

There are 250 known lakes. There may be small ones in the wilder parts which white men have not yet even seen.

This region was not visited by white men till 1853, when a Government engineer, exploring for a route to the Pacific Ocean, ascended one of the creeks by mistake and returned when he found that no railroad could be built there. The next explorers were engineers who went in to establish the Canadian boundary line in 1861.

In 1890 copper was found and there was a rush of prospectors. In 1896 Congress bought the land east of the Continental Divide from the Blackfeet Indians, but there was not enough copper to pay for the mining. After that few persons except big-game hunters went there till 1910, when it was made a national park.

There are now several excellent hotels and several chalets on the east side. The west side is wonderfully beautiful, too, and a hotel and chalets are found there also.

There are a few good roads for automobiles and many miles of trail for walking and horseback riding. A railroad touches its southern boundary.

IX

THE ROCKY MOUNTAIN NATIONAL PARK

Special Characteristics: Continental Divide; Peaks 11,000 to 14,255 feet altitude; Heart of the Rockies; Readable Records of Glacial Period

THE Rocky Mountain National Park is in Colorado, about 70 miles by road or rail northwest of Denver. Find Longs Peak on a good map and you will have the center of the 401 square miles of snow-topped mountains which constitute the park.

These mountains are part of the Continental Divide, which is the name given to the irregular line of highest land running north and south through North America which divides the waters flowing eastward into the Atlantic Ocean from those flowing westward into the Pacific. For this reason the people of Colorado call their mountains the crest of the continent.

This national park is certainly very high up in the air. The summer visitors who live at the base of the great mountains, principally at the beautiful eastern gateway, a little valley town of many hotels, which is called Estes Park, are 7,600 feet, or a mile and a half, above the level of the sea; while the mountains rise precipitously nearly a mile, and sometimes more than a mile, higher still. Longs Peak, the biggest of them all, rises 14,255 feet above sea level, and most of the other mountains in the Snowy Range, as it is sometimes called, are more than 12,000 feet high; several are nearly as high as Longs Peak.

AT TIMBER LINE

The valleys on both sides of this range and those which penetrate into its recesses are dotted with lovely parklike glades clothed in a profusion of glowing wild flowers and watered with cold streams from the mountain snows and glaciers. Forests of pine and silver-stemmed aspen separate them. Timber line is more than 11,000 feet above sea level, and up to that point the slopes are covered thick and close with spruce and fir, growing very straight and very tall.

Just at timber line, where the winter temperature and the fierce icy winds make it impossible for trees to grow tall, the spruces lie



Courtesy Denver Tourist Bureau

LILY PADS ON LAKE IN WILD BASIN

flat on the ground like vines, and presently give place to low birches which in their turn give place to small piney growths and finally to tough straggling grass, hardy mosses, and tiny alpine flowers. Grass grows in sheltered spots even on the highest peaks, which is fortunate for the large curve-horned mountain sheep which seek these high open places to escape their special enemies, the mountain lions.

Even at the highest altitude gorgeously colored wild flowers grow in glory and profusion in sheltered gorges. As late as September large and beautiful columbines are found in the lee of protecting masses of snow banks and glaciers.

Above timber line the bare mountain masses rise from 1,000 to 3,000 feet, often in sheer precipices. Covered with snow in fall, winter, and spring, and plentifully spattered with snow all summer long, the vast, bare granite masses, from which, in fact, the Rocky Mountains got their name, are beautiful beyond description. They are rosy at sunrise and sunset. During fair and sunny days they show all shades of translucent grays and mauves and blues. In some lights they are almost fairylike in their exquisite delicacy. But on stormy days they are cold and dark and forbidding, burying their heads in gloomy clouds, from which sometimes they emerge covered with snow.

Often one can see a thunderstorm born on the square granite head of Longs Peak. First, out of the blue sky a slight mist seems to gather. In a few moments, while you watch, it becomes a tiny cloud. This grows with great rapidity. In five minutes, perhaps, the mountain top is hidden. Then, out of nothing apparently, the cloud swells and sweeps over the sky. Sometimes in 15 minutes after the first tiny fleck of mist appears it is raining in the valley and possibly snowing on the mountain. In half an hour more it has cleared.

Standing on the summits of these mountains the climber is often enveloped in these brief-lived clouds. It is an impressive experience to look down upon the top of an ocean of cloud from which the greater peaks emerge at intervals. Sometimes the sun is shining on the observer upon the heights while it is raining in the valleys below it. It is startling to see lightning below you.

ACCESSIBILITY

One of the striking features of the Rocky Mountain National Park is the easy accessibility of these mountain tops. One may mount a horse after early breakfast in the valley, ride up Flattop to enjoy one of the great views of the world, and be back for late luncheon. The hardy foot traveler may make better time than the horse on these mountain trails. One may cross the Continental Divide from the hotels of one side to the hotels of the other between early breakfast and late dinner, or motor between these points via the Fall River Road in four hours.

In fact, for all-round accessibility there surely is no high mountain resort of the first order that will quite compare with the Rocky Mountain National Park. Three railroads to Denver skirt its sides, and Denver is only 24 hours by train from St. Louis and Chicago.

ROCKY MOUNTAIN SHEEP

This range was once a famous hunting ground for large game. Lord Dunraven, the English sportsman, visited it yearly to shoot its deer, bear, and bighorn sheep, and acquired large holdings by purchase of homesteading and squatters' claims, much of which was reduced in the contests that followed. Now that the Government has made it a national park, the protection offered its wild animals is making it a successful wild-animal refuge.

These lofty rocks are the natural home of the celebrated Rocky Mountain sheep or bighorn. This animal is much larger than any



Courtesy Denver Tourist Bureau

VIEW FROM CONTINENTAL DIVIDE IN ROCKY MOUNTAIN NATIONAL PARK

domestic sheep. It is powerful and wonderfully agile. When fleeing from enemies these sheep, even the lambs, make remarkable descents down seemingly impossible slopes. They do not land on their curved horns, as many persons declare, but upon their four feet held close together. Landing on some near-by ledge, which breaks their fall they immediately plunge again downward to another ledge, and so on till they reach good footing in the valley below. They ascend slopes surprisingly steep. They are more agile even than the celebrated chamois of the Swiss Alps, and are larger, more

powerful, and much handsomer. To watch a dozen or more mountain sheep making their way along the volcanic flow which constitutes Specimen Mountain in the Rocky Mountain National Park is a sight not easily forgotten.

LONGS PEAK AND THE GLACIER RECORDS

The prominent central feature of the Rocky Mountain National Park is Longs Peak. It rears a square-cornered, boxlike head well above the tumbled sea of surrounding mountain tops. It has, unlike most great mountains, a distinct architectural form. Standing well to the east of the range at about its center, it suggests the captain of a white-helmeted company; the giant leader of a giant band. It is supported on four sides by mountain buttresses, suggesting the stone buttresses of a central cathedral spire. From every side it looks the same, yet remarkably different. One does not know Longs Peak until he has seen it from every side, and then it becomes to him not a mountain mass but an architectural creation.

For many years Longs Peak was considered unscalable. But at last a way was found through an opening in perpendicular rocks called, from its shape, the Keyhole, out upon a steep slope leading from near its summit far down to a precipice upon its west side. The east side of Longs Peak is a nearly sheer precipice almost 2,000 feet from the extreme top down to Chasm Lake, which was the starting point of a gigantic glacier in times long before man. Chasm Lake, which is reached by trail from the valley, is one of the wildest lakes in nature. It is frozen 11 months of the year.

There is no region in America where glacial records of such prominence are more numerous and more easily reached and studied than in the Rocky Mountain National Park. The whole country has been fantastically cut and carved by gigantic glaciers of the prehistoric past. Their ancient beds, now grown with forests, their huge moraines, their cirques, or starting places, are, next to the vast mountains themselves, the most prominent features of the region.

The Fall River Road offers one of the most attractive and impressive scenic automobile trips in the country. It crosses the Continental Divide within the Rocky Mountain National Park and reaches an altitude of 11,797 feet.

The trip starts from Denver, goes through the Rocky Mountain National Park, crosses the Continental Divide, reaches Grand Lake, crosses the Continental Divide again at Berthoud Pass, traverses the Denver Mountain Parks, and returns to Denver, having completed without any duplication 240 miles of comfortable travel through magnificent country, full of interest and variety.

X

THE HAWAII NATIONAL PARK

Special Characteristics: Large Volcanoes, Two Active, Including the Kilauea Lake of Fire

THE Hawaiian Islands are a land of coral reefs, tropical palms and flowers, pineapples and sugar-cane, midday siestas, rainbows, music, earthquakes and volcanic violence. They have a history which is a romance. Their very mention evokes visions of girls dancing under tropical stars to the ukulele. They possess the fourth largest volcanic crater in the world, the largest active volcano, and a lake of turbulent sulphurous fire, which fills the beholder with awe.

It was not the gentle poetic aspects of the Hawaiian Islands which led Congress to create a national park there, though these form its romantic contrasted setting. It was the extraordinary volcanic exhibit, that combination of thrilling spectacles of Nature's colossal power, which for years has drawn travelers from the four quarters of the earth. The Hawaii National Park includes the summits of three volcanoes of world celebrity—Haleakala, on the island of Maui, and Mauna Loa and Kilauea, on the island of Hawaii.

There are 12 islands in all, 8 of which are hospitable enough for habitation. They rose from the ocean's bottom in a series of submarine eruptions. Coral growths have enlarged and enriched them since. Kauai was the first island to develop habitable conditions, and those to its southeast followed in order. Hawaii, the youngest, is still in the building. Dead Haleakala on the island of Maui has been inactive for centuries.

HALEAKALA

The popular translation of the name Haleakala is "The House of the Sun"; literally the word means "The house built by the sun." The volcano is a monster of more than 10,000 feet, which bears upon its summit a crater of a size and beauty that makes it one of the world's show places. This crater is 8 miles long by 3 miles wide. Its surrounding walls rise 2,000 feet. Its broad, rolling, rainless, sandy floor is decorated with plants famous under the name of silver swords; yuccalike shrubs 3 or 4 feet high, whose drooping filaments of bloom gleam like polished stiletos. From this great gray floor within its lava rim rise, to a height of several hundred feet, 13 volcanic cones. "It must have been awe inspiring," writes Castle, "when its cones were spouting fire, and rivers of scarlet molten lava crawled along the floor." That the crater was left in all its beauty

is due to the fact that enormous side vents drained the fires from below.

Sunrise and sunset are the magic hours when the immense bowl and its cratered cones catch a hundred fleeting tints to mingle with their silver. Midnight and moonlight parties climb the mountain to see the sunrise glories, or make the trip in the afternoon in order to have the additional enjoyment of the wonder of the sunset. Visitors return loquacious with the myriad charms of the islands, but silent about Haleakala's morning and evening splendor; it baffles speech. Sometimes at the sunset hour is seen the Brocken specter. The lowering sun throws upon the rising mists the shadow of the watcher upon the rim and encircles it with a rainbow frame.

MAUNA LOA

Upon the island of Hawaii, across 60 miles of water from Maui, another section of the national park incloses Mauna Loa, greatest of living volcanoes, and Kilauea's celebrated lake of fire. These are different volcanoes, but so huge has grown Mauna Loa, the greater and the younger, that Kilauea has been nearly absorbed in his spreading flank.

Mauna Loa soars 13,675 feet. Its snowy dome shares with Mauna Kea, which rises even higher, the summit honors of the islands. From Hilo, the principal port of the island of Hawaii, Mauna Loa suggests the back of a leviathan, its body hidden in the mists. The way up, through forests of ancient mahogany and tangles of giant tree fern, then up brilliantly colored lava slopes, is one of the inspiring tours in the mountain world. The summit crater, Mokuaweoweo, 3 miles long by $1\frac{1}{2}$ miles wide, is as spectacular in action as that of Kilauea.

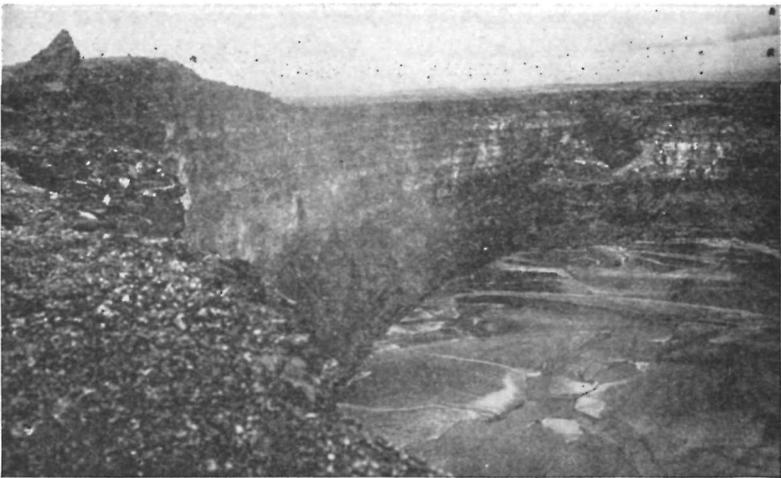
This enormous volcanic mass has grown of its own output in comparatively a short time. For many decades it has been extraordinarily frequent in eruption. Every 5 or 10 years it gets into action with violence, sometimes at the summit, oftener of recent years since the central vent has lengthened, at weakened places on its sides. Few volcanoes have been so regularly and systematically studied.

KILAUEA

The most spectacular exhibit of the Hawaii National Park is the lake of fire in the crater of Kilauea, although at times this lake has disappeared.

Kilauea is unusual among volcanoes. It follows few of the popular conceptions. Older than the towering Mauna Loa, its height is only 4,000 feet. Its lavas have found vents through its flanks, which

they have broadened and flattened; doubtless its own lavas have helped Mauna Loa's to merge the two mountains into one. Its crater is not bowl shaped. From the middle of a broad flat plain, which really is what is left of the ancient great crater, drops a pit with vertical sides within which boil its lavas. This pit, the lake of fire, is Halemaumau, commonly translated "The House of Everlasting Fire." Since 1790, when it destroyed a native army, until 1924, it ejected neither rocks nor ashes. In September, 1923, the lake of lava suddenly disappeared, but it gradually returned until by December the pit contained a 50-acre lake of seething lava. Lava geysers traveling across its surface sent up incandescent sprays 150 feet into the air. This brilliant display continued for two months,



Photograph by Tai Sing Loo

HALEMAUMAU, THE FIRE-PIT OF KILAUEA CRATER, HAWAII NATIONAL PARK

and then, with the crater nearly full, a large dome slowly formed on the lake. This dome burst with a roar, sending large sheets of lava many feet into the air. The lake again disappeared and crumbling masses of rock fell into the smoking pit, choking the vents through which the volcanic gases had escaped. A few months later, when the volcanic gases unexpectedly returned, the vents were cleared by tremendous explosions hurling ashes for miles into the air, and red-hot boulders weighing many tons were hurled half a mile away. During the 3-week period of explosive eruptions the crater enlarged to four times its former size, the opening now being 190 acres in area and 1,200 feet deep.

Six weeks later, when all was again normal, a roaring geyser appeared at the bottom of the pit, sending up a steady spray of lava 200 feet high, building up a small cinder cone, and forming a 10-acre

lava lake on the floor of the pit. After two weeks' brilliant display this fountain subsided and the volcano became dormant. In July, 1927, a similar display lasted for two weeks, and the following January there was a return of activity for one night only. That the fires are ever smoldering is shown by the gas and vapor that rise continually from the depths, depositing sulphur. The lake of fire is expected again to reoccupy the pit as it did throughout the century preceding the explosive eruption of 1924.

Two miles and a little more from Halemaumau, on a part of the ancient crater wall, stands the Hawaiian Volcano Observatory, which is maintained by the Department of the Interior. One may approach the fiery pit through forests of mahogany, sandalwood, and giant tree fern; then across long stretches of hard lava congealed in ropes and ripples and strange contortions. Then the pit. The traveler reaches it suddenly. From its rim he looks perpendicularly down hundreds of feet into a cavity 3,000 by 3,500 feet in area. The spectacle is weird beyond description.

"The lake of fire," writes William R. Castle, "is a greenish yellow, cut with ragged cracks of red that look like pale streaks of stationary lightning across its surface. It is restless, breathing rapidly, bubbling up at one point and sinking down in another; throwing up sudden fountains of scarlet molten lava that play a few minutes and subside, leaving shimmering mounds which gradually settle to the level surface of the lake, turning brown and yellow as they sink."

It is an appalling spectacle at night.

Such is "The House of Everlasting Fire" to-day. But who can say what it will be a year or a decade hence? A clogging or a shifting of the vents 10,000 feet below sea level, and Kilauea's lake of fire may become again explosive. Who will deny that Kilauea may yet soar even above Mauna Loa? Stranger things have happened before this in the Islands of Surprise.

XI

THE LASSEN VOLCANIC NATIONAL PARK

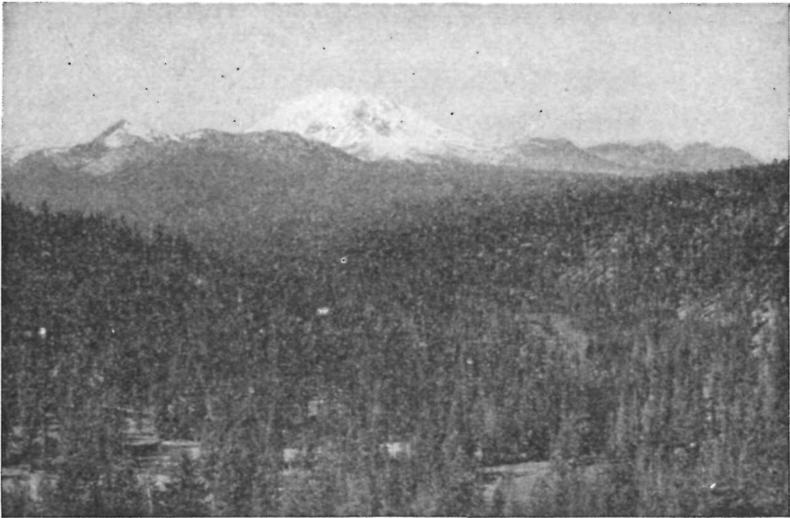
Special Characteristic: Volcano in Semiaction

ONE of the greatest fields of former volcanic activity in the world lies in the northwestern corner of the United States; its lavas cover a quarter of a million square miles and include large areas of the States of Washington and Oregon and portions of California, Nevada, Idaho, Montana, and Wyoming. Most of this great region now, of course, blooms with forest and prairie. The origin of its soil foundations is apparent only to the eye of the geologist except where the ice-clad cones of monster volcanoes rise from the Cascade Range, where Lassen Peak still vomits smoke and steam, and where

remnants of twisted lava emerge, as on Mount Washburn, above the forests of Yellowstone.

To-day Lassen Peak only is aggressive, and for this reason Congress has set it apart as a national park. Here alone within the borders of the United States may be seen and studied the phenomena of volcanic activity.

Lassen Peak is in northern California at the southern end of the Cascade Range. It had been quiet for 200 years. Then, at the end of May, 1914, as if precursor of the cataclysm of war so soon to follow, an explosion from its summit ushered in a new period of eruption which, feeble as compared with those of its violent past,



LASSEN PEAK, LASSEN VOLCANIC NATIONAL PARK

was magnificent as a spectacle and educationally typical of volcanism.

From the first explosion to the end of January, 1916, Lassen remained in more or less constant eruption. Within that period occurred 220 explosions, between which the volcano emitted day and night enormous quantities of smoke and steam.

The greatest of the explosions occurred May 22, 1915, nearly a year after the eruptions began. It was ushered in by the rising of a mushroom-shaped cloud of smoke to a height of 4 miles. Another interesting phenomenon of this explosion was the superheated gas blast which rushed down Lost Creek and Hat Creek Valleys during its continuance. For 10 miles it withered or destroyed every living thing in its path. Large trees were uprooted. Forests were scorched

to a cinder, spreading fires. Large snow fields were instantly turned to water and flooded the lower valleys in rushing tides. Fortunately summer visitors had been well warned.

Examination showed that this explosion had opened a new fissure extending 1,000 feet from the summit down the slope toward Chaos Crags, the old and the new craters, now joined in one of irregular shape, filled to the brim with lava, forming what geologists call a lid. After this great explosion activity declined rapidly.

The national park has great natural charm as well as scientific interest. The lava forms, ancient as well as modern, are fantastic and striking. Its fumaroles, its very hot springs, its lofty ragged peak, and twisted crater, its extremely interesting Cinder Cone, its minor vents, all have also a strange, almost uncanny, beauty. And these volcanic exhibits are set in an area of forests and ice-cold lakes and rushing trout streams, which add the enchantment of vivid contrasts.

XII

THE MOUNT MCKINLEY NATIONAL PARK

Special Characteristic: A Snow-Clad Mountain More Than 20,000 Feet High Rising From a Rolling Plateau, Peopled With Caribou and Mountain Sheep

THE highest mountain in North America, scenically speaking the highest in the world, together with an enormous expanse of rolling plateau on its north and west, was made a national park in 1917. Mount McKinley rises from the great Alaska range 20,300 feet above sea level. Down its southern and eastern slopes through a region of arctic sublimity flow glaciers of enormous size, but north and west its sides abruptly drop to grassy valleys only 3,000 feet in altitude. From these valleys, some of which also have impressive glaciers, visitors to the national park may look up 17,000 feet of mountain, a spectacle greater by far than greets the eyes of those who climb into the lofty valleys of the Himalayas to see the several mountains there whose heights measured from sea level exceed McKinley's.

The caribou, with its enormous antlers, is a most picturesque animal, the American representative of the reindeer family. Herds of 1,000 to 1,500 roam the great plateau. Bands of mountain sheep varying from 20 to 100 are seen in the hills along the trail. Moose also frequently invade the region from the Tanana lowlands on the north, and the great Alaska brown bear is not infrequently met, even within the belt of perpetual snow.

It is this great treeless plateau, with its rich mosses and grasses, its sudden prominences rising like islands, its sweeping ranges of low hills, its lakes, its innumerable rushing streams, its fertile flow-

tered valleys and friendly animals, its long winding approachable glaciers, and its background of the Alaska Range and Master Mountain, which is the Mount McKinley National Park. It is an area unlike any other national park; its charm and inspiration are all its own.

Mount McKinley is two-headed. It is the South Peak which is the summit. From the North and the South Peaks, supporting them like ice buttresses, descend northward long ridges which merge in the foothills, and between these ridges flow from the divide between



Photograph by Alaska Railroad

MOUNT MCKINLEY, THE HIGHEST MOUNTAIN IN NORTH AMERICA AND,
SCENICALLY SPEAKING, THE HIGHEST IN THE WORLD

the peaks a series of great glaciers which constitute the only known passage to the summit.

Various attempts have been made to climb Mount McKinley but only one has been authenticated, that of Archdeacon Stuck and Harry P. Karstens. In the spring of 1913 they ascended the glaciers on the north side and reached the summit on that rarest of occasions at the top of McKinley, a perfect day.

Credit should be given Judge Wickersham, of Alaska, as the pioneer to make the attempt. His effort was made in 1903.

One other ascent must be mentioned to complete the record, that of the North Peak in 1910 by a party of adventurous prospectors headed by Thomas Lloyd; but Lloyd himself did not go all the way.

It is probable that trying for the summit will not be one of the popular amusements of the McKinley National Park, but when roads, trails, and public camps make this wonderland comfortably accessible, many will find unique pleasure and inspiration in trips part way up the glaciers into the white land of the avalanche.

XIII

THE GRAND CANYON NATIONAL PARK

Special Characteristic: A Highly Colored Gorge 1 Mile Deep and 4 to 18 Miles Across; 56 of Its 217 Miles of Length Within the Park

THE rain falling in the plowed field forms rivulets in the furrows. The rivulets unite in a muddy torrent in the roadside gutter. With succeeding showers the gutter wears an ever-deepening channel in the soft soil. With the passing season the gutter becomes a gully. Here and there, in places, its banks undermine and fall in. Here and there the rivulets from the field wear tiny tributary gullies. Between the breaks in the banks and the tributaries, irregular masses of earth remain standing, sometimes resembling mimic cliffs, sometimes washed and worn into mimic peaks and spires.

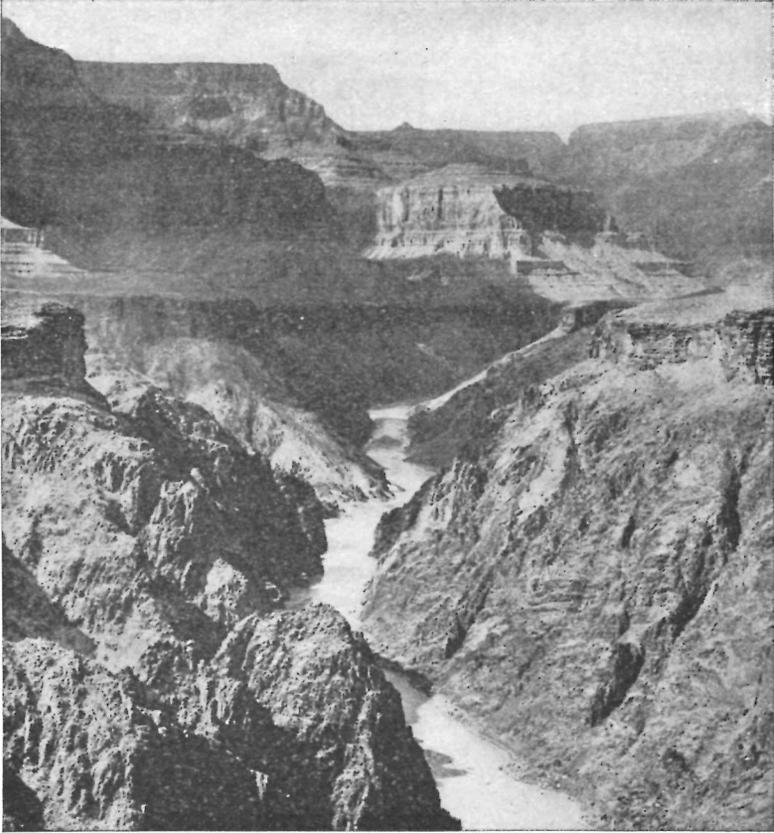
Such roadside erosion is familiar to us all. A hundred times we have idly noted the fantastic water-carved walls and minaretted slopes of these ditches. But seldom, perhaps, have we realized that the muddy roadside ditch and the world famous Grand Canyon of the Colorado are, from nature's standpoint, identical; that they differ only in soil and size.

The arid States of our great Southwest constitute an enormous plateau or table-land from four to eight thousand feet above sea level. It is a plateau of sun-baked conglomerate and loose soils from which emerge occasional mountain masses of more or less solid rock. Rain seldom falls, but in winter the snows lie heavy in the mountains. In the spring the snows melt and torrents of water wear temporary beds in the loose soils.

In ages before history the Colorado River probably flowed upon the surface of this lofty table-land. But, like the roadside ditch, it gradually wore an ever-deepening channel. In time, as with the roadside ditch, the banks caved in and the current carried the soil away. The ever-busy chisels of the untiring winds have carved and polished through untold centuries.

AN UNPARALLELED SPECTACLE

To-day the Colorado flows through a series of self-dug canyons 217 miles in length, a mile deep, and in some places more than a dozen miles across the top. The sides of these canyons are carved and fretted beyond description, almost beyond belief; and the strata of rock and soil exposed by the river's excavations are marvelously colored. The blues and grays and mauves and reds are second in



Photograph by A. J. Baker

THE COLORADO RIVER, GRAND CANYON NATIONAL PARK

glory only to the canyon's size and sculpture. The colors change with every changing hour. The morning and the evening shadows play magician's tricks.

That portion of the canyon which affords the finest spectacle was created a national park in February, 1919. It is situated in north-eastern Arizona and is called the Grand Canyon National Park. It constitutes one of the most astonishing phenomena in nature and one of the stupendous sights of the world.

The Colorado River is joined, in southern Utah, by the Green River. The Colorado drains the western Rockies in Colorado. The Green rises in northern Utah and drains also a corner of Wyoming. Together they gather the waters of 300,000 square miles of mountains. "Ten million cascade brooks," writes J. W. Powell, "unite to form a hundred rivers beset with cataracts; a hundred roaring rivers unite to form the Colorado, a mad, turbid stream."

Southwest from Utah, the Colorado passes into Arizona through the noble Marble Canyon and swings west between the mile-high walls of the mighty Grand Canyon. Thence, emerging into more open country, it skirts Nevada and California, cuts through Mexico, and deposits its vast burden of mud in the Gulf of California.

MOSAIC OF DESCRIPTION

Who can describe the Grand Canyon?

"More mysterious in its depth than the Himalayas in their height," writes John C. Van Dyke, "the Grand Canyon remains not the eighth but the *first* wonder of the world. There is nothing like it."

"Looking down more than half a mile into this 15-by-218-mile paint pot," writes Joaquin Miller, "I continually ask: Is any 50 miles of Mother Earth that I have known as fearful, or any part as fearful, as full of glory, as full of God?"

"To the eye educated to any other," writes Charles Dudley Warner, "it may be shocking, grotesque, incomprehensible; but those who have long and carefully studied the Grand Canyon do not hesitate to pronounce it by far the most sublime of all earthly spectacles."

"The Grand Canyon of Arizona fills me with awe," writes Theodore Roosevelt. "It is beyond comparison—beyond description; absolutely unparalleled throughout the wide world."

"A pageant of ghastly desolation and yet of frightful vitality, such as neither Dante nor Milton in their most sublime conceptions ever even approached," writes William Winter. "Your heart is moved with feeling that is far too deep for words."

"It has a thousand different moods," writes Hamlin Garland. "No one can know it for what it is who has not lived with it every day of the year. It is like a mountain range—a cloud to-day, a wall of marble to-morrow. When the light falls into it, harsh, direct, and searching, it is great, but not beautiful. The lines are chaotic, disturbing—but wait! The clouds and the sunset, the moonrise and the storm will transform it into a splendor no mountain range can surpass. Peaks will shift and glow, walls darken, crags take fire, and gray-green mesas, dimly seen, take on the gleam of opalescent lakes of mountain water."

"It seems a gigantic statement for even nature to make all in one mighty stone word," writes John Muir. "Wildness so Godful,

cosmic, primeval, bestows a new sense of earth's beauty and size * * * But the *colors*, the living, rejoicing *colors*, chanting, morning and evening, in chorus to heaven! Whose brush or pencil, however lovingly inspired, can give us these? In the supreme flaming glory of sunset the whole canyon is transfigured, as if all the life and light of centuries of sunshine stored up in the rocks was now being poured forth as from one glorious fountain, flooding both earth and sky."

DIFFICULT TO COMPREHEND

Even the most superficial description of this enormous spectacle may not be put in words. The wanderer upon the rim overlooks a thousand square miles of pyramids and minarets carved from the painted depths. Many miles away and more than a mile below the level of his feet he sees a tiny silver thread which he knows is the giant Colorado. He is numbed by the spectacle. At first he can not comprehend it. There is no measure, nothing which the eye can grasp, the mind fathom.

It may be hours before he can even slightly adjust himself to the titanic spectacle, before it ceases to be utter chaos, and not until then does he begin to exclaim in rapture. And he never wholly adjusts himself, for with dawning appreciation comes growing wonder. Comprehension lies always just beyond his reach. But it will help to descend one of these trails which zigzag down the precipitous cliffs to the river's muddy edge.

The Grand Canyon was first reported to the civilized world by the early Spanish explorers in 1540. It was first described in 1851 by the Sitgreaves Expedition. The War Department explored the navigable waters from the south in 1858, but stopped at the foot of the canyons.

MAJOR POWELL'S FIRST EXPLORATION

No exploration of the Grand Canyon was made until 1869, when Maj. J. W. Powell, who afterwards became Director of the United States Geological Survey, made a perilous passage with a party of nine men in four small boats. This exploration constitutes one of the most romantic adventures in American history. Until then it was unknown.

"Yet enough had been seen to foment rumor," Major Powell wrote in his report to the Smithsonian Institution, "and many wonderful stories have been told in the hunter's cabin and prospector's camp. Stories were related of parties entering the gorge in boats and being carried down with fearful velocity into whirlpools, where all were overwhelmed in the abyss of waters; others, of underground passages for the great river, into which boats had passed never to be seen again. It was currently believed that the river was lost under the rocks for

several hundred miles. There were other accounts of great falls whose roaring music could be heard on distant mountain summits."

The passage, while it developed none of these reported dangers, was sufficiently perilous. Boats were repeatedly upset in the rapids, food was nearly exhausted, and the adventurers many times barely escaped destruction. Three men who deserted the party, terrified, climbed the walls only to be killed by Indians on the rim.

XIV

THE ACADIA NATIONAL PARK

Special Characteristics: A group of Granite Mountains Rising From an Island on the Atlantic Coast With Interesting Headlands on the Near-by Mainland

THE first national park in the East is an area of 18 square miles on Mount Desert Island, Me., and the adjoining mainland. It includes a group of low granite mountains abutting the sea, the only prominent elevation along the entire Atlantic coast of the United States. Formerly known as the Lafayette National Park, early in 1929 Congress changed its name to Acadia, as this latter word is of native origin, coming from an Indian word apparently describing the region. Early fishermen and traders visiting the area, before recorded explorations of the English and French on their return to Europe, referred to it as Acadia, the name later used by Longfellow.

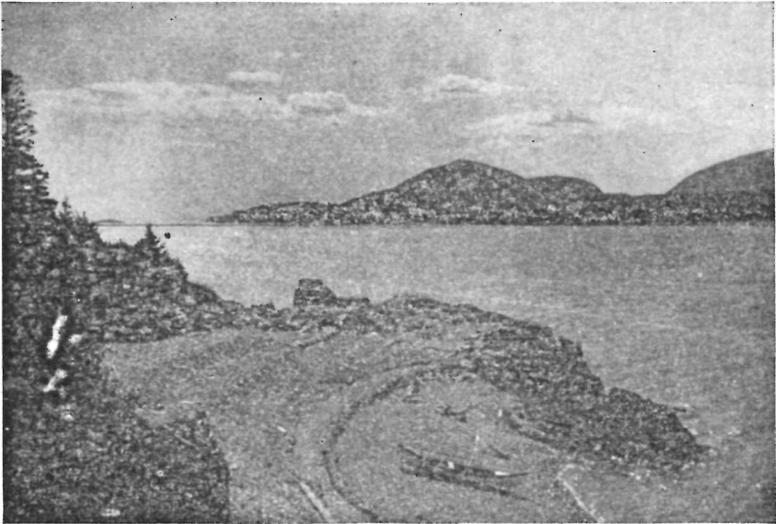
The Acadia National Park is not only a varied and beautiful exhibit of seacoast, mountain, and eastern forest—it is a monument to the public spirit of New England. These mountains, surrounded by thriving seashore resorts, had been in private ownership for centuries. The day was fast approaching when they would be utilized for summer homes. Foreseeing this, George B. Dorr, of Bar Harbor, Me., determined to acquire them as a gift to the people of the United States. He created a holding organization, to which he and Charles W. Eliot contributed their holdings, and set about to persuade other owners to do the same.

It took a dozen years of ceaseless effort to collect 5,000 acres, much of it by gift, some of it by purchase from funds collected from public-spirited persons. Then they presented it to the Nation, and it was made the Sieur de Monts National Monument. This was in 1915. In 1919 Congress made it the Lafayette National Park. Other contributions have been offered the Government and it is believed that ultimately the area of the park will be about 20,000 acres. Hardly a year passes without deeds to additional tracts of land for inclusion in the park being accepted by the United States.

Compared with the huge bristling peaks of the Rockies and the Sierra, the mountains of the Acadia National Park are low indeed. But they are no less beautiful, and they are characteristic of our East, as the Rocky Mountain and Sierran national parks are characteristic of our West. There are more than a dozen mountains

in the group, which is cut into two parts by a fine fiord called *Somes Sound*. Fresh-water lakes lie in the hollows. Forests of coast pines, cedars, and deciduous trees of many kinds border the lakes and mount the gray sides of the mountains. Innumerable shrubs and flowering plants decorate the forest aisles. The region is a wilderness typical of the noblest woodlands of the East.

Chief of all is the mingling of mountain and sea. The waves lash their abrupt rock-bound heights, beating hollows in their foundations, undermining the granite. From the mountain tops gorgeous views are revealed of sea and sound, island and wooded mainland. The air is now fragrant with the breath of the forest, now



Photograph by Herbert W. Gleason

VIEW ACROSS FRENCHMANS BAY, ACADIA NATIONAL PARK

charged with the savor of the sea. The visitor has his choice of many pleasures. He may vary his days on the mountains with salt-water bathing, boating, sailing, and fishing. He may walk and motor; the park is surrounded by a fine waterside drive; roads cross it along the shores of *Somes Sound*. There are many hotels in *Bar Harbor* and other neighborhood resorts.

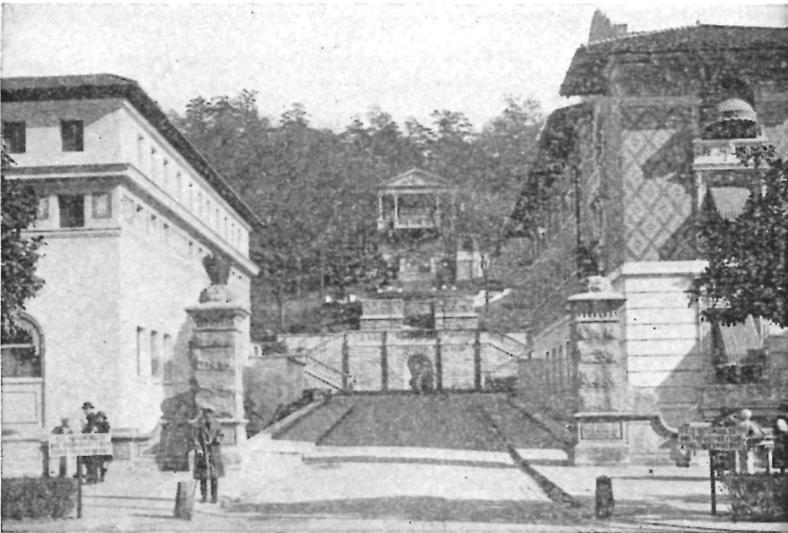
Besides nature's rich endowment, history adds its charm. This was the first land within the United States which was reached by *Champlain*; it was in 1604. The first European settlement in America north of the Gulf of Mexico was here. The mountains bear names which memorialize its French and English occupations and its many associations with the romance of early days.

XV

THE HOT SPRINGS NATIONAL PARK

Special Characteristic: Medicinal Hot Springs

AS DIFFERENT, almost, as possible from the great scenic national parks which we have been considering, but in its own particular way as extraordinary as any of them, the Hot Springs National Park in the Ouachita Mountains of Arkansas must be accorded a distinguished place among American resorts of national character and ownership. The park is in one sense the oldest national park, having been created a special reservation in 1832, 40



Photograph by Eckler

ENTRANCE TO HOT SPRINGS NATIONAL PARK

years before the wonders of the Yellowstone first inspired Congress with the idea that scenery was a national asset deserving of preservation for the use and enjoyment of succeeding generations. It was given national park status by Congress in 1921.

No esthetic consideration was involved in this early act of national conservation. Congress was inspired only by the undoubted, but at that time inexplicable, power of these waters to alleviate certain bodily ills. The motive was to retain these unique waters in public possession in order that they should be available to all persons for all time at a minimum, even a nominal, cost.

The country is one of much beauty. Hot Springs Mountain, from whose sides flow the cleansing waters, is about 50 miles west by

south from Little Rock. Here, as early as 1804, began the settlement which has developed into the prosperous and growing city of Hot Springs. It is a resort city, made wealthy from the many thousands of visitors seeking health from the adjacent Government springs and pleasure in the high and beautiful neighborhood country with its excellent drives and woodland paths, its mountain and river views, its social gayeties, and its exceptional golf.

Adjoining the borders of the city at the mountain's foot lies the park, a tract of 927 acres inclosing all the 46 hot springs. Nine bath-houses are in the reservation and 10 more in the city, all under Government regulation. In the city are many hotels and boarding houses with a wide range of rates to meet all pocketbooks. The Department of the Interior has spent altogether more than a million dollars on the development of the park. The park contains, also, an Army and Navy hospital.

Tradition has it that the medicinal properties of the hot springs were known to the Indians long before the Spanish invasion. It is probable that they were known to De Soto, who died in 1542 less than a hundred miles away. It is tradition that Indian tribes warred for their possession but that finally a truce was made which enabled all tribes to avail alike of their waters.

Government analyses of the waters disclose more than 20 chemical constituents, and it is these or their combination to which is principally attributed the water's virtue in many diseased conditions.

XVI

THE ZION NATIONAL PARK

Special Characteristic: Vividly Colored and Fantastically Carved Sandstone Cliffs Bordering a Deep Valley

NOT many miles north of the Grand Canyon National Park the desert of southern Utah finds its most gorgeous expression in a deep canyon between sandstone cliffs of great height and vivid color. Here the famous Vermilion Cliff, whose brilliant red precipice brightens more than a hundred desert miles, joins the glistening White Cliff, another desert feature of celebrity, the white overlying the red. Here, too, sandstones and shales of many other hues unite in dazzling combination. The canyon of Mukuntuweap River, cutting vertically down 2,500 feet, displays these colors in many majestic and fantastically modeled masses.

The gorge has been known to the Mormons since the late fifties, and was first explored in 1862. The early pioneers, being deeply religious, named it Little Zion Canyon. In 1872 it was explored and described by members of the Powell Survey. In 1909 the area was, for scientific reasons, reserved as the Mukuntuweap National Monu-

ment. It was not until 1916 that its great scenic beauty became known outside the immediate locality. In 1918 the monument was enlarged and the name changed to Zion. Finally, on November 19, 1919, it was created the Zion National Park by act of Congress.

This gorgeous valley has about the same dimensions as the famous Yosemite Valley. Extraordinary as are the sandstone forms, the color is what most amazes. The gorgeous red of the Vermilion Cliff is the prevailing tint. Two-thirds the way up these marvelous walls and temples are painted gorgeous reds; then above the reds they rise in startling white. Sometimes the white is surmounted by a cap of vivid red, remains of another red stratum which once overlay all.



Photograph by George L. Beam

A HORSEBACK PARTY IN ZION NATIONAL PARK, ANGEL'S LANDING IN THE DISTANCE

The other colors are many and brilliant. The Vermilion Cliff rests upon 350 feet of even a more insistent red relieved by mauve and purple shale. That in turn rests upon a hundred feet of other variegated strata.

Through these successive layers of sands and shales and limestones, colored like a Roman sash, glowing in the sun like a rainbow, the Mukuntuweap River has cut its amazing valley.

Zion National Park is reached by an automobile ride of 62 miles from the railroad through a vividly colored sandstone country. Motorists driving their own cars can visit the park by a side trip of 35 miles from the Arrowhead Trail over excellent highway. The

entrance is between two gigantic stone masses of complicated architectural proportions which are appropriately named the East and West Temples.

The West Temple is the greatest of the mountains forming the walls of Zion Canyon, and is also one of the great monoliths of the world. From a stairway of many colors it springs abruptly 4,000 feet. Its body is red, and its upper third is white. The East Temple, which rises directly opposite, stands as a sky-line sentinel on the east side of the gorge.

Passing the gates the traveler stands in a canyon of nearly perpendicular sides more than half a mile deep, half a mile wide at the bottom, a mile wide from crest to crest, whose walls glow with color. On the west the Streaked Wall, carved from the White Cliff, is wonderfully eroded. Opposite is the Brown Wall, rich of hue, supporting three stupendous structures of gorgeous color, known as the Three Wise Men. Opposite these rise on the west the Three Patriarchs, Yosemite-like in form, height, and bulk but not in personality or color.

A mile beyond stands El Gobernador, the most remarkable monolith of the region. This mighty rock, better known as the Great White Throne, is a colossal truncated dome, mostly white or gray in color, with streaks of red throughout. The white crown is heavily marked in two directions, suggesting the web and woof of drapery. Directly opposite, a lesser monolith, nevertheless gigantic, is called Angels Landing. A natural bridge which is still in nature's workshop is one of the interesting spectacles of this vicinity. Its splendid arch is fully formed, but the wall against which it rests its full length remains, broken through in one spot only.

XVII

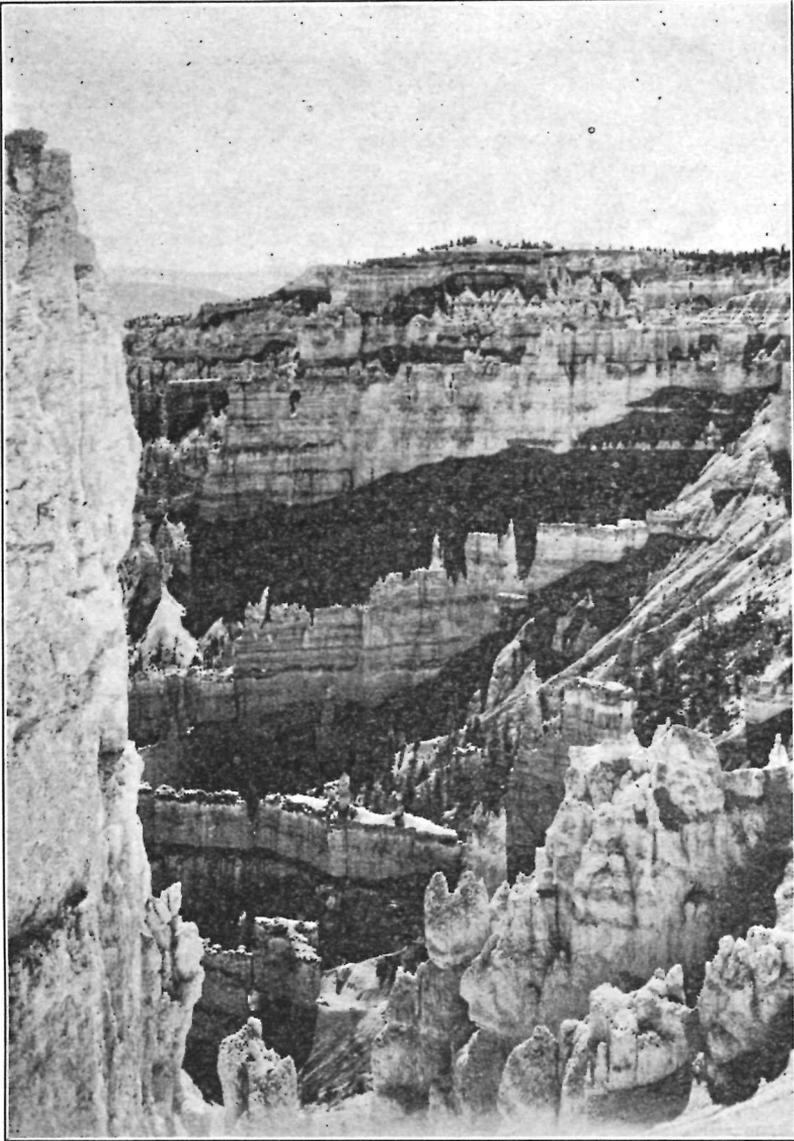
THE BRYCE CANYON NATIONAL PARK

Special Characteristic: Box Canyon Filled With Countless Array of Fantastically Eroded Pinnacles of Vivid Coloring

BRYCE CANYON, located in the same general desert region that produced the Grand Canyon and Zion, was established as the twentieth member of the national park system on September 15, 1928. Previous to this it had been a national monument for five years.

In reality Bryce is not a canyon, but rather an immense bowl or amphitheater cut into the top of the Paunsagunt Plateau to a depth of 1,000 feet. It is 3 miles long and 2 miles wide, and the space between the upper rims is filled with an almost endless variety of shapes and forms carved by the sculpturing forces of erosion. These fantastic carvings vie in interest with the brilliant exotic color that glows throughout. The top of the plateau is composed of white or pale lemon-colored sandstone, and along the irregular edges of the

canyon are steep slopes of this sandstone merging into the pinks and reds of the lower layers. It is out of these pinks and reds, sometimes streaked with lavender and brown, that the greater portion of the



SPIRES AND MINARETS OF BRYCE CANYON

curious shapes are cut, rising from the bottom of the canyon or clinging close to its sides. The taller formations are tipped with white or cream, but the greater number glow throughout with the

deeper colors of the canyon. It is a miracle of erosion, astounding in its beauty.

Always exquisite, sunset and sunrise bring added beauty to Bryce Canyon. In the light of the setting sun the colors shimmer and change with the lengthening shadows, finally fading from view as though a veil of mystery were drawn over it all. At sunrise it is if possible even lovelier. As the rays of rosy light shoot up into the sky, higher and brighter, a glorious spectacle is revealed. At one's feet the highest points are touched with light and cast long mauve shadows downward into the depths of the amphitheater. Suddenly the sun appears, seeming to roll over the edge of the plateau out into the world. Then Bryce is supremely beautiful. The topmost peaks of the towers and spirelike formations in the background intercept the sun's rays and glow as though each peak were lighted within by eternal fires. It is a superb sight, worth the loss of many hours' sleep.

XVIII

THE GRAND TETON NATIONAL PARK

Special Characteristic: Spectacular Teton Mountains, A Granite Uplift of Unusual Grandeur

THE Grand Teton National Park was created early in 1929. It is located about 11 miles south of the southern boundary of Yellowstone National Park. The Teton Mountains, its main feature, are granite, as contrasted with the volcanic mountains of the Yellowstone.

The Grand Teton Mountain group, scenic climax of the park, is one of the noblest in the world, and one of the few that can be described accurately as cathedrallike. Its great central spire is formed by the summit of the Grand Teton itself. On approaching this mountain group from the north, the visitor beholds a vast cathedral, built of granite and shaped by glaciers, of which the remnants are still at work. From the east and south the Grand Teton strikingly resembles the Matterhorn of the Alps. The elevation of this peak is 13,747 feet, while Mount Owen and Middle Teton, the next highest mountains of the park, rise to 12,910 and 12,769 feet, respectively.

Toward Jackson Hole the Teton Range presents one of the most precipitous mountain fronts on the continent, indeed in the world. Forty miles in length, it springs abruptly from Jackson Hole and only a few miles west of its base attains elevations of from 9,000 feet to nearly 14,000 feet above sea level. Thus most of the range is lifted above timber line into the realm of perpetual snow, and in its deeper

recesses small glaciers still linger. West of Jenny Lake the Tetons culminate in a central group of spires whose summits tower more than a mile above Jackson Hole. These are the mountains included in the Grand Teton National Park. The grandeur of the beetling gray crags, sheer precipices, and perennial snowfields is vastly enhanced by the total absence of foothills, and by contrast with the relatively flat floor of Jackson Hole.

In this park, as in Glacier, Yosemite, Rocky Mountain, and others, the glaciers of the ice age played the leading rôle in developing the extraordinary scenic features. Just as the streams now converge toward Jackson Hole, so in ages past glaciers moved down toward, and in many instances into, the basin from the highlands to the east,



© Crandall

CAMPING IN SIGHT OF THE TETONS

north, and west. Where Jackson Lake now is there undoubtedly lay a great, sluggish field of ice, probably fed largely from the northern end of the Teton Range but possibly having connections with a much larger ice mass in the Yellowstone Park region.

The principal lakes of the park—Leigh, Jenny, Bradley, Taggart, and Phelps, as well as Jackson Lake—are all inclosed in glacial moraines. They are exquisitely beautiful as they nestle in the forests at the foot of the Tetons and mirror the towering summits in their quiet waters. There are no lakes along the eastern border of the Jackson Hole basin because on this side none of the valley glaciers of the latest glacial stage extended far enough into the basin.

The visitor should climb a few hundred feet up the mountain side near Jenny Lake and look down on this superb array of lakes. From

this vantage point can be seen how each lake lies outside the mouth of a canyon, and how each occupies a basin formed by a crescent-shaped moraine, the points of which extend back to each side of the canyon. Each lake is filled to the rim, so that the water spills over at a low place and cascades down to the floor of Jackson Hole, where Cottonwood Creek, in passing, collects the streams one by one. Only Leigh and Jenny Lakes are accessible by automobile.

Jackson Lake, which must once have been the most charming and beautiful of all the lakes of this glorious wilderness region, was despoiled by the erection of a dam at its outlet, and because of its vast areas of dead trees and its unsightly shores it was not included in the park.

XIX

THE CARLSBAD CAVERNS NATIONAL PARK

Special Characteristic: Series of Connected Caverns, Believed to Be the Largest in the World, With Magnificent Limestone Decorations

THE Carlsbad Caverns National Park contains the largest series of underground caverns yet explored. Because of its magnitude and the beauty of its limestone caverns, the area was given national-park status in May, 1930. Formerly it had been designated a national monument under the administration of the Department of the Interior.

This underground wonder, 30 miles distant from the town of Carlsbad in southeastern New Mexico, consists of a series of lofty, spacious chambers and connecting corridors, with alcoves extending off to the sides, that are of remarkable beauty. Its limestone decorations excel those of any caves heretofore discovered.

The most impressive portion of the Carlsbad Caverns is the Big Room, an enormous chamber a mile and a half from the entrance. It is nearly 4,000 feet long, with a maximum width of 625 feet. At one place the ceiling rises to a height of 300 feet. In this room the limestone formations are superbly beautiful and of an infinite variety of sizes and shapes. The stalactites vary from almost needlelike proportions to huge chandeliers, and the stalagmites are equally varied, though of different contours. One group of unusually tall and graceful stalagmites resembles the totem poles of the Alaskan Indians and others are like snow-banked forests.

The most outstanding formation in this room is the Giant Dome, 62 feet high, 16 feet in diameter, with a striking resemblance to the Leaning Tower of Pisa. Scientists estimate the age of this great dome at 60,000,000 years.

Near by are the fountain basins, lined with masses of crystalline onyx marble, which remind one of the hot-springs formations of

Yellowstone National Park. The basins are decorated at the rim with crusts of onyx resembling lily pads, formed at the surface of the water in much the same way that ice forms around the edge of a pool.

Other interesting rooms, nearer the entrance, are the King's Palace and the Queen's Chamber. The former is almost circular in form,

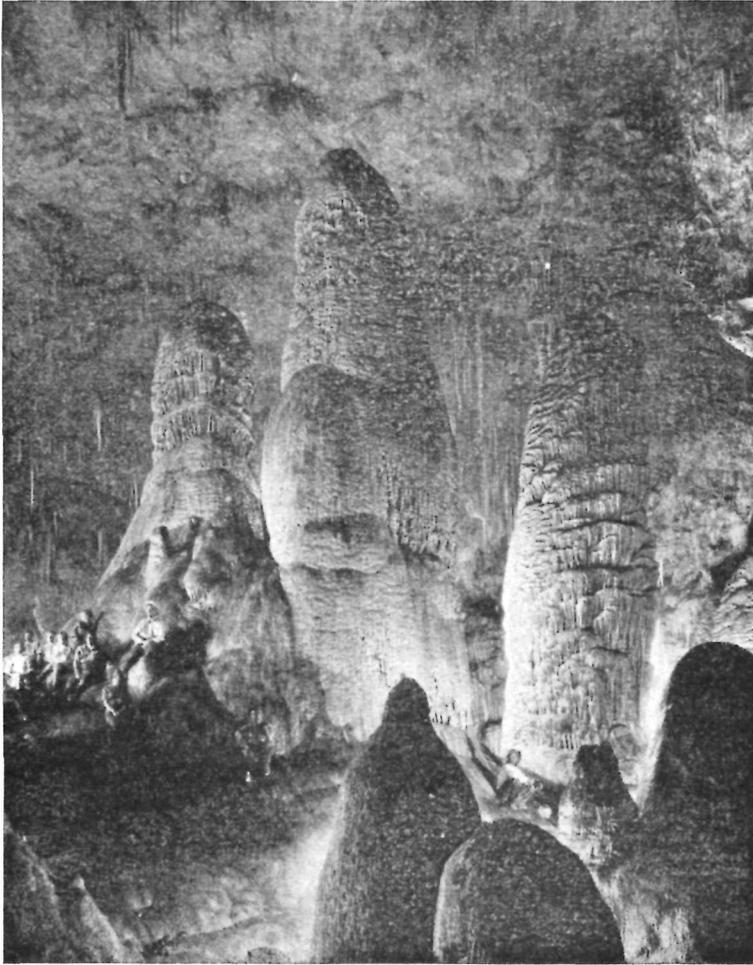


Photo by Davis

Carlsbad Caverns—Rear view of Twin Domes

and under the illumination of the electric lights is probably the most striking room in the entire cave system. In this portion of the caverns curtains and partitions of gleaming onyx, formed by deposition of lime carbonate from waters dripping from the roof, separate the chambers. In places the stalactites have grown together laterally to form the curtains. Some of these reach the floor, while shorter ones resemble a stage curtain partly raised. All through the caves these

curtains are encountered, some draped, others folded. Some are so delicate and translucent that a light placed behind them brings out faint tints of pink and tea rose.

Altogether 7 miles of the caverns have been made accessible to visitors through the construction of trails and stairways and the installation of an excellent flood-lighting system. Properly to cover this distance requires about six hours, with a half-hour stop for lunch in the depths of the earth. Other portions of the cave will be open to visitors as the trails and lighting system are extended.

Astounding as are the upper passages and chambers, with their millions of pendants hanging from the ceilings, their great columns and curtains, below them lies another vast subterranean apartment which equals, if it does not excel, that already familiar to visitors. Off to the sides also are passageways of exquisite beauty, differing greatly in type from the more accessible areas.

An interesting feature of the caverns to the adventurous mind is the fact that always beyond lies some region, probably of equal beauty, perhaps entirely new in type of decorations, waiting to be explored. The scientific explorations of the National Geographic Society during a period of six months covered about 21 miles, and four additional miles have been explored since then, part within the past year.

Of interest, also, are the bat flights from Carlsbad Caverns, which each evening during the summer may be seen for about two or three hours. About dusk these little animals, which during the day rest in a portion of the cave not reached by visitors, start coming out. At first only a few in number, they increase steadily until they form a black column, which seen from a distance, resembles smoke. It has been estimated that nearly 3,000,000 bats leave the cave on these nightly forays, always flying south as they come out. Early next morning they return, but not from the south. Somehow during their flights they must have made a big circle, for they invariably return from the north.

It was the "smoke" of the bats issuing from the natural opening to the cave which first attracted the attention of its discoverer, Jim White, a cowboy of the region. Accompanied by a Mexican boy, he made extensive explorations of the caverns, making possible his return by leaving behind him a trail of string. Later at odd times he conducted visitors into the area, and news of "Bat Cave," as it was then called, came to the attention of the General Land Office and then of the National Geographic Society, leading to the explorations which have made Carlsbad Caverns famous throughout the world.

Under the act of Congress making Carlsbad Caverns a national park, the President of the United States has authority to add to the park, by proclamation, surrounding lands up to a total of 193 square

miles additional. The surface boundaries of the original reservation took in only 719 acres, despite the fact that the caverns extend for miles underground.

An investigation will be made by the Department of the Interior to determine just how much of the authorized lands should be added to provide adequate surface protection to the caves, as well as broader surface developments needed in connection with the greatly increasing number of visitors each year.

The surface lands of the park give life to a profusion of the strange plants of the desert. Alike in belonging mostly to the cactus family, with a fibrous toughness and protection by hook, barb, and spine, their variety of form is amazing. Several times higher than man grow some of these desert plants, like the yucca and the sotol plant, while others are delicate growths to be measured in inches. The spring flowers of the region are a revelation to those unfamiliar with the flora of the Southwest.

XX

OTHER NATIONAL PARKS

TWO further national parks may be briefly mentioned.

PLATT NATIONAL PARK

Because of the sulphur and other beneficent springs, hot and cold, which gush plentifully from an area of $1\frac{1}{3}$ square miles in southern Oklahoma, the area was reserved as the Platt National Park in 1902. It lies in a high country of considerable charm and delightful climate.

WIND CAVE NATIONAL PARK

In 1903 Congress made a national park of a remarkable limestone cavern in the Black Hills of southwestern South Dakota, not far from one of Custer's famous battle fields. Its name, Wind Cave, comes from a current of air which passes in and out of its mouth intermittently. The walls, ceilings, and floors of the many large and involved passages and chambers are elaborately decorated with the fantastic formations usual in limestone caves.

The park has a surface area of 19 square miles, a part of which is maintained as a national game preserve for bison, elk, and antelope.

XXI

EASTERN PARK PROJECTS

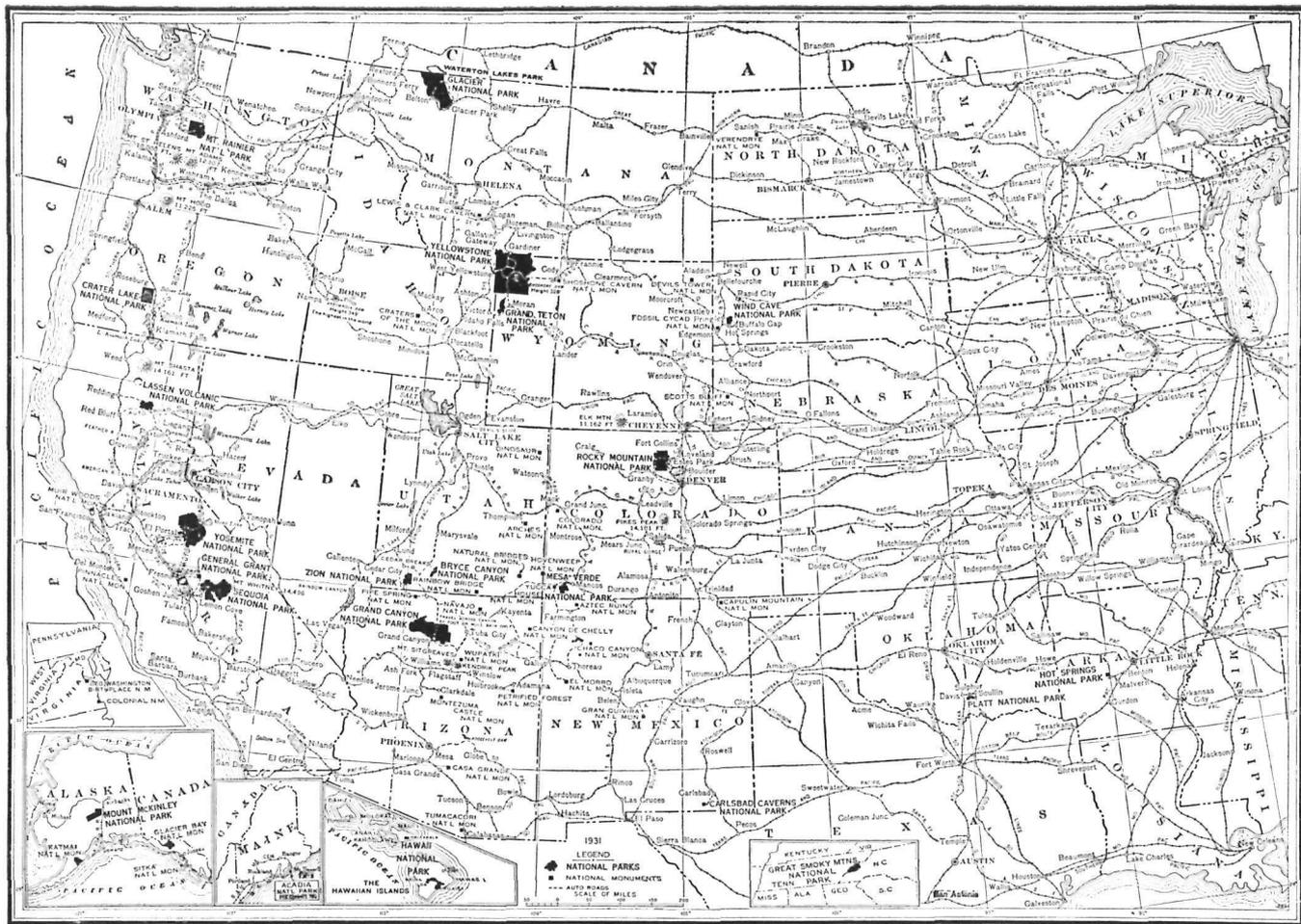
Four additional national parks have been authorized by Congress for establishment in the East, namely, the Great Smoky Mountains

National Park of Tennessee-North Carolina, the Shenandoah National Park of Virginia, the Mammoth Cave National Park of Kentucky, and the Isle Royale National Park, Michigan. These projects are now in various stages of development.

At this writing (June 1, 1931), more than one-half the minimum area of 427,000 acres necessary for the creation of the Great Smoky Mountains National Park has been acquired and a small protective force installed in the park area under authority of law, as a matter of cooperation with the States of North Carolina and Tennessee. No development of the area may be undertaken, however, until the total minimum area has been acquired and accepted by the Federal Government.

The law providing for the establishment of all these eastern parks requires that the entire area of each must be given to the Federal Government in fee simple. No lands for the purpose may be purchased with Federal funds.





22 NATIONAL PARKS AND 34 NATIONAL MONUMENTS



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OLD FAITHFUL GEYSER
YELLOWSTONE NATIONAL PARK