

GLIMPSES OF OUR
National Parks

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AS REVISED AND EXPANDED BY
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National Park Service



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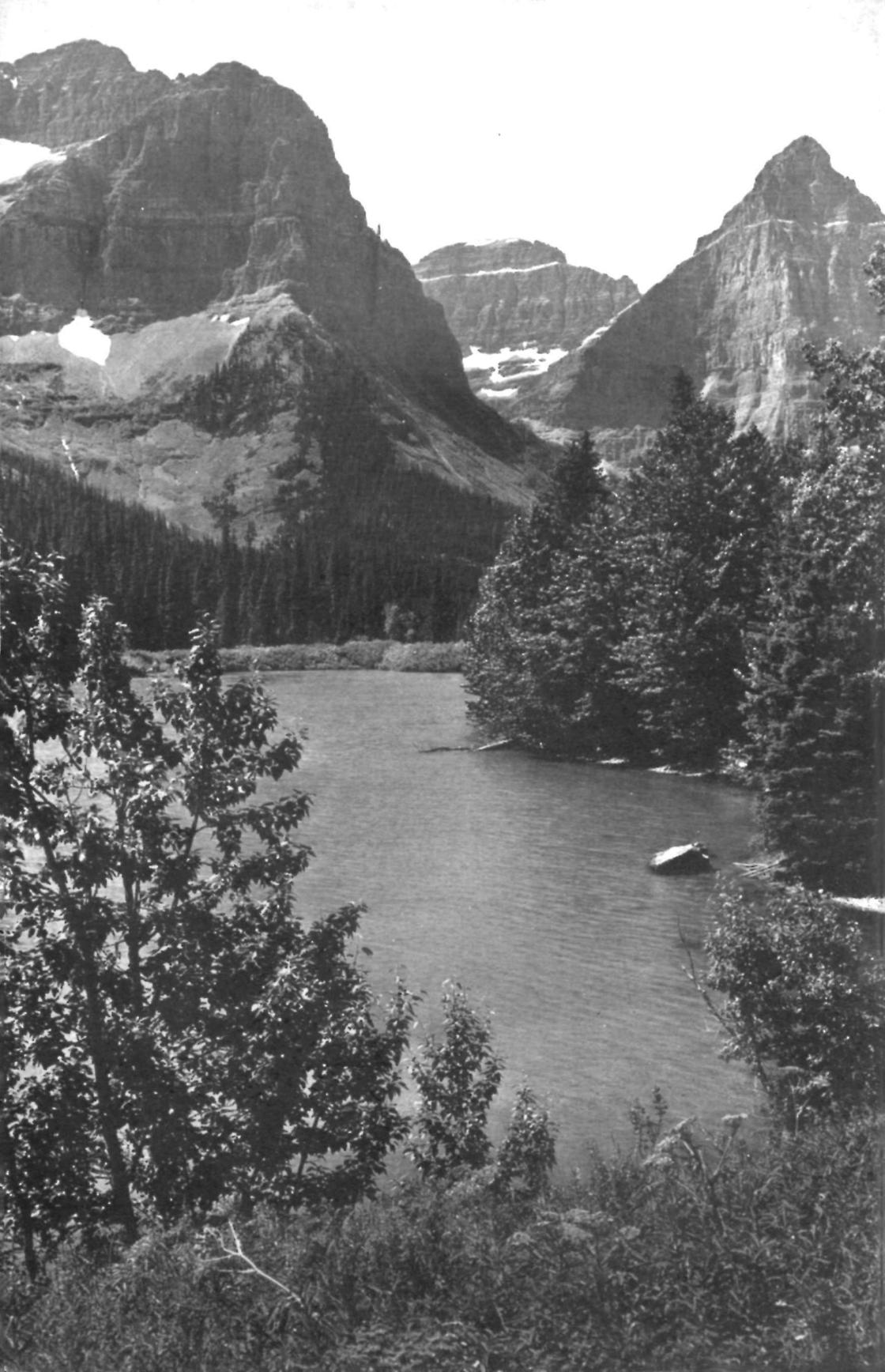
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Glimpses of Our
NATIONAL PARKS

• I •

THE NATIONAL PARK SYSTEM—HISTORY,
ADMINISTRATION, AND USE

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

That system came into existence more than 60 years ago, when a group of average Americans voluntarily relinquished their legal and moral rights to profit through private ownership of the area now included in Yellowstone National Park.

They had been making an official 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. At first disbelieved, the very persistence of the weird tales finally resulted in this official investigation.

As the exploration came to a close, the members of the party sat around a camp fire 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 our national parks and those of the whole world. Cornelius Hedges, a lawyer of 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 re-

turned 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 is 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 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

The national parks of the United States always are created by act of Congress to preserve some unusual scenery or other natural wonder, or some historic or scientific feature of outstanding national interest. In the field of scenery and natural phenomena, each national park represents the highest type of its particular feature, and, in general, duplication of the major exhibits of existing national parks is avoided in enlarging the system. Size also is important, as each national park must be sufficiently large to permit of adequate development from the tourist standpoint.

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, and 4 miscellaneous memorials 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.

Although the national monuments constitute the largest numerically and most widely scattered group of the national park and monument system, many persons do not know their exact meaning and purpose. In order to insure the protection of places of national interest from a scientific or historic 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." Now there are 68 of these national monuments. The exhibits in them run the gamut from

the ruined dwellings of Indians who lived a thousand or so years ago to historic areas of the middle nineteenth century; from trees and plants petrified—apparently turned to stone—millions of years ago, to magnificent groves of living trees.

By far the greater number of monuments are rich in human associations. Those of the Southwest in particular are a vast storehouse of treasures of antiquity. Research constantly brings to light new facts about the peoples who lived on that part of the continent long before the footsteps of the first white man were recorded only temporarily in the shifting desert sands.

This booklet, limited in size, treats of the 23 scenic national parks, the 2 historic areas listed as national parks, and the 1 national historical park. 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 has already given authority for the addition of four important areas to the system. These are the Mammoth Cave region in Kentucky, a lodestone of travel for generations; Isle Royale in Lake Superior, important for its island beauty and its great herds of moose; 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. Acquisition of the necessary land already is under way in the Mammoth Cave and Isle Royale areas. 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 expressed definite interest in the establishment of eight national monuments in different parts of the country by authorizing their creation under terms similar to those affecting the national park projects. In addition, the President may create new monuments from time to time as areas of historic or scientific interest demand national protection.

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 the headquarters office in Washington for all 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 tourists, fire fighting, improvement of trails, repair of telephone lines, protection of wild animals, fish planting, supervision of camp grounds, and numerous other duties.

The more important of national monuments are in charge of local superintendents or custodians. The group of southwestern national monuments is in charge of a superintendent, through whom the custodians report.

EDUCATIONAL USES

As has already been indicated, the national parks and national monuments offer exceptional opportunities for informal education. The education afforded in these areas is not the kind that is acquired in schools or from textbooks. Rather, the city dweller in the parks has an opportunity to acquire, under the leadership of ranger naturalists, information about trees and plants that all skilled woodsmen know almost as second nature.

This service is a definite outgrowth of the demands of visitors for information as to the why and wherefore of the interesting and unusual things encountered along the beaten track or 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 specially trained in the 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, in the lodge and hotel lobbies, and in the museums.

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 nearly 15,500,000 acres of territory, at the same time making the parks and monuments accessible to the millions of people who visit them 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 camp grounds 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 all 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. Not so many decades ago these animals roamed the entire United States in vast numbers. Today, outside of zoological parks, there are comparatively few places where they may be viewed, and of these places 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 animals 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 in the vicinity of the park buffalo ranch can properly accommodate. Every year since then it has been necessary to give away or otherwise dispose of several hundred surplus animals to keep the buffalo from taking over the administration of the whole park. Herds also have been established at Wind Cave National Park and Colorado National Monument.

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 game sanctuaries. No hunting is permitted in any of them. It is further explained that this absolute ban on the killing of animals within the parks and monuments actually is for the benefit of the hunters, for the wildlife thrives and multiplies under the protection afforded in these breeding places, and eventually there is an overflow from the parks to the adjoining territory.

In relating the story of the restocking of the Yellowstone with buffalo, and also with antelope—another plains animal that had almost disappeared—emphasis also is laid on the fact that no nonnative species of animal, or plant for that matter, is ever introduced into a national park with the possible exception of game fish of other localities which occasionally are placed in otherwise barren waters in some park lake.

Bears are a delight to the tourists, except to those who insist upon becoming too familiar with them and get nipped or scratched in reproof. It is often said by the park people that the quality that makes humans so enjoy the antics of the bears is that bruin is so very human in many of his reactions. In a number of the parks bear-feeding grounds provide an interesting and amusing spectacle. To these places are carted the left-overs from the lodge and hotel kitchens. The bears become accustomed to the feeding time and congregate each evening for a hand-out of "combination salad." Both grizzly and black bears come to these feeding stations.

For a time feeding these bears was considered a harmless pastime, so long as the food was thrown and not fed directly from the hand. Even this practice now is strictly forbidden by park authorities, since the bears are unable to understand when the available supply of sweets is exhausted and are apt to go after more, with unpleasant results to the visitors.

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, which sit up and beg for food and often climb into a visitor's lap when tactfully coaxed. 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 Bureau of Biological Survey, is doing everything possible to protect the breeding places and the young birds until they become strong enough to fight their own battles. During the last 5 years a definite increase in the number of these swans has been noted.

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 in the national parks where the State laws prevail it is necessary to obtain a State fishing license. The parks in which such licenses must be obtained are the Yosemite, Sequoia, Lassen Volcanic, General Grant, Grand Teton, Grand Canyon, Acadia, Wind Cave, Zion, and Great Smoky Mountains.

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.



On the Trail—Sequoia National Park.

• II •

THE NATIONAL PARKS AND EMERGENCY
CONSERVATION WORK

DEVELOPMENT of national park and monument trails, of adequate fire protection facilities, and of camp grounds; 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 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, Robert Fechner was appointed Director of Emergency Conservation Work, and the National Park Service was invited to participate, both by providing actual work for camps of the Civilian Conservation Corps and by active planning and correlation of the whole program through the selection of its Director as a member of the Advisory Council appointed to assist Director Fechner.

Nothing approaching the scope of this work has ever been undertaken by any 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 self-respect and to feel themselves an important part of the social fabric of the Nation.

At the present time it is the privilege of the National Park Service to supervise the work of approximately 430 Civilian Corps camps. About one-fifth of these are upon national park, national monument, military park, or other areas directly administered by the Bureau. 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.



C. C. C. Men Cutting a Trail Through Granite Ridge—Sequoia National Park.

It is pertinent to add here that the President's program, in addition to enhancing greatly the usefulness of State parks already in existence, has been responsible for very large additions to State park acreages throughout the country, and even for the inauguration of State park systems in States not previously affording facilities of this type to its citizens.

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 these 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 trained 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.

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



Cleanup Work at Jackson Lake by C. C. C. Men—Grand Teton National Park.

against fire and various tree blights; that control of erosion along roadsides 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 Emergency Conservation Work 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 Emergency Conservation Work 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.

• III •

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 inconspicuous.

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

One peculiarly fascinating glimpse of Yellowstone's tempestuous past is afforded in the petrified forest of the Specimen Ridge neighborhood, where

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

THE GEYSERS

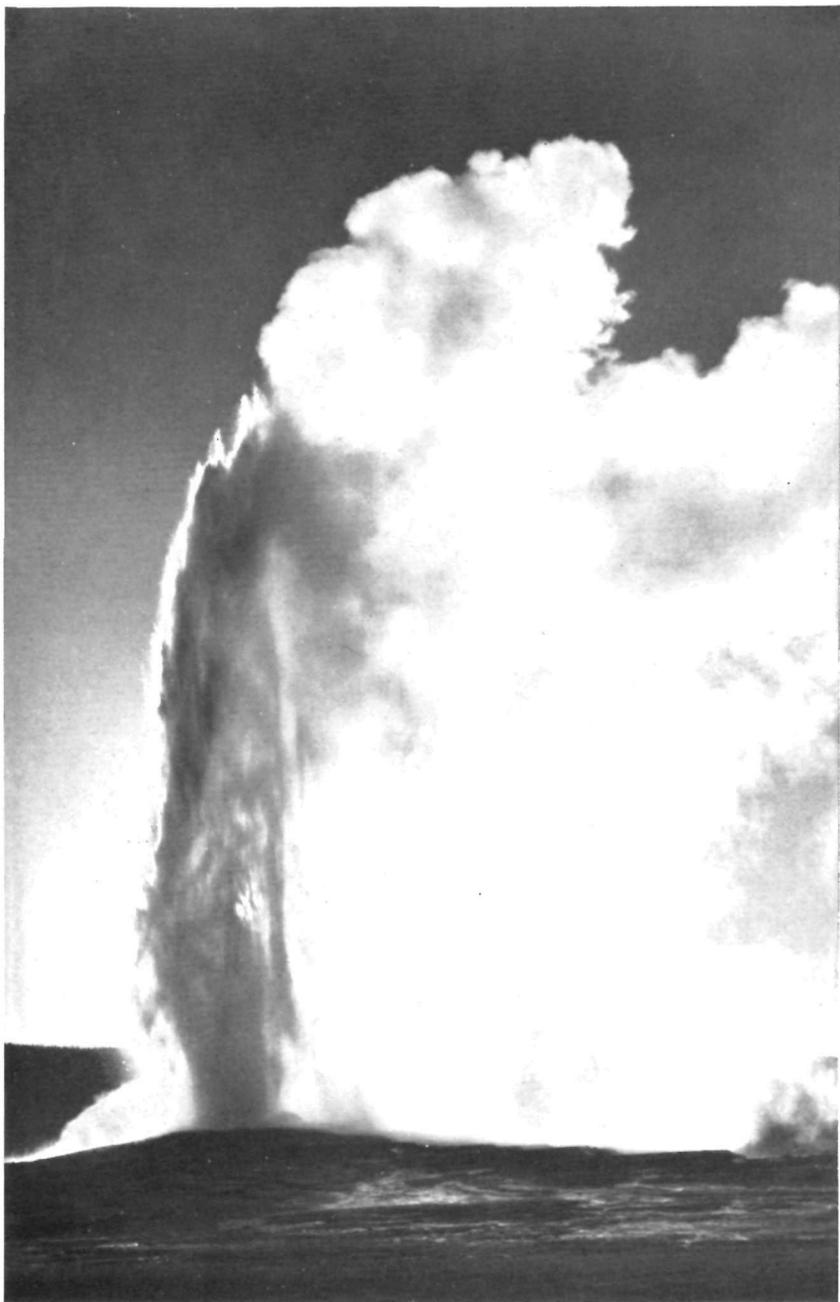
Geysers are, roughly speaking, water volcanoes. They occur only at places where the internal heat of the earth approaches close to the surface. Their action, for so many years unexplained and even now regarded with wonder by so many, is simple. Water from the surface trickling through cracks in the rocks, or water from subterranean springs collecting in the bottom of the geyser's crater, down among the strata of intense heat, becomes itself intensely heated and gives off steam, which expands and forces upward the cooler water that lies above it. This makes room for the more rapid formation of steam which immediately gathers under enormous pressure.

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

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

THE HOT-WATER PHENOMENA

Nearly the entire Yellowstone region, covering an area of 3,438 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, assist-



Old Faithful—Yellowstone National Park.

ing the deposition of the mineral matter and painting them hues of red and pink and bluish gray. At many other points lesser hot springs occur, introducing strange, almost uncanny, elements into wooded and otherwise quite normal landscapes.

A tour of these hot-water formations and spouting geysers is an experience never to be forgotten. Some of the geysers play at quite regular intervals. The celebrated Old Faithful, the tourists' friend, plays often and with regularity. It had the honor of welcoming the first explorer, and never since that day has it failed any tourist. Some of the largest geysers play at irregular intervals of days, weeks, or months. Some very small ones play every few minutes. Many bubbling hot springs, which throw water 2 or 3 feet into the air once or twice a minute, are really small, imperfectly formed geysers.

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

But the geysers and hot-water formations are by no means the only wonders in the Yellowstone. Indeed, the entire park is a wonderland. The Canyon of the Yellowstone affords a spectacle worthy of a national park were there are no geysers. What makes it a scenic feature of the first order is its marvelously variegated volcanic coloring. It is the cameo of canyons.

CANYON OF THE YELLOWSTONE

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

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

And the whole is colored as brokenly and vividly as the field of a kaleidoscope. 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 wild-animal life. It is one of the largest and most successful preserves in the world. Its mountains and valleys remain nearly as nature made them, for the more than 325 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 motor busses which travel from point to point daily during the season, but it is the quiet watcher on the trails who may see deer, and bear, and elk, and antelope to his heart's content, and he may even see mountain sheep, moose, and bison by journeying on foot or by horseback into their distant retreats. In the fall and spring, when the crowds are absent, wild deer gather in great numbers at the hotel clearings 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 roots, berries, nuts, and honey—when honey may be had. 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 they first come into the world.

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

This wild-animal paradise now contains great herds of elk, several hundred moose, innumerable deer, many antelope, and a herd of about a thousand 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 barren waters. Park waters now contain some of the best game species.

DISCOVERY OF THE YELLOWSTONE

The first recorded visit to the Yellowstone was made by John Colter in 1807-08. Having been released as a private soldier from the Lewis and Clark expedition, Colter, in 1807, joined the expedition of Manuel Lisa, a celebrated trader. Later, while returning alone to Lisa's fort at the mouth of the Bighorn from a dangerous mission, probably to the Three Forks of the Missouri, Colter, seeking a route safe from hostile Indians, traveled through the Yellowstone country. 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 not true, though doubtless Meek fully believed it to be the truth.

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

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

• IV •

THE YOSEMITE NATIONAL PARK

CALIFORNIA

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

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

The irregular eastern boundary is the crest of the Sierra, a rampart of tremendous granite peaks buttressed by 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 amphitheatres; gardens on their sunny brows, avalanches thundering down their long white slopes, cataracts roaring gray and foaming in the crooked, rugged gorges, and glaciers in their shadowy recesses working in silence, slowly completing

their sculptures; new-born lakes at their feet, blue and green, free or encumbered with drifting icebergs like miniature Arctic Oceans, shining, sparkling, calm as stars."

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

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

THE VALLEY AND ITS WATERFALLS

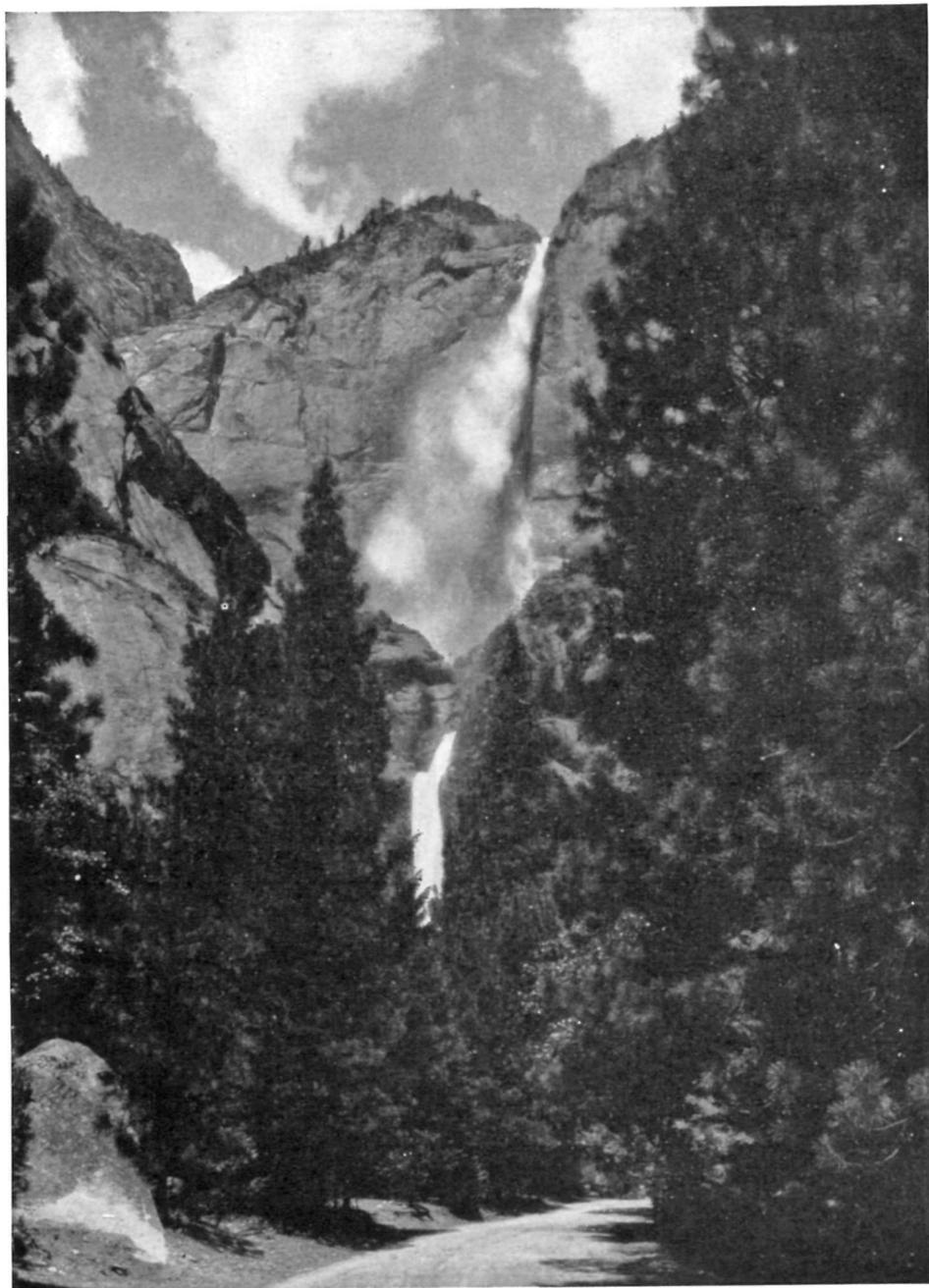
No matter what their expectation, most visitors are delightfully astonished upon entering the Yosemite Valley. The sheer immensity of the precipices on either side of the valley's peaceful floor; the loftiness and the romantic suggestion of the numerous waterfalls; the majesty of the granite walls; and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

After the visitor has recovered from his first shock of astonishment—for it is no less—at the supreme beauty of the valley, inevitably he wonders how nature made it. 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 Glacier, as it forced its 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 manner of its making explains the extreme loftiness of the waterfalls which pour over the rim into the valley. The Yosemite Fall, for instance,



Yosemite Falls—Yosemite National Park.

drops 1,430 feet in one sheer fall, a height equal to nine Niagara Falls piled one on top of the other. The Lower Yosemite Fall, immediately below, has a drop of 320 feet, or two Niagaras more. 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 sheer, a straight 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 it is equally true that in September when, in specially dry seasons, much of the water of the great fall reaches the bottom in the shape of mist, the spectacle still possesses a filmy grandeur not comparable, perhaps, to any sight on earth. The one inspires wonder by its immensity and power; the other uplifts by its intangible spirit of sheer beauty.

ABOVE THE VALLEY'S RIM

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

And thus is added to the amazing water spectacle for which the Valley is famous still another kind of Yosemite waterfall destined to world-wide celebrity. The Tuolumne River, descending sharply to the head of the Hetch Hetchy Valley, becomes, in John Muir's phrase, "one wild, exulting, onrushing mass of snowy purple bloom spreading over glacial waves of granite without any definite channel, gliding in magnificent silver plumes, dashing and foaming through huge boulder dams, leaping high in the air in wheellike whirls, displaying glorious enthusiasm, tossing from side to side, doubling, glinting, singing in exuberance of mountain energy."

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

In addition to its many other attractions, the Yosemite National Park contains three groves of sequoias, the celebrated "Big Trees of California."

One of these trees, the Grizzly Giant, has a base diameter of 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. A few hours in the red silence of the Mariposa Grove is an experience never to be forgotten.

• V •

THE SEQUOIA AND GENERAL GRANT
NATIONAL PARKS

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 the Sequoia and General Grant National Parks.

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

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

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

pure stands of Big Trees in the conifer forests. It is estimated that half—nearly 9,000—of the Big Trees 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 over 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 Sequoia and General Grant National Parks were vigorous youngsters before the pyramids were built in Egypt and before Babylon was at its zenith. Hundreds of them were thriving before the heroic ages of ancient Greece, while, in fact, the rough Indo-Germanic ancestors of the Greeks were still swarming from the north. Hundreds were lusty youngsters through all the ages of Greek art and Roman wars. Thousands were flourishing trees when Christ was born in Bethlehem.

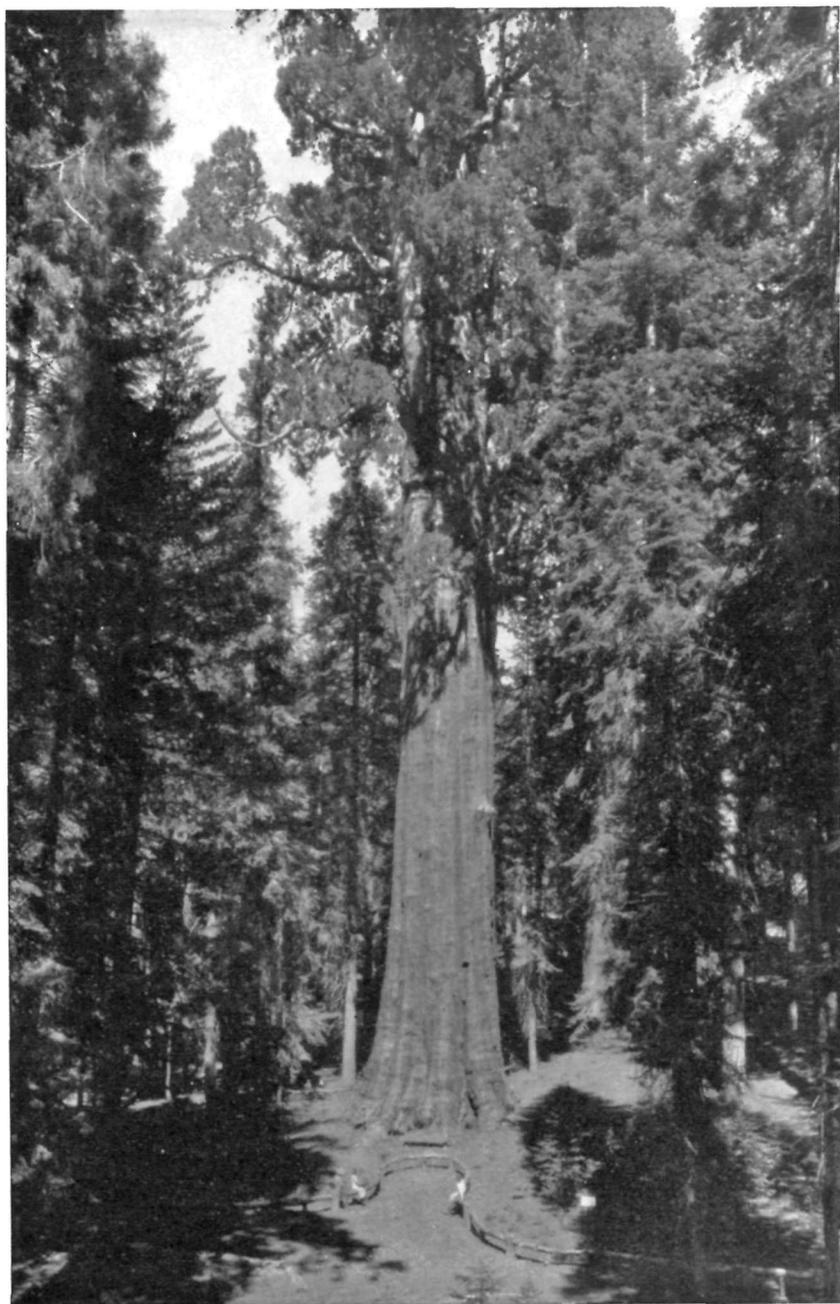
Despite its vast age, the mature Big Tree is the embodiment of serene vigor. No description, says Muir, can give adequate idea of its majesty, much less of its beauty. He calls it nature's forest masterpiece. He dwells on its patrician bearing, its suggestion of ancient stock, its strange air of other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

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

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

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



General Sherman Tree—Sequoia National Park.

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.

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

• VI •

THE MOUNT RAINIER NATIONAL PARK

WASHINGTON

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

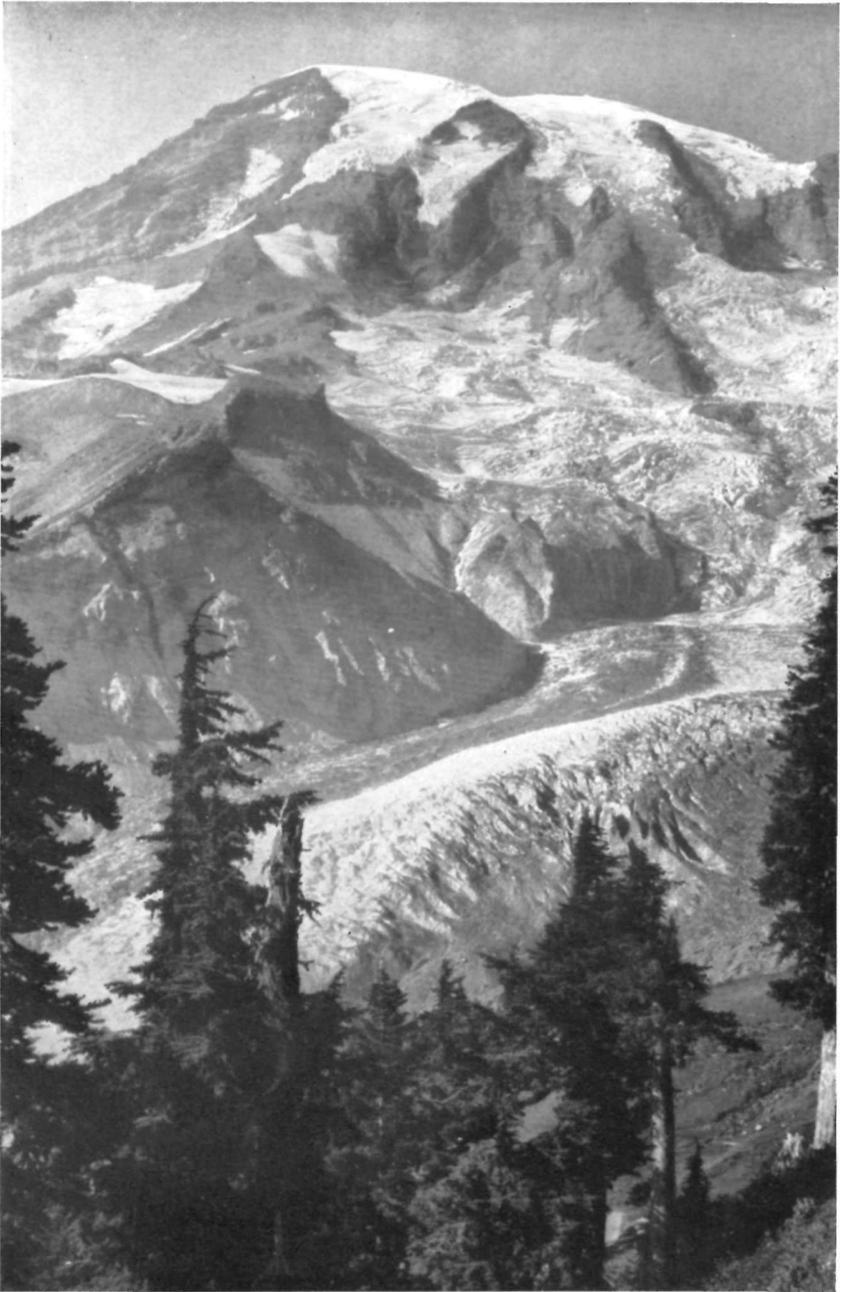
IN THE northwestern corner of the United States rises, from the Cascade Mountains, a series of extinct volcanoes ice clad the year around. Foremost among them, counting from south to north, are Mount Shasta in California; Mount Hood in Oregon; Mount St. Helens, Mount Adams, Mount Rainier, and Mount Baker in Washington. 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 his silver summit. Travelers overland catch the sun glint from his shining sides at a distance of more than 150 miles.

This mountain has a glacier system far exceeding in size and impressive beauty that of any other in the United States. From its summit and cirques 28 named rivers of ice pour slowly down its sides. There are others unnamed. Seen upon the map, as if from an airplane, one thinks of it as an enormous frozen octopus stretching icy tentacles down upon every side among the rich gardens of wild flowers and splendid forests of fir and cedars below.

BIRTH OF THE GLACIERS

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



Edge of Nisqually Glacier Showing the South Side of the Mountain—Mount Rainier National Park.

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

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

ONCE WAS 2,000 FEET HIGHER

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

Indian legends tell of a great eruption.

The 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 and fairly smooth at its shining source on the mountain's summit, its surface here is soiled with dust and broken stones and squeezed and rent by terrible pressure into fantastic shapes. Innumerable crevasses or cracks many feet deep break across it, caused by the fact that the middle of the glacier moves more rapidly than its edges. Glaciers, again like rivers of water, develop swifter currents near midstream. Experiments made by Prof. Joseph N. LeConte in 1905 tell us that the Nisqually Glacier in summer moves about an average of 16 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, of a radically different type than the Nisqually, also is readily accessible to the public. It contains beautiful ice caves and offers opportunities for novel tobogganing.

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, hopping about like tiny fleas. They are harder to see than the so-called sand fleas at the seashore because of their much smaller size. Slender, dark-brown worms live in countless millions on the surface ice. Microscopic rose-colored plants also thrive in such great numbers that they tint the surface here and there, making what is commonly called "red snow."

GORGEOUS CARPETING OF FLOWERS

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

Within the park itself wide highways unfold the majesty of the mountain and the scenic advantages of the park to the visitor to the best advantage.

• VII •

THE CRATER LAKE NATIONAL PARK

OREGON

Special Characteristic: Lake of Great Depth Filling Volcanic Crater

IN the heart of the Cascade Mountains of our Northwest, whose volcanoes were in constant eruption in the ages before history, and now, extinct and ice plated, shine like huge diamonds in the sunlight, there lies, jewellike in a setting of lava, a lake of unbelievable blue. The visitor who comes suddenly upon it stands silent with emotion, overcome by its quite extraordinary beauty and by a strange sense of mystery which even the unimaginative feel keenly and which increases rather than decreases with familiarity. This is Crater Lake.

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

But this was years ago. No human eyes ever saw Mount Mazama. Long before man came the entire upper part of it was destroyed in some titanic cataclysm. It is evident that a great catastrophe occurred, and a mighty crater remains where the top of the mountain formerly stood. Three theories have been advanced to explain the destruction of the volcanic mountain and the cause of the huge crater which is some 4,000 feet deep.

Whether the top was blown away by a series of terrific explosions and a yawning chasm remained in the heart of the mountain, or the mountain top fell in as if swallowed by a subterranean cavern, leaving a vast caldera, or the volcanic cone was destroyed by a seething molten mass of lava in the crater of the volcano as the sides were fused and undermined with huge spawls tumbling in and gradually widening the great crater, is not fully known and remains a challenge to scientists. It is possible to conceive that one of the above forces may have prevailed in the formation of the crater or that a combination of the several forces destroyed Mount Mazama.

What a spectacle that must have been! The first awful depth of this vast hole no man can guess. But the volcano was not quenched; it burst up through the seething lava in three places, making lesser cones within the crater, but none so high as the surrounding rim.

Then the fires ceased, and gradually after the crater cooled the snow and rain of countless years accumulated in the vast basin and filled it with

water within 1,000 feet of its rim. As you see it today one of these cones emerges nearly 800 feet from the surface. The lake is 2,000 feet deep in places. It has no inlet of any sort, nor is there any stream running out of it, but the water is supposed to escape by underground seepage.

ITS MANY ATTRACTIONS

The park embraces 251 square miles of high cascade country, a rugged picturesque area. About 80 percent of its acreage is beautifully forested, principally with yellow pine, mountain hemlock, fir, and lodgepole pine. During the spring and summer the exhibit of wild flowers typical of high altitudes is very interesting. While the lake, with its enclosing crater wall,



Wizard Island—Crater Lake National Park.

is the great central attraction, there are numerous other points of interest, including canyons, waterfalls, and some vast panoramas obtainable by ambitious hikers from the tops of park summits, the highest of which reaches an altitude of nearly 9,000 feet. The pinnacles, in the canyon of Wheeler Creek near the east entrance, are annually visited by thousands. Wildlife is abundant and in the main friendly, particularly the native black bear. The lake is well stocked with trout.

The Rim Road is unlike anything else in the world, being 35 miles of highway that completely encircles the rim, offering incomparable views of

the lake and the crater, with occasional glimpses of a vast panorama of southern Oregon and northern California.

The park lies in the center of the great recreational area of southern Oregon, being a hub from which some of America's most famous fishing streams and lakes may be reached by automobile within 2 hours.

PHANTOM SHIP AND WIZARD ISLAND

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

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

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

• VIII •

THE PLATT NATIONAL PARK

OKLAHOMA

Special Characteristics: Numerous Hot and 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.

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.



Lincoln Bridge—Platt National Park.

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.

Platt National Park is located within the holdings of the Choctaw Nation of the old Indian Territory, and the greater part of the area was purchased from the Indians when the park was established in 1902.

• IX •

THE WIND CAVE NATIONAL PARK

SOUTH DAKOTA

Special Characteristic: Limestone Cave With Unusual Boxwork Formations

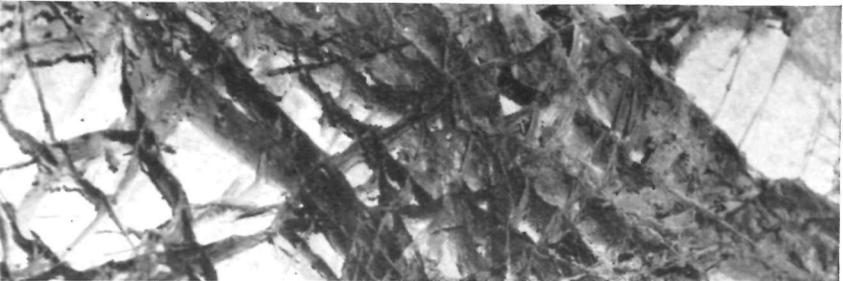
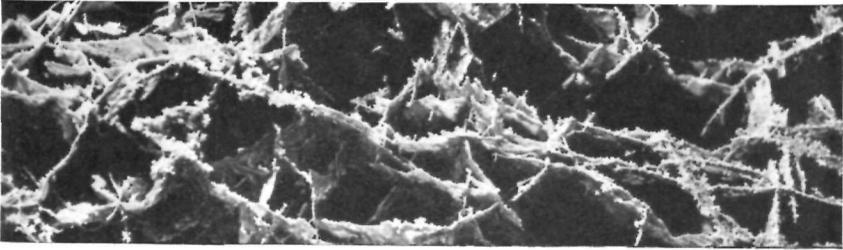
THE southwestern corner of South Dakota, in which Wind Cave National Park is located, has a fascinating story of earth-making to tell. It ranges in interest from ancient fossil deposits buried in the Badlands telling a tale of prehistoric alligators, rhinoceroses, three-toed horses, and other long-extinct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

Wind Cave lies in the great Pahasapa limestone formation which also contains several other large subterranean caverns. The facts about the

discovery of the cave are little known, but it is generally believed that it was discovered by Tom Bingham, a Black Hills pioneer, while hunting deer in 1881. He was attracted by a strange whistling and after searching about in the undergrowth, he discovered that it was caused by wind escaping through a small hole in some rocks. This hole, not more than 10 inches in diameter, is the only natural opening to the cave so far discovered. It is located a few steps behind the present cave entrance building.

The strong currents of wind that blow alternately in and out of the mouth of the cave suggested its name. This strange phenomenon is believed to be caused by changes in the atmospheric pressure outside. When the barometer is falling, the wind usually blows outward; when it rises, the wind blows in.

The present cavern opening was made by digging down about 6 feet to a long, winding fissure or tunnel leading into corridors and galleries decorated with a variety of crystal formations. These formations differ radically from those found in most caverns because stalactites and stalagmites are practically nonexistent in this cave, a feature that adds to its unique interest. Here the formations are of the unusual boxwork and frostwork type. The boxwork is composed of delicately colored crystal fins arranged in honeycomb pattern. Tiny white crystals, sometimes superimposed on a pink background, hang in clusters from ceilings and ledges to form a frostwork decoration of rare beauty.



Characteristic Boxwork Formations not Found Elsewhere in the United States—Wind Cave National Park.

COLORFUL HISTORY OF THE REGION

In addition to its natural beauty and scientific interest, the southwestern section of South Dakota has a colorful and picturesque history. Possibly a French explorer made his way into it as early as 1683, and the Verendrye brothers are said to have visited it in 1743. In 1804 Lewis and Clark passed through on the famous exploring expedition that followed the Louisiana purchase.

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

• X •

THE MESA VERDE NATIONAL PARK

COLORADO

Special Characteristic: Prehistoric Cliff Dwellings

WHERE did the Indians come from? That is one of the innumerable questions that anthropologists puzzled over for many years. The generally accepted theory now is that centuries before the cliff dweller civilization of our Southwest began, small groups of primitive Mongoloid hunters crossed from the northeastern peninsula of Asia to the western coast of Alaska. The Bering Strait, with but 60 miles of water travel, offered the safest and easiest route.

Just when these migrations to the east had their origin and how long they continued cannot definitely be said, but it is thought the earliest Mongoloid hunters were in northwestern America about 10,000 or 12,000 years ago. When Columbus "discovered" America, the continent was inhabited from Alaska to the Strait of Magellan and from the Pacific to the Atlantic coasts.

For perhaps several thousand years following the first migrations little of great significance developed. There undoubtedly was cultural progress, but it was slow, and in the long perspective of time its evidences are hardly discernible. With the knowledge and benefits of agriculture, which was probably developed first in Mexico, hunting gave way to husbandry, nomadism to sedentary life, and there followed a great period of change and advancement. The introduction of corn or Indian maize into what is now the southwestern United States may be called the antecedent condition for all advanced cultures of the area.

It is not known yet whether the first maize-growing Indians of the Southwest were permanent occupants of the Mesa Verde, but in Cliff Palace cave, well below the floor levels of the cliff dwellers, was found a yucca fiber sandal of a distinctive type which is associated only with the first agricultural civilization. Therefore it is believed that sometime before the development of the cliff-dweller culture in the park area, these earliest of American farmers at least found temporary shelter, if not permanent homes, in the welcoming caves of Mesa Verde.

The builders of the prehistoric dwellings in Mesa Verde were Pueblo Indians. By this is meant not a separate Indian stock or tribe, but merely Indians, possibly of various stocks and many tribes, who used to live, and a few of whose modern descendants still live, in pueblos or community houses of many rooms holding entire clans or villages under one roof.

BURROWING INTO THE MESAS

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

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

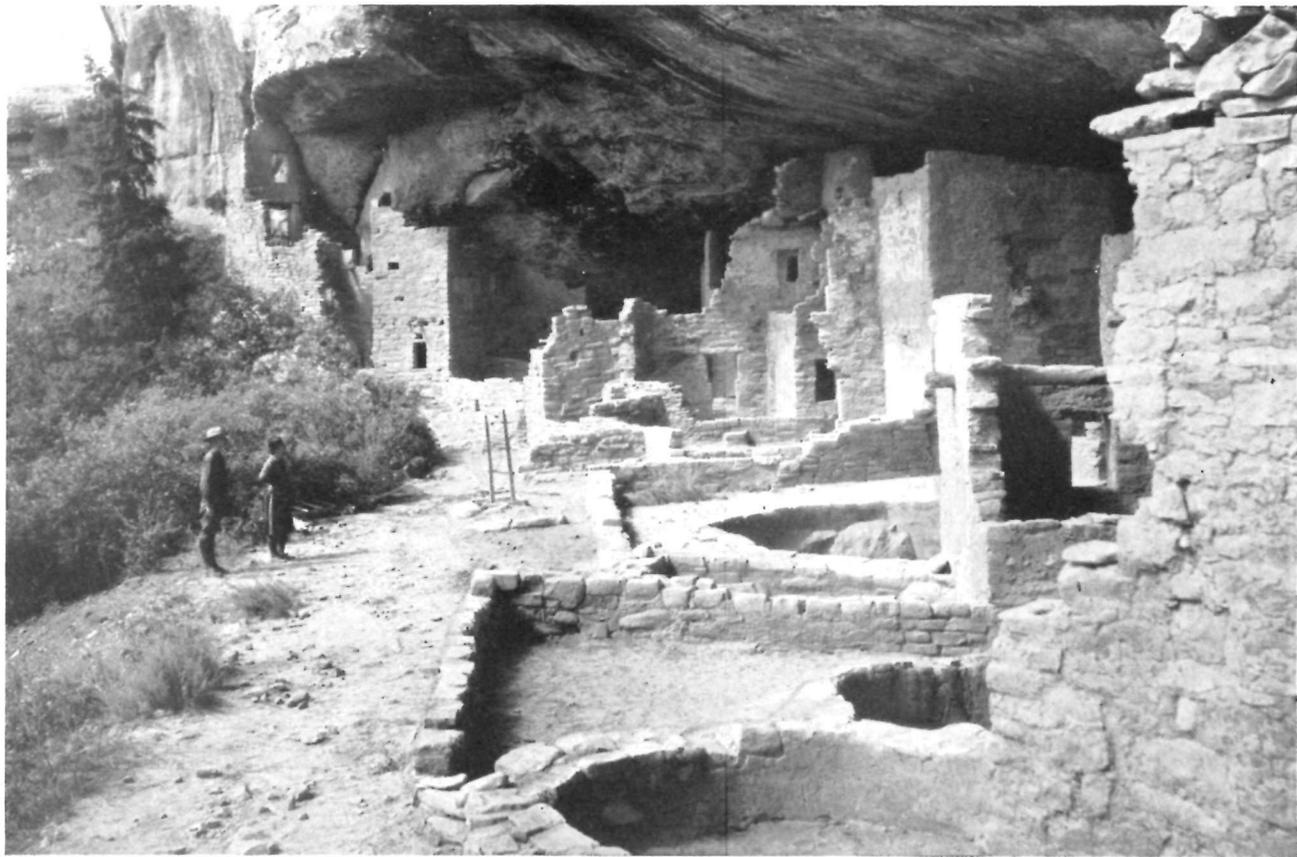
All have heard of the Enchanted Mesa in New Mexico which the Indians of recent times considered sacred. The Mesa Verde, or green mesa (because it is covered with stunted cedar and piñon trees in a land where trees are few), is the next most widely known.

The Mesa Verde is one of the largest mesas. It is 15 miles long and 8 miles wide. At its foot are masses of broken rocks rising from 300 to 500 feet above the plains. These are called the talus. Above the talus yellow sandstone walls rise precipitously 200 or 300 feet higher to the mesa's top.

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

LIVING HARD IN PREHISTORIC TIMES

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



Spruce Tree House—Mesa Verde National Park.

Life must have been hard in this dry country when the Mesa Verde communities flourished in the side of these sandstone cliffs. Game was scarce and hunting arduous. The Mancos yielded a few fishes. The earth contributed berries or nuts. At that time, as at present, water was rare and found only in sequestered places near the heads of the canyons, but notwithstanding these difficulties the inhabitants cultivated their farms and raised their corn, which they ground on flat stones called metates, and baked their bread on a flat stone griddle. They boiled their meat in well-made vessels, some of which were artistically decorated.

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

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

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

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

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

DISCOVERY OF THE SUN TEMPLE

A great mound on the top of the mesa which Dr. Fewkes unearthed in the summer of 1915 shows that, probably about 1200 A. D., they had begun to emerge from the caves to build upon the surface, still a further advance in civilization. It is significant that this building is partially sculptured and architecturally ambitious. It is still more significant that it was not a house

for temporal needs nor a fortress, but apparently was planned for religious purposes.

Because of a symbol in one corner resembling the sun symbol, and apparently enclosed as a shrine by the cliff dwellers, the name of Sun Temple was given to this great ruin. It is believed to have been constructed among the latest of the aboriginal buildings in the park.

The indications are that Sun Temple never was completed; but that before the ambitious project was abandoned the walls had been carried up some 6 feet higher than at present. Then, after abandonment, these higher walls toppled over, soil accumulated over it all, and many large trees grew over the surface. One great tree cut down in excavating the mount was found to have more than 360 annual rings. It probably germinated on top of the Sun Temple Mount about 1540, when Coronado first entered New Mexico.

By means of such deductions, the antiquity of Sun Temple is carried back to about 1200 A. D. The ages of many of the other Mesa Verde ruins have been determined through the tree-ring method applied to remnants of original beams still in place, but no timber apparently was used in the construction of Sun Temple. Perhaps the construction had not progressed that far before abandonment became necessary for some reason not yet determined by archeologists.

EXPLORATION OF THE MESA VERDE

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

Later they explored it and called it Cliff Palace—an unfortunate name—for it was not a palace at all, but a village with 200 rooms for family living, with 23 kivas, or sacred rooms, for worship. Later they found another similar community dwelling, which once sheltered about 350 inhabitants. This they called Spruce Tree House, because a large spruce tree grew near it.

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

The remains of this advanced civilization, of quality so greatly beyond its neighbors, may be seen and studied by all who choose to visit the Mesa

Verde National Park. It is an experience full of interest and pleasure. There are many canyons, and many ruins in each canyon. Some of these ruins are yet unexplored.

Antiquities are not the only attractions in Mesa Verde National Park. It is a land of real beauty. The canyons which seam the mesa, all leading toward the distant Mancos River, in themselves are of extraordinary interest. In winter the park is inaccessible to visitors because of deep snows; in some months it is dry and parched; but in July and August when rains



Cliff Palace—Mesa Verde National Park.

come, vegetation is in full bloom, the plants flower, the grass grows high in the glades, and the trees put on their bright new garments of green. It is then of greatest interest to most people, although to its devotees it is beautiful at all times of the year.

• XI •

THE GLACIER NATIONAL PARK

MONTANA

Special Characteristics: Unsurpassed Romantic Scenery; 200 Lakes of Particular 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 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.

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. It crumbled into peaks, precipices, and gorges.

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

But mark this: When the western edge of the earth's cracked skin overthrust the eastern edge, it brought its bottom surface over and on top of the eastern edge; and this bottom surface was the oldest sedimentary rock known, the very same strata of mud and limestone ooze which were deposited in the sea millions of years ago. And mark this also, that the erosion of the years following has washed away all the deposits of the later



Red Eagle Lake—Glacier National Park.

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.

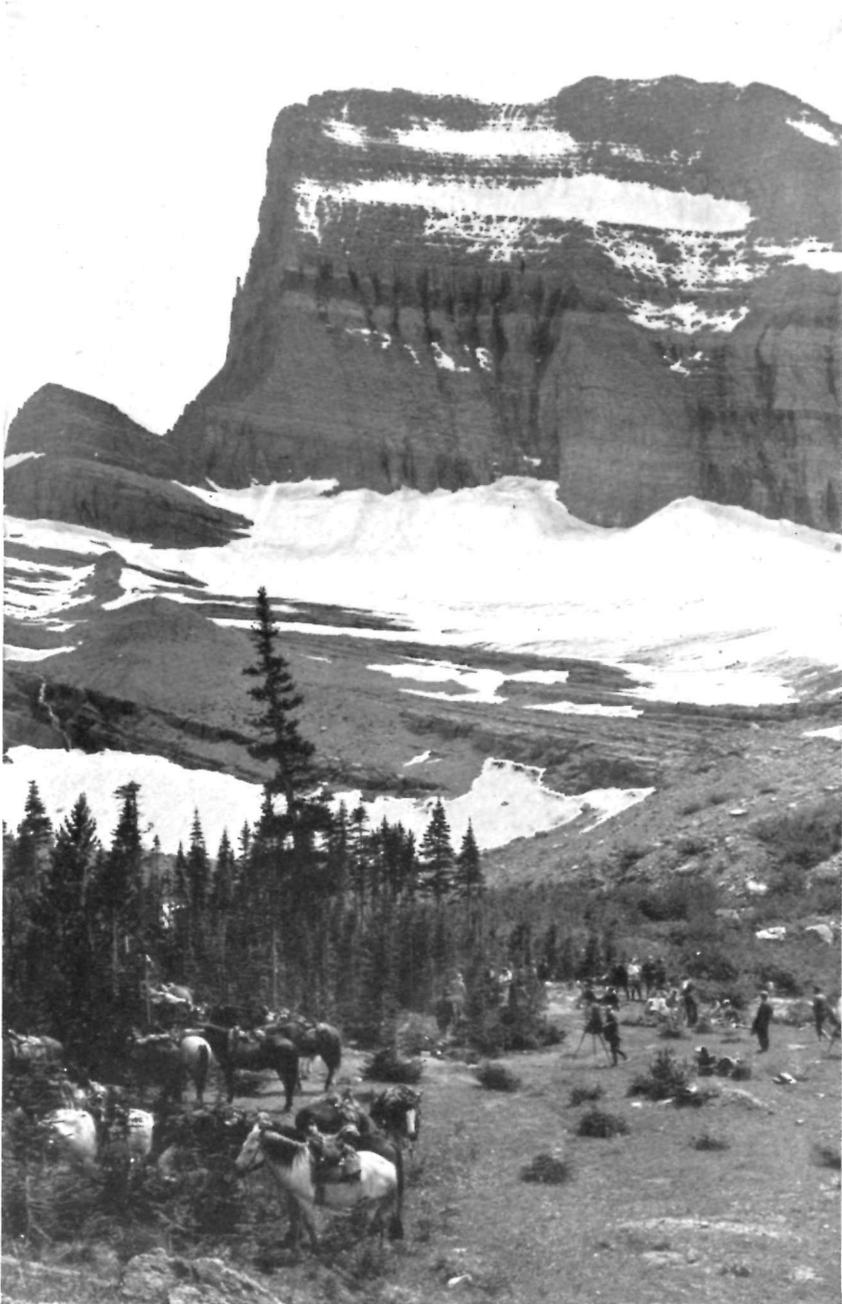
Down from the Continental Divide descend 19 principal valleys, 7 on the east side and 12 on the west. Of course, there are very many smaller valleys tributary to each of these larger valleys. Through these valleys run the rivers from the glaciers far up on the mountains.

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.



Camping Party at Foot of Grinnell Glacier—Glacier National Park.

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 Blackfoot 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 1933, 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 and functions as it did before the union.

• 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 or rail northwest of Denver. Find Longs Peak on a good map and there is the center of the snow-topped mountains which constitute the park.



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

These mountains are part of the Continental Divide, which is the name given to the irregular line of highest land running north and south through North America 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. Long's Peak, the biggest of them all, rises 14,255 feet above sea level, and most of the other mountains in the Snowy Range, as it is sometimes called, are more than 12,000 feet high; several are nearly as high as Long's Peak.

AT TIMBER LINE

The valleys on both sides of this range and those which penetrate into its recesses are dotted with lovely parklike glades clothed in a profusion of glowing wild flowers and watered with cold streams from the mountain snows and glaciers. Forests of pine and silver-stemmed aspen separate them. Timber line is more than 11,000 feet above sea level, and up to that point the slopes 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 tiny alpine flowers. Grass grows in sheltered spots even on the highest peaks and is available for the large curve-horned mountain sheep even during winter, for the fierce winds blow the snow off the exposed slopes and pile it deep in the sheltered valleys.

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 snowbanks 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 SHEEP

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 sheep, and acquired large holdings by purchase of homesteading and squatters' claims, much of which was reduced in the contests that followed. Now that the Government has made it a national park, the protection offered its wild animals is making it a successful wild-animal refuge.

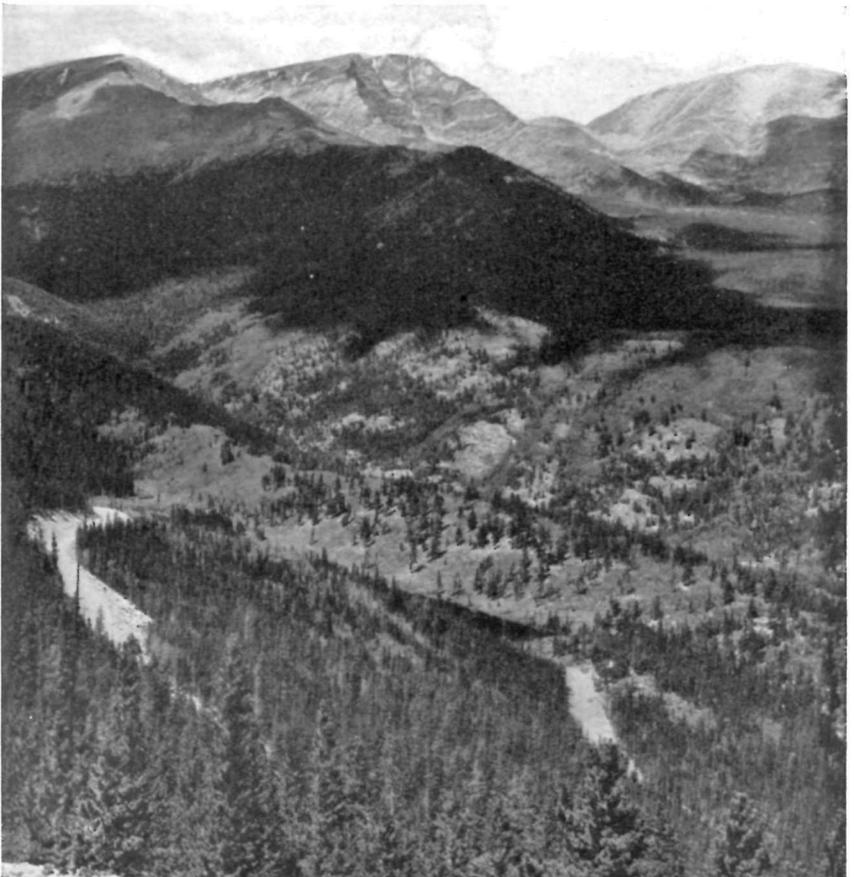
These lofty rocks are the natural home of the celebrated Rocky Mountain sheep or bighorn, which is much larger than any domestic sheep. These Rocky Mountain sheep, even the lambs, make descents down seemingly impossible slopes. They do not land on their curved horns, as many persons declare, but upon 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 mountain sheep making their way along the volcanic flow which constitutes Specimen Mountain in the Rocky Mountain National Park is a sight not easily forgotten.

LONGS PEAK AND THE GLACIER RECORDS

The prominent central feature of the Rocky Mountain National Park is Longs Peak. It rears a square-cornered, boxlike head well above the tumbled sea of surrounding mountain tops. It has, unlike most great mountains, a distinct architectural form. Standing well to the east of the range at about its center, it suggests the captain of a white-helmeted

company; the giant leader of a giant band. It is supported on four sides by mountain buttresses, suggesting the stone buttresses of a central cathedral spire. From every side it looks the same, yet remarkably different. One does not know Longs Peak until he has seen it from every side, and then it becomes to him not a mountain mass but an architectural creation.

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



Mummy Range—Rocky Mountain National Park.

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.

ONE OF AMERICA'S HIGHEST HIGHWAYS

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 these mountain tops. One may mount a horse after early breakfast in the valley, ride up Flattop to enjoy one of the great views of the world, and be back for late luncheon. The hardy foot traveler may make better time than the horse on these mountain trails. One may cross the Continental Divide from the hotels of one side to the hotels of the other between early breakfast and late dinner, or motor between these points via the Trail Ridge Road in a few hours.

• XIII •

THE HAWAII NATIONAL PARK

HAWAII

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

THE Hawaiian Islands are a land of coral reefs, tropical palms and flowers, pineapples and sugarcane, midday siestas, rainbows, music, earthquakes, and volcanic violence. They have a history which is a romance. Their very mention evokes visions of girls dancing under tropical

stars to the ukulele. They possess the fourth largest volcanic crater in the world, the largest active volcano, and a lake of turbulent sulphurous fire, which fills the beholder with awe.

It was not the gentle poetic aspects of the Hawaiian Islands which led Congress to create a national park there, though these form its romantic contrasted setting. It was the extraordinary volcanic exhibit, that combination of thrilling spectacles of Nature's colossal power, which for years has drawn travelers from the four quarters of the earth. The Hawaii National Park includes the summits of three volcanoes of world celebrity—Haleakala, on the island of Maui, and Mauna Loa and Kilauea, on 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 eruptions. Coral growths have enlarged and enriched them since. Kauai was the first island to develop habitable conditions, and those to its south-east followed in order. Hawaii, the youngest, is still in the building. Dead Haleakala on the island of Maui has been inactive for centuries.

HALEAKALA

The popular translation of the name Haleakala is "The House of the Sun"; literally the word means "The house built by the sun." The volcano is a monster of more than 10,000 feet, which bears upon its summit a crater of a size and beauty that makes it one of the world's show places. This crater is $7\frac{1}{2}$ 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 drooping filaments of bloom gleam like polished stilettos. From this great gray floor within its lava rim rise, to a height of several



Lava Cascades—Hawaii National Park

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 mahogany and tangles of giant tree fern, then up brilliantly colored lava slopes, is one of the inspiring tours in the mountain world. The summit crater, Mokuaweoweo, is 3 miles long by 1½ 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. Every 5 or 10 years it gets into action with violence, sometimes at the summit, oftener of recent years since the central vent has lengthened, at weakened places on its sides.

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 the 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.

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, or Hawaiian mahogany, vie with the flowering ohia trees in making the forests unusually interesting to the visitor.

Bird Park, a beautiful natural park, also known as Kipuka Puauulu, 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 40 species of trees grow here. This favored spot of 56 acres is the haunt of many beautiful and rare native birds.



Fern Jungle—Hawaii National Park.

• 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 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 200 years. Then, at the end of May 1914, as if precursor of the cataclysm of war so soon to follow, an explosion from its summit ushered in a new period of eruption which, feeble as compared with those of its violent past, was magnificent as a spectacle and educationally typical of volcanism. From the first explosion to the end of January 1916 Lassen remained in more or less constant eruption. Within that period occurred 220 explosions, between which the volcano emitted day and night enormous quantities of smoke and steam.

The greatest of the explosions occurred May 22, 1915, nearly a year after the eruptions began. It was ushered in by the rising of a mushroom-shaped cloud of smoke to a height of 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. Large trees were uprooted. Forests were scorched to a cinder, spreading fires. Large snow fields were instantly turned to water and flooded the lower valleys in rushing tides. Fortunately summer visitors had been well warned.

Examination showed that this explosion had opened a new fissure extending 1,000 feet from the summit down the slope toward Chaos Crags, the old and the new craters, now joined in one of irregular shape, filled to



Mount Lassen—Lassen Volcanic National Park.

the brim with lava, forming what geologists call a lid. After this great explosion activity declined rapidly.

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 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.



Kings Creek Falls—Lassen Volcanic National Park.

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 Horse-shoe 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.

• XV •

THE MOUNT MCKINLEY NATIONAL PARK

ALASKA

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

MOUNT McKinley is the highest mountain in North America and, scenically speaking, the highest in the world. This majestic peak rears its snow-covered head high into the clouds, reaching an altitude of 20,300 feet above sea level and 17,000 above timber line. No other mountain rises so far above its own base. 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.

Denali, "Home of the sun", was the name given to this impressive snow-clad mountain by the early Indians. Its upper two-thirds is enveloped in snow throughout the year.

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



Mount McKinley—Mount McKinley National Park.

buttresses, descend northward long ridges which merge in the foothills, and between these 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 névé 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 crest line 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 was 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 1,300 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. Liek, 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.

• 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 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.

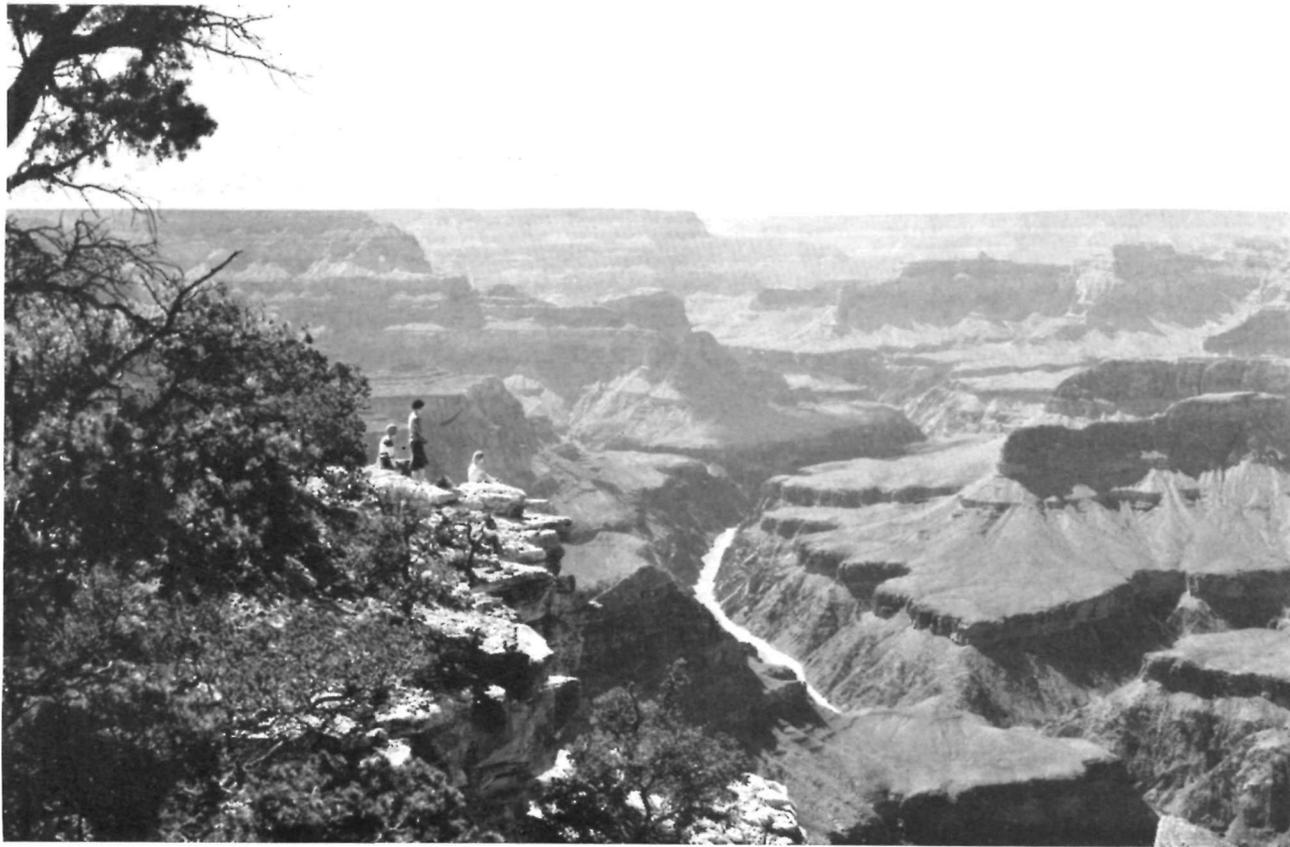
Such roadside erosion is familiar to us all. A hundred times we have idly noted the fantastic water-carved walls and minaretted slopes of these ditches. But seldom, perhaps, have we realized that the muddy roadside ditch and the world-famous Grand Canyon of the Colorado are, from nature's standpoint, 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 probably flowed upon the surface of this lofty tableland. But, like the roadside ditch, it gradually wore an ever-deepening channel. In time, as with the roadside ditch, the banks caved in and the current carried the soil away. The ever-busy chisels of the untiring winds have carved and polished through untold centuries.

AN UNPARALLELED SPECTACLE

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



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

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 northern Arizona and is called the Grand Canyon National Park. It constitutes one of the most astonishing phenomena in nature and one of the stupendous sights of the world.

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

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

MOSAIC OF DESCRIPTION

Who can describe the Grand Canyon?

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

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

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

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

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

"It has a thousand different moods", writes Hamlin Garland. "No one can know it for what it is who has not lived with it every day of the year. It is like a mountain range—a cloud 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 transfigured, as if all the life and light of centuries of sunshine stored up in the rocks was now being poured forth as from one glorious fountain, flooding both earth and sky.”

DIFFICULT TO COMPREHEND

Even the most superficial description of this enormous spectacle may not be put in words. The wanderer upon the rim overlooks a thousand square miles of pyramids and minarets carved from the painted depths. Many miles away and more than a mile below the level of his feet he sees a tiny 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 Maj. 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."



Section of Bright Angel Trail—Grand Canyon National Park.

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.

• XVII •

THE ACADIA NATIONAL PARK

MAINE

Special Characteristics: 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 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 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, undermining the granite. From the mountain tops gorgeous views are revealed of sea and sound, island and wooded mainland. The air is now fragrant with the breath of the forest, now 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.



Otter Cliffs from Ocean Drive—Acadia National Park.

• 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.

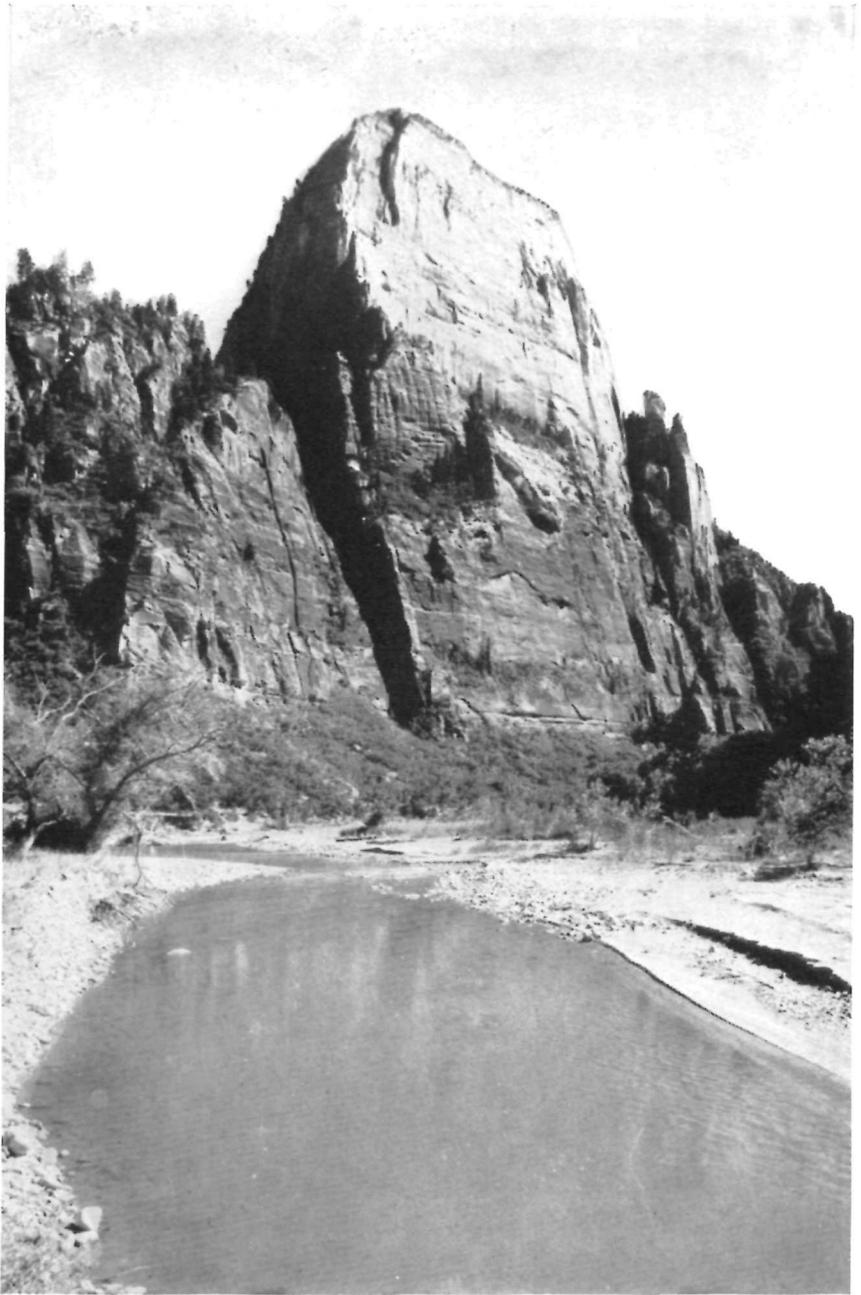
Where the famous Vermilion Cliff, whose brilliant red precipice brightens more than a hundred desert miles, joins and underlies the glistening White Cliff, another desert feature of celebrity, a turbulent stream cutting downward vertically for 2,500 feet, has dug a spectacular gorge known as "Zion Canyon." Sandstones and shales of many hues have united with the Vermilion and White Cliffs to make the formation, and the canyon displays these colors in many majestic and fantastically modeled masses.

The gorge has been known to the Mormons since the late fifties, and was first explored in 1862. The early pioneers, being deeply religious, named it Little Zion Canyon. In 1872 it was explored and described by members of the Powell survey. In 1909 the area was 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.

This gorgeous valley has about the same dimensions as the famous Yosemite Valley. Extraordinary as are the sandstone forms, the color is what most amazes. The gorgeous red of the Vermilion Cliff is the prevailing tint. Two-thirds the way up these marvelous walls and temples are painted gorgeous reds; then above the reds they rise in startling white. Sometimes the white is surmounted by a cap of vivid red, remains of another red stratum which once overlay all. The other colors are many and brilliant. The Vermilion Cliff rests upon 350 feet of even a more insistent red relieved by mauve and purple shale. That in turn rests upon a hundred feet of other variegated strata.

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

Zion National Park is reached by an automobile ride of 62 miles from the railroad through a vividly colored sandstone country. Motorists driving



Great White Throne—Zion National Park.

their own cars can visit the park by a side trip of 35 miles from the Arrowhead Trail over excellent highway. The entrance is between two gigantic stone masses of complicated architectural proportions which are appropriately named the East and West Temples.

The West Temple is the greatest of the mountains forming the walls of Zion Canyon, and is also one of the great monoliths of the world. From a stairway of many colors it springs abruptly 4,000 feet. Its 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.

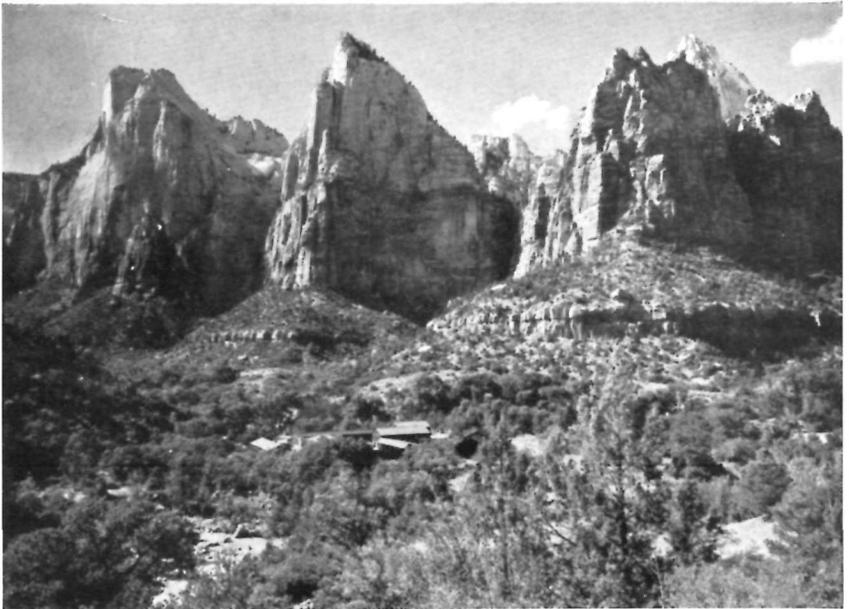
Passing the gates the traveler stands in a canyon of nearly perpendicular sides more than half a mile deep, half a mile wide at the bottom, a mile wide from crest to crest, whose walls glow with color. On the west the Streaked Wall, carved from the White Cliff, is wonderfully eroded. Opposite is the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

A mile beyond stands the Great White Throne, the most remarkable monolith of the region. This mighty rock, sometimes called El Gobernador, 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 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-



The Three Patriarchs—Zion National Park.

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.

• 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.

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



Bathhouse Row—Hot Springs National Park.

the waters believed to possess medicinal value, making them available to all and preventing their commercial exploitation. Not until 1921, nearly 90 years after its creation as the Hot Springs Reservation, did Congress give it national-park status.

The country is one of much beauty. Hot Springs Mountain, from whose sides flow the cleansing waters, is about 50 miles west by south from Little Rock. Here, as early as 1804, began the settlement which has developed into the prosperous and growing city of Hot Springs. It is a resort city, made wealthy from the many thousands of visitors seeking health from the adjacent Government springs and pleasure in the high and beautiful neighborhood country with its excellent drives and woodland paths, its mountain and river views, its social gayeties, and its exceptional golf.

Adjoining the borders of the city at the mountain's foot lies the park, a tract of 1,009 acres enclosing all the 47 hot springs. Nine bathhouses are in the reservation and 10 more in the city, all under Government regulation. In the city are many hotels and boarding houses with a wide range of rates to meet all pocketbooks. The 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.

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

• XX •

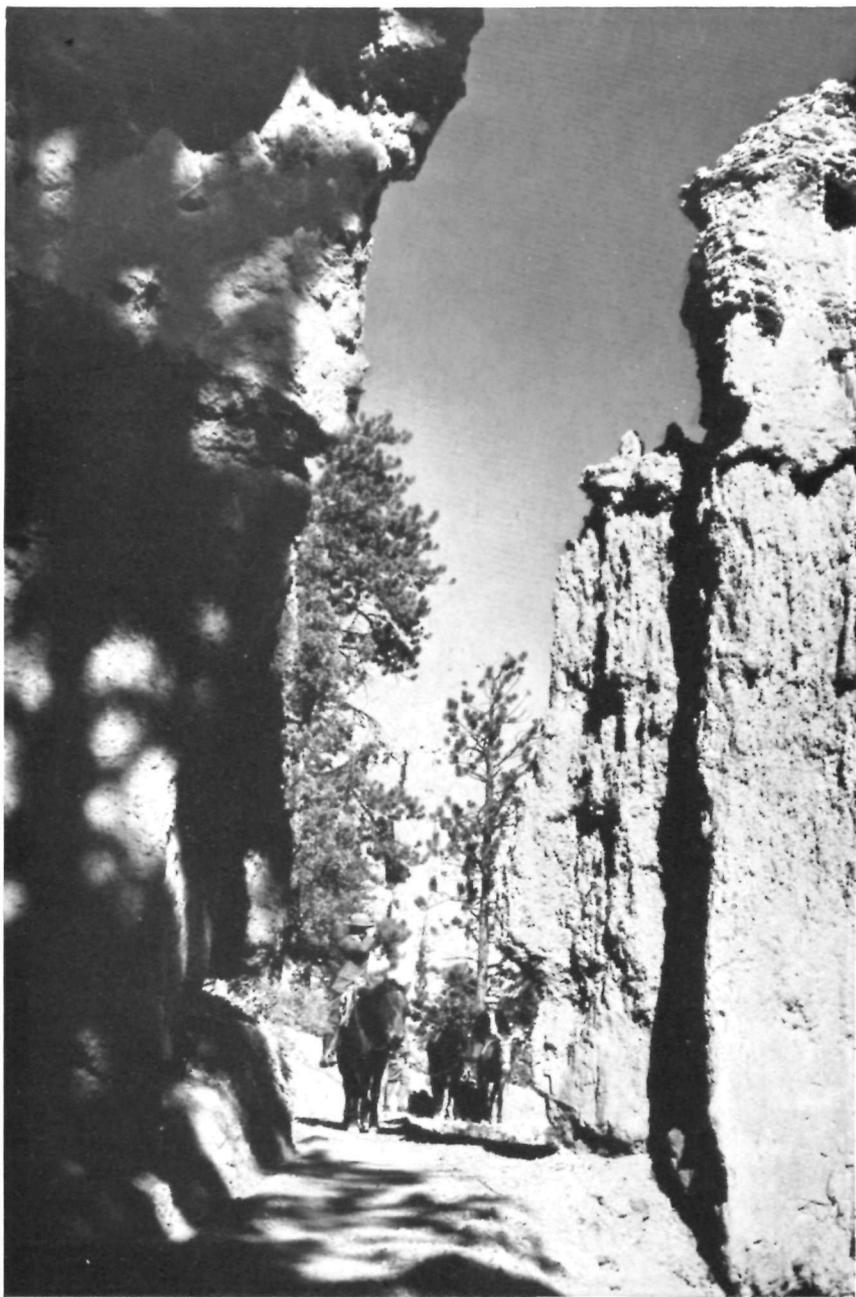
THE BRYCE CANYON NATIONAL PARK

UTAH

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

BRYCE Canyon, located in the same general desert region that produced the Grand Canyon and Zion, 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 the edge of the cliffs, forming amphitheaters or wide canyons filled with pinnacles and grotesque forms.

The Yellow Creek, Sheep Creek, and Willis Creek sections are all magnificent and have won high praise from those who have seen them. Bryce



On the Trail—Bryce Canyon National Park.

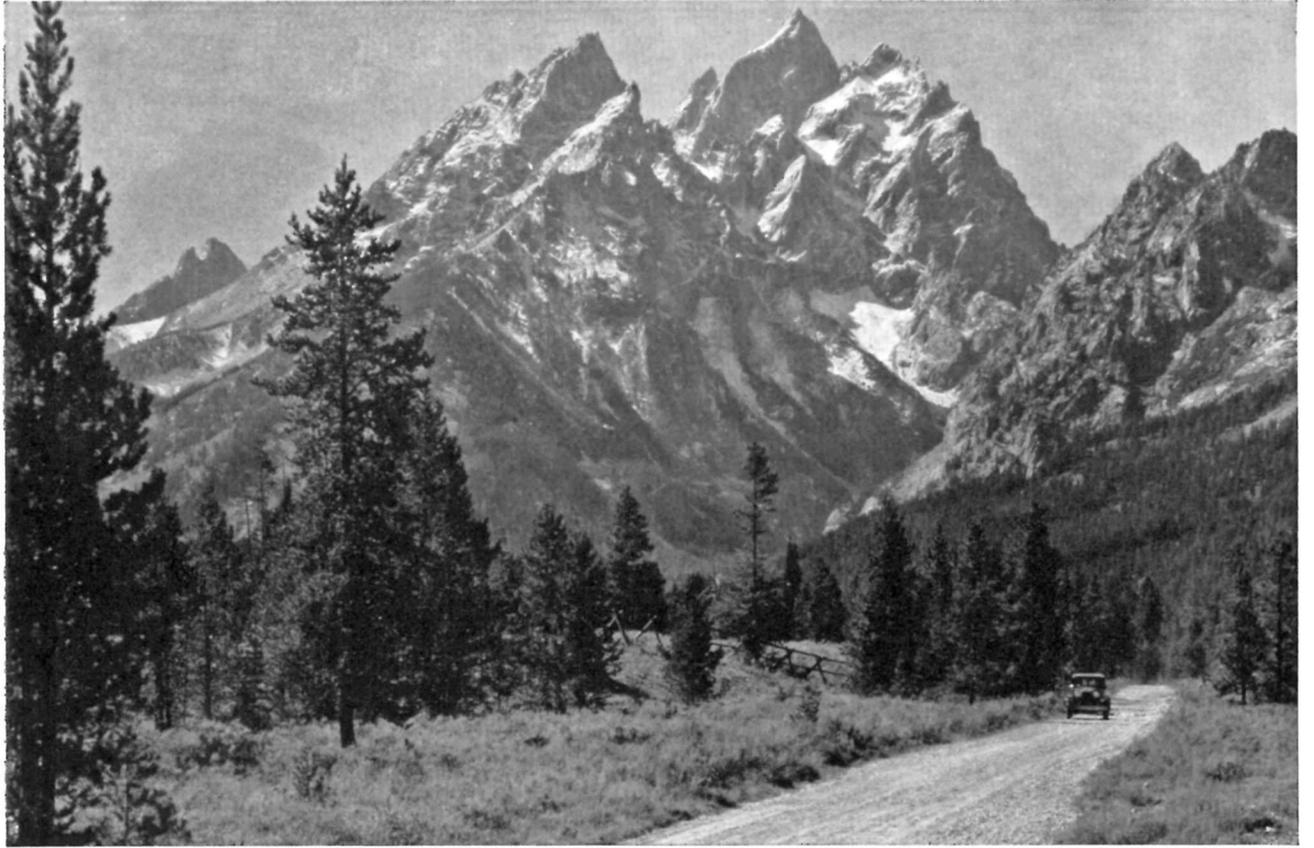
Canyon, however, is the most spectacular and best known of all the wonders, and, due to the fact that the original park area included only this one canyon, the park takes its name from this feature. The canyon was named after Ebenezer Bryce, a Mormon pioneer, who was the first to settle near its mouth 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 limy sandstones. The amphitheater is 3 miles in length and about 2 miles wide, and is filled to the brim with myriads of fantastic figures cut by weathering influences, chiefly by running water, wind, 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 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 completely realized. 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 sandstone 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 sandstone, and along the irregular edges of the canyon are steep slopes of this sandstone merging into the pinks and reds of the lower layers. It is out of these pinks and reds, sometimes streaked with lavender and brown, that the greater portion of the 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-



The Grand Teton Range—Grand Teton National Park.

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 horseback and foot trails have 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.

• 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.

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 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, Beaver Dick, 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. During the last three summers members of the Civilian Conservation Corps under National Park Service direction removed vast quantities of dead trees and stumps that marred the beauty of its shores.

This lake is not included in the present park boundaries although a bill to include it was presented to the first session of the Seventy-fourth Congress by Senators Robert D. Carey and Joseph C. O'Mahoney of the State of Wyoming.

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, in which year 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.

• XXII •

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 known as the Carlsbad Caverns. They are located in southeastern New Mexico, in the rugged foothills of the Guadalupe Mountains. The region is picturesque semidesert 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.

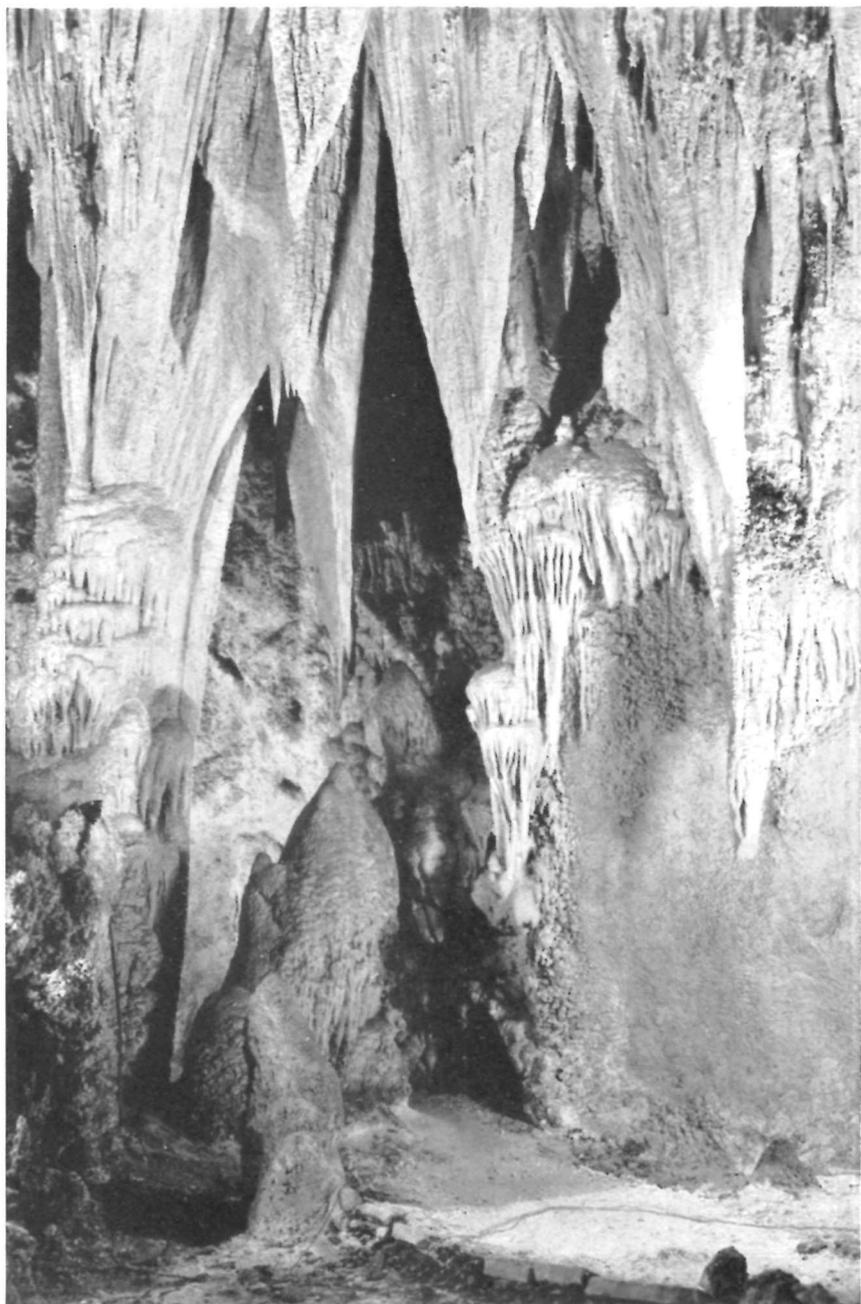
After the great series of chambers forming the main portions of the caverns were formed, nature took up the task of decorating them with a myriad of beautifully sculptured effects in the form of stalagmites, stalactites, more irregular spiral forms known as helectites, enormous columns, curtains seemingly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



Queen's Chamber—Carlsbad Caverns National Park.

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 150 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 disap-

pear 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 11½ 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.

• XXIII •

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

“MYSTERIOUS, 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 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 152 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



A Few Peaks of the Great Smoky Range—Great Smoky Mountains National Park.

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 wild cat, 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 INCOMPLETE

Congress, in providing for the establishment of the Great Smoky Mountains when lands for the purpose had been given to the Nation, stipulated that until the park had an area of 427,000 acres it could not be developed for public use. It did, however, permit its establishment, for protective purposes only, upon the acceptance by the Federal Government of 150,000 acres. Under that provision 383,374 acres of land within the minimum area required have been accepted for administration and protection. By act of Congress dated June 15, 1934, the total minimum area for development was reduced 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.

The North Carolina section of the park was brought to completion on May 1, 1934, and the State of Tennessee is actively engaged in acquiring the land still needed to complete the park.

• XXIV •

THE SHENANDOAH NATIONAL PARK

VIRGINIA

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

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 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.

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 Skyline Drive, of which two-thirds will be passable during the summer of 1936. Several years’ more work will be necessary to complete the southern third. From this highway trails lead off into the mountain wilderness with its beautiful glens and dashing waterfalls.

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



A Section of the Skyline Drive—Shenandoah National Park.

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.

TWO NATIONAL PARKS TRANSFERRED FROM WAR
DEPARTMENT

UNDER the consolidation of August 1933 two national parks of historic interest were transferred to the administration of the National Park Service and, pending reclassification of areas, are included in the list of scenic areas previously classified as national parks. Brief descriptions follow:

ABRAHAM LINCOLN NATIONAL PARK

KENTUCKY

The little one-room log cabin in which Abraham Lincoln was born—a home about 11 by 16 feet in dimensions, with door and window on one side only—is protected against the ravages of the elements and the vandalism of the curious in one of the national parks added to the enlarged system.

To safeguard this priceless national relic, while the area was under the control of the War Department a granite shrine was built around it, approached by sunken gardens and gleaming granite stairs leading up over the terraces.

Part of the old Lincoln farm also is included in the park.

FORT McHENRY NATIONAL PARK

MARYLAND

Anchored amid British ships of war as they shelled Baltimore during the War of 1812, Francis Scott Key was relieved, as dawn broke, to see that "Our flag was still there" as he gazed toward Fort McHenry. In that moment of exultation he composed "The Star-Spangled Banner."

The defeat of the British Fleet at Fort McHenry and North Point was largely responsible for the successful termination of the War of 1812.

Francis Scott Key had approached the British Fleet under flag of truce. His object—the release of a friend unjustly imprisoned—was accomplished; but the American pilot boat on which he had approached the British was held until after the battle. Anchored amid the enemy transports in Old Bay, Key and his friend could see the whole bombardment.

Although Fort McHenry perhaps is best known in connection with the repulse of the British in the War of 1812 and the production of "The Star-Spangled Banner", it had its beginnings back in Revolutionary days. When the news of the Battle of Lexington was received in Maryland, the provincial council expressed support of the revolutionary cause and in the spring of 1776 built the fortifications which preceded Fort McHenry. The present fort was begun about the beginning of the nineteenth century.

• XXVI •

MORRISTOWN NATIONAL HISTORICAL PARK

NEW JERSEY

MORE than a century and a half ago, the hills about Morristown, at once so beautiful and historic, furnished shelter to the ragged American army. Only 30 miles from the British at New York, but protected from them by hill barriers, Washington could camp here in security, while still keeping a close watch on his foe.

In 1777, and again in 1779–80, his army wintered at Morristown. In 1780–81, the Pennsylvania Line, commanded by General Wayne, mutinied there. In all, Washington lived at Morristown for about a year during the Revolution.

The Ford Mansion was the residence of General and Mrs. Washington during the winter and spring of 1779–80. This beautiful house, which was built in 1774 and has been unchanged since that time, now houses a magnificent collection of materials relating to George Washington and the Revolutionary War.

Today the Ford Mansion, the Jockey Hollow area, and Fort Nonsense in Morristown are included in a park—the first national historical park to be created by Congress.



Ford Mansion—Morristown National Historical Park.

• XXVII •

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.

