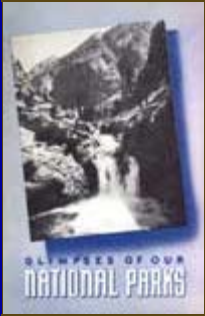


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Glimpses of Our NATIONAL PARKS

As revised and expanded by
ISABELLE F. STORY, *Chief of Information*
NATIONAL PARK SERVICE



Copy for the original (1915) edition of Glimpses of Our National Parks was prepared by Robert Sterling Yard, who, in 1920, resigned as Editor of the National Park Service

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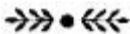
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Glimpses of Our National Parks



THE NATIONAL PARK SYSTEM—HISTORY, ADMINISTRATION, AND USE

THE United States has a system of national parks and allied areas—national monuments, national historical parks, national military parks and others—that is unparalleled in the annals of civilization.

That system came into existence nearly 70 years ago, when a group of average Americans voluntarily relinquished their legal and moral rights to profit through

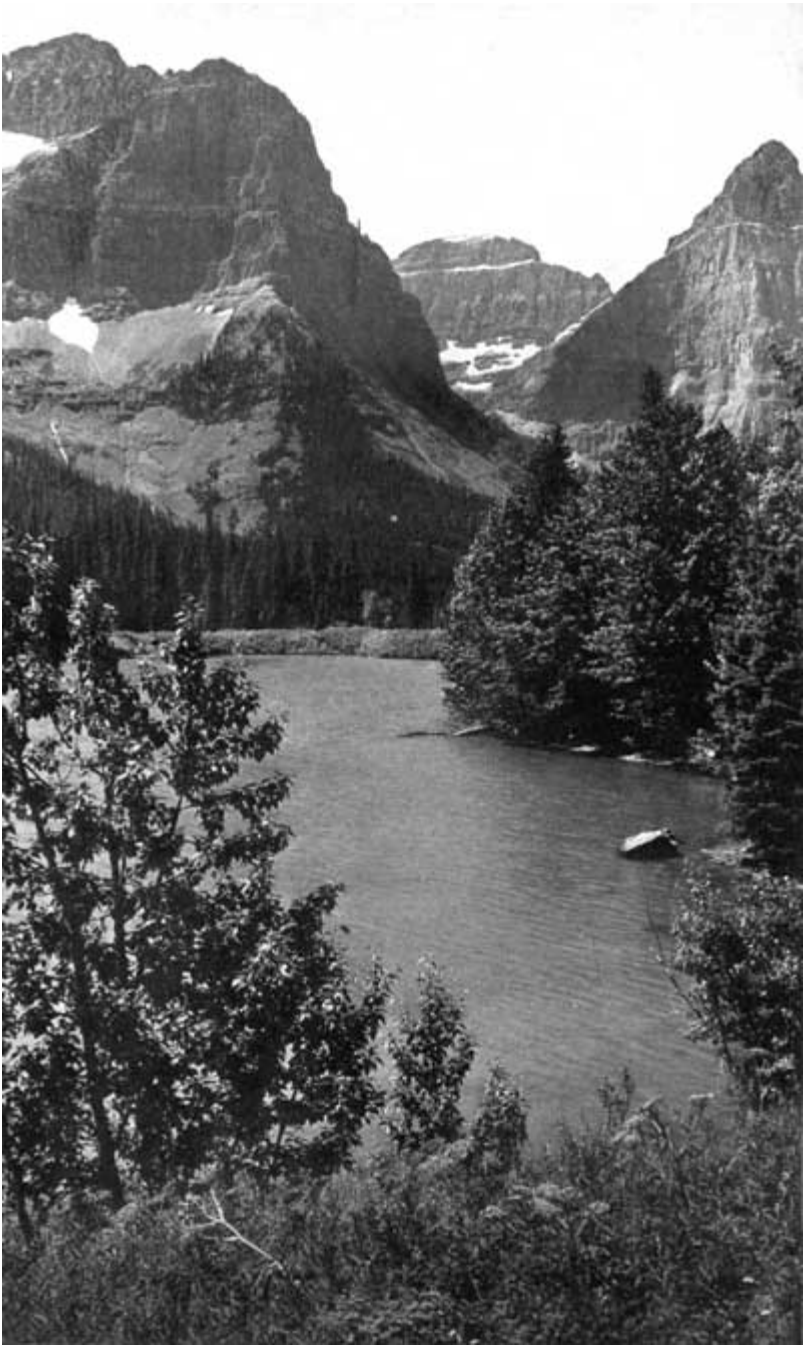
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private ownership of the area now included in Yellowstone National Park.

They had been making a month's investigation of the Yellowstone region, a land of mystery visited only occasionally during the first three-quarters of the nineteenth century by Indians and by a few white trappers and hunters. Rumors of the geysers and hot springs filtered to the outside world.

As the exploration came to a close, the members of the party sat around a campfire one night discussing the marvels of nature viewed during the month just ending. They talked of filing claims on the land, then unappropriated public domain, one taking the geyser area, another the superb canyon of the Yellowstone River, and so on.

Then came the momentous suggestion that resulted in the creation of the first national park in this country or abroad. Cornelius Hedges, a lawyer of



Upper End of Lake Janet, Glacier National Park

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Montana, advanced the startling suggestion that the individuals of the party forego any ideas of personal gain and work for the reservation of the area as a national park for the perpetual use of the American people. The unique idea caught the imagination of the others in the party; they returned home, put their energies behind the project, and in 1872 were rewarded by the action of Congress in establishing the Yellowstone National Park "as a pleasuring ground for the benefit and enjoyment of the people."

Thus was born a new conception of land use. In 1872 the national park idea was little more than an ideal; a response to a vague urge that incomparable scenery be preserved for esthetic reasons, beyond the reach of utilitarian development.

Today national-park establishment and development are recognized as a major land use, vital to the well-being of the people of the Nation and to the preservation of our biologic resources. The National Park Service, a bureau of the U. S. Department of the Interior, was created by Congress in 1916 to manage the Federal park areas.

The entire world has followed the example of the United States, and today national parks or similar reservations exist on every continent, and in almost every country of any size.

NATIONAL PARK IDEALS AND STANDARDS

National parks in the United States, created by act of Congress, are areas of national significance distinguished by superlative natural scenery, set aside for preservation as nearly as possible in unimpaired condition and dedicated to the use and inspiration of the people. In establishing the Yellowstone, first national park, Congress quaintly designated it "a public park or pleasuring-ground for the benefit and enjoyment of the people," and provided against "injury or spoliation of all timber, mineral deposits, natural curiosities, or wonders within said park, and their retention in their natural condition."

In establishing national parks no thought is given to geographic location. The area proposed for national park use is considered primarily from the standpoint of whether or not its principal features are of broad, national interest.

No consideration of commercialism enters into park creation. The major function is the promotion of the well-being of Americans, through the health-giving qualities of inspiration, relaxation, and recreation in pure, unpolluted air, in natural surroundings of inspiring grandeur.

Many of the parks contain noble forests, but the trees are preserved for their beauty and never considered as lumber. It is a strange fact, but often the trees that add most to the beauty of the landscape in reality have no commercial value.

There are many wild animals, but they never are considered from the standpoint of food supply. All hunting is forbidden except that called in park parlance "hunting with the camera." Many an erstwhile hunter, having laid down his gun for a camera while in a park, never cares to shoulder a gun again. The gentle-eyed deer becomes a friend, not an intended victim. The lesson of

the national parks 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 deer, 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.

There are great waterfalls, but they are not harnessed. Outside the parks are more than enough falls to supply the power needs of the Nation. Those in the parks feed man's hunger for beauty—a demand that, long denied, seems stifled; but that given a chance in the unmarred outdoors thrives and increases and gives a broader outlook on life.

OTHER RESERVATIONS UNDER SUPERVISION OF NATIONAL PARK SERVICE

In addition to the national parks there are several other classes of reservations in the national-park and monument system administered by the National Park Service. Previous to August 10, 1933, there were 22 national parks, 1 national historical park, and 40 national monuments under its jurisdiction. On August 10, under President Roosevelt's Executive order of June 10, 1933, the various park areas under the control of the Federal Government were consolidated in one unified system. At that time the name of the Service was changed to Office of National Parks, Buildings, and Reservations. Five months later the original name of National Park Service was restored by congressional action.

In consolidating the various areas similar in concept and administration, 2 national parks, 11 national military parks, 10 national monuments, 10 battlefield sites, 4 miscellaneous memorials, and 11 national cemeteries were transferred from the jurisdiction of the War Department. Sixteen other national monuments, previously administered by the Forest Service of the Department of Agriculture, were transferred to the enlarged system.

Jurisdiction over the park system of Washington, the Federal city, was also transferred to the National Park Service at that time.

Since the 1933 consolidation, normal growth has increased the Federal park system to 162 areas—26 national parks, 4 national historical parks, 82 national monuments, 11 national military parks, 8 national battlefield sites, 6 national historic sites, 1 national recreational area, 9 miscellaneous national memorials, 12 national cemeteries, 3 national parkways, and the National Capital Parks system. [1]

Although the national monuments constitute the largest numerically and most widely scattered group of the system, their precise meaning and purpose are not always understood. In order to insure the protection of places of national interest from a scientific, historic, or archeologic standpoint, Congress in 1906 passed a law known as the "Antiquities Act," which gave to the President of the United States authority "to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon lands owned or controlled by the Government of the United States to be national monuments." The exhibits in

the existing national monuments run the gamut from the ruined dwellings of Indians who lived a thousand or more years ago to historic areas of the middle century; from trees and plants fossilized millions of years ago to magnificent groves of living trees.

Because of its limited size, this booklet describes only the national parks. Descriptions of these areas, arranged chronologically, begin on [page 14](#).

PROPOSED INCREASES IN THE PARK AND MONUMENT SYSTEM

The national park system is not yet complete. Nevertheless, only areas which meet the standards set up by the existing major parks are considered for inclusion in the system.

It is hoped eventually to make complete this national gallery of scenic, historic, and scientific displays. In the field of parks, for instance, Congress already has given authority for the addition of 2 important areas to the system. These are the Everglades in Florida, including tropical scenery and a rare tropical bird life, and the Big Bend area of Texas, with its steep-walled canyons, virgin forests, and abundant wildlife—the last wilderness area left in the Lone Star State.

These parks cannot be established until the lands within the approved boundaries have been acquired and donated to the United States. In connection with the Big Bend project, the Mexican Government has shown an interest in establishing a national park on its side of the international boundary, adjoining the proposed Big Bend Park, the two to form a great international peace park. This would be similar to the Waterton-Glacier International Peace Park, including Canada's Waterton Lakes Park and our own Glacier National Park now an established fact on our northern boundary.

Congress also has approved the Saratoga National Historical Park project, New York, and has expressed definite interest in the establishment of several national monuments in different parts of the country by authorizing their creation under terms similar to those affecting the national park projects. Saratoga National Historical Park project is now being developed with CCC funds and the area will be established as soon as title to lands is vested in the United States.

On August 22, 1935, the President approved the Historic American Sites Act, which gives the Secretary of the Interior, through the National Park Service, greatly broadened and strengthened powers in the preservation of historic sites and buildings. The act also establishes an Advisory Board on National Parks, Historic Sites, Buildings, and Monuments to assist in the formulation of policies in connection with the work of the National Park Service.

LOCAL ADMINISTRATION

Each of the national parks is in charge of a local superintendent, who resides in the park and is responsible to regional and Washington headquarters for activities within the area under his control. In several of the smaller parks the superintendent has only four or five assistants. In the larger ones, such as the Yellowstone and the Yosemite, a large force is necessary, and includes

protective, clerical, educational, and engineering assistants.

The protective work is done by the ranger force, headed by a chief ranger, who reports to the superintendent. The permanent ranger force is the all-year nucleus around which is built up the larger summer temporary force to handle the increased work of the tourist season. The permanent ranger positions are filled by civil service appointment. Ranger duties include checking travel, directing traffic, enforcing the rules and regulations promulgated by the Secretary of the Interior for the protection of the park, giving information to visitors, fire fighting, improvement of trails, repair of telephone lines, protection of wildlife, fish planting, supervision of campgrounds, and numerous other duties.

The national monuments are headed by superintendents or custodians. The group of 27 southwestern national monuments is in charge of a superintendent through whom the local custodians report. There are also several eastern groups of four or five historical areas under coordinating superintendents.

EDUCATIONAL USES

The national parks are veritable outdoor laboratories, offering unexcelled opportunities for informal education. The wealth of natural history and human history encountered in the Federal parks is interpreted by naturalists and historians. This service is a direct outgrowth of the interest displayed by visitors in the why and wherefore of the interesting and unusual things encountered along the beaten track or on the out-of-the-way trail.

The demand for knowledge is met primarily in two ways—through the naturalist and historian services and through the museums. The ranger naturalists and historians are trained in the natural sciences, history, or archeology, and in public contacts. They conduct parties out on the park trails on short or long trips and give informal talks at the campfires in the public auto camps, community houses, museums, and outdoor amphitheaters.

The museums in the wilderness national parks and monuments are designed primarily to interest the average visitor in finding out for himself just what the particular unit has to offer. It has been said that the museum exhibits are in reality only the index to the park or monument, which is the real museum of nature.

In the historical areas the museums contain relics and artifacts connected with the human events which transpired in them, and which by their importance in the pageant of our national history entitle the areas to the status of historic shrine.

So in our prehistoric monuments. There the museum exhibits include the implements in use a thousand years ago in grinding corn, and in other ordinary routine of life—a sandal or other bit of clothing or personal adornment, shreds of baskets, and pottery of many designs and colors.

WHAT THE LANDSCAPE ARCHITECTS AND ENGINEERS DO

Congress in establishing the National Park Service outlined its function to be

the preservation of the national parks, monuments, and other reservations assigned to its jurisdiction in their natural condition for the use and enjoyment of American citizens of all times.

Carrying out this mandate involves the serious responsibility of conserving the finest natural scenery the country has to offer and of guarding more than 21,500,000 acres of territory, at the same time making the parks and monuments accessible to the millions of visitors annually.

To keep the natural beauty of mountain, forest, lake, and waterfall unspoiled and yet within easy access of such a multitude of visitors is an interesting though often difficult problem. Quoting the landscape architects, upon whom devolves the responsibility for this phase of park activities, the reverse of the famous principle used by the ostrich generally is followed, for roads, trails, and buildings all should provide a maximum of scenic view, at the same time being as inconspicuous as possible themselves.

The landscape process begins with selecting locations which do not tear up the landscape or obtrude into important views. This is followed by a study of the design, which endeavors to use native materials and other architectural features that will harmonize the structure with its surroundings. The last phase of the problem is the placing of any plant materials necessary to cure unavoidable damage that may have resulted from the construction.

The range of national park landscape problems is highly interesting and diversified. It runs the gamut from dog kennels in Alaska to colonial plantations in Virginia, from adobe houses with cactus gardens in the Southwest to subarctic roadside plantings in Maine, and from lakeside hotels in Montana to hot-spring developments in Arkansas. And new problems continually arise.

The actual construction work generally devolves upon the engineers, and all studies of the physical problems of each park are made by the landscape men, the engineers, and the individual park superintendents, and in special cases of historical interest by the historians. When a general scheme of development has been decided upon, a so-called "master plan" is prepared by the landscape architects on which is charted an outline of all future construction work. Using this master plan as a guide, designs are then worked out for the individual items, such as roads, buildings, parking areas, bridges, trails, and numerous miscellaneous projects.

The supplying of adequate living accommodations for visitors is an important phase of national park development, especially in those parks handling from a hundred thousand to nearly half a million visitors annually. The National Park Service, in addition to providing roads and trails and the necessary buildings for carrying on the administration of the parks, also provides free public automobile camps. The main camps in the larger parks have all the modern improvements. Wherever available without injury to forests, firewood is furnished to visitors without charge.

Not so many years ago most motorists making use of these campgrounds carried their own equipment, pitched their own tents, and cooked their own meals. But the gradual change in the habits of motorists has brought about the introduction and expansion of housekeeping cabins and cafeteria service in

many of the larger camps. Hotels, lodges, transportation facilities, and various types of store service are operated by private capital under close Government supervision, as are the housekeeping cabins and cafeterias in the public camps.

THE WILD ANIMALS IN THEIR NATURAL HABITAT

One of the most fascinating features of the national parks is the opportunity they afford visitors to meet face to face wild animals such as their pioneer forefathers encountered in moving westward from the Atlantic seaboard. In the comparatively short time of a few decades, these animals that were once plentiful on plains and mountains have almost disappeared. Today, there are few places where they can be seen, and of these the national parks take first rank.

The park visitors want animal stories, and more animal stories. One that always engenders keen interest is that of the buffalo. Some thirty-odd years ago this animal, which once roamed the plains of the West in countless numbers, had almost disappeared. A few were taken into the Yellowstone, formerly a natural range for these great beasts. These animals, and the little remnant of the original Yellowstone herds, were given protection, with the result that the new herd increased with great rapidity. Several years ago it reached a thousand head, the greatest number that the range can properly accommodate. Since then, it has been desirable to eliminate surplus animals and ship them to other parts of the park or to restock depleted ranges beyond the park boundaries. In this way herds also have been established at Wind Cave National Park, Colorado National Monument, Platt National Park, the Crow Indian Reservation, and other places.

While telling the story of the buffalo and of the traits and habits of the various other park animals, the naturalists always explain that the national parks and monuments are absolute wildlife sanctuaries. No hunting is permitted in any of them. The ban on killing, molesting, or feeding the wild creatures has, in effect, permitted them to lead their normal lives without dependence upon man (except protection from man himself). National parks are the only places on the North American continent where the wildlife may be observed in its free state unafraid of or completely ignoring the presence of man.

In relating the story of the Yellowstone buffalo, and also antelope— another plains animal that had almost disappeared—emphasis also is laid on the fact that no species of animal, or plant for that matter, not originally native to the area, is ever introduced into a national park with the possible exception of game fish.

Bears are a delight to the visitors, except to those who insist upon becoming familiar with them and are bitten or scratched in reproof. For protection of the bears as well as the visitors, park regulations prohibit feeding of the animals. Naturalists have found that bruin in his native haunts feeding upon his native foods is healthier and probably happier than the half-tame begging bears that once gorged on peanuts, bread, and sundry other foods in our national park. An old mother bear with cubs romping around her, majestically crossing a woodland glade, is a superb sight—far more thrilling than a dozen bears, rooting like pigs in a garbage dump.

In some places, bears are classified as predatory animals and hounded by hunters and trappers. But in our national parks where all wildlife is protected, the bears are found just as they were when the first intrepid white man wandered through the areas.

Glimpses of deer, elk, moose, antelope, and mountain sheep add much to the pleasure of a park trip. There are many smaller animals which provide much amusement, notably the little "picket pins," or ground squirrels that scurry about on their serious business of food getting, oblivious to the "giant" human beings watching them. For the bird lover also the parks are a paradise.

A bird conservation problem that now faces the National Park Service involves the trumpeter swan. This bird, practically extinct a few years ago, has recently found the Yellowstone region a favorable nesting place, and the National Park Service, in cooperation with the Fish and Wildlife Service, is doing everything possible to guard the breeding places and to protect the young birds until they become strong enough to fight their own battles. During the last few years a definite increase in the number of these swans has been noted, both in the Yellowstone and in the nearby Red Rock Lakes National Wildlife Refuge.

FISHING

Although hunting is strictly banned in the national parks, fishing is permitted under regulations that insure against depletion of the fish supply. No fishing licenses are required by the Federal Government, but State fishing licenses are required in all except Glacier, Crater Lake, Mount Rainier, Mount McKinley, and Yellowstone National Parks.

The waters of several of the parks contain excellent native game fish while others at the time of park establishment were practically barren. To insure good fishing, many millions of eyed eggs and fingerlings are planted each year in park lakes and streams through the cooperation of Federal and State fish hatcheries. Every effort is made to improve fishing conditions and afford good sport for the thousands of anglers who seek recreation in the parks.

The best fishing, of course, is in the lakes and streams away from the main motor roads. Even along the highways the fish are plentiful, but they are also accustomed to most forms of artificial bait, so that they become wary a fact which adds to the enjoyment of the skilled fisherman. Even the Grand Canyon, in Arizona's semidesert, is becoming of keen interest to anglers through the stocking of Bright Angel and several other creeks. The large fish hatcheries operated at Yellowstone Lake in Yellowstone National Park and at Happy Isles in Yosemite National Park are great attractions to visitors. Special guides take parties through at stated hours, and observation platforms and aquaria are so arranged that the entire operation may be easily studied.

The few regulations laid down by the National Park Service concerning fishing are all designed to aid fishing conditions. The number and size of fish that may be taken in any one day are limited, according to the supply in a particular body of water. Sometimes, to protect newly planted young fish or promote the comeback of an overfished lake or stream, fishing in particular waters is temporarily suspended.

For the convenience of fishermen who visit the various national parks, the

stores in these reservations carry in stock and have on sale each season a large quantity of appropriate fishing tackle and other necessary equipment.

¹ As of October 1, 1940.

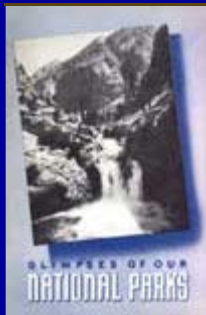
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Glimpses of Our National Parks

• II •

THE NATIONAL PARKS AND THE CIVILIAN CONSERVATION CAMPS



On the trail—Sequoia National Park

DEVELOPMENT of national park and monument trails of adequate fire protection facilities, and of campgrounds; protection of trees from spread of disease and infestation; clearing of roadsides for both fire prevention and esthetic reasons; rounding of slopes through cuts along the park highways to prevent slipping and erosion, and at the same time to beautify the highways—all these were dreams, sometimes even plans, toward which the National Park Service was working steadily before the spring of 1933. But the progress was slow, sometimes heartbreakingly difficult, because of financial limitations.

Then President Roosevelt announced his conservation program, a Director of Emergency Conservation Work was appointed, and the National Park Service was invited to participate by providing actual work for camps of the Civilian Conservation Corps and by active planning and correlation of the whole program through representation on the Advisory Council appointed to assist Director of Emergency Conservation Work.

Nothing approaching the scope of this work has ever been undertaken by any

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other government. Through these emergency conservation measures the development of the Nation's recreational areas—including State and metropolitan parks—has been advanced further than would have been possible in 10 to 20 years under the old order that prevailed prior to the spring of 1933. And the practical benefits from land development and the use thereof are increased immeasurably when one takes into consideration, the good done to the hundreds of thousands of young men given employment through this amazing conservation program; the salvage of social values through enabling these boys to regain and hold their selfrespect and to feel themselves an important part of the social fabric of our national life.

On July 1, 1940, it was the privilege of the National Park Service to supervise the work of approximately 310 Civilian Conservation Corps camps. Nearly one-third of these are upon national park, national monument, military park, or other areas directly administered by the Service. The remainder are upon State parks, metropolitan areas, and allied local parks. Responsibility for the work upon these latter areas was placed upon the National Park Service because State and similar park work is predicated upon the same premises as that for national parks, the purpose of all these areas being preservation of natural scenic beauty and historic shrines, and development for public use.



CCC men cutting a truck trail through granite ridge—Sequoia National Park

Federal aid through Civilian Conservation Corps and emergency appropriations has encouraged widespread extension of State parks since 1933. Seven States have established their first State parks, and, with an increase of nearly 600 areas in 45 States, the total is now about 1,400. State park acreage, which prior to 1933 totaled 965,057, has been more than doubled.

Fortunately for the expedition of the work in national parks, the Service had prepared master plans based upon the 6-year development needs of these areas. With such plans, it was a simple matter to inaugurate work in the shortest possible time, without lost motion and without making the mistakes that might be expected to occur in putting into operation such a hastily conceived, hastily organized program of work.

The conservation activities directed by the National Park Service take the form of landscape protection rather than the straight forest protection that is the function of the Forest Service, which conserves the forest stands for use under wise regulation. All park work under the program necessarily is planned and conducted with detailed attention to the landscape values. Forest areas in those reservations are kept in their natural condition so far as possible. The removal of underbrush, dead trees, windfalls, and other natural debris from old forests is undertaken only to such an extent as is necessary to remove serious fire hazards. Ground cover is essential in the complete protection of bird life and small mammals, and also is part of the natural forest scene. Timber cutting is undertaken only when it is designed to improve the quality of young growth on cut-over or burned-over lands.

Although the work reports from the various parks show many millions of hours spent in roadside and trail clearing, forest-stand improvement, erosion control, and nursery work and seed collecting, it is always with the above principle in mind—to protect the landscape and to restore it to its primitive condition where scars have occurred through fire, tree disease, or necessary construction of roads and other facilities for visitors.

While landscape men supervise all plans for work by the Civilian Conservation Corps, other technical details also are given careful attention. Treatment of forest stands is under the supervision of expert foresters and work in historic areas in the military parks and monuments under the watchful eye of historians. Civil engineers see that all construction work is done on approved methods. What they are doing will make the great park system of the country a more valuable national asset.



Clean-up work at Jackson Lake by CCC Enrollees—Grand Teton National Park

Certainly future visitors to the parks and monuments will get an added degree of enjoyment of the scenes they behold as a result of these conservation activities. It may even be that some of the magnificent tree stands will owe

their continued existence to the present conservation activities against fire and various tree blights; that control of erosion along road sides may mean the salvation of other objects of beauty.

The young men who today constitute the Civilian Conservation Corps may well feel in the future special interest and ownership in the beauty spots of the country, which they have helped to preserve and make accessible to their fellow men. And it is the hope of the National Park Service that many men who first became acquainted with the parks through their participation in the Civilian Conservation Corps may find the activities so to their liking that they will continue to devote their energies to conservation. Certainly the interest taken in forestry and other conservation courses offered the Civilian Conservation Corps indicates a trend in this direction.

The National Park Service has expressed its approbation of the Civilian Conservation Corps activities in the strongest way possible—by expressing the hope that this work may be continued on a permanent basis. The wisdom with which the plan was conceived has been demonstrated by the splendid cooperation of the Government agencies engaged in carrying it out, the fine spirit of the enrollees, and the high quality of the work accomplished.

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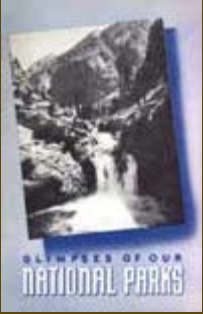
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THE YELLOWSTONE NATIONAL PARK

WYOMING

(Also Small Sections in Montana and Idaho)

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

THE Yellowstone National Park long has been widely celebrated 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

- [Zion](#)
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Old Faithful—Yellowstone National Park

inconspicuous.

To comprehend the Yellowstone we must begin with its making. The region is largely 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 volcanic ash; which plainly shows that after the first forest grew on the volcano's slope and was engulfed by a fresh shower of ash, enough time elapsed for a second forest to grow upon that level, and that this in turn was engulfed with new breccia 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 volcanic debris which engulfed them.

THE GEYSERS

Geysers have been defined as hot springs which intermittently eject columns of boiling water and steam. They are found only at places where the internal heat of the earth approaches the surface. The action of the geyser is comparatively simple. Water from the surface or from subterranean sources collects in the bottom of a deep tube-shaped opening in the rocks. This opening which has been enlarged from a crevice by the dissolving action of heated waters charged with sulphur gases, is known as the geyser tube. The water in the bottom of this tube is heated by hot gases rising from below or by contact with heated rock, but because of the weight of the column of cooler water in the tube above, it does not form bubbles of steam although it is heated much above the boiling point. The hot water gradually rises until the entire column of water becomes heated and the water near the surface, which is under less pressure, begins to boil causing a certain amount of water to overflow the rim of the geyser. This relieves the pressure on the superheated water below which immediately bursts into steam and boils over.

After the eruption the water re-collects in the tube, to become heated and again to be expelled. The geyser is thus periodic in its action. The eruptions of Old Faithful occur at intervals of about 1 hour.

THE HOT-WATER PHENOMENA

Nearly the entire Yellowstone region, covering an area of 3,472 square miles, is remarkable for its hot-water phenomena. The geysers are confined to six basins in the middle west and southern portions 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 algae 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 visitor. 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 geysers with habits of unusual interest.

The hot-spring terraces are also a rather awe-inspiring spectacle when seen for the first time. The visitor may follow the trails among the steaming pools. In certain lights the surfaces of these pools appear vividly colored. The deeper hot pools are often intensely green. The incrustations are often beautifully

decorated. Clumps of grass, and even flowers, which have been submerged in the charged waters become exquisitely plated, as if with frosted silver.

CANYON OF THE YELLOWSTONE

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 Canyon of the Yellowstone affords a spectacle worthy of a national park were there no geysers. 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 extends out almost to the center of the canyon, one looks almost vertically down upon the foaming Yellowstone River. To the Southwest a waterfall nearly twice the height of Niagara rushes seemingly out of the pine-clad hills and pours downward to be lost again in the mist and jade of the river below.

Between the falls and Inspiration Point widens out a glorious expanse 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. It 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.

WILD ANIMALS LIVING NATURALLY

Another interesting feature of the Yellowstone National Park is its animal life. It is one of the largest and most successful sanctuaries in the world. Its mountains and valleys remain nearly as nature made them, for the more than 345 miles of roads and the few hotels and 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 or sheep invade its valleys.

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. Some of these animals are seen by the people filling the long trains of motorbusses which travel from point to point daily during the season, and by the motorist from his automobile

window. It is the quiet watcher on the trails, however, who most enjoys the deer, and bear, and elk, and antelope, 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 the headquarters area to crop the vegetation.

An innovation in guided trips is the "game stalk" caravan conducted each evening just before dusk by the rangers to permit visitors with their own cars to get a glimpse of the larger park 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.

The grizzly bear, for instance, is one of the shiest of wild animals, and may be seen only with difficulty. It lives principally on rodents, roots, berries, and grass. It cannot climb trees like the black bear. Its little ones are born in caves where the bears hibernate through the winters and are little larger than squirrels when born.

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 in habits. They are playful, comparatively fearless. They are greedy fellows and steal camp supplies whenever they can. However, they are wild animals and should not be fed or teased.

This wild-animal paradise now contains great herds of elk, several hundred moose, numerous deer, many antelope, and a herd of about 900 bison.

More than 200 species of birds live natural, undisturbed lives in Yellowstone. Eagles nest among the crags. Wild geese and ducks are plentiful. The rare trumpeter swan is nesting in increasing numbers. 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 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 otherwise barren waters. Park waters now contain some of the best games species.

DISCOVERY OF THE YELLOWSTONE

The first recorded visit to the Yellowstone was made by John Colter in 1807-08. Having been released as a private soldier from the Lewis and Clark

expedition, Colter, in 1807, joined the forces of Manuel Lisa, a celebrated trader. Later, while returning alone to Lisa's fort at the mouth of the Bighorn from a dangerous mission, to acquaint the Indians of Lisa's plans to trade with them, he traveled through the Yellowstone country. Upon his return to civilization, his story of the wonders he had seen 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 "a slight exaggeration", 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, that reckless frontiersman whose strange yarns of the marvels he had there beheld remained discredited or tabooed by other writers as late as 1870.

The first Government expedition, sent out in 1859 under command of Capt. W. F. Reynolds, yielded little of accurate information about the central glories of the Yellowstone. The fact is that party never did reach the area now known as Yellowstone National Park. 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 suffered 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 in 1872.

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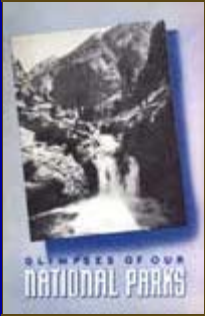
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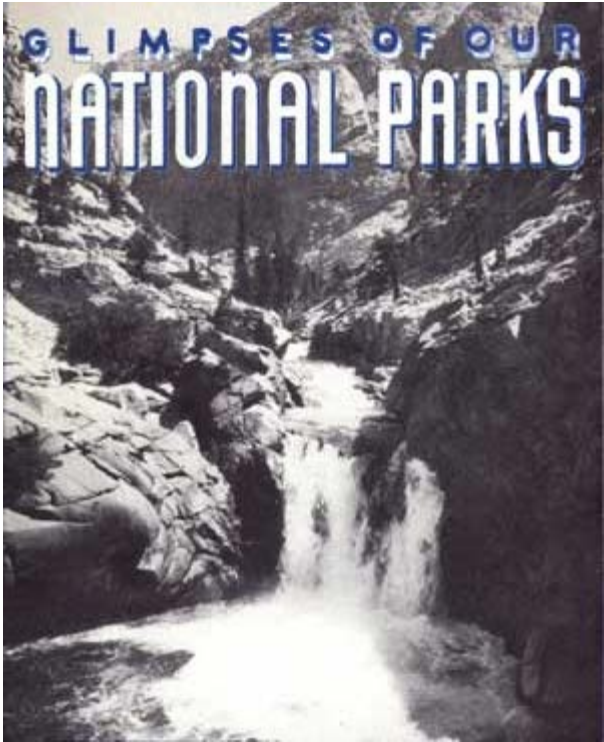
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Glimpses of Our
National Parks
Glimpses of Our
National Parks

• IV •

THE YOSEMITE NATIONAL PARK

CALIFORNIA

*Special Characteristics: Valley of Sheer Granite Cliffs; Spectacular Waterfalls;
Magnificent Forests; Marvelous Domes; and High Sierra Peaks*

THE
Yosemite
National Park
lies west of
the crest of
the Sierra
Nevada
Mountains in
middle
eastern

- [Zion](#)
- [Hot Springs](#)
- [Bryce Canyon](#)
- [Grand Teton](#)
- [Carlsbad Caverns](#)
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California. The famous Yosemite Valley is a small part of this extraordinary holiday garden—a canyon 7 or 8 miles long by less than 1 mile wide in over a thousand square miles of beautiful and varied scenic wilderness.

The irregular eastern boundary is the crest of the Sierra, a rampart of tremendous granite peaks buttressed by pinnaced 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 innumerable 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, pinnaced groups partially separated by tremendous canyons and amphitheaters; 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



Yosemite Falls—Yosemite National Park

miniature Arctic Oceans, shining, sparkling, calm as stars."

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

Most visitors know only the Yosemite Valley. And, indeed, were there nothing else, the valley itself 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 its exceptional beauty, it quickly became celebrated; but it was not until 1874 that a road was built into it. Until then it had been approached only by trail.

THE VALLEY AND ITS WATERFALLS

No matter what their expectation, most visitors are happily astonished upon entering the Yosemite Valley. The sheer immensity of the cliffs 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 cannot be successfully described.

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. How 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. 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 depths. The tremendous amount of work performed by the river was made possible by the torrential speed to which it was again and 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 Glaciers, forcing their way slowly through the narrow, stream-worn gorge, quarried away and steepened the sides, thereby producing towering cliffs and transforming the cascades that poured from the mouths of the lofty hanging valleys to leaping waterfalls.

The Yosemite Fall drops 1,430 feet in one sheer fall, the highest free leaping waterfall in the world. The Lower Yosemite Fall, immediately below, has a drop of 320 feet. Vernal Fall has approximately 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—a fall 10 times as great as Niagara. Similarly the sheer summits: Cathedral Rocks rise 2,592 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 in September when 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 because it is less known.

Glacier Point commands a magnificent view of the High Sierra. Spread before one in panorama are the domes, the pinnacles, the waterfalls, and, dominating all, Half Dome, a mythical Indian turned to stone. A few steps from the hotel one looks down into Yosemite Valley, 3,254 feet below.

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 the rim country accessible, and now trails lead from public camps in the Valley 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 27.6 feet and a height of 209 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 and gaze upward through it to the sky.

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THE SEQUOIA NATIONAL PARK

CALIFORNIA

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, 14,495 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 Sequoia National Park and its new neighbor, the Kings Canyon National Park.

The California Big Tree must not be confused with

- Zion
- Hot Springs
- Bryce Canyon
- Grand Teton
- Carlsbad Caverns
- Great Smoky Mountains
- Shenandoah
- Mammoth Cave
- Olympic
- Isle Royale
- Kings Canyon
- Former Parks
- Historical Parks



General Sherman Tree—Sequoia National Park

the smaller species of the Sequoia genus, the Coast Redwood. The Big Tree occurs only in the Sierra Nevada Mountains, and the Coast Redwood 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 Coast Redwood as the "poor relation" of the Big Tree. While this is poetic license, it may be said generally, that the giant Sequoia or 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 National Park are thousands of giant Sequoias 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 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 giant Sequoias 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 the adjoining Kings Canyon. 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 numerous groves; and also almost pure stands of Big Trees in the conifer forests. It is estimated that half—nearly 9,000—of the giant Sequoias in California 10 feet in diameter when measured 6 feet above the ground are in Sequoia National Park.

It is difficult to grasp the immense size of these giants. For instance, it is estimated that in the trunk of the General Sherman Tree, the largest of them all, 36.5 feet in diameter at the base, 17 feet in diameter 120 feet from the ground, and 272.4 feet in height, there are almost a half million board feet of lumber. 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 national parks of the High Sierra 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 giant sequoia 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."

There are many groves of the Big Trees in Sequoia National Park, scattered here and there over large areas. The Giant Forest, sometimes referred to as a grove, in reality contains scores of separate groves, merging one into another, or into flower-strewn meadows.

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

MOUNTAIN AREA OF WILD BEAUTY

Far 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 (14,495 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.

Throughout this upland park are trout-filled mountain streams; deer and bear and smaller animals; magnificent forests and gorgeous flower fields and meadows.

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Glimpses of Our National Parks

• VI •

THE MOUNT RAINIER NATIONAL PARK

WASHINGTON

*Special Characteristics: Complicated Glacial System Flowing From One Peak;
Varied plant life; dense forests; the mountain, an old volcanic cone, which
rises nearly 2 miles above its immediate base*

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.

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Once, in the dim ages, when America was making, they blazed across the sea like

huge beacons. Today, 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 its ice-clad summit. Travelers overland catch the sun glint from its 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, as well as from many glacier-carved basins or cirques just below the summit, 28 named "rivers of ice," move slowly down its sides. 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, hemlock, and cedar below.



Edge of Nisqually Glacier showing the south side of the mountain—Mount Rainier National Park

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BIRTH OF THE GLACIERS

Every winter the moisture-laden winds from the Pacific, suddenly cooled against its icy flanks, deposit snows of great depth which change to ice and move slowly down deep canyons on the mountain's side.

Thus are born the glaciers, for the snow under its own pressure quickly hardens into ice. Through many deep, glacier-carved canyons flow these "rivers of ice," as they maybe roughly called, now turning, as rivers of water turn, to avoid the harder rock strata, now passing over precipices like congealed waterfalls, now rippling, like water currents over rough glacial beds, 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 more than a mile, and in thickness from 50 feet to many hundreds, perhaps even as great as 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 Nisqually Glacier is the best known, although by no means the largest of the glaciers. It is 5 miles long and near Paradise Valley is half a mile wide. Glistening white at its shining source on the mountain's summit, its surface near the terminus or "snout" is soiled with dust and rock debris and squeezed and rent by terrible pressure into fantastic shapes. Innumerable crevasses or cracks many feet deep may be seen. These are caused by the difference in the rate of flow of the ice as well as by the rough, irregular surface of the glacial bed over which the ice passes. Glaciers, again like rivers of water, develop swifter currents near midstream. Experiments made by Prof. Joseph N. LeConte in 1905 tell us that the Nisqually Glacier in summer moves downward at a maximum rate of 16 to 24 inches a day in midstream. Recession measurements of this same glacier conducted by the National Park Service since 1918 show that in spite of this downward flow, the ice is slowly melting back at the average yearly rate of 70 feet.

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 debris. These are called lateral moraines, or side moraines. Sometimes glaciers build lateral moraines miles long and many feet high. 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 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 not so well known because harder to reach. 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, exploring its crevasses.

Paradise Glacier is of a radically different type. Locally it is known as a "dead" glacier for it does not move downward. It is readily accessible from Paradise Valley and its snowfields offer the favorite summer sport of "nature coasting"—one merely sits and coasts downward, attired, of course, in special clothing.

CREATURES LIVING ON THE ICE

Many interesting things might be told of these glaciers were there space. For example, several species of minute insects live on the ice. Slender, dark-brown worms are also found on the surface of the glaciers. 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

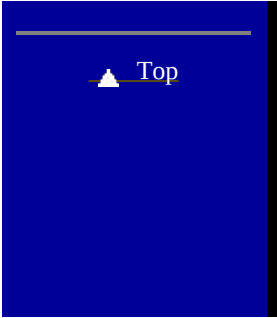
But this brief picture of the Mount Rainier National Park would miss its loveliest touch without some notice of the wild-flower parks lying at the base, and often reaching far up between the icy fingers of Mount Rainier. Paradise Valley, Indian Henrys Hunting Ground, Spray Park, Summerland—such are the names given to some of these beauty spots. In all, over 600 species of flowering plants are native to this park.

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."

ACCESSIBILITY

This national park is easily reached by rail or automobile from nearby cities. The new Naches Pass Highway provides an easy and enjoyable cross-state route and is one of the links in the Park-to-Park Highway which connects all the major western national parks.



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Glimpses of Our National Parks

• VII •

THE CRATER LAKE NATIONAL PARK

OREGON

*Special Characteristics: Lake of Outstanding Beauty and Great Depth Cupped
in Crater of Extinct Volcano*

CRATER
LAKE is a scenic gem cupped in the crater of an extinct volcano. The volcano, known as Mount Mazama, is in the heart of the Cascade Range, a great chain of volcanic peaks which extends north from the



Wizard Island—Crater Lake National Park

recently active Mount Lassen in northern California through Oregon and Washington and includes Mount Shasta, Mount Hood, Mount Rainier and many other famous glacial-scarred extinct volcanic peaks.

Crater Lake is truly a lake in the top of a mountain. To see it one ascends the gentle slopes of the ancient volcano, slopes mantled by virgin forests and cut by deep canyons. As one ascends the grandeur and depth of the forests, the alpine meadows with their colorful displays of wild flowers, the architecture of the canyons, and the vistas of distant valleys and peaks prepare one for the awe-inspiring beauty of the lake at the top. Coming suddenly on the rim of the vast crater which holds the lake, one stands silent with emotion, deeply impressed by the hues of blue and intensity of color of the water, and by the

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grandeur of the towering cliffs which completely surround the lake.

Geologists tell us that the rim of Crater Lake is only a remnant of a volcanic peak. Studies indicate that where there is now the vast crater there once was a peak which stood at least 14,000 feet high. Ancient Mount Mazama was comparable to Mount Shasta or Mount Rainier. The many rock formations exposed in the crater wall as well as other features on the rim are evidence that such a peak once existed, and that a great catastrophe occurred during which the peak was destroyed and the crater formed. The most recent investigations led to the conclusion that the crater owes its origin principally to collapse or engulfment of the mountain. Such a catastrophe was undoubtedly preceded by the pouring out of great quantities of lava at the summit of the mountain and the development of cracks on the flanks of the mountain. Eventually the top collapsed and was engulfed within the void produced by the outpourings of ash and molten rock, thus forming the crater.

Following the destruction of the peak, volcanic activity within the deep crater built at least one cone and perhaps others, but none so high as the crater rim. Finally the vast crater cooled. Rain and melted snow of countless ages accumulated, forming the lake with a maximum depth of 2,000 feet. One cone built during the last stages of volcanic activity rises nearly 800 feet above the lake as Wizard Island.

Crater Lake is unique not only for its scenic beauty and scientific interest but also in other respects. The lake has no direct inlet or outlet. Its annual inflow is entirely by precipitation which falls directly into the lake and crater. Annual loss is by seepage and evaporation. From year to year there is essentially no change in lake level. Many visitors are surprised to learn that Crater Lake is a body of fresh water.

ITS MANY ATTRACTIONS

The park embraces 250 square miles of high cascade country, a rugged picturesque area. About 80 percent of the acreage is beautifully forested, principally with mountain hemlock, fir, and pine. During the summer the display of wild flowers typical of high altitudes is most attractive. While the lake is the central attraction, there are numerous other points of interest including canyons, waterfalls, and some vast panoramas obtainable from the tops of park summits; the highest, Mount Scott, is nearly 9,000 feet high. The pinnacles, in the canyon of Wheeler Creek near the east entrance, are annually visited by thousands. Wildlife is abundant. There are numerous species of small mammals. Over 100 species of birds may be seen in the park. Black bears and deer are common.

The rim road is unlike anything else in the world, being 35 miles of highway that completely encircles the crater rim, offering incomparable views of the lake and crater, with occasional glimpses of a vast panorama of southern Oregon and northern California. For those who wish to hike there are many miles of trail in the rim area. One of the most popular of the trails is the Crater Wall Trail leading from the rim village to the waters edge. Descending this trail the visitor realizes that in approaching the waters edge the intensity of the color of the water increases, and from the waters edge the visitor gains a magnificent impression of the grandeur of the colorful crater walls towering

500 to 2,000 feet above the water. Throughout the summer launch service is available for trips around the lake and to Wizard Island. There is a trail to the summit of the island. Rowboats are available for visitors wishing to enjoy excellent trout fishing in the crystal clear water of Crater Lake.

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Glimpses of Our **National Parks**

• VIII •

THE PLATT NATIONAL PARK

OKLAHOMA

Special Characteristics: Numerous Cold Springs

PLATT

National Park in southern Oklahoma shares with Hot Springs National Park in Arkansas the distinction of having been set aside because of the mineral properties of the waters.



Lincoln Bridge—Platt National Park

The gently rolling area of the park offers a pleasing relief from the comparatively level surrounding country. Most of the area is well-wooded and traversed by picturesque streams with a number of springs, small waterfalls, and cascades. Travertine Creek, which flows through the eastern portion of the park, is a beautiful stream of clear, sparkling water, fed by numerous springs.

Within the park there are 32 springs of major importance and several minor ones. Eighteen may be classed as sulphur, 6 as fresh water, 4 as iron, and 3 as bromide. While the waters are free to all, they should be used extensively only upon the advice of a physician.

It is not known definitely when the spring waters first were used for healing purposes. Tradition has it that the springs were known to the Indians and that for many decades before the coming of the white man the creek banks were dotted with tepees of those who came to drink the waters at certain seasons of the year.

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Platt National Park is located within the holdings of the Choctaw Nation of the old Indian Territory, established in 1832. The greater part of the area was purchased from the Indians when the Sulphur Springs Reservation was established in 1902. In 1906 the name was changed to Platt National Park.

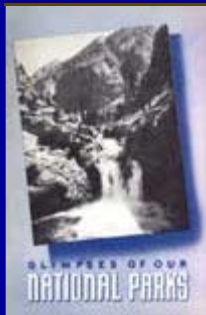
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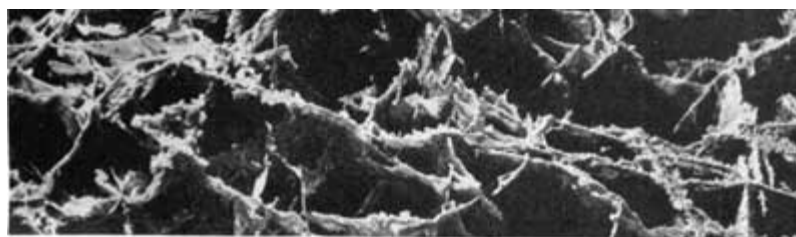
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THE WIND CAVE NATIONAL PARK

SOUTH DAKOTA

Special Characteristics: Limestone Cave With Unusual Boxwork Formations

THE southwestern corner of South Dakota, in which Wind Cave National Park is located, has a fascinating story of earth-making to tell. It ranges from ancient fossil deposits buried in the Badlands telling a tale



Characteristic boxwork formations not found elsewhere in the United States—Wind Cave National Park

of prehistoric alligators, rhinoceroses, three-toed horses, and other long extinct animals, to the lofty, needlelike formations that erosion has sculptured of granite high up the forest-clad slopes of the Black Hills.

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

The strong currents of wind that blow alternately in and out of the mouth of the

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cave suggested its name. This strange phenomenon is believed to be caused by changes in the atmospheric pressure outside. When the barometer falls the wind blows outward; when it rises, the wind blows in.

The present opening was made by digging down about 6 feet to the first of a series of corridors and galleries decorated with a variety of crystal forms.

There are very few stalagmites and stalactites, the most beautiful of the cave deposits being of the type known as "boxwork." It is composed of delicate veins of calcite deposited in cracks in the limestone. The surrounding rock, more easily dissolved than the veins, has been carried away, leaving the vein deposits projecting from the surface. Exquisite tiny crystals of aragonite (a form of calcium carbonate) are also present in certain parts of time cave.

WILDLIFE ABUNDANT

The surface area of Wind Cave National Park furnishes one of the best examples of the undisturbed wildlife on our western plains. Surrounded by a high fence, its 12,000-acre range supports over 200 bison, about 50 antelopes or pronghorns, about the same number of mule deer and 150 wapiti or elk. The motorists may see the buffalo herd and at least a few antelope grazing peacefully on the rolling hills. Wapiti can be seen only at dusk or early in the morning when they come out of the yellow pine woods to graze. There are numerous small animals. Prairie dogs enjoy life in several "towns" just as they did before the white man arrived and started extensive poisoning campaigns because of interference with agricultural pursuits. Once in a while a coyote is seen. In spite of the comparatively small area and uniformity of conditions there is a surprisingly wide variety of bird life. Hawks are abundant and other characteristic plains birds are the western meadowlark, horned lark, white-rumped shrike, western nighthawk and dickcissel.

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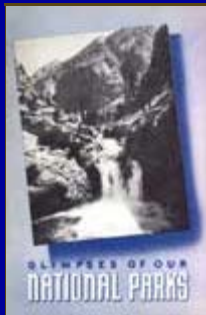
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Glimpses of Our National Parks



THE MESA VERDE NATIONAL PARK

COLORADO

*Special Characteristics: The Nation's Major Archeological Preserve, and
Spectacular Mesa and Canyon Scenery*



Spruce Tree House—Mesa Verde National Park

RADIATING from "Four Corners," where the States of Colorado, New Mexico, Utah, and Arizona meet at a common point, is a vast land of scenic grandeur, inhabited by unusual people, and rich in monuments and abandoned homes of still earlier tribes of the prehistoric past.

From this great inter-mountain plateau rise huge monoliths, mesas, and mountain ranges. Here live, in primitive fashion, the virile and inimitable Navajos, the peaceful and friendly Pueblos, and the more warlike and sullen Utes, all practicing the handicrafts of the ancients.

Dominating this region like a huge and unscalable fortress towers the Mesa Verde—a tableland 15 miles long, more than 9 miles wide, and rising 1,500 feet above the surrounding valleys, intriguing and challenging all who see it.

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In 1906 the Congress set aside as a national park an area of approximately 52,000 acres on the Mesa Verde, which today is recognized as the Nation's major archeological preserve. Mesa Verde National Park enjoys the distinction of being the only one of the great western national park areas created to preserve the works of men.

The trip to the top of the Mesa Verde is made over a spectacular highway, oil surfaced and of double width, from which the visitor obtains magnificent views into four States. The memorable ride along the north escarpment is followed by a beautiful winding drive to park headquarters, passing through dense juniper and pinyon forests, where wild flowers and shrubs bloom in profusion from early spring until late autumn.

WORLD'S BEST PRESERVED CLIFF DWELLINGS

The southern exposure of the mesa is gashed by deep, precipitous canyons in whose walls, high above the stream bed, nature has eroded unnumbered caves. It is in these natural canyon caves that the largest and best preserved cliff dwellings in the world are found. Not one or two, but hundreds of these magnificent prehistoric dwellings are revealed to the astonished visitors as they travel over the scenic rim drives and picturesque trails. Back amid the forests on the mesa top are found additional thousands of early homesites. The variety and complexity of the ruins and the evidence of the material culture of the aboriginal builders all point to a long-time occupation of the Mesa Verde. Archeologists who have studied the material evidence of the ancient inhabitants place a relative time age of the prehistoric Indian occupation ranging approximately from the beginning of the Christian era to 1300 years A. D.

In early times a sizable population sought shelter and built homes on the mesa. The people obtained their livelihood by practicing agriculture, cultivating corn, beans, squash and melons as the major crops. The native fruits were gooseberries, service berries, choke cherries, pinyon nuts, acorns and the prickly pear. Bones of the deer, mountain sheep, turkey, squirrel, wood rat, and prairie dog show that these early inhabitants were good hunters also, and had a natural tendency to balance their diet.

No doubt their life was hard, but they were a religious people who worshipped the Sun as the father of all, and the Earth as the mother who brought all material blessings. Confident of the goodness and favor of their gods, they depended upon them to make the rain fall and the corn grow tall. The ruins of Sun Temple, Fire Temple, and the many hundreds of kivas are truly indicative of the full ceremonial life led by these ancients.

The caves were shelter not only from the elements, but from human enemies as well, and these peace-loving people no doubt treasured the safety afforded them,

FINE COMMUNITY LIFE DEVELOPED

The first tribes coming to the Mesa Verde had little culture when they scaled the precipitous cliffs and sought this shelter in the embracing canyons. With the successive generations they made interesting cultural progress. These

ancient dwellers were not content with rude buildings and outgrew the natural cave and earth homes that satisfied less civilized Indians to the north or south. Here, in favorable surroundings provided by nature, lived America's first apartment house builders. Developing a fine community and social life, these people built complex structures of stone and timber, some containing hundreds of rooms.

They possessed no written language, and the only records found today are the symbols woven into their baskets, painted on earthen pottery, or scratched upon the sides of the cliffs adjoining their habitations. Their sense of beauty was keen, and their art true, though primitive and generally symbolic. Even as judged by the highly developed tastes of today, their decoration of cotton fabrics and ceramic work is beautiful. Arrow points, knives, and grinding mortars were fashioned of stone; they wove intricately patterned blankets and made attractive sandals.

The homes and monuments of this advanced group of prehistoric Indians may be seen by all who choose to visit Mesa Verde National Park, in southwestern Colorado.

Cliff Palace, Balcony House, Spruce Tree House, Square Tower House, Far View House, Sun Temple, Fire Temple, and other of the major ruins are daily entered by visitors in the company of park ranger-naturalists who explain the salient features of the ruins and their builders. In a large museum is exhibited a splendid collection of their art and industry, as well as skeletons and mummies of the makers. Nightly, as people gather about the campfire, the story of the ancients is told by the ranger-naturalists; and Navajo Indians living in the park perform the ancient ceremonial dances of their people, to the beat of chant and tom-tom.

A visit to Mesa Verde National Park is an educational experience, full of interest and pleasure. The winters are mild and summers cool and there are many canyons and thousands of ruins. Away from the improved highways are foot and horseback trails that lead into a wilderness full of ruins yet unexcavated—many unexplored.

Days spent among the ruins, and evenings by the campfire, will create a lasting impression of the charm and beauty of this unique national park.



Cliff Palace—Mesa Verde National Park

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Glimpses of Our National Parks

• XI •

THE GLACIER NATIONAL PARK

MONTANA

(United States Section of the Waterton-Glacier International Peace Park)

Special Characteristics: Rugged, Colorful Mountains of Distinctive Shape; Enormous Twisting Glacier-Scooped Valleys; High Precipices; 200 Alpine Lakes of Great Beauty; 60 Small Glaciers

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



Camping party at foot of Grinnell Glacier—Glacier National Park

peaks. 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.

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Its geological history is identical with that of the Canadian Rockies, but the region lies in a much older rock formation. There is 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 millions of 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. From the overthrust place, erosional agents, principally glaciers, carved the mountains, precipices, and gorges that are the distinguishing beauty of the Glacier National Park today.

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 millions of 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 today.

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 mountain masses of smaller size in whose hollows lie gemlike lakes.

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 200 known lakes, many of them stocked with fish. There may be small ones in the wilder parts which white men have not yet seen.

This park was not seen by white men until 1846, when Hugh Monroe visited and named St. Mary Lake. In 1853 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 1895 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.

GOING-TO-THE-SUN HIGHWAY

The Going-to-the-Sun Highway, opened to travel throughout its length in 1934, is a magnificent transmountain road, the only highway crossing the Continental Divide within the park. By means of this spectacular roadway,

visitors unable to take to the trails afoot or on horseback may penetrate into the mountains, going over the divide by way of famous Logan Pass.

It is the plan of the National Park Service that no other road shall be constructed across the park, which always will remain primarily a wilderness area.

INTERNATIONAL PEACE PARK

The Waterton-Glacier International Peace Park was established in 1932 by Presidential proclamation, as authorized by the Congress of the United States and the Canadian Parliament.

At the dedication exercises in June of that year, the following message from the President of the United States was read:

The dedication of the Waterton-Glacier International Peace Park is a further gesture of the good will that has so long blessed our relations with our Canadian neighbors and I am gratified by the hope and the faith that it will forever be an appropriate symbol of permanent peace and friendship.

In the administration of these areas each component part of the Peace Park retains its nationality and individuality. The Chief Mountain International Highway connects the two sections.



Red Eagle Lake—Glacier National Park

A fishing camp on this lake has no telephone. Mail and newspaper delivery is indefinite.

It is an ideal vacation spot for the city-wearied.

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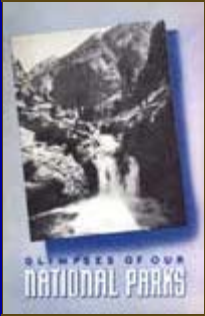
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Glimpses of Our
National Parks

• XII •

THE ROCKY MOUNTAIN NATIONAL PARK

COLORADO

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

THE Rocky Mountain National Park is in Colorado, about 70 miles by road northwest of Denver. Find Longs Peak on a good map and there is the center of the snow-topped mountains which constitute this high-in-the-air park.

These mountains are part of the Continental Divide, which is the name given to the irregular line of high land running north

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Continental Divide across Forest Canyon from Big Cut on Trail Ridge Road—Rocky Mountain National Park

and south through North America that 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 giant of them all, rises 14,255 feet above sea level, and most of the other mountains in the Snowy Range, as it is some times 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

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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 have a thick and close covering of 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 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 carpets of alpine flowers. Grass grows in sheltered spots even on the highest peaks and furnishes forage for the picturesque Rocky Mountain Bighorn that dwell far up in these high open places, and may sometimes be glimpsed on exposed ridges.

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 it becomes a tiny cloud. This grows with great rapidity. In 5 minutes, perhaps, the mountaintop 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 is startling to look down on the lightning.

ROCKY MOUNTAIN BIGHORN

This range was once a famous hunting ground for large game. Lord Dunraven, the English sportsman, visited it yearly to shoot deer, bear, and Bighorn, 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.

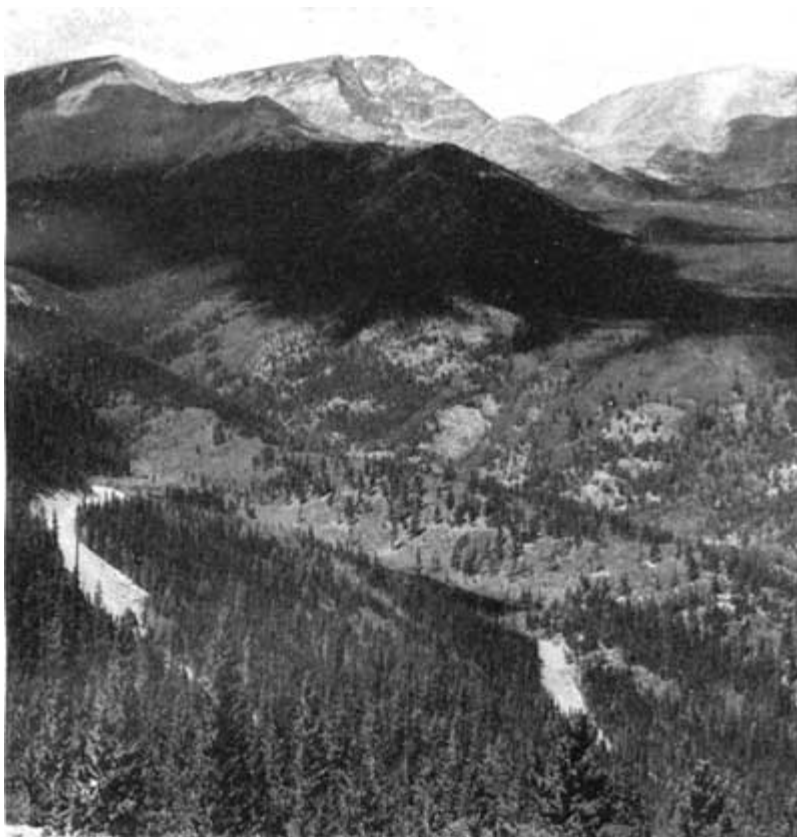
These lofty rocks are the natural home of the celebrated Rocky Mountain Bighorn, which is much larger than any domestic sheep. These Rocky Mountain sheep, even the lambs, make descents down seemingly impossible slopes. They do not land on their curved horns, as many persons declare, but upon their four feet held close together. Landing on some nearby 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 Bighorn 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 flanking ridges, 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.

Until 1868, when the first successful ascent was made by Maj. J. W. Powell of Grand Canyon fame, Longs Peak was considered unscalable. The most popular route to the summit today is 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 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. Fine small glaciers, remnants of former mighty sheets of ice, lie in sheltered gorges above the 12,000-foot level.



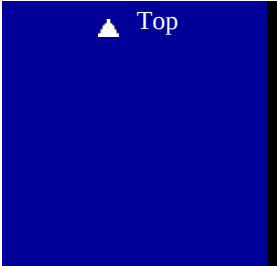
The Mummy Range and Mount Ypsilon from the Trail Ridge Road

The Trail Ridge Road is one of the highest and most spectacular automobile roads in America. Its four-mile section over 12,000 feet in altitude is probably the longest stretch of road ever built at such a height. A trip across the park on this mountain highway is a never-to-be-forgotten experience. The road climbs to the very crest of the range and then follows the ridge. Valleys and parks lie thousands of feet below; rivers look like tiny silver threads and automobiles on the highways on the floors of the valleys seem to be only minute moving dots.

To the south an unexcelled view of the most rugged portion of the Front Range spreads out, while to the north, across Fall River Valley, the view is dominated by the majestic Mummy Range. Far to the west is the Never Summer Range. The mountain setting is superb.

ACCESSIBILITY

One of the striking features of the Rocky Mountain National Park is the easy accessibility of its peaks. 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 even better time on these mountain trails, hiking across the Continental Divide from the hotels of one side to those of the other between breakfast and late dinner. Or one may motor via the Trail Ridge Road in a few hours.



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Glimpses of Our **National Parks**

• XIII •

THE HAWAII NATIONAL PARK

HAWAII

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

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Hawaiian islands are a land of coral reefs, tropical palms and flowers pineapples and sugarcane, sculptured mountains, rainbows, music, earthquakes,



Lava Cascades—Hawaii National Park

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 or ancient drums. 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 Hawaii.

There are 12 Hawaiian islands in all, 8 of them hospitable enough for habitation. They rose from the ocean's bottom in a series of submarine

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eruptions. Coral growths have enlarged and enriched some of 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. Dormant Haleakala on 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 7-1/2 miles long by 3 miles wide. Its surrounding walls rise more than 1,000 feet. Its broad, rolling, rainless, sandy floor is decorated with plants famous under the name of silverswords—yuccalike shrubs 3 or 4 feet high, whose slender leaves gleam like polished stilettos. From this great multicolored floor within its lava rim rise, to a height of several hundred feet, 13 volcanic cones. "It must have been awe inspiring," writes William R. 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 encloses 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 13,680 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 koa 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, is 3 miles long by 1-1/2 miles wide.

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. About every 4 years it gets into action with a beautiful pyrotechnic display either within its summit crater or from fissures on its sides which send streams of molten lava writhing down the mountain's slopes.

Between November 21, 1935, and January 2, 1936, Mauna Loa erupted spectacularly, sending down its flanks a tremendous flow of lava which for a time threatened the city of Hilo. Bombing of the lava flow on December 27 so lessened the activity that the danger was averted and the flow gradually ceased.

KILAUEA

The most spectacular portion of the park is that including the volcano of Kilauea, usually the most active. This volcano, probably older than the towering Mauna Loa, its neighbor, creates the impression of being a crater in the side of a higher mountain, although in reality it is itself a mountain with an elevation of more than 4,000 feet. This illusion is the result of the broad depression at its top and of its gentle slopes, caused by lava flows from many lateral vents.

Within the depression is a vast pit, Halemaumau sometimes called the "House of Everlasting Fire". This pit often contains a boiling, bubbling mass of molten lava whose surface fluctuates from bottom to rim. Activities averaging at least one outbreak a year have occurred since 1924. Its risings are accompanied by brilliant fountains and inflows of liquid lava, and its lowerings by tremendous avalanches which send up enormous dust clouds.

Nearly a century and a half ago Kilauea became unusually active, and its violent blast of ash destroyed a Hawaiian army. From that time—1790—no rocks or ash were ejected until 1924. During the autumn of 1923 the lake of fire drained away, but gradually returned until the pit contained a 50-acre lake of seething lava. Lava geysers appeared on its surface, sending up incandescent sprays 150 feet into the air. In 1924 this lake 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 steam blasts unexpectedly occurred, the vents were cleared by tremendous explosions hurling boulders and ash for thousands of feet into the air. The violent disturbance continued for 3 weeks, and at the end of that time the fire pit had been enlarged to four times its former size, the opening being 190 acres in area and 1,200 feet deep. A few weeks later, when all was quiet, a roaring jet of lava appeared at the bottom of the pit, sending up a steady spray 200 feet high, building up a small cinder cone and forming a 10-acre lava lake on the floor of the pit. After giving a brilliant display for a couple of weeks the fountain subsided and the volcano became dormant. In July 1927 a similar display occurred, lasting for 2 weeks, and in January 1928 the fire returned for 1 night only. Gas and vapor rise continually.



Fern jungle—Hawaii National Park

During 1929 spectacular lava inflows occurred in February and July, raising the floor with new material to depths of 55 and 45 feet, respectively. The pit depth in December 1929 was 1,050 feet and the floor area 48 acres. On November 19, 1930, molten lava again appeared in Halemaumau. Activity continued until December 7. This activity raised the floor of the pit 70 feet; the surface area of the floor then covered 62 acres.

Following a series of earthquakes, molten lava broke into the bottom of Halemaumau on December 23, 1931. The activity lasted as a spectacular display until January 5, 1932. During the activity the pit was filled to a depth of 100 feet with lava, resulting in a new floor of 88 acres, which was 860 feet below the rim of the pit.

In the early morning of September 6, 1934, at about 2:45 a.m., without much preliminary warning, molten lava again returned to the fire pit in Kilauea. This eruption in its early stages was one of the most spectacular on record. Highly charged with gas released from tremendous pressure the frothy lava burst through a crack 700 feet long, halfway up the western wall of the crater, cascading in rivers of fire 425 feet to the floor below. The force of the lava cracked open the old floor left by the 1931-32 eruption across its northern and northwest end, and along the foot of the western wall dense clouds of sulphur fumes poured out, as the fiery fountains shot the liquid lava high into the air. As in the previous eruption, blocks of light pumice thrown out from the vents were whirled upward by the heat currents and gales of wind and deposited in shattered fragments over the land for more than a mile to leeward. In a few days the crater had been filled with new lava to a depth of 70 feet, and instead of the countless frothy fountains of the initial outbreak the activity centered in a lake of fire with from 5 to 10 fountains continuously throwing jets of heavy liquid lava from 50 to 200 feet above the lake.

TROPICAL VEGETATION AND RARE NATIVE BIRDS

The Park is also noted for its luxuriant tropical vegetation, which forms a striking contrast to the volcanic craters and barren lava flows. Gorgeous tree ferns, sandalwood, and koa vie with the flowering ohia trees in making the forests unusually interesting to the visitor.

Kipuka Puaulo, a beautiful natural park, also known as Bird Park, is an

interesting feature of the Kilauea area. This kipuka or oasis has escaped encircling lava flows, and its rich black soil supports a marvelous variety of vegetation. As many as 25 species of trees grow here. This favored spot of 100 acres is the haunt of many beautiful and rare native birds.

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Glimpses of Our National Parks

• XIV •

THE LASSEN VOLCANIC NATIONAL PARK

CALIFORNIA

*Special Characteristic: Recently Active Volcano and Interesting Display of
Lava Formations and Hot Springs*

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



Lassen Peak—Lassen Volcanic National Park

Washington and Oregon and portions of California, Nevada, Idaho, Montana, and Wyoming. Most of this great region now 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.

Today 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 recent volcanic activity.

Lassen Peak is at the southern end of the Cascade Range. It had been quiet for

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centuries. 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, was magnificent as a spectacle and educationally typical of volcanism. From the first explosion to February 1921 Lassen remained in more or less constant eruption. Within that period occurred nearly 300 eruptions between which the volcano emitted day and night enormous quantities of 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 four 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. Several square miles of forest were uprooted. 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 lava overflowed the crater and extended 1,000 feet down the west side of the mountain. A small amount of lava also poured down the east side.

Lassen's forests and streams are a dramatic contrast to its volcanic features.

In addition to Lassen Peak, which rises 10,453 feet in altitude, other interesting volcanic cones in the park are Cinder Cone, 6,913 feet, Prospect Peak, 8,342 feet high, and Harkness Peak, 8,039 feet. Then there are smaller volcanic peaks and fantastic lava fields, both ancient and modern, fumaroles, hot springs, and mud volcanoes, as well as boiling lakes and other interesting phenomena of a volcanic region. The cones, which are easily climbed and studied, have remained nearly perfect.

The west front of the park exhibits a magnificent sky line, culminating on the north in pink-toned lava crags which rise to a height of over 8,500 feet above sea level, and over 3,300 feet above the older lava flows upon which they rest.

Cinder Cone, with its fantastic lava beds and multicolored volcanic ejecta, is unusually beautiful. It is bare of vegetation and leaves the impression of having been formed so recently that the heat of creation should still be present. Evidence has been found, both historical and scientific, to indicate that some of the flows seen here did occur as late as 1850-51. Adjoining Cinder Cone on the south and east are the chromatic dunes, colorful heaps of volcanic ash. Cinder Cone itself is nearly all of a reddish, dark brown, or cinder slate color.

In the southern half of the park, following roughly a semicircular course, are located six distinct spots wherein are to be seen active



Kings Creek Falls—Lassen Volcanic National Park

manifestations of volcanic activity.

The highly colored earth, the sulphurous odors that rise from the ground, the roar of live steam coming up under pressure from vents, the gurgling mud pots, and the noise of fumaroles, steamers, and small geyserlike formations all contribute to the weird and supernatural atmosphere that seems to hang over most of these areas.

FORESTS AND SPARKLING LAKES

Impressive canyons, scored deeply into the ancient lavas in the westerly and southerly regions of the park, add to its attractions. Primeval forests cover the entire area, except where the loftier peaks rear their summits above timber line.

Through the forest curtain the silvery sheen and shimmer of innumerable alpine lakes greet the eye. The splendid Chain-of-Lakes in the eastern region of the park extends from Juniper, with a shore line of 5 or 6 miles at the northerly base of Mount Harkness to the northward, including Horseshoe Lake, which divides its waters between the Feather and the Pit, to flow apart for several hundred miles and meet again; then linking in Snag Lake with its broad beaches of volcanic sand formed by the ejecta from Cinder Cone; and on to Butte Lake near the eastern base of Prospect Peak with its rugged shores of lava and its scenic setting. Through the clear waters of Snag Lake, and at many places above the surface of the water, can be seen standing the remains of trees that grew at the south end of the lake before it was dammed by the lava flow and raised to its present shore level.

ACCESSIBILITY

Lassen Volcanic National Park is easily reached over excellent highways. The

Lassen Peak Loop Highway, an interesting scenic drive across the park, passes areas of live volcanic activity and traverses the devastated area which was denuded of forest by the eruptions of 1915.

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• XV •

THE MOUNT MCKINLEY NATIONAL PARK

ALASKA

Special Characteristic: A Snow-Clad Mountain Over 20,000 Feet High Rising from a Rolling Plateau, Inhabited by Caribou and Mountain Sheep

MOUNT

McKinley is the highest mountain in North America.

This majestic peak rears its snow-covered head high into the clouds, reaching an altitude of 20,300 feet above sea



Mount McKinley—Mount McKinley National Park

level and 17,000 above timber line. From the rolling plateau country on its north and west, one may look up 17,000 and more 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.

Down the 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 2,500 to 3,000 feet in altitude.

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 flowing valleys and friendly animals, its long winding approachable glaciers, and its background of the Alaska Range and Master Mountain, that makes up 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

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ridges flow from the divide between the peaks a series of great glaciers which constitute the only known passage to the summit.

All of the larger northward-flowing glaciers of the Alaska Range rise on the slopes of Mount McKinley and Mount Foraker. Of these the largest are the Herron, having its source in the neve fields of Mount Foraker; the Peters, which encircles the northwest end of Mount McKinley; and the Muldrow, whose front is about 15 miles northeast of Mount McKinley and whose source is in the unsurveyed heart of the range. The fronts of all these glaciers for a distance of one-fourth to one-half a mile are deeply buried in rock debris.

Along the crestline there are many smaller glaciers, including many of the hanging type. Both slopes of Mount McKinley and Mount Foraker are ice covered.

The greatest glaciers of the Alaska Range are on its southern slope, which is exposed to the moisture-laden winds of the Pacific. The largest of the Pacific slope glaciers, however, lie in the basin of the Yentna and Chulitna Rivers. These have their source high up in the loftiest parts of the range and extend south far beyond the boundaries of the park.

WILD ANIMAL PARADISE

The Mount McKinley region was made a national park primarily to protect its magnificent herds of game animals from hunters as the opening up of the country by rail brought increasing numbers of people into the area.

Outstanding among these animals are the caribou, a species related to the Old World domesticated reindeer of Santa Claus fame. Caribou and reindeer are the only members of the deer family in which both sexes have horns.

Though many thousand caribou graze within McKinley Park, their roving disposition makes their whereabouts at any given time uncertain, and this feature imparts real zest to the quest of those desiring to see them. They travel singly, in pairs, or in small bands, while a herd of hundreds may be in one valley on a certain day and have vanished the next. Then, too, the search may lead anywhere from the low-lying barrens to the high steep ridges of the Alaska and Secondary Ranges.

Almost everywhere in the park the presence of caribou is indicated by the well-defined trails through the tundra or by certain battered willows which the animals have used for rubbing the velvet off their horns. Caribou also visit the licks, where their large, rounded, cowlike tracks give plain evidence of their visitations.

Vying with the caribou as a wildlife attraction are the herds of white Alaska mountain sheep which are among the handsomest game animals in the region and the most fascinating to pursue and observe.

The Alaska moose is the largest animal found in Mount McKinley Park. It is, roughly, the size of a horse, large males weighing as much as a thousand pounds. It has the distinction of being the largest member of the deer family. In addition to this, the moose reaches its maximum size in Alaska.

The tundra brown bear, belonging to a group containing the largest carnivorous animals in North America, frequently is seen within the park, Sometimes within the belt of perpetual snow.

These and many other animals and a wide range of bird species find sanctuary in the park at different seasons of the year. Particularly do many sea birds breed there, over 300 miles inland from sea water.

The surfbird is the most distinguished as well as the most elusive avian citizen of the park. For nearly 150 years, since the species was first given its scientific name, its nest and eggs remained unknown. The surfbird winters in South America as far south as the Strait of Magellan. It breeds among the mountain tops of central Alaska. Twice each year, in migration, it traverses the Pacific coasts of North and South America. The first and only nest and eggs of the surfbird known to science were found in McKinley Park in 1926, located on a barren rocky ridge, 1,000 feet above timber line.

ASCENTS OF MOUNT MCKINLEY

Numerous attempts have been made to climb to the summit of Mount McKinley, but only two have been crowned with complete success. Judge James Wickersham, of Alaska, made the pioneer attempt in 1902, but failed to reach the top.

The north peak is 300 feet lower than the south peak's altitude of 20,300 feet.

In 1912 a party under Dr. Herschel Parker and Belmore Brown succeeded in getting within a few hundred feet of the summit of the south pinnacle, which is the very top of the mountain.

In 1913 Archdeacon Hudson Stuck and former Superintendent Harry P. Karstens, of the park, with two companions climbed to the summit of the south peak and were the first men ever to achieve this goal.

Nearly 19 years later, a party composed of Alfred D. Lindley, Park Superintendent Harry J. Lick, Erling Strom, and Grant Pearson accomplished the same feat and 2 days later they climbed the north peak, thus achieving the distinction of becoming the first expedition to ascend both peaks forming the summit of the great mountain.

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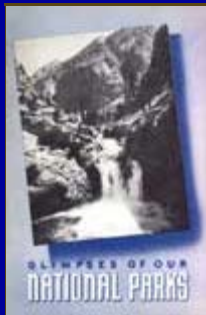
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• XVI •

THE GRAND CANYON NATIONAL PARK

ARIZONA

Special Characteristic: A Highly Colored, Mile-Deep Gorge, 4 to 18 Miles Across; 105 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



View from between Mojave Point and Pima Point—Grand Canyon National Park

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 tableland from 4,000 to 8,000 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, like the roadside ditch, started

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gradually digging the ever-deepening channel that now cuts this tableland. 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 waters have carved and polished through untold centuries.

AN UNPARALLELED SPECTACLE

Today the Colorado flows through a series of 19 self-dug canyons, one of which, the Grand Canyon, is 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 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 Grand Canyon which affords the finest spectacle was created a national park in February 1919. It is situated in northwestern 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 southwestern Wyoming. Together they gather the waters of 300,000 square miles of mountains. "Ten million cascade brooks," writes J. W. Powell, conqueror of the Colorado River, "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."



Section of Bright Angel Trail—Grand Canyon National Park

"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 today, a wall of marble tomorrow. 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 trans figured, 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 gleaming thread which he knows is the giant Colorado. He is numbed by the spectacle. At first he cannot 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.

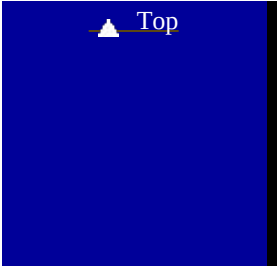
The Grand Canyon was first reported to the civilized world by the early Spanish explorers in 1540. The first good description of it was made in 1851 by the Sitgreaves expedition. The War Department explored the navigable waters from the south in 1858, but stopped at the foot of the canyons.

MAJOR POWELL'S FIRST EXPLORATION

No complete exploration of the Grand Canyon was made until 1869. when Major J. W. Powell, who afterward 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.

"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.



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Glimpses of Our National Parks

• XVII •

THE ACADIA NATIONAL PARK

MAINE

Special Characteristic: A Group of Granite Mountains Rising from an Island on the Atlantic Coast with Interesting Headlands on the Nearby Mainland

THE first national park in the East is on Mount Desert Island, Maine, and the adjoining mainland. It includes a group of low granite mountains abutting the sea, the only prominent elevation



Otter Cliffs from Ocean Drive—Acadia National Park

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, Maine, 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

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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 1916. 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 presented to the United States.

Compared with the huge bristling peaks of the Rockies and the Sierras, the mountains of the Acadia National Park are low indeed. But they are no less beautiful, and they are characteristic of our Northeast, as the Rocky Mountain and Sierra 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.

Chief of all is the mingling of mountain and sea. The waves lash their abrupt rock-bound heights, beating hollows in their foundations, under-mining 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 charged with the savor of the sea. The visitor has his choice of many pleasures. He may vary his days on the mountains with boating, sailing, and fishing, and even salt-water bathing, if he be hardy enough to stand the shock of the cold water. 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; that 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.

WHERE ARCTIC AND TEMPERATE ZONES MEET

Acadia National Park is remarkable as a wildlife sanctuary, plant and animal. Land and sea, woodland, lake, and mountain—all are represented in it in wonderful concentration. In it, too, the Northern and Temperate Zone floras meet and overlap, and land climate meets sea climate, each tempering the other. It lies directly in the coast migration route of birds and exhibits at its fullest the Acadian Forest, made famous by Evangeline; and the northernmost extension of that great Appalachian Forest which at the landing of De Monts stretched without a break from the St. Lawrence to the Gulf, and is the oldest by the record of the rocks and richest in existing species of any mingled hardwood and coniferous forest in the Temperate Zone. And it possesses, also, a rich biologic field in the neighboring ocean, the parent habitat of life. Deeper waters apart, the sea beach and tidal pools alone form an infinite source of interest and study, while the ocean climate, like the land one, is profoundly

different from that to the southward, off the Cape Cod shore. A marine biological laboratory has been established on the ocean shore, through the cooperation of the Wild Gardens of Acadia, to take advantage of the unusual opportunity afforded for study in this field.

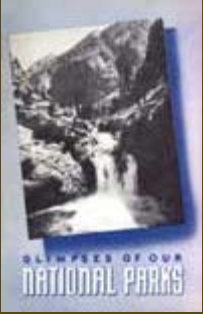
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Glimpses of Our
National Parks

• XVIII •

THE ZION NATIONAL PARK

UTAH

*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 canyon Country of vivid coloring and erosional formations of great height and spectacular carving.

Where the massive Navajo sandstone beds, overlying a region of many thousands of square miles, reach their

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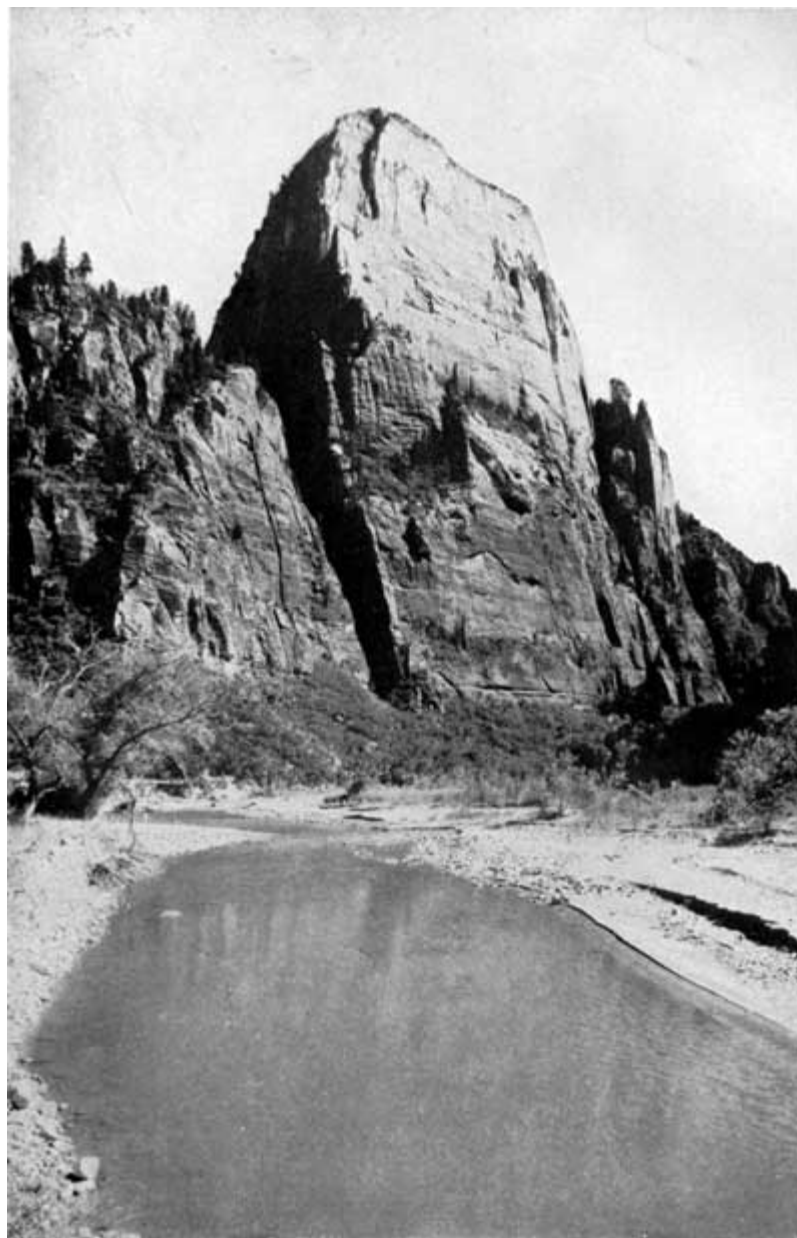
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Great White Throne—Zion National Park

greatest
thickness, the
turbulent

Virgin River,
cutting down

vertically for a half mile or more, has excavated a spectacular gorge known as Zion Canyon. Sandstones and shales of many hues form the slopes and low cliffs of the base, on which rests the massive Navajo sandstone forming vertical cliffs. The vertical walls have been cut into many majestic and fantastically modeled masses.

The gorge has been known to the Mormons since the late fifties, and was first explored in 1858. 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 reserved for scientific reasons as the Mukuntuweap National Monument. 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.

The valley of Zion Canyon has about the same dimensions as the famous Yosemite Valley. Extraordinary as are the sandstone forms, the color is what

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most amazes. The base slopes and cliffs are a deep red; the lower two-thirds of the Navajo sandstone cliffs are rich reds and browns, and the upper one-third is white, tinted with buffs, grays, and reds. Sometimes the white is surmounted by a cap of vivid red, remains of another red stratum which once overlay all. These colors change remarkably under changing light conditions of clouds or of shadows cast by the cliffs. The colors are deepest and most glowing when illuminated by brilliant sunlight reflected from opposite cliffs.

Moonlight effects in the canyon are among the most remarkable to be found anywhere in the world.

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 28 miles from the Arrowhead Trail (U. S. 91), or 25 miles from Mount Carmel Junction on U. S. 89, over excellent highways. 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 2,500 feet. Its lower two-thirds is red, surmounted by 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, the Twin Brothers and Mountains of the Sun. 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 the Great White Throne, the most remarkable monolith of the region. This mighty rock 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.

North of the Great White Throne the chiseling stream makes a great swing, past a projecting rock formation on the left known as the Great Organ. Farther on, the mystic temple of Sinawava is entered. This is a great natural amphitheater, encircled with walls that appear to close behind as one enters. The floor is lined with deciduous trees accompanied by a remarkable assortment of other vegetation. In the center of the circle stand two large stone pillars. The larger is the altar, the smaller one the pulpit. The south side of the altar bears the profile view of a great stone face known as the Guardian of the Temple, and is chiefly remarkable for the change of expression which takes place as one enters the sacred confines which he guards.



The Three Patriarchs—Zion National Park

THE ZION-MOUNT CARMEL HIGHWAY

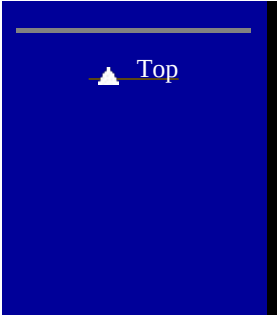
The Zion-Mount Carmel Highway is famous for two reasons—it was built inside a solid cliff when there seemed no practicable way of getting around the great canyon walls and, from six galleries broken out through the face of the cliff in its tunnel of more than a mile in length, it affords amazingly beautiful views of southern Utah. So precipitous are the cliffs through which the tunnel runs that the galleries had to be excavated first and the tunnels completed between these points. Nearly half of the 24-mile-long highway is within the park. The Zion-Mount Carmel Highway was the first road in a national park to involve tunnel construction.

HISTORIC INTEREST

Cliff dwellings have been discovered in Zion Park and its vicinity, proving that long before Little Zion gave sanctuary to the Mormons it was the home of a prehistoric people. It is believed that these ancients farmed down near the creek while living up in the face of the cliffs at places that would be almost inaccessible to hostile tribes unfamiliar with the region. Many interesting relics have been found in these ruins.

NATURE'S WORKSHOP

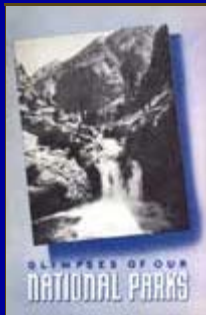
As though it were not enough to have been a place of refuge in prehistoric and modern times, and now a thing of beauty that gladdens and thrills and inspires all who see it, this area is also a workshop of nature where new wonders are being formed, for here are natural bridges in the making. The most interesting of these is the Great Arch of Zion, located in Pine Creek Canyon, which is 720 feet long, 580 feet high, and is cut back into the supporting cliff a distance of 90 feet.



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Glimpses of Our **National Parks**

• XIX •

THE HOT SPRINGS NATIONAL PARK

ARKANSAS

Special Characteristic: Medicinal Hot Springs

As DIFFERENT, almost, as possible from the great wilderness national parks, 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.



Bathhouse Row—Hot Springs National Park

In 1832 Hot Springs was set aside as a Government reservation by act of Congress. In its earlier conception, while providing for social use of lands that pointed the way to broader development, Hot Springs could not be considered a national park. The sole purpose of its establishment as a national reservation was the alleviation of human ills through the use of the waters believed to possess medicinal value, making them available to all and preventing their commercial exploitation. In 1921 Congress gave it national-park status.

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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, in 1807, began the settlement which has developed into the 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 neighboring 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 1,006 acres enclosing all the 47 hot springs. Nine bathhouses are on the Federal area and nine in the city, all under Government regulation including the Leo N. Levi Hospital which operates a bathhouse subject to provisions of an act of Congress. In the city are many hotels and boarding houses with a wide range of rates to meet all pocketbooks. The park contains, also, an Army and Navy hospital, a Public Health Service clinic and a free bathhouse operated by the Federal Government for indigent persons.

The hot springs were probably visited in 1541 by De Soto, who traveled this region extensively in that year and died in 1542 less than 100 miles away. Tradition has it that the medicinal properties of the hot springs were known to the Indians long before the Spanish invasion. It is said that Indian tribes warred for their possession, but that finally a truce was made which enabled all tribes to use their waters.

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THE BRYCE CANYON NATIONAL PARK

UTAH

*Special Characteristic: Amphitheater 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,
includes some
of the most
interesting
exposures of
the Pink Cliff
formation.
The rocks
which are
present in this
formation are
among the
most colorful
of any
forming the
earth's crust.
The major
beauty spots
of the area
are found
where
streams have
cut back into

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On the trail—Bryce Canyon National Park

the edge of the cliffs, forming amphitheaters or wide canyons filled with pinnacles and grotesque forms.

The Agua Canyon, Natural Bridge, and Rainbow Mountain sections are all magnificent and no trip into the park is complete without visiting them. Bryce Canyon, however, is the most spectacular and best known of all the wonders, and, due to the fact that the original park area included only this one canyon, the park takes its name from this feature. The canyon was named after Ebenezer Bryce, a Mormon pioneer, who was the first to settle near its mouth in the early seventies, and not after the famous English statesman.

In reality Bryce is not a canyon; rather it is a great horseshoe-shaped bowl or amphitheater cut by erosion into the Paunsaugunt Plateau and extending down a thousand feet through its pink and white rocks, chiefly limestone. The amphitheater is 3 miles in length and about 2 miles wide, and is filled with myriads of fantastic figures cut by weathering influences, chiefly by running water, and changes in temperature. Ages have been consumed in their making and even now they are undergoing change, probably as rapidly as at any other

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time. The older forms are gradually crumbling, and new ones are slowly appearing from the freshly attacked walls. That the rim of the canyon is gradually receding is shown by the large number of trees that have been undermined recently, and now either are precipitated into the canyon below or rest insecurely near the top of the wall.

Words can never convey an adequate conception of the fantasy and beauty of Bryce Canyon. It must be seen to be realized completely. From the countless variety of forms in the canyon it would seem that the imagination of some titanic sculptor had run riot and cut into the soft limestone every figure and shape known to or dreamed of by man. Domes, spires, and temples predominate.

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 limestone, and along the irregular edges of the canyon are steep slopes of this limestone merging into the pinks and reds of the lower layers. It is out of these pinks and reds, sometimes streaked with lavender and yellow, that the greater portion of the 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 top most 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. To enable visitors to really become acquainted with Bryce Canyon, a series of fine horsesback and foot trails has been built in the interesting area under the rim. Trails lead into Queen's Garden, the Silent City, Fairyland, Wall Street, Peek-a-boo Canyon, and other more remote points, each with its well-named peculiar and distinctive forms.

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Glimpses of Our National Parks

• XXI •

THE GRAND TETON NATIONAL PARK

WYOMING

Special Characteristic: Spectacular Teton Mountains, An Uplift of Unusual Grandeur

THE Grand

Teton National Park, only 11 miles south of the Yellowstone, embraces the most scenic portion of the Teton Range. The great array of peaks which

constitute the scenic climax of this national park is one of the noblest mountain massings in the world; it is alpine in the truest sense.



The Grand Teton Range—Grand Teton National Park

Southwest of Jenny Lake rises the culminating group of lofty peaks whose dominating figure is the Grand Teton itself, the famous mountain after which the range and park take their name. This group with its clustered, tapering spires towering aloft thousands of feet, hung with never-melting snow fields, resembles a vast cathedral.

Eleven peaks in the group are of such boldness and prominence that they rank as major peaks, the highest, the Grand Teton, rising 13,766 feet above the sea. Then there is an even greater number of lesser peaks that rise to elevations of more than 10,000 feet.

Added to these mighty peaks is a host of nameless pinnacles and crags which

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serve still further to make the Teton sky line the most jagged of any on the continent.

Most of the range is lifted above timber line into the realm of perpetual snow. The grandeur of the beetling gray crags, sheer precipices, and perennial snow fields is greatly enhanced by the total absence of foothills and by contrast with the relatively flat floor of Jackson Hole.

The larger lakes of the park, Leigh, Spring, Jenny, Bradley, Taggart, and Phelps, all lie close to the foot of the range and like beads are linked together by the sparkling, tumbling waters of Cottonwood Creek and neighboring streams. Nestled in dense forests outside the mouths of canyons, these lakes mirror in their quiet depths nearby peaks whose pointed summits rise with sheer slopes a mile or more above their level.

In this park, as in Glacier, Yosemite, Rocky Mountain, and others, the glaciers of the Ice Age played the leading role 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, 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.



Overlooking Jackson Lake and the Tetons—Grand Teton National Park

Jackson Lake, once perhaps the most charming and beautiful of all the lakes of this glorious wilderness region, lost much of its beauty through the raising of the water when it was dammed for reservoir purposes. Now, through the efforts of enrollees of the Civilian Conservation Corps working under National Park Service direction, the vast quantities of dead trees and stumps that marred the beauty of its shores have been removed.

This lovely lake is not included in the present park boundaries, but its inclusion has been proposed by the National Park Service, since it inevitably is a part of the picture of the Grand Tetons, whether technically in the park or not.

REGION FAMOUS IN HISTORY AND ROMANCE

Many of our national parks have been carved from wilderness areas previously little known to man and but seldom visited. The Tetons, on the contrary, are remarkably rich in historic associations. The Grand Teton itself has been referred to by an eminent historian as "the most noted historic summit of the West."

Up to the beginning of the last century Indians held undisputed sway over the country dominated by the Three Tetons. Then as now Jackson Hole was literally a happy hunting ground, and while the severe winters precluded permanent habitation, during the milder seasons bands of Indians frequently came into the basin on hunting or warring expeditions.

The Tetons first became known to white men in 1807-8, when the intrepid John Colter crossed the range presumably near Teton Pass on the memorable journey which also made him discoverer of the Yellowstone country. In 1811 the Astorians, under Wilson Price Hunt, entered Jackson Hole by the Hoback Canyon, and, failing in an attempt to navigate the Snake River, likewise crossed the Teton Range in the vicinity of Teton Pass, continuing thence to the mouth of the Columbia where the trading post, Astoria, was founded. The Tetons also figure in the adventures of the returning Astorians in 1812. In Washington Irving's classic account of the Astorian expedition (Astoria, published in 1836) the name "Tetons," French for "breasts," first appears in literature.

In the following decade known as "Fur Era" the Tetons became the center of remarkable activities on the part of fur trappers representing both British and American interests, the former by the Northwest and Hudson's Bay Co.'s, the latter by a succession of companies operating out of St. Louis, Mo. Could these ancient monuments speak they would make known some of the most interesting events in the annals of the fur trade.

The picturesque name "Jackson Hole" dates back to 1828, in which year Capt. William Sublette so named it after his fellow trapper, David Jackson, who was especially partial to this beautiful valley. The term "Hole" was used by the trappers of that period in much the same sense as is the word "basin" today, being applied to any mountain-girt valley.

To readers of western fiction, the Teton region, particularly Jackson Hole adjoining the park on the east, is best known as the locale of Owen Wister's famous story The Virginian. One of the great peaks of the Tetons now is known as Mount Wister.

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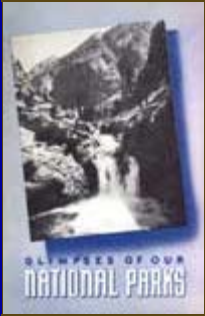
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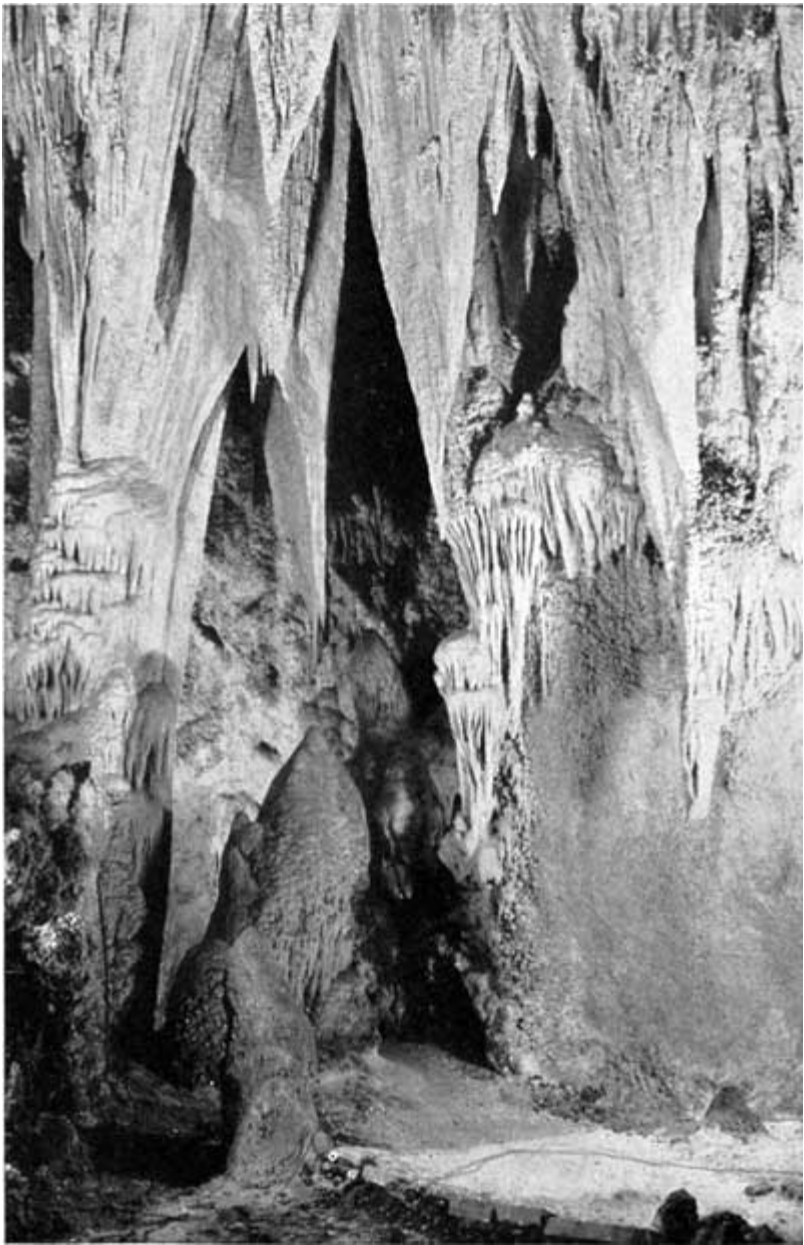
THE CARLSBAD CAVERNS NATIONAL
PARK

NEW MEXICO

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

AMONG the superb areas included in the national park system of the United States is a series of connected caverns of unusual magnificence and extent called the Carlsbad Caverns. They are located in southeastern New Mexico, in the rugged foothills of the Guadalupe Mountains. The region is picturesque semidesert

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Queen's Chamber—Carlsbad Caverns National Park

country, and its unusual cactus vegetation is as strange and interesting to many visitors as are the caverns themselves.

Carlsbad Caverns, like most caves, is a series of openings in a massive limestone which were made by percolating ground water. The Carlsbad limestone in which these caverns were formed was laid down originally in a sea of muddy water some 200 million years ago.

After the great series of chambers forming the main portions of the caverns were formed, nature took up the task of decorating them with a myriad of beautifully sculptured effects in the form of stalagmites, stalactites, more irregular spiral forms known as helectites, enormous columns, curtains seemingly of alabaster, and other limestone ornamentations.

The immensity of the large rooms, the beauty of form, and the impenetrable stillness leave an indelible impression upon all who venture into this fairyland.

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

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long, with a maximum width of 625 feet. At one place the ceiling rises to a height of 350 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.

Nearby 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.

EXTENT OF THE CAVERNS AND OF PARK

The size of the Carlsbad Caverns has not yet been determined. Already many miles of passages and chambers have been explored, and each year further mileage is conquered. How far the caverns extend under the Guadalupe Mountains can only be conjectured.

At the present time the cavern has three main levels, and there may be others not yet discovered. The first is at 750 feet, to which visitors are conducted. Below it is another vast subterranean apartment at 900 feet, and below that still another at 1,320 feet. None of these levels has been completely explored, nor is it the desire of the National Park Service to make further explorations until the present known areas are more fully developed.

EXPLORATION OF CAVERNS

The first white man known to have explored the caverns is Jim White, a cowboy of the locality. This was in 1901. Seeing a dark, moving column issuing from the region, he investigated and found a natural opening in the earth which led down to the caverns. The dark, smokelike column proved to be alive, a moving stream of bats emerging from their day-long siesta in the darkness of the caves.

With a young Mexican boy as his only companion, Jim White made extensive explorations of the caverns, insuring success in his return by leaving behind him a trail of smudge marks and strings. Many long stretches of string still remain in the less-visited portions of the caverns today, a monument to the intrepid courage of the young cowboy whose love of adventure made him the pioneer explorer of the world's greatest caverns.

After exploring Carlsbad Caverns, Jim White never missed an opportunity to take visitors into his find and share its beauties with them. Their reports of the size and magnificence of the underground chambers led to examinations of the caverns by representatives of the Federal Government and finally resulted in the reservation of the area for public use and enjoyment.

THE BAT SPECTACLE

The bat spectacle which first claimed the attention of Jim White and led to the discovery of the caverns is now one of the great attractions of the Carlsbad Caverns National Park.

Each evening at dusk, except during the winter period of hibernation, millions of bats come forth from a cavern 180 feet below the surface, flying in a spiral through the great entrance arch, and streaming off over the rim in a southerly direction, later to separate into flocks which disappear in the distance for a night's foraging. Beginning about sunset, the flight outward lasts for about 3 hours. The bats return before the following dawn.

It has been estimated that 3,000,000 bats during one night's foray consume a little over 11-1/2 tons of night-flying insects, such as various kinds of moths, beetles, flies, and mosquitoes.

During the day the bats hang by their legs, heads downward, in great clusters high on the walls and ceilings of their particular portion of the cavern. From October until March they hibernate, hanging in this position and seeming almost lifeless.

The portion of the cavern occupied by the bats is a long corridor extending a quarter of a mile eastward from the main entrance, and is not open to visitors.

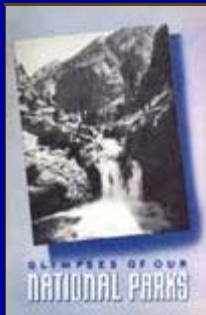
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THE GREAT SMOKY MOUNTAINS NATIONAL PARK

NORTH CAROLINA-TENNESSEE

Special Characteristic: Includes the Most Massive Mountain Uplift in the Eastern Section of the United States—A Veritable Paradise for the Hiker and Fisherman— Primeval Forests



A few peaks of the Great Smoky Range—Great Smoky Mountains National Park

"**M**YSTERIOUS, indeed", wrote the late Horace Kephart, "this Smoky Mountain region has been ever since the first white explorer, De Soto, heard of it nearly four centuries ago. At intervals of many years a few adventurous botanists and geologists have roamed through its great forest—Bartram, Michaux, Gray, Buckley, Mitchell, Guyot, and others—but their reports reached none but scientific circles. The wildest and most picturesque highland east of the Rockies remained virtually unknown until about 10 years ago. Even today there are gulfs in the Smokies that no man is known to have penetrated.

"Nearly always there hovers over the high tops and around them a tenuous mist, a dreamy blue haze, like that of Indian summer, or deeper. Often it grows

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so dense as almost to shut out the distant view, as smoke does that has spread from a far-off forest fire. Then it is a 'great smoke' that covers all the outlying world; the rim of the earth is but a few miles away; beyond is mystery, enchantment."

PLANT LIFE REACHES HIGHEST EXPRESSION

The Great Smoky Mountains run the entire length of the park, one of their ridges carrying the boundary line between the States of Tennessee and North Carolina. Their slopes and crests are covered with a luxuriant growth of trees and shrubs. The southern Appalachians have been recognized by students of plant geography as one of the outstanding vegetational centers of the world because of the high rainfall, good drainage, and long growing season. In the Great Smoky Mountains region the plant life of the southern Appalachians reaches its highest expression.

There are 147 varieties of trees alone. The park contains the largest tract of hardwood in America, and the idea has been suggested that probably the hardwoods of the Nation, and perhaps of the world, originated in this region. Here, too, is the country's largest virgin forest of red spruce.

The highest peaks in the park are covered with unusually dense forests of spruce, balsam, and some hemlock, while the intermediate mountains are clothed with hardwood, beech predominating. Hemlock, buckeye, the tulip tree, chestnut, and a number of other species reach their maximum growth in this favored place.

Other giants include a huge old grapevine, 60 inches in circumference at a point 12 feet above the ground, which is supported by five large trees. It is estimated to be at least 150 years old.

Equally as famous as the forests are the flowering shrubs of the Great Smokies. Among these are the white-flowered rhododendron, the true laurel or calico bush with pink-spotted flowers, the amazing flame azalea, and the white honeysuckle.

Many of the mountaintops are known as "balds" because they lack the waving tresses provided by the great stands of trees that cover most of the peaks. But they are far from bald, being covered with grass and flowering shrubs.

Once the Great Smokies region was the native haunt of the deer, the bear, the wildcat, many smaller animals, and several species of game birds. During the days of unrestricted hunting, before the area became a wildlife sanctuary as a national park, the larger animals had become practically extinct. Under the protection now afforded, and with restocking with deer and other native species, the park again will become the range of wild animals.

There are 600 miles of ideal trout streams in the park—sparkling waters dancing down the mountain sides, hurrying on their way to join the larger waters that eventually will carry them to the sea.

THE CHEROKEES

At one time this whole region was the home of the Cherokee Indian. In 1838, when white men desired the lands, the greater part of the tribe was moved to Oklahoma. A fair-sized band, loving their own home intensely, escaped to the mountain fastnesses where they lived for years until permitted to occupy the Qualla Reservation, immediately south of the park. There they may be seen today, living according to modern standards but still preserving many of their ancient ceremonies and sports.

PARK COMPLETED AND DEDICATED

On September 2, 1940, 10 years after the area received limited national park status, the Great Smoky Mountains National Park was dedicated to public use by President Franklin D. Roosevelt.

This ceremony marked a milestone in park history. Congress, in providing for its establishment, had stipulated that until the park included the 427,000 acres designated as essential it could not be developed for public use. It did, however, permit its establishment, for protective purposes only, upon acceptance by the Federal Government of 150,000 acres. This smaller area was accepted in 1930. Later congressional legislation (1934) reduced the total minimum area for development to 400,000 acres.

When Congress passed the legislation providing for the park's establishment it was estimated that \$10,000,000 would be needed to acquire all the land within the area. All of this land was privately owned. A great portion, practically primitive in character, was in the hands of lumber companies. About one-half of the purchase price was pledged by the States of North Carolina and Tennessee and their citizens, and the other half contributed on a basis of matching dollar for dollar by the Laura Spelman Rockefeller Memorial in memory of Laura Spelman Rockefeller. Later, due to increased costs and bank failures, the purchase funds were augmented by \$2,300,000 of Federal funds, by Presidential allocation of emergency funds, and congressional appropriation.

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• XXIV •

THE SHENANDOAH NATIONAL PARK

VIRGINIA

Special Characteristic: Heart of Blue Ridge Mountains; Interesting Panoramic Views; Profusion of Trees and Flowering Plants, Including Springtime Display of Azalea; Spectacular Skyline Drive



A section of the Skyline Drive—Shenandoah National Park

SHENANDOAH—sometimes translated "Daughter of the Stars"—is the appropriate name applied to our newest national park, situated in the heart of Virginia's famous Blue Ridge Mountains. Its majestic, tree-covered peaks are the highest in the State; and in them the eastern mountain ridge, for the first time south of Vermont, reaches an elevation of more than 4,000 feet above the sea. Much of the time these peaks are softened by a faint blue haze that lends an air of mystery and romance.

From the highway that follows closely the crest of the ridge, interesting panoramas spread out in every direction. As the ridge twists sinuously back and forth, the highest peaks constantly appear in view—in front, on one side, or on the other. All are magnificently shaped and forested with hardwoods. Their names are reminiscent of the mood of the pioneers who first knew the

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region, when to enter it was as much of an adventure as the conquest of the West.

Practically all of the park lies at least 2,000 feet above sea level. Hawksbill, highest mountain in the park, is at an elevation of 4,049 feet. Stony Man Mountain is a close second, 4,010 feet high. Old Rag, not quite so high, is the most picturesque in the park, in name and appearance.

Off in the distance other mist-enshrouded mountains appear, retreating ridge after ridge into the distance. Below lie historic valleys, their rectangles in varying shades of green in summer marking fertile fields, and with towns dotted here and there through their length.

SKYLINE DRIVE

The Shenandoah National Park embraces 80 miles of the Blue Ridge and is long and narrow, in some places including only the top of the ridge. Through its length runs the spectacular Skyline Drive, which in the south connects with the Blue Ridge Parkway. From this highway trails lead off into the mountain wilderness.

Of particular interest is the Shenandoah's portion of the Appalachian Trail—that footpath that extends from Maine to Georgia, a distance of more than 2,000 miles, and is believed to be the longest in the world today.

In the park the Appalachian Trail lures the hiker to mountain peaks, along sheer cliffs, through spectacular forest growth, into unexpected canyons, out again into sunny clearings—unexpected, ever-changing, but filled with solitude and peace.

VEGETATION AND WILDLIFE

In addition to the magnificent forests that clothe Shenandoah's peaks, there is a profusion of mountain laurel, plum azalea, hawthorne, dogwood, and other flowering shrubs and plants that makes springtime in the Blue Ridge something to dream about for many a long day; and the autumn coloring of its deciduous trees furnishes a color display of unsurpassed beauty and vividness. In its forests may be heard and seen many of the best loved and most familiar of America's songbirds.

Deer, once a familiar sight in the Shenandoah region, disappeared perhaps half a century ago. Fifteen of these animals, formerly on the Mount Vernon estate near Washington, were moved to the area early in 1934, in an effort to reestablish a herd in one of their old ancestral ranges. In a few years it is hoped that visitors on the park trails, and even on the highway, may catch glimpses of deer grazing on the mountain slopes as was possible in our grandfathers' day.

HISTORIC BACKGROUND

Once these mountains were the hunting ground of Indians, perhaps a retreat for them when hard pressed by enemy tribes. Then, more than two centuries ago, came the first of the pioneers, following Indian and game trails into and across

the Blue Ridge. A Frenchman, Louis Michelle, is the first recorded white man to visit the Shenandoah Valley, in 1707. That he penetrated the mountain wilderness of the park area, we have no record. But following him in 1716 came Governor Spotswood of Virginia and his Knights of the Golden Horseshoe, while surveying the vast unknown domain of his State; and he is known to have penetrated the Blue Ridge, crossing at Swift Run Gap, in the present park. George Washington passed over the terrain, during the French and Indian wars. Across it also passed many a hardy caravan, en route to the unknown West on the other side of the mountains. On both sides of the Blue Ridge are the battlefields of the Civil War and across its gaps swiftly moved the troops of the Confederacy.

Other history there is also in the region, less spectacular, but perhaps equally dramatic in the story of the human race. Clearings were made high up on the slopes of the Blue Ridge, even at times on its crest; cabins were built in its hollows, seemingly with deliberate intent of concealment. Long ago these clearings and cabins were made, each perhaps by some pioneer who left the westward cavalcade or wandered in alone, made himself a home, shut away from the outside world. For generations their descendants have led a primitive life in the mountain fastnesses, subsisting largely on the native plant and animal life. It is only with the coming of the automobile, with the building of the highway in the Shenandoah Park area, that the descendants of these early settlers have been freed of their isolation and discovered the world beyond.

The Shenandoah National Park was finally established December 26, 1935, some 10 years after initiation of the project by act of Congress. Great credit is due the State and people of Virginia for their magnificent work in acquiring the lands for the park, in accordance with the mandate of Congress, and administering them until such time as the entire park area could be turned over to the Federal Government as a great national playground. So widespread was the interest in the creation of the park that conservationists and nature lovers in other States contributed to the funds for land purchase.

As a recreation area for the many millions of people living in the East, the Shenandoah National Park reaches its highest destiny, after more than two hundred years of romantic history.

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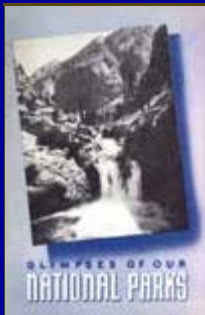
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Glimpses of Our National Parks

• XXV •

THE MAMMOTH CAVE NATIONAL PARK

KENTUCKY

Special Characteristic: Historic Series of Approximately 150 miles of Explored Underground Avenues; One of Nation's Show Places for More than a Century and a Quarter

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Ruins of Karnak—Mammoth Cave National Park

TRADITION has it that a wounded bear caused the discovery of famous Mammoth Cave, long known as one of the Seven Wonders of the Modern World. Hunting safety, he limped into a cave opening. The hunter followed—and in the gloom found himself at the entrance to the caverns that stretch far into the underground world. He forgot the bear. That was in 1799. Today the area is a national park, with approximately 150 miles of explored underground passages—and none knows how many unexplored.

To the historic portions of the cave leading from that accidentally discovered entrance increasing throngs of visitors have come throughout more than a century. Long before transportation was easy, to those who traveled widely, Mammoth Cave was a lodestone. In what is known as the Onyx Arm Chair, Jenny Lind, the "Swedish Nightingale," sang to fortunate visitors back in 1851. In the cave Edwin Booth rendered Hamlet's Soliloquy to otherfortunates. Many other famous people of the nineteenth century are known to have visited Mammoth Cave.

Historical Parks

Military Parks

The name of Mammoth Cave first appeared in public records early in 1812. Saltpetre dirt, containing potassium nitrate or saltpetre, which was necessary for the manufacture of gunpowder, had been discovered in the cave. Rumors of the War of 1812 were in the air, and for awhile Mammoth Cave was a boom property. Three times in one day the records show it changed ownership. When the war actually started, and American harbors were blockaded against powder imports, Mammoth Cave became one of the few sources of supply of nitrate. Crude wooden vats and pipes were built for leaching purposes inside the cave and tons of salt petre dirt mined by torchlight and prepared for powder manufacture. The old vats still remain, showing no signs of decay, and several of the original pipes.

For miles stretch the corridors of the historic portion of the cave, replete with reminders of other days—both from the human and geological standpoint. Here is where nitrate was mined—over there Booth declaimed. Now the trail leads over what was, eons ago, the main channel of the underground river that carved out the great subterranean passageways.

Also in the old portion of Mammoth Cave is Echo River, slowly winding its eerie way 360 feet underground. In its depths live eyeless fish. Through hundreds of centuries of living in its darkness, having no need for sight, they gradually lost the power to see and eventually lost all traces of eye sockets.

On its surface, visitors of today go boating in specially prepared flat-bottomed boats.

In the older portions of Mammoth Cave, only the more massive formations remain since the travelers of a century ago—and until very recently— did not realize fully their responsibility to leave nature's priceless sculpturing for others to enjoy.

Fortunately much of the cave was unopened until well after the turn of the century, and the most spectacular portions not until the national-park idea was strongly brewing. The Frozen Niagara section, with its group of onyx cascades and "tapestries," its exquisitely delicate gypsum flowers, its stalactites and stalagmites, is superb. In this area is Crystal Lake—where again the visitor may go boating.

The various portions of the cave may be visited separately from three different entrances. Four of the scheduled trips leave from the Historic Entrance, and two from the magnificent Frozen Niagara entrance, discovered in 1923. One combined trip from the Historic Entrance on the west to Frozen Niagara on the east is believed to be the longest cave route in the world; this trip requires 7-1/2 hours, with a stop for luncheon in the underground Snowball Dining Room. Water is piped from the bottom of a spring above.

NEWEST DISCOVERY

In the fall of 1938 new miles of amazingly beautiful limestone caverns were added to the known portions of Mammoth Cave. Starting out to obtain some eyeless fish for display in the historic section, four cavern guides themselves made history. There are miles of main avenues, underground gardens decorated with gypsum flowers surpassing any previously discovered, and a series of

spectacular cave onyx formations unlike any thing so far discovered in Kentucky's other limestone caves. One avenue in the new section extends fully 7,000 feet, and for massiveness and perfect sculpturing is unequalled by anything previously known in Mammoth Cave. In places its walls and ceiling glisten white with flaked gypsum or are studded with gypsum crystals; at other points are great domes and cupolas of creamy white, sometimes fringed or veined with tracery in red rust, black, or brown.

This new portion of Mammoth Cave has been explored by National Park Service engineers, scientists, and cave guides, and is now being prepared for public use. In order that its wealth of delicate formations may not be injured, public showing of this section of the cave will be delayed until complete geologic and engineering studies have been made and trail and illumination problems solved. It is hoped this new discovery may be shown the visitor sometime in 1942.

PRE-COLUMBIAN MUMMY

Long before white men came, Indians knew of and worked in Mammoth Cave. In 1935 two guides exploring near Violet City found a mummy high on a ledge. From its position and the articles found with it, archeologists pieced together the story. An Indian miner was digging for something in sand on the ledge. A rock above slipped and pinned him down. The body, found many centuries later in an excellent state of preservation, was clad in a breech clout, woven of fiber. Crude stone implements lay nearby. Beneath the miner was what remained of a pouch, also of woven fiber. Close by bundles of reeds, thrust into the sand, had been used as torches, as their singed ends indicated. The mummy was found three miles from the nearest natural entrance—three miles of pitch black darkness, lighted for that long-ago miner only by the reed torches he carried. Today the mummy rests in an air-tight glass case just below the ledge on which it was found.

SURFACE AREA

The surface area of Mammoth Cave National Park includes over 47,000 acres of picturesque forested hill country, penetrated by foot trails and a small mileage of park roads. Native flowers, shrubs, and wildlife enhance the peaceful charm.

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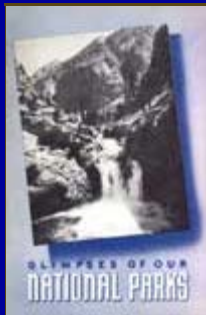
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Glimpses of Our National Parks

• XXVI •

THE OLYMPIC NATIONAL PARK

WASHINGTON

Special Characteristic: Finest Remnant of the Pacific Northwest "Rain Forests"; Majestic Mountain Uplift; 20 Square Miles of Glaciers; Approximately 3,000 Rare Roosevelt Elk Which Summer in the Park

OLYMPIC

National Park
is a

spectacular
expanse of
glacier-clad
peaks,
flower-strewn
alpine
meadows,
turbulent
streams and
jewellike
lakes, deep
winding
canyons and
broad valleys
supporting a
rich forest
growth
unequaled
elsewhere in
America.

This
unspoiled
"last frontier,"
its mountain
fastness
teeming with
vegetation

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and wildlife, is destined to be preserved as a primeval wilderness, little changed in a thousand years.



Soleduck Falls—Olympic National Park

By Grant

Located in the northwest corner of the United States, this park occupies the central interior of the Olympic Peninsula, promontory of the State of Washington, washed on three sides by the Waters of the Pacific Ocean, Strait of Juan de Fuca, and Puget Sound. Cool ocean breezes temper the summer weather of the area, and moderate temperatures prevail throughout the year. Little moisture falls in the park in summer, rains being normal for the region except on the western slopes of the Olympic Mountains which have remarkably heavy precipitation in the winter months.

"RAIN FORESTS"

One of the few remaining areas of virgin forest, Olympic National Park presents a glorious example of the original timberlands of the Northwest in the

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dense growth which surrounds the Olympic Mountains. In the lower valleys of the western slopes, the temperate climate, a seasonal rainfall averaging 142 inches annually, and favorable soil combine to produce the unique "rain forests," vast stands of Douglas fir, Sitka spruce, western hemlock, western red cedar, and silver fir, with age-old individual trees of remarkable size. Some of these tree specimens tower as high as 300 feet, and one, the largest living Douglas fir, measures over 17 feet in diameter.

These unsurpassed "rain forests" are tropical in luxuriance, with an undergrowth of vine maple, bigleaf maple, ferns, and other junglelike growth. Mosses drape the branches and trunks of trees in fantastic patterns. Seedlings, in ancient succession, take root on fallen trunks which through the centuries rot away, furnishing food for future forest monarchs.

THE MOUNTAINS

The majesty of the tumbled, jagged peaks of the Olympics is unrivaled in America. They form no definite range, but rise in an irregular mass from the junglelike forest that clothes the lower slopes up to 4,000 feet. Mount Olympus, its crest rising 7,915 feet above sea level, is loftiest of them all, but numerous other peaks are nearly as high. Although not reaching to the altitudes of the Sierra Nevada or the Rockies, the Olympics are equally impressive. Stretching from sea level to their full height of 5,000 to 7,000 feet, without intervening plateaus, the vast array of peaks presents a tremendous sweep. So wild and precipitous is this mountain massing that it never has been completely explored.

The highest peaks are snow-covered throughout the year. The snowfall in the interior, said to be the heaviest in the country, has produced one of the largest glacier systems on the continent. There are some 50 or 60 living glaciers in all—the count is as yet unofficial



Mount Tom, as seen from the Skyline Trail—Olympic National Park

—covering an aggregate area of nearly 20 square miles. Many of them are large ice masses that are still working their way downward, relentlessly gouging and shaping the rock beneath. In all this snow and ice swift rivers are born, to plunge madly downward, slashing deep narrow canyons. Beautiful lakes dot the valleys between the peaks or fill ruggedly sculptured cirques.

Alpine tundras encroach on the snow line, to give way in turn to flower-strewn open meadows that merge into the forests below.

THE RARE ROOSEVELT ELK

Chief of the park's wildlife is the Olympic or Roosevelt elk, largest of the American wapiti. About 6,500 of these magnificent animals inhabit the Olympic Peninsula, making their last stand there against oblivion. Establishment of the park gave protection to range vitally needed if the Roosevelt elk are to survive. Unlike other elk, this species is almost nonmigratory.

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Glimpses of Our National Parks

• XXVII •

THE ISLE ROYALE NATIONAL PARK

MICHIGAN

Special Characteristic: An archipelagian park, rugged Isle Royale surrounded by many smaller islands and protruding rocks; splendid hardwood and coniferous forests; many inland lakes; coves and fjords reminiscent of the Scandinavian coast line

FAR up in Lake Superior, near Canada and just within the international boundary line, lies unique Isle Royale National Park. The main island, nearly 45 miles long and 9 miles at its greatest width, has



A peaceful vista—Isle Royale National Park

been likened to a "gigantic blunt-headed 40-mile long fish that has taken a bite from the Canadian shore." [1] Surrounding Isle Royale are more than 100 smaller islands, some attaining a length of two or more miles, and innumerable minor islets. Mott Island, where park headquarters are located, is part of an outer chain that forms the southeast boundary of Rock Harbor, a fjord 13 miles long.

Practically uninhabited, Isle Royale contains the elements of pure wilderness—and a wilderness different from the adjoining mainlands because of its age-long isolation. Indeed, it is said that probably nowhere else in the United States

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is there such an isolated land mass.

Fire, ice, and water all played a part in producing the Isle Royale archipelago. In recent times, geologically speaking, the islands emerged from Lake Superior—great masses of rock caused by old lava flows or sediments derived almost wholly from volcanic rock. Later came the Ice Age, when glaciers overrode it all. Time passed, and the ice gradually retreated, leaving Isle Royale submerged beneath the waters of a great lake which lay in front of the receding ice. As the ice melted still further, the waters receded, and again Isle Royale emerged, much as it is today.

The rugged, rocky shores of Isle Royale and its surrounding islands are indented by long deep bays and fjord-like channels. Too young as islands to have weathered to sandy beaches, the waters of Lake Superior come close to the shores of the Isle Royale group, so that most of the picturesque harbors may be navigated by boats of any size. Rocky beaches, sea caves, rock towers or skerries, and cascades tumbling into the lake add to the wild beauty of the scene. So do some 30 inland lakes, many of which contain yet other islands.

UNIQUE PLANT AND ANIMAL LIFE

Though but little soil covers the rocky base—from a few inches to a few feet at most—the islands support a dense growth of hardwood and coniferous trees. Because of the archipelago's isolation, it offers a unique type of vegetation, unlike the typical lakes country of the surrounding mainland. Plants of alpine character mingle with those of the plains; and swamp growth is neighbor to plants typical of arid regions. The vegetation as a whole is an outstanding example of plant transition. In summer there is a great profusion of wildflowers. Red and green lichens and green moss add color, and gray moss hanging from many a tree introduces yet another note.

Its rare combination of forests, open glades, and inland waterways, protected by comparative inaccessibility, have made Isle Royale an interesting sanctuary for wildlife. The lordly moose, whose favorite haunts are the inland lakes and marshes, often may be met along the trails. Beaver inhabit some of the inland lakes and may frequently be seen by those who patiently watch and wait. Despite its hospitality to wildlife, many forms common to the nearby mainland, both in the United States and Canada, are missing from Isle Royale. Among these are bear, deer, wolves, and porcupine. Whether they have not made their appearance yet on these comparatively new islands, or whether, once here, they disappeared, is not known.

HISTORY

Isle Royale's human history vies in interest with the story of its creation. From prehistoric times the Indians knew of its copper deposits and mined them. Their copper pits, thousands of them still in evidence, are said to be 600 to 800 years old. French explorers heard and recorded rumors of "an isle where there is a mine of copper." Tradition has it that those rumors came to the attention of Benjamin Franklin while in Paris as one of the commissioners drawing up the international boundary following the Revolution, and caused him to insist upon the island's inclusion in the United States. Moderns sought the copper in the

middle and later nineteenth century, but their mining ventures were unsuccessful.

Fur traders also knew Isle Royale well, even had a post there 80 or more years ago. And it may have been the fur trade, rather than the copper mines, that inspired Franklin and his fellow commissioners in their insistence on a line from Sault Ste. Marie to Pigeon River—for that was the route of the old voyageurs going to the Lake of the Woods and the Great Northwest. In establishing that as the international boundary it was pegged on Isle Royale, which on old maps was shown considerably south of the island's actual location.

Isle Royale also has an Old World flavor, introduced by a few families engaged in commercial fishing in Lake Superior. From April to December they live on the shores of the island, their fishing "villages" of two or three houses and the all-important net racks being typical of Norway or Finland. Their fishing is carried on in much the same methods as in Scandanavia, the ancestral homeland of most of them.

A ROADLESS WILDERNESS

Isle Royale came into the national park system as a roadless wilderness, and so it will remain. Three lodges, near the shore at divergent points, established long before the park idea was considered, will provide the necessary accommodations for visitors, supplemented by half a dozen boaters and fishermen's camps. Approach to these camps, which will be quite primitive, will be by trail or boat only. The trails are for foot use only—not even a horse will be permitted to intrude upon the wilderness. It is hoped that most of the travel between island points will continue to be by boat.

¹ Webb Waldron's "We Explore the Great Lakes" 1923.



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Glimpses of Our National Parks

• XXVIII •

THE KINGS CANYON NATIONAL PARK

CALIFORNIA

Special Characteristic: Some of the Wildest and Most Beautiful Scenery in the United States; Massive Peaks, Glacier Cirques, and Lake-covered Plateaus 10,000 to 14,000 Feet Above Sea-level; Includes the Magnificent Giant Sequoia Groves Formerly Known as the General Grant National Park and also Redwood Mountain, With 7,000 Giant Sequoias, Young and Old

"WILD

as the Himalayas" is the Kings Canyon National Park—a region of superlative, unspoiled mountain wilderness in the heart of the Sierra Nevada. Here the summit peaks of the



Scenic view—Kings Canyon National Park

Sierra are truly magnificent. Rising from valleys some 5,000 feet above sea level, these stupendous mountains, always snow-capped, soar into the clouds to a height of 12,000 to 14,000 feet.

Spectacular granite gorges cut deeply through the main body of the range, leading upward toward the Sierran crests. To the west of the fantastic miles-high wall formed by the towering peaks spread out the shoulders of the range, ridged and valley-spattered, rich with timber-line plateaus.

Through all this lofty magnificence cut rushing streams, leaving in their wake picturesque waterfalls and cascades. Lakes nestle in glacier-sculptured basins, surrounded by meadows and alpine flower gardens.

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► **Kings Canyon**

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Establishment of the park in 1940 brought to a happy conclusion a conservation struggle of nearly half a century. In 1891 John Muir, famous naturalist, opened the campaign to preserve the superb scenery of Kings Canyon in a national park and strove valiently to bring about that consummation until his death in 1914. His zeal fired others to enlist in the cause, and the endeavor continued unceasingly until it ended in 1940 in the triumphant consummation of the park plan. Early in the struggle in 1899, Dr. David Starr Jordan, then president of Leland Stanford University, said of the Kings Canyon:

"I have never seen a more magnificent mountain panorama. I have seen the mountains of this continent from Alaska to Mexico, and I have tramped many mountain miles in the Alps, but such a comprehensive view of mountain masses and peaks and amphitheaters and canyons, of all the details of mountain sculpture on the tremendous scale . . . I have never before seen."

Resembling Yosemite and Sequoia National Parks in general characteristics, the Kings Canyon complements these mountain wildernesses. The basic structure is similar, yet each is distinctive in detail. Each is an essential part of the national park picture.

But one road enters the Kings Canyon National Park, and this reaches into it only a few square miles. Most of this vast wilderness will remain untouched by road, a paradise for the lower of the forest and mountain primeval.

GENERAL GRANT GROVE

The four-square-mile General Grant National Park, established in 1890 to protect two magnificent groves of giant sequoias, was absorbed in the new Kings Canyon National Park. Now known as the General Grant Grove Section, it is administrative headquarters for the great wilderness park of which it is an important, although detached unit.

The venerable General Grant Tree, which gave the grove its name, is so huge that it is difficult to visualize. Its greatest horizontal diameter is 40.3 at the base. In most forests, trees 200 feet tall are giants, yet the General Grant Tree, at 200 feet above the ground, has a diameter of about 12 feet, and reaches upward for yet another 67 feet. It is second only in size to the General Sherman Tree in Sequoia National Park and is one of the most celebrated trees in the United States. Each Christmas Day, services are held in the snowy silence at the base of the General Grant Tree, widely known for a dozen years as the Nation's Christmas Tree. The age of this giant sequoia is estimated at from 3,500 to 4,000 years.

REDWOOD MOUNTAIN

Supplementing the Grant Grove is the newly acquired Redwood Mountain, covered by some 4,000 acres of mountain forest land. The last great grove of giant sequoias remaining under private ownership, over it had fallen the dire shadow of total destruction by commercial cutting, slashing, and dynamiting. Acquisition by the Federal Government and inclusion in the Kings Canyon National Park have saved this mighty grove from that irrevocable fate; for a

giant sequoia grove once cut is gone forever. Seedlings may be raised, young trees carefully tended in the hope that they may mature, but a living grove, with forest monarchs thousands of years old surrounded by younger generations, cannot be replaced. The giant sequoias are a survival from another age—an age of giants. Under complete conservation they can be preserved, but never renewed.

On Redwood Mountain may be seen giant sequoias of all ages—seedlings, fine groves of young trees, and some of the oldest and largest of this age-old and giant species. Among these is the widely known Hart Tree.

A striking characteristic of Redwood Mountain is its skyline—for here only may be seen large numbers of giant sequoias silhouetted against the sky. Here also more sequoias show their dome-topped crowns above the balance of the forest than may be seen in any other grove. It is estimated that 7,000 giant sequoias are growing on Redwood Mountain. On just one acre are 7 fire-scarred giants 10 feet or more in diameter and over 200 feet tall.

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TWO FORMER NATIONAL PARKS RECLASSIFIED

UNDER the consolidation of August 1933 two national parks of historic interest were transferred to the administration of the National Park Service, which have since been redesignated. The Abraham Lincoln National Park, in Kentucky, is now classified as a national historical park; and Fort McHenry National Park, in Maryland, scene of the repulse of the British in the War of 1812 and the production of The Star-Spangled Banner, as a national monument and historic shrine.

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NATIONAL HISTORICAL PARKS

AS of July 1, 1940, there are four national historical parks under the jurisdiction of the National Park Service, as follows:

ABRAHAM LINCOLN, KENTUCKY. The log cabin in which Lincoln is believed to have been born; protected by a memorial building.

CHALMETTE, LOUISIANA. Part of the ground on which was fought the Battle of New Orleans, January 8, 1815.

COLONIAL, VIRGINIA. High lights of Anglo-colonial history—Jamestown Island, where first permanent English settlement was made in North America; Yorktown, where in 1781 French and American troops captured Cornwallis' army in the last important battle of the Revolution; and parkway connecting Jamestown and the colonial city of Williamsburg.

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- ▶ **Former Parks**
- ▶ **Historical Parks**
- ▶ **Military Parks**

MORRISTOWN, NEW JERSEY. Site of important military encampments during the Revolution; Washington's headquarters, 1779-90; 18th century houses; museum and collection of Washingtoniana.

The National Park Service also is administering the Saratoga National Historical Park project. The Battle of Saratoga is considered one of the 15 great battles from Marathon to Waterloo and is recognized as the turning point in the American Revolution.



NATIONAL MILITARY PARKS

THE 11 national military parks, mainly historic in character, that were transferred from the War Department to the jurisdiction of the National Park Service when the consolidation of park activities mentioned on [page 3](#) was effected, are as follows:

CHICKAMAUGA AND CHATTANOOGA, GEORGIA AND TENNESSEE. Civil War battlefields of Chickamauga, Missionary Ridge, and Lookout Mountain.

FORT DONELSON, TENNESSEE. Site of Civil War fort.

FREDERICKSBURG AND SPOTSYLVANIA, VIRGINIA. Scenes of Civil War battles of Fredericksburg, Spotsylvania, Wilderness, Chancellorsville, and Salem Church, at or near the city of Fredericksburg.

GETTYSBURG, PENNSYLVANIA. The scene of a bitter Civil War conflict. Now a beautiful natural park.

GUILFORD COURTHOUSE, NORTH CAROLINA. Scene of one of the great battles of the Revolutionary War, fought in 1781.

KINGS MOUNTAIN, SOUTH CAROLINA. Revolutionary War battlefield site.

MOORES CREEK, NORTH CAROLINA. Scene of memorable Revolutionary War battle.

PETERSBURG, VIRGINIA. Scene of siege and defense of Petersburg during the Civil War.

SHILOH, TENNESSEE. Natural park embracing Civil War battlefield.

STONES RIVER, TENNESSEE. Civil War battlefield site.

VICKSBURG, MISSISSIPPI. A beautiful natural park that was the scene of the momentous siege and surrender of Vicksburg during the Civil War.

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