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NATIONAL PARK SERVICE

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RULES AND REGULATIONS

YELLOWSTONE

NATIONAL PARK

WYOMING



© By Haynes, St. Paul

THE "HOLD-UP" BEAR

SEMI-CENTENNIAL OF THE CREATION
OF THE PARK—1872-1922

SEASON FROM
JUNE 20 TO SEPTEMBER 15



Photograph by United States Reclamation Service.

JACKSON LAKE AND THE TETON MOUNTAINS IN THE PROPOSED
ENLARGEMENT.

Grand Teton, elevation 13,747 feet, on the left, and Mount Moran, elevation 12,100 feet, on the right. The elevation of Jackson Lake is 6,700 feet.



© Haynes, St. Paul.

CAMPING IN MAMMOTH HOT SPRINGS AUTOMOBILE CAMP.

As many as 300 cars may be parked in this site in a single night during the tourist season.

THE NATIONAL PARKS AT A GLANCE.

[Number, 19; total area, 11,301 square miles.]

National parks in order of creation.	Location.	Area in square miles.	Distinctive characteristics.
Hot Springs..... 1832	Middle Arkansas.....	1½	46 hot springs possessing curative properties—Many hotels and boarding houses—17 bathhouses under public control.
Yellowstone..... 1872	Northwestern Wyoming.	3,348	More geysers than in all rest of world together—Boiling springs—Mud volcanoes—Petrified forests—Grand Canyon of the Yellowstone, remarkable for gorgeous coloring—Large lakes—Many large streams and waterfalls—Vast wilderness, greatest wild bird and animal preserve in world—Exceptional trout fishing.
Sequoia..... 1890	Middle eastern California.	252	The Big Tree National Park—Several hundred sequoia trees over 10 feet in diameter, some 25 to 36 feet in diameter—Towering mountain ranges—Startling precipices—Mile-long cave of delicate beauty.
Yosemite..... 1890	Middle eastern California.	1,125	Valley of world-famed beauty—Lofty cliffs—Romantic vistas—Many waterfalls of extraordinary height—3 groves of big trees—High Sierra—Waterwheel falls—Good trout fishing.
General Grant.... 1890	Middle eastern California.	4	Created to preserve the celebrated General Grant Tree, 35 feet in diameter—6 miles from Sequoia National Park.
Mount Rainier... 1899	West central Washington.	324	Largest accessible single peak glacier system—28 glaciers, some of large size—48 square miles of glacier, 50 to 500 feet thick—Wonderful subalpine wild flower fields.
Crater Lake..... 1902	Southwestern Oregon.	249	Lake of extraordinary blue in crater of extinct volcano—Sides 1,000 feet high—Interesting lava formations—Fine fishing.
Wind Cave..... 1903	South Dakota.....	17	Cavern having many miles of galleries and numerous chambers containing peculiar formations.
Platt..... 1904	Southern Oklahoma...	1½	Many sulphur and other springs possessing medicinal value.
Sullys Hill..... 1904	North Dakota.....	1½	Small park with woods, streams, and a lake—Is an important wild animal preserve.
Mesa Verde..... 1906	Southwestern Colorado.	77	Most notable and best preserved prehistoric cliff dwellings in United States, if not in the world.
Glacier..... 1910	Northwestern Montana.	1,534	Rugged mountain region of unsurpassed Alpine character—250 glacier-fed lakes of romantic beauty—60 small glaciers—Precipices thousands of feet deep—Almost sensational scenery of marked individuality—Fine trout fishing.
Rocky Mountain. 1915	North middle Colorado.	397½	Heart of the Rockies—Snowy range, peaks 11,000 to 14,255 feet altitude—Remarkable records of glacial period.
Hawaii..... 1916	Hawaii.....	118	Three separate areas—Kilauea and Mauna Loa on Hawaii; Haleakala on Maui.
Lassen Volcanic.. 1916	Northern California...	124	Only active volcano in United States proper—Lassen Peak, 10,465 feet—Cinder Cone 6,879 feet—Hot Springs—Mud geysers.
Mount McKinley. 1917	South central Alaska..	2,645	Highest mountain in North America—Rises higher above surrounding country than any other mountain in the world.
Grand Canyon.... 1919	North central Arizona.	958	The greatest example of erosion and the most sublime spectacle in the world.
Lafayette..... 1919	Maine coast.....	8	The group of granite mountains upon Mount Desert Island.
Zion..... 1919	Southwestern Utah...	120	Magnificent gorge (Zion Canyon), depth from 800 to 2,000 feet, with precipitous walls—Of great beauty and scenic interest.

The National Parks Portfolio

(THIRD EDITION)

**Bound
securely
in cloth
one dollar**

A presentation of the national parks and national monuments in picture. The selection is from the best work of many photographers, professional and amateur. It contains nine chapters descriptive each of a national park, and one larger chapter devoted to other parks and monuments. 248 pages, including 306 illustrations.

¶ Sent postpaid, upon receipt of price in cash or money order, by the Superintendent of Documents, Government Printing Office, Washington, D. C. For sale in Yellowstone National Park at the Information Office, Mammoth Hot Springs.

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YELLOWSTONE NATIONAL PARK.

GENERAL DESCRIPTION.

The Yellowstone National Park was created by the act of March 1, 1872. It is approximately 62 miles long and 54 miles wide, giving an area of 3,348 square miles, or 2,142,720 acres. It is under the control and supervision of the National Park Service of the Interior Department.

The Yellowstone is probably the best known of our National Parks. Its geysers are celebrated the world over because, for size, power, and variety of action, as well as number, the region has no competitor. New Zealand, which ranks second, and Iceland, where the word "geyser" originated, possess the only other geyser basins of prominence, but both together do not offer the visitor what he may see in two or three days in Yellowstone. Indeed, the spectacle is one of extraordinary novelty. There are few spots in this world where one is so strongly possessed by emotions of wonder and mystery. The visitor is powerfully impressed by a sense of nearness to nature's secret laboratories.

The Yellowstone National Park is located in northwestern Wyoming, encroaching slightly upon Montana and Idaho.¹ It is our largest national park. The central portion is essentially a broad, elevated, volcanic plateau, between 7,000 and 8,500 feet above sea level, and with an average elevation of about 8,000 feet. Surrounding it on the south, east, north, and northwest are mountain ranges with culminating peaks and ridges rising from 2,000 to 4,000 feet above the general level of the inclosed table-land.

The entire region is volcanic. Not only the surrounding mountains but the great interior plain is made of material once ejected, as ash and lava, from depths far below the surface. Geological speculation points to a crater which doubtless once opened just west of Mount Washburn. Looked down upon from Washburn's summit and examined from the main road north of the pass, the conforma-

¹ Of the park area, 3,114 square miles, or 1,992,960 acres, are within the State of Wyoming, 198 square miles, or 126,720 acres, within the State of Montana, and 36 square miles, or 23,040 acres, within the State of Idaho.

tion of the foreground and of the distant mountains is suggestive even to the unscientific eye.

In addition to these speculative appearances, positive evidence of Yellowstone's volcanic origin is apparent to all in the black glass of Obsidian Cliff, the whorled and contorted lavas along the road near the top of Mount Washburn, and the decomposed colored sands in the sides and depths of the Grand Canyon.

THE GEYSERS.

There are five active geyser basins, the Norris, the Lower, the Upper, the Heart Lake, and Shoshone Basins, all lying in the west and south central parts of the park. The geysers exhibit a large variety of character and action. Some, like Old Faithful, spout at quite regular intervals, longer or shorter. Others are irregular. Some burst upward with immense power. Others shoot streams at angles or bubble and foam in action.

Geysers 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.

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. The 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.

*One may readily make a geyser in any laboratory with a test tube, a little water, and a Bunsen burner. A mimic geyser was made in the laboratory of the Department of the Interior in the winter of 1915, which when in action plays at regular intervals of a minute and a quarter. The water is heated in a metal bulb, and finds its way to the surface vent through a spiral rubber tube. When it plays the

water rises 3 or 4 feet in height, varying according to the intensity of the heat applied at the bulb.

The water finds its way back by an iron pipe into the bulb, when presently it again becomes heated and discharges itself.

OTHER HOT-WATER PHENOMENA.

Nearly the entire Yellowstone region is remarkable for its hot-water phenomena. The more prominent geysers are confined to three basins lying near each other in the middle west side of the park, but other hot-water manifestations occur at more widely separated points. Marvelously colored hot springs, mud volcanoes, and other strange phenomena are frequent. At Mammoth, at Norris, and at Thumb 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 pour the hot water. Microscopic plants called algæ grow on the edges and sides of these basins, painting them hues of red and pink and bluish gray, which glow brilliantly. 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. For many years the celebrated Old Faithful has played with average regularity every 65 minutes. 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.

GRAND CANYON OF THE YELLOWSTONE.

But the geysers and hot-water formations are by no means the only wonders in the Yellowstone. Indeed the entire park is a wonderland. The Grand Canyon of the Yellowstone affords a spectacle worthy of a national park were there no geysers. But the

Grand Canyons, of which there are several in our wonderful western country are not to be confused. Of these, by far the largest and most impressive is the Grand Canyon of the Colorado River in Arizona. That is the one always meant when people speak of visiting "The Grand Canyon," without designating a location. It is the giant of canyons.

The Grand Canyon of the Yellowstone is altogether different. Great though its size, it is much the smaller of the two. What makes it a scenic feature of the first order is its really marvelous coloring. It is the cameo of canyons.

Standing upon Inspiration Point, which pushes out almost to the center of the canyon, one seems to look almost vertically down upon the foaming Yellowstone River. To the south a waterfall twice the height of Niagara rushes seemingly out of the pine-clad hills and pours downward to be lost again in green. From that point 2 or 3 miles to where you stand and beneath you widens out the most glorious kaleidoscope of color you will ever see in nature. The steep slopes, dropping on either side a thousand feet and more from the pine-topped levels above, are inconceivably carved and fretted by the frost and the erosion of the ages. Sometimes they lie in straight lines at easy angles, from which jut high rocky prominences. Sometimes they lie in huge hollows carved from the side walls. Here and there jagged rocky needles rise perpendicularly for hundreds of feet like groups of gothic spires.

And the whole is colored as brokenly and vividly as the field of a kaleidoscope. The whole is streaked and spotted and stratified in every shade from the deepest orange to the faintest lemon; from deep crimson through all the brick shades to the softest pink; from black through all the grays and pearls to glistening white. The greens are furnished by the dark pines above, the lighter shades of growth caught here and there in soft masses on the gentler slopes and the foaming green of the plunging river so far below. The blues, ever changing, are found in the dome of the sky overhead.

It is a spectacle which one looks upon in silence.

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

DUNRAVEN PASS AND TOWER FALLS.

From the canyon the visitor follows the road northward to Mammoth and views some of the most inspiring scenery in America. The crossing of Dunraven Pass and the ascent of Mount Washburn are events which will linger long in vivid memory.

A few miles farther north, where the road again finds the shore of the Yellowstone River, scenery which has few equals is encountered at Tower Falls. The river's gorge at this point, the falls of Tower Creek, and the ramparts of rock far above the foaming Yellowstone are romantic to a high degree.

REMARKABLE FOSSIL FORESTS.

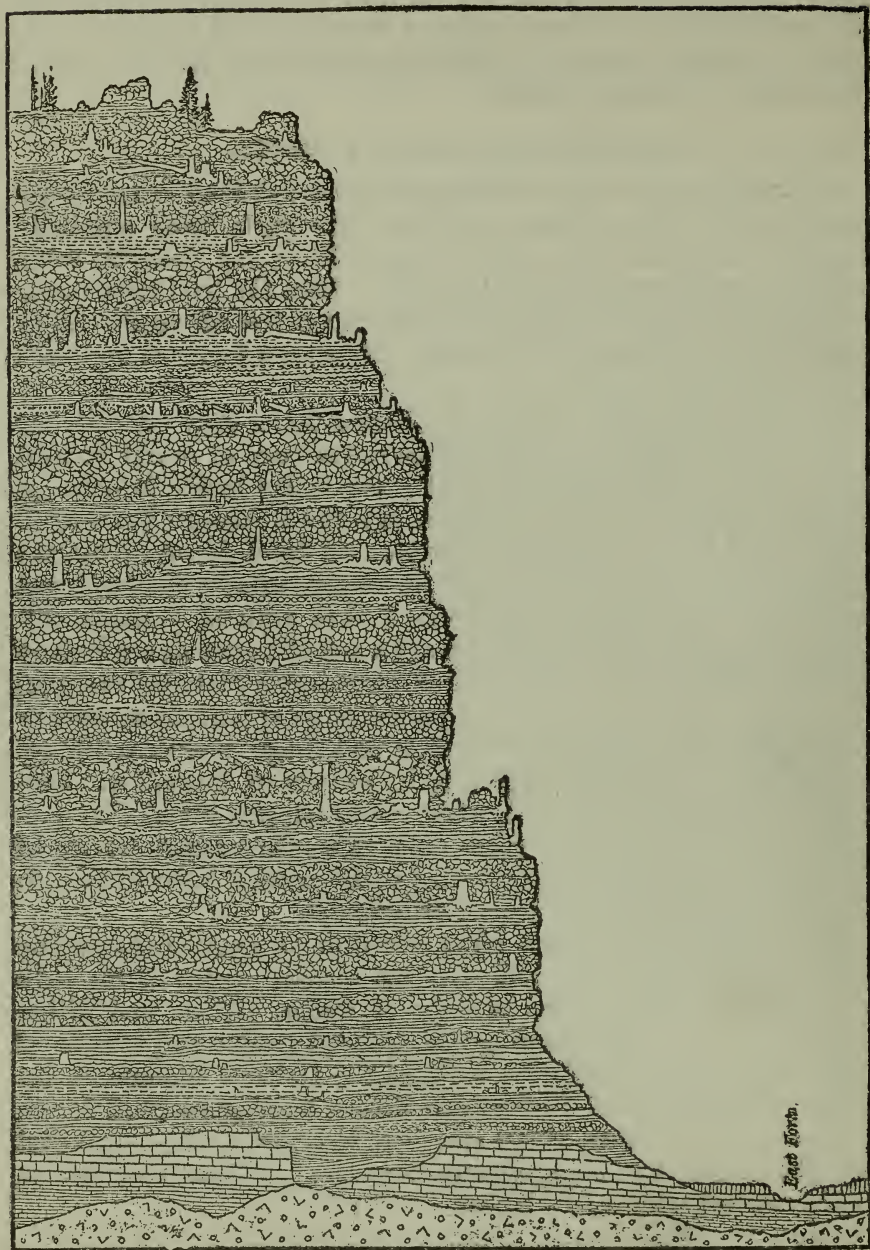
The fossil forests of the Yellowstone National Park cover an extensive area in the northern portion of the park, being especially abundant along the west side of Lamar River for about 20 miles above its junction with the Yellowstone. Here the land rises rather abruptly to a height of approximately 2,000 feet above the valley floor. It is known locally as Specimen Ridge, and forms an approach to Amethyst Mountain.

One traversing the valley of the Lamar River may see at many places numerous upright fossil trunks in the faces of nearly vertical walls. These trunks are not all at a particular level but occur at irregular heights; in fact a section cut down through these 2,000 feet of beds would disclose a succession of fossil forests, as in the accompanying illustration. That is to say, after the first forest grew and was entombed, there was a time without volcanic outburst—a period long enough to permit a second forest to grow above the first. This in turn was covered by volcanic material and preserved, to be followed again by a period of quiet, and these more or less regular alternations of volcanism and forest growth continued throughout the time the beds were in process of formation. Geological changes are excessively slow. No geologist would dare predict that, a few thousand years from now, the present forests of Yellowstone Park may not lie buried under another layer of lava on top of which may flourish a new Yellowstone.

There is also a small fossil forest containing a number of standing trunks near Tower Falls, and near the eastern border of the park along Lamar River in the vicinity of Cache, Calfee, and Miller Creeks there are many more or less isolated trunks and stumps of fossil trees. Just outside the park, in the Gallatin Mountains, between the Gallatin and Yellowstone Rivers, another petrified forest, said to cover more than 35,000 acres and to contain many wonderful upright trunks, has been recently discovered. These wonders are easily reached with saddle horses.

GREATEST WILD-ANIMAL REFUGE.

The Yellowstone National Park is one of the largest and most successful wild-animal refuges in the world. It is also, for this reason, the best and most accessible field for nature study.



IDEAL SECTION THROUGH 2,000 FEET OF BEDS OF SPECIMEN RIDGE, SHOWING SUCCESSION OF BURIED FORESTS. AFTER HOLMES.

Its 3,300 square miles of mountains and valleys remain nearly as nature made them, for the 200 miles of roads and the four hotels and many camps are as nothing in this immense wilderness. No tree has been cut except when absolutely necessary for road or trail or camp. No herds 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. To be sure they are not always seen by the people in the automobile stages which move from point to point daily during the season; but the quiet watcher on the trails may see deer and bear and elk and antelope to his heart's content, and he may even see mountain sheep, moose, and bison by journeying on foot or by horseback into their distant retreats. In the fall and spring when the crowds are absent, wild deer gather in great numbers at the hotel clearings to crop the grass. One of the diversions at the road builders' camps in the wilderness is cultivating the acquaintance of the animals.

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

BEARS.

Even the big grizzlies, which are generally believed to be ferocious, are proved by our national parks' experience to be inoffensive if not attacked. When attacked they become dangerous, indeed. It is contrary to the regulations of the park to molest or feed the bears.

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 playful, comparatively fearless, sometimes even friendly. They are greedy fellows, and steal camp supplies whenever they can.

This wild-animal paradise contains from 10,000 to 20,000 elk, several hundred moose, innumerable deer, many antelope, and a large and increasing herd of bison.

It is an excellent bird preserve also; 200 species live natural, undisturbed lives. Eagles are found among the crags. Wild geese and ducks are found in profusion. Many hundreds of large white pelicans add to the picturesqueness of Yellowstone Lake.

TROUT FISHING.

Trout fishing in Yellowstone waters is unexcelled. All three of the great watersheds abound in trout, which often attain large size. Yellowstone Lake is the home of large trout, which are taken freely from boats, and the Yellowstone River and its tributaries yield excellent catches to the skillful angler.

The Madison River and its tributaries also abound in trout, and Montana grayling are to be caught in the northwestern streams.

There is excellent fishing also in many of the lesser lakes. Detailed information concerning fishing is found, beginning on page 62.

THE GREATER YELLOWSTONE.

The criticism often made by persons who have visited granite countries that the Yellowstone region lacks the supreme grandeur of some others of our national parks will cease to have weight when the magnificent Teton Mountains just south of the southern boundary are added to the park. These mountains begin at the foot of the Pitchstone Plateau a mile or two below the southern gateway and extend south and west. They border Jackson Lake on its west side, rising rapidly in a series of remarkably toothed and jagged peaks until they reach a sublime climax, 30 miles south of the park, in the Grand Teton, which rises cathedrallike to an altitude of 13,747 feet.

This whole amazing outcropping of gigantic granite peaks is in many respects the most imposing, as certainly it is the most extraordinary massing of mountain spires in America. It leaps more than 7,000 feet apparently vertically from the lake and plain. Seen from the road at Moran, where the Snake River escapes from the reclamation dam which pens flood waters within Jackson Lake for the benefit of farms in arid western lands, these mountains seem actually to border the lake's west shore. It is hard to realize that these stupendous creations of the Master Architect, bearing upon their shoulders many glistening glaciers, are 9 miles away.

Jackson Hole, as this country has been known for many years, was the last refuge of the desperado of the picturesque era of our western life. Here, until comparatively recent years, the bank robber of the city, the highwayman of the plains, the "bad man" of the frontier, the hostile Indian, and the hunted murderer found safe retreat. In these rolling, partly wooded plains and the foothills and canyons of these tremendous mountains even military pursuers were baffled. Here for years they lived in safety on the enormous elk herds of the neighborhood and raided distant countrysides at leisure.

With their passing and the partial protection of the game Jackson Hole entered upon its final destiny, that of contributing to the pleasure and inspiration of a great and peaceful people. The very contrast between its gigantic granite spires and the beautiful rolling plateau and fruitful farms farther to the south is an element of charm.

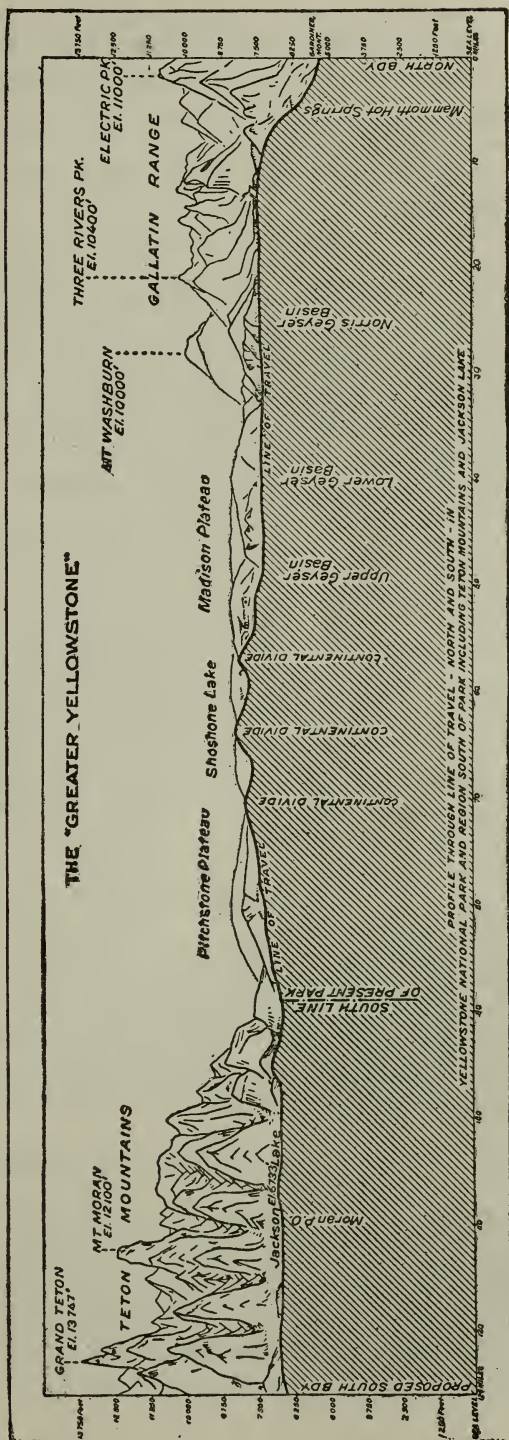
These amazing mountains are, from their nature, a component part of the Yellowstone National Park, whose gamut of majestic

scenery they complete, and no doubt would have been included within its original boundaries had their supreme magnificence been then appreciated. Already Yellowstone visitors have claimed it, and automobile stages run to Moran and back on regular schedule. In time, no doubt, part of it will be added formally to the park territory.

THE RED CANYON OF THE SHOSHONE.

Jackson Hole is not the only spectacle of magnificence intimately associated with Yellowstone but lying without its borders. Eastward through picturesque Sylvan Pass, well across the park boundary, the road passes through a red-walled canyon so vividly colored and so remarkably carved by the frosts and the rains of ages that its passage imprints itself indelibly upon memory. It is no wonder that a hundred fantastic names have been fastened upon these fantastic rock shapes silhouetted against the sky.

And miles farther on, where the united forks of the Shoshone won a precipitous way through enormous walls of rock,



the Shoshone Dam, the second highest in the world, higher than New York's famous Flatiron Building, holds back for irrigation a large and deep lake of water and creates, through partnership of man and nature, a spectacle of grandeur perhaps unequaled of its kind. The road, which shelves and tunnels down the canyon, forcing a division of space with the imprisoned river, is one of the sensational runs of the West.

THE TRAIL SYSTEM.

The motorization of Yellowstone National Park, which is now complete, by reducing greatly the time formerly required to travel from scenic spot to scenic spot, permits the tourist to spend a far greater proportion of his allowance of time in pleasurable sight-seeing. It has also brought to the park many thousands of more or less leisurely motorists in their own cars, many of whom bring with them their own camping-out equipment. The day of the new Yellowstone, of Yellowstone the vacation land, has dawned.

To fill these new needs, the National Park Service is developing the trail system as rapidly as time and appropriations permit. Much has already been accomplished, and several hundred miles of fairly good trails are now available for the horseback rider and hiker. These trails lead into splendid scenic sections of the park, out to streams and lakes teeming with fish, far away into the foothills of the Absaroka Range where the wild buffalo graze, into the petrified forests and other regions of strange geological formations, out beyond the north boundary to picturesque old mining camps, and they afford park tours touching the same important points of interest that the road system includes, although sections of the roads must be used in these circle tours. If parties wish to travel on the trails without the service of a guide, careful inquiries should be made at the office of the superintendent or at the nearest ranger station before starting, and a good map should be procured and studied. The map in the center of this booklet merely sketches the trail system. On this map the trails are printed in green. On pages 55 to 60 the reader will find an outline of the important trail trips.

ADMINISTRATION OF THE PARK.

Headquarters of Yellowstone National Park are at Mammoth Hot Springs, 5 miles from the north gateway. Here are the executive offices of the park administration and of the public utilities that operate in the park under Government regulation and supervision.

The officer of the National Park Service in immediate charge of the park is the superintendent, Mr. Horace M. Albright. His office

is in the general headquarters building, and his address is Yellowstone Park, Wyo. All complaints and suggestions regarding service in the park should be addressed to the superintendent.

PROTECTION OF THE PARK.

The park is protected by a permanent ranger force composed of men who are skilled in forest fire fighting and in the detection of offenses in violation of the rules and regulations governing the park. This ranger force is augmented in the summer season by temporary rangers who are assigned to protect the natural features of the park from depredations by thoughtless and careless tourists (especially those who desecrate the geyser and hot spring formations and the trees and signs by carving their names or initials upon them). This temporary force as well as the regular ranger service is charged with the duty of giving information to visitors, and rendering such other assistance to the touring public as time and opportunity permit.

INFORMATION BUREAU.

The National Park Service has established an official bureau of information in a building near the superintendent's office, for the use of tourists, free of all charges. Rules and Regulations, containing general information, of all national parks, and automobile maps of the Yellowstone National Park, are on hand for free distribution. Pamphlets on Geysers, Geological History of the Yellowstone, Fossil Forests, and Fishes of the Yellowstone are on sale at nominal charges; and also topographical maps of this park. A museum of the natural history of the park is maintained in connection with the bureau.

THE RULES AND REGULATIONS.

Exclusive jurisdiction over the park was vested in the United States by the act of Congress creating the park. The rules and regulations printed on pages 85 to 92, inclusive, have the full force and effect of law, and should be carefully observed. Offenders charged with violation of the rules and regulations are tried at headquarters by the United States commissioner for the park, Mr. John W. Meldrum.

THE TOURIST SEASON.

The tourist season extends from June 20 to September 15. This means that tourists may enter the park for a complete tour on and between these dates. The park utilities, therefore, are actually operated from June 20 to September 20. After the latter date admittance is granted only to tourists who come equipped to camp out along the roads or trails.

RAILROAD INFORMATION.

The Northern Pacific Railroad reaches the park on the north, at Gardiner, Mont.; the Union Pacific System (Oregon Short Line Railroad) reaches it on the west, at West Yellowstone, Mont.; and the Chicago, Burlington & Quincy Railroad reaches Cody, Wyo., from which the eastern entrance to the park is reached by the auto-stage drive of 55.4 miles.

During the park season round-trip excursion tickets at reduced fares are sold at practically all stations in the United States and Canada, to Gardiner, West Yellowstone, and Cody, as destinations. From the Middle West, East and South round-trip excursion tickets may be purchased for transportation on going trip to any of the three Yellowstone National Park gateways (Gardiner, West Yellowstone, Cody), and for transportation on the return trip from the same or any other gateway, thus affording passengers the privilege of entering the park at one entrance and leaving it at the same point or any one of the other entrances.

From many sections trips may be planned to include visits to two or more of the following national parks in the Rocky Mountain region: Yellowstone, Glacier, Rocky Mountain, Mesa Verde.

Passengers wishing to visit Yellowstone National Park as a side-trip in connection with journeys to other destinations will find stop-over privileges available and may make side-trips to the park from Livingston, Mont.; Pocatello, Idaho; Ogden, Utah; Salt Lake City, Utah; or Frannie, Wyo.; which are stop-over points on both one-way and round-trip tickets, or from Billings, Mont., or Butte, Mont., which are stop-over points on round-trip tickets.

Coupons covering autostage transportation and accommodations at the park hotels or permanent camps for a "sight-seeing" tour of the park of about five days duration may be included in railroad tickets at proper additional charges, which are the same as those in effect at the park. The National Park Service, however, recommends to the traveling public that stop-overs of as long duration as practicable be planned at points within the park; that Yellowstone National Park be regarded not alone as a region which may be glimpsed on a hurried trip of a few days, but also as a vacation playground of boundless opportunities for rest and recreation.

Storage charges for baggage will be waived by the interested railroads at Livingston, Gardiner, West Yellowstone, Pocatello, Idaho Falls, Ogden, Salt Lake City, Cody, Frannie, or Billings, or at Butte (by C., M. & St. P. R. R.), for actual length of time consumed by passengers in making the park trip. Baggage may be checked to stations via which passengers enter the park, i. e., Gardiner, West Yellowstone, or Cody. Passengers entering the park via one station and



MAP SHOWING RAILROAD ROUTES TO YELLOWSTONE, GLACIER, ROCKY MOUNTAIN, MESA VERDE, ZION, AND WIND CAVE NATIONAL PARKS.

leaving via another station will find certain regulations for checking of baggage to the station by which they leave the park.

DETAILED TRAVEL INFORMATION.

For further information regarding railroad fares, service, etc., apply to ticket agents, or address A. B. Smith, passenger traffic manager, Northern Pacific Railroad, St. Paul, Minn.; W. S. Basinger, passenger traffic manager, Union Pacific Railroad, Omaha, Nebr.; or P. S. Eustis, passenger traffic manager, Chicago, Burlington & Quincy Railroad, 347 West Jackson Street, Chicago, Ill.

TRANSPORTATION AND ACCOMMODATIONS.

There are four hotels, five permanent camps, and an automobile transportation line operated in the park under contract with the Department of the Interior. Movable camps operate under yearly license issued by the department, but every person is at liberty to provide his own means of transportation, subject to the regulations printed on pages 89 to 92.

For authorized rates of the public utilities see last pages of this book.

The transportation company allows each passenger to take along 25 pounds of hand baggage without extra charge, which is usually quite sufficient unless considerable extra time is to be spent in the park, when arrangements can be made for having trunks forwarded at extra expense. Arrangements can be made for caring for trunks left at entrance during tour of park, or for rechecking them for passengers who enter at one side of the park and go out by another route.

Heavy, strong clothing and heavy shoes (or light shoes and rubbers) are advisable. A raincoat or other light, serviceable wrap should be taken along. Dusters or heavy coats may be rented for park trips by those desiring them.

Tourists desiring to view the wild animals feeding in Gardiner Canyon at north entrance of Yellowstone Park in winter will find comfortable accommodations in Gardiner, Mont., at Shaw's Hotel.

General stores are located at Mammoth Hot Springs, Upper Geyser Basin, West Thumb, the outlet of Yellowstone Lake, and the Grand Canyon. There is also a store at Tower Falls.

A special permit from the superintendent is required to take moving pictures in the park.

TELEGRAMS.

Telegrams may be sent from hotels to any part of the world.

POST OFFICE.

The post office in the park is called Yellowstone Park, Wyo., and is located at Mammoth Hot Springs. There is a post office at Gardiner, Mont., the northern entrance, at West Yellowstone, Mont., the western entrance, and at Cody, Wyo., the eastern entrance to the park.

Tourists are advised to have all mail addressed to Yellowstone Park, Wyo., care of the hotel company or camps company, or general delivery, as the case may be, and to call for such mail on arrival at Mammoth Hot Springs.

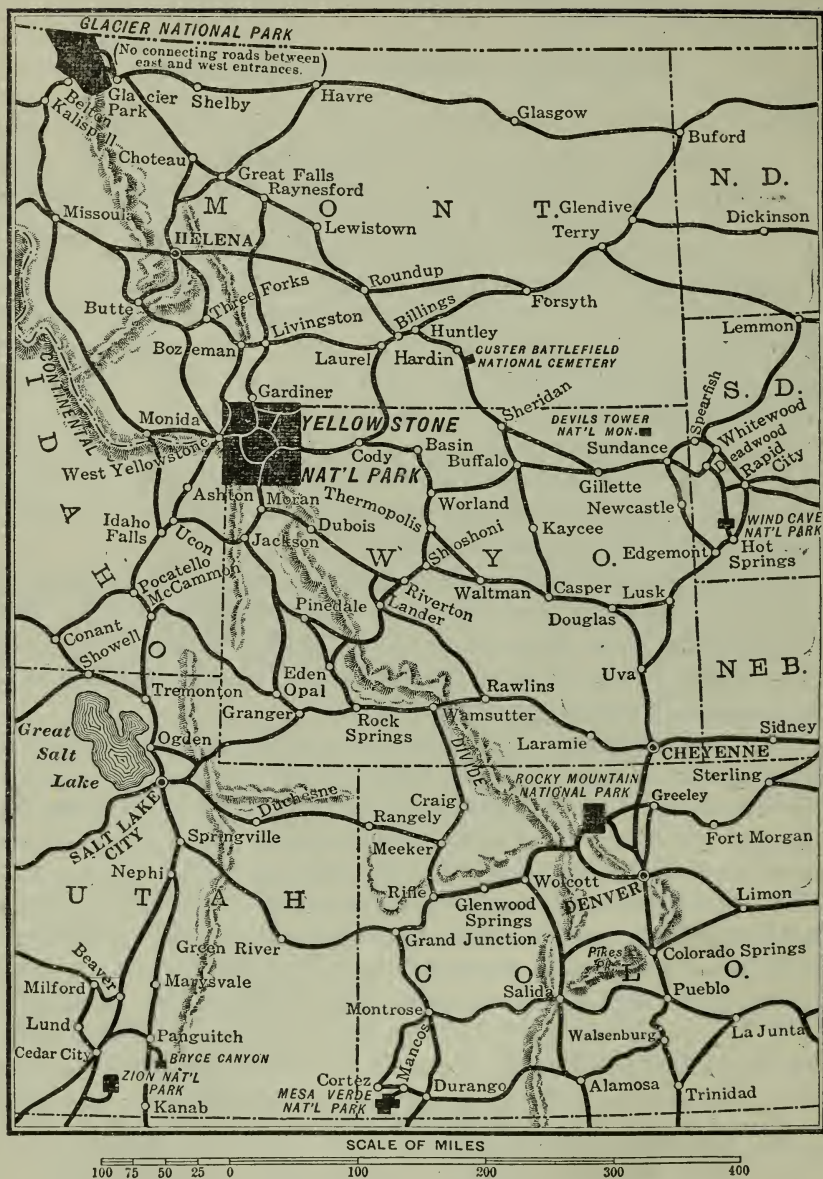
AUTOMOBILE HIGHWAY INFORMATION.

The Yellowstone National Park may be reached by motorists over good connecting automobile roads from a number of the main trans-continental automobile highways. Gardiner, the northern entrance to the park, is reached from Livingston, Mont., on both the National Parks Highway and the Yellowstone Trail which traverse Montana by approximately the same route. A map and information concerning the National Parks Highway can be obtained from the National Parks Highway Association, Spokane, Wash. Information concerning the Yellowstone Trail can be obtained from the Yellowstone Trail Association, Minneapolis, Minn.

The Cody or eastern entrance may be reached from the National Parks Highway or Yellowstone Trail by turning south from Billings, Mont., and following the main-traveled highway via Laurel, Bridger, and Powell to Cody, Wyo.

West Yellowstone at the western entrance can be reached from the above main highways from Bozeman, Mont., traveling up the Gallatin Valley and from Missoula or Butte, Mont., via the Ruby Valley or the Valley of the Madison River. Inquiry should be made at the various cities concerning road conditions.

The Lincoln Highway traverses southern Wyoming and motorists traveling this route may reach Yellowstone Park by the eastern or Cody entrance by turning north at Cheyenne and following the Yellowstone Highway via Casper, Thermopolis, and Cody and may reach West Yellowstone, the western entrance by turning north at Salt Lake City and following the main-traveled road through Idaho via Ogden, Utah, and Pocatello and Idaho Falls. The southern or Snake River entrance is reached from this Idaho highway by turning east at St. Anthony, crossing the Teton Basin, thence crossing the Teton Mountains via the Teton Pass into the Jackson Hole country. This trip affords wonderful views of the Teton Mountains, Jackson Lake, and the area in the proposed Greater Yellowstone. The southern entrance may also be reached from the Lincoln Highway via the Wind River and other routes. Information concerning the best routes to follow can be obtained from Charles S. Hill, State Immigration Commissioner, State Capitol Building, Cheyenne, Wyo., who also has available information of other points of interest in Wyoming that can be visited by prospective Yellowstone tourists. A map and information concerning the Lincoln Highway can be obtained from the Lincoln Highway Association, Detroit, Mich.



MAP SHOWING AUTOMOBILE ROUTES BETWEEN YELLOWSTONE, GLACIER, ROCKY MOUNTAIN, MESA VERDE, ZION, AND WIND CAVE NATIONAL PARKS.

Yellowstone Park is also reached through the Cody or eastern entrance by the Black and Yellow Trail and the Custer Battlefield Hiway, both of which traverse the Black Hills and give direct access to the Custer State Park of South Dakota, the Wind Cave National Park, and the Devils Tower National Monument. The Custer Battlefield Hiway also leads to Glacier Park, and by taking the main highways west from Billings, Mont., travelers on this route may reach the north gateway of the Yellowstone. For information concerning the Black and Yellow Trail, address the Chicago, Black Hills and Yellowstone National Park Highway Association, Huron, S. Dak., or Charles S. Hill, immigration commissioner of Wyoming, Cheyenne. Address W. D. Fisher, secretary, Custer Battlefield Hiway, Sheridan, Wyo., or Commissioner Hill, Cheyenne, for information relative to the Custer Battlefield Hiway.

From Glacier National Park tourists may reach Yellowstone by following any one of the following routes:

The Geysers-to-Glaciers Trail via Choteau, Wolf Creek Canyon, Helena, Townsend, Bozeman, and Livingston.

The Glacier-Yellowstone Beeline Highway via Choteau, Great Falls, White Sulphur Springs, and Livingston.

The Flathead Valley Route via Kalispell, Missoula, Butte, Bozeman, and Livingston, or by turning off at Butte or Bozeman, routes, as above discussed, leading to the western entrance, may be followed.

Most of our national parks are linked together by the National Park to Park Highway, dedicated in 1920.

AUTOMOBILES IN THE PARK.

Automobiles for pleasure purposes only are allowed in the park under appropriate regulations and after payment of a license fee. (See p. 89.)

FREE PUBLIC CAMP GROUNDS.

A system of free public automobile camps is being developed and many of these camps will be available for use during the season. Others are being opened as fast as funds are granted for their improvement. In these camps pure water is supplied and firewood is made available. Special attention is being given to sanitation of these camps. Cooking grates will be provided soon.

It is not and will not be the policy of the service to confine all camping by motorists to these special sites, but it is hoped that the facilities of these places will make them attractive and inviting to visitors who are touring the park, using their own equipment and supplies.

GASOLINE AND OIL, ETC.

The Yellowstone Park Transportation Co., the general stores, and several permanent camps are authorized to sell gasoline and oil and the transportation company carries a stock of standard automobile

parts, tires, etc. The transportation company also maintains garages and repair shops at Mammoth Hot Springs, Upper Basin (Old Faithful), outlet of Lake Yellowstone and Grand Canyon.

THE PARK MILE-POST SYSTEM.

The mile-post signs in Yellowstone National Park are diamond-shaped, steel signs with raised letters, which are in every case initials of a junction point on the loop road system or a park gateway. As a measure of economy these signs have not always been placed exactly one mile apart. Fractions of miles have sometimes been dropped in order that two mileage signs might always be placed on one steel post. For instance, between Gardiner, the north gateway, and Mammoth Hot Springs, a speedometer indicates that the distance is slightly over five miles, yet the mileage signs state the distance as five miles.

The following is a key to the mile-post initials:

- N. E. North entrance at Gardiner, Mont.
- W. E. West entrance at West Yellowstone, Mont.
- E. E. East entrance, 55 miles west of Cody, Wyo.
- S. E. South entrance, 50 miles north of Jackson, Wyo.
- M. S. Mammoth Hot Springs where the north-approach road joins the loop system.
- N. J. Norris Junction, near Norris Geyser Basin, where a road leads directly across the park to the Grand Canyon of the Yellowstone.
- M. J. Madison Junction, where the west-approach road joins the loop system.
- O. F. Old Faithful, at the head of Upper Geyser Basin.
- W. T. West Thumb of Yellowstone Lake where the south approach road joins the loop system.
- L. J. Lake Junction where the east or Cody approach road joins the loop system.
- C. J. Canyon Junction where a road leads directly across the park from the Grand Canyon of the Yellowstone to Norris Basin.
- T. J. Tower Falls Junction where the road to the Buffalo Ranch and Cooke City leaves the loop system.
- Mt. W. stands for the Mount Washburn road.

There is a ranger station at each of the above entrances and junction points.

As the map in the center of this booklet clearly shows, the main road system of Yellowstone Park is roughly in the form of a figure 8. This system is called the "loop" or "belt line" road. There are 148.5 miles of improved highways in the main system.

The approach roads are the feeders to the loop system and they lead from all four park gateways to junction points as above indicated. The aggregate length of the approach roads in the park is 68.4 miles.

Other roads in the park have a combined length of 86.65 miles.

Outside of the park boundaries, by special authority of Congress, the National Park Service maintains 28 miles of the east approach road in the Shoshone National Forest and 30 miles of the south approach road in the Teton National Forest.

YELLOWSTONE PARK TOUR—PRINCIPAL POINTS OF INTEREST.

GARDINER, THE NORTHERN ENTRANCE (N. E.) TO MAMMOTH HOT SPRINGS (M. S.).¹

(5 miles.)

Gardiner (altitude, 5,300 feet) is the terminus of the branch line of the Northern Pacific Railroad and is immediately north of the northern boundary line of the park. Here is located the entrance arch of basaltic rock. Automobiles are required to stop at the point of entrance to register and purchase permit. Guides, horses, outfits, and supplies can be secured in Gardiner. There is a fair camp site near the town. As camping is not allowed between Gardiner and Mammoth Hot Springs, the next camp sites are near the headquarters power plant, which is located just east of Mammoth Hot Springs. The distance from Gardiner to Mammoth Hot Springs is 5 miles; the road lies along Gardiner River.

Electric Peak is due west of the railroad station at Gardiner and is easily recognized by its sharp point and general reddish color. It is the highest mountain in the park (11,155 feet) and one of the peaks of the Gallatin Range. It is so named by reason of magnetic disturbances noted by the first party to ascend this mountain with surveying instruments.

Sepulcher Mountain is east of Electric Peak and southwest of Gardiner. It can be easily ascended by trail from Snow Pass, 1½ miles south of Mammoth Hot Springs, and turning to the northwest as the trail enters Swan Lake Basin, or by trail direct from Mammoth. It has an elevation of 9,500 feet, and from its summit is obtained a magnificent view to the south and east. It is named from rocks on its eastern face, which suggest the head and foot stones of a grave.

Gardiner Canyon, entered 1 mile from Gardiner, is a deep, narrow gorge between walls of gray sandstone on the east and compact volcanic breccia on the west. *Eagle Nest Rock* on the east side has been a nesting place for ospreys since the park was first discovered.

Through *Boiling River*, 3½ miles from Gardiner, a large volume of warm water from the Mammoth Hot Springs flows directly into Gardiner River. The water in this river is not boiling hot, as inferred by the name, but varies in temperature, due to variations in

¹ The road from West Yellowstone, Mont. (western entrance), connects with the loop road at Madison Junction (M. J.) 14½ miles south of Norris. (See p. 35.) The route from the western entrance to the loop road is given on page 50. The road from the southern entrance joins the loop road at West Thumb. (See p. 44.) The route from the southern entrance is given on page 53.

The road from Cody via eastern entrance joins the loop road at Lake Junction (L. J.) about 2 miles north of Lake Hotel. (See p. 45.) The route from Cody is given on page 51.

the volume of underground steam, the highest temperature recorded being 136° F. in 1896.

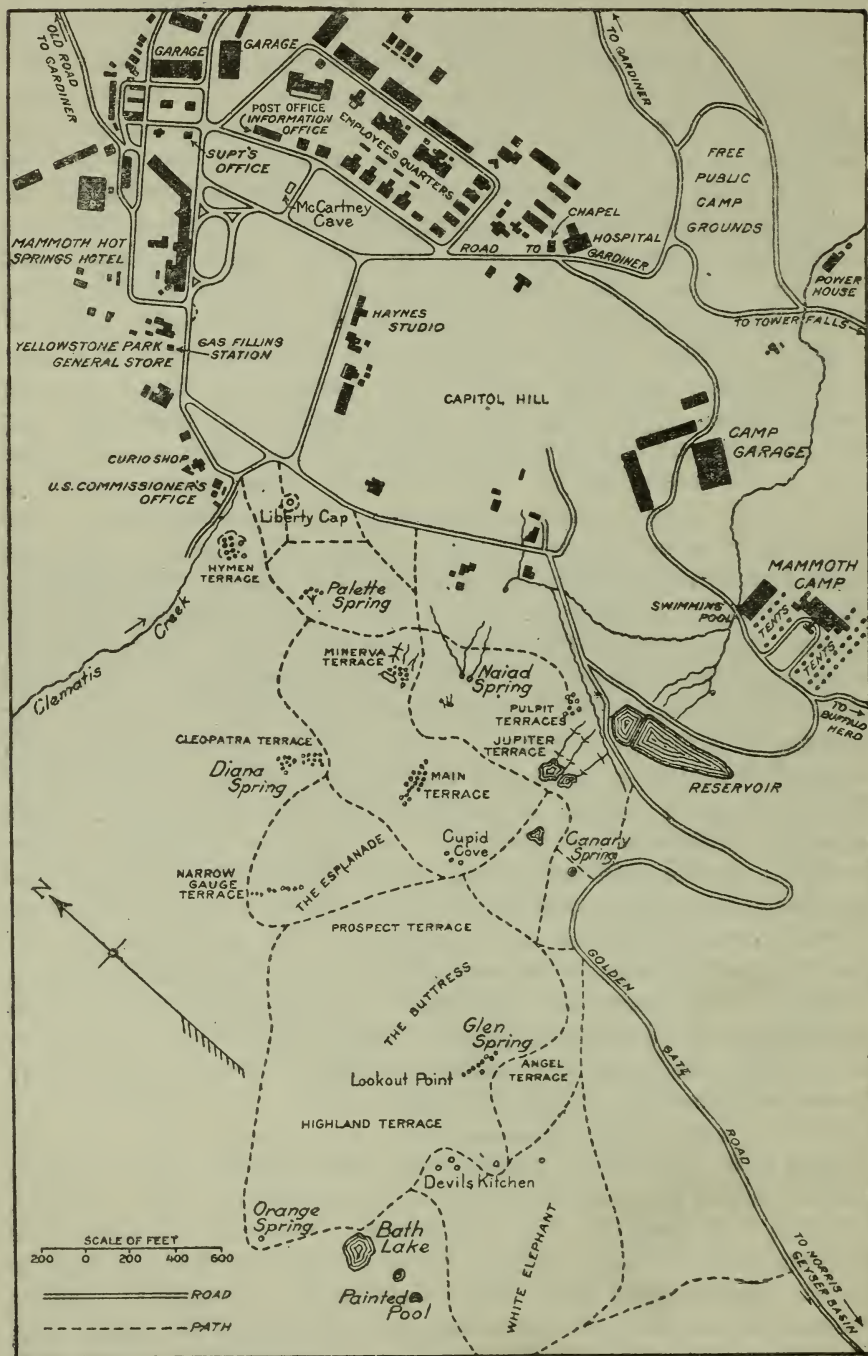
From Boiling River the road ascends 600 feet in $1\frac{1}{2}$ miles to *Mammoth Hot Springs* (6,264 feet), the administrative headquarters of the park. Here are located the superintendent's office, United States commissioner's office, Mammoth Hotel, Yellowstone Park, Wyoming, post office, and stores where supplies, curios, etc., may be purchased. It is one-half mile farther south to the junction of the road to Mammoth Camp and the road to Norris Geyser Basin. Straight ahead is the Mammoth Camp. No private camping is permitted above the power plant nor along Glen Creek, nor in Swan Lake Basin, so the next camp site is 7.4 miles south of Mammoth Hot Springs on the road to Norris. A small herd of buffalo is kept one-half mile south of Mammoth Camp following the road past the camp. There is a small camp site near the buffalo corral. The main attractions of this locality are the large and beautiful hot springs and terraces.

THE TERRACES AT MAMMOTH HOT SPRINGS.

In seeing the springs and terraces the direction here given is usually followed, although the trip may be reversed if desired. The path starts at *Liberty Cap*, an extinct hot-spring cone, now standing 40 feet above the surrounding formation. It is similar in all respects to the travertine deposits which make up the terraces and is the result of processes of erosion. At Mammoth Hot Springs the deposits from the hot water consist almost exclusively of carbonate of lime and are essentially different from those of the geyser basins, the latter being made up mainly of siliceous sinter. Under favorable conditions this carbonate of lime at Mammoth Hot Springs may deposit rapidly, as is shown by the thin film of travertine found coating all objects exposed in waters issuing directly from the springs. Small articles left for five or six days in the water frequently show a deposit one-sixteenth of an inch in thickness. There are some other minerals in these waters, but it is true here, as at all other points, that the most of the coloring is due to a low form of vegetable life that will grow in hot water up to a temperature of 180° F.

From Liberty Cap the path runs southwest for 400 feet and then turns to the south, ascending the first bend to *Minerva* and *Mound Terraces*. At Mound Terrace there is a side path to *Pulpit Terrace*, which passes around Mound Terrace to the left. Two hundred feet beyond Minerva Terrace the path climbs the next bench at a very steep angle and continues southeast to the main *Jupiter Spring*, which is at present the largest spring on this formation. Being large and safely approached on the south side, this spring

gives the tourist his best point to view the general features of these springs. At many of the springs upon the broad terraces the water presents the appearance of boiling springs, when as a matter of fact the temperature is far below the boiling point. The violent agitation is due to the escape of carbonic-acid gas. The phenomenon may be observed at a number of localities throughout the park. The boiling point on the terraces is 198° F. The blue color of the water here and elsewhere in the park is not a mineral color nor a reflection from the sky, but is the natural color of clear water in large bodies. The water escaping from Jupiter Spring glides down the terraces to the east, forming the incomparably beautiful *Jupiter Terrace*. From Jupiter Spring the path leads in a general southwest direction past *Canary Spring*, now dry, across an amphitheater of old formation, dotted with small pine trees. At the southern end of this amphitheater the path passes around to the left of the lower part of *Angel Terrace*. *Glen Spring*, which is on the left, is now nearly or quite dry. The tourist passes up the next bench around *Angel Terrace*, keeping this terrace on his left until a shoulder of formation on the right is passed. The path then turns sharply to the right to a narrow gulch ascending the next bench. At the top of this bench at the left is the *Devil's Kitchen*, which may be descended by means of the ladders as far as the tourist finds comfortable. The tourist should note that this is the only opening it is safe to descend, as at all the other caves and openings carbonic-acid gas is present to a dangerous extent. Indeed, many birds and small animals fall victims annually to the gas in these openings, although the principal one has been covered by wire netting. A side path leads from *Devil's Kitchen* to *Lookout Point* and the *Buttress*, two prominent points on the old inactive *Highland Terrace*, from which the view is extensive. The main path then extends a short distance to the west of *Bath Lake*, where the bathing is very fine in the clear lukewarm water discharged into this lake from a hot spring on its southern shore. The path then runs over a slight rise to the northwest and down to *Orange Spring*, a very large prominent formation sometimes called *Orange Geyser*, although not possessing any of the characteristics of a geyser. Here the path merges with an old road. Should the tourist be sufficiently interested, he may follow this road in a southerly direction to *Dedolph Spring*, *Stygian Cave*, and the *White Elephant*. Otherwise the path leads northeasterly to *Narrow Gauge Terrace*, which has become slightly active within recent years at its western end. South of *Narrow Gauge Terrace* the path turns sharply to the right and runs along the *Esplanade* until it turns north and descends to a level for-



SKETCH MAP OF MAMMOTH HOT SPRINGS.

mation, which is crossed to the *Diana Spring*. The waters flowing from this spring form the wonderful *Cleopatra Terrace*. About 500 feet from Cleopatra Terrace is a side path to old Palette Springs. Beyond the side path the main path descends to the level of the starting point, with *Hymen Terrace*, in some respects the most beautiful of all, on the left. It will repay the tourist to make a side trip completely around this terrace.

McCartney's Cave is an old extinct spring, the opening of which is now covered by wire netting, on the grass lawn near the tennis court. *Cupid's Cave*, west of Jupiter Spring, has been closed up by deposit from a hot spring and can not now be visited.

SIDE TRIPS FROM MAMMOTH HOT SPRINGS.

Around Bunsen Peak.—Twelve miles by automobile road via Hoodoos, Golden Gate, Middle Gardiner Canyon (second canyon in size in the park), Sheepeater Cliffs in canyon walls, along the canyon with view of Osprey Falls (150 feet), and returning via northeastern slope of Bunsen Peak and the Buffalo Corral. Trip available to rail tourists as well as private motorists.

Same trip can be made on horseback except that trail goes through Snow Pass, making trip about 1 mile longer.

Buffalo herds (tame).—Small show herd is kept in summer in corral 1 mile south from Mammoth Hotel, on road to Bunsen Peak. Guide not needed. Formation automobiles from the hotel and camp drive to this corral. Main herd is kept near buffalo ranch on Lamar River, 30 miles east from Mammoth, on stage road to Cooke City. More than 500 head of pure-blood bison under fence or herder. Accommodations at Camp Roosevelt (18 miles) and plenty of good camp sites and fine fishing.

Tower Falls (132 feet).—Near mouth of Tower Creek, 20 miles southeast from Mammoth. Beautiful falls and mountain scenery. Guide not needed. Camp Roosevelt, 2 miles from Tower Falls.

Petrified trees.—Seventeen miles by automobile road and three-fourths mile on side road southeast en route to Tower Falls. No guide needed.

Specimen Ridge and Fossil Forest.—Twenty-four miles southeast by automobile road, thence 4 miles by well-marked trail.

Northeastern portion of park.—A trip could be made to include the petrified trees, Tower Falls, main buffalo herd, Specimen Ridge and Fossil Forest, and some of the best fishing in the park in Yellowstone River in vicinity of Tower Falls, Lamar River, and Slough Creek. The Yellowstone Camps Co.'s Camp Roosevelt on Lost Creek, 2 miles northwest from Tower Falls (18 miles from Mammoth), provides accommodations. Automobile road to Tower Falls and Soda Butte, but other points would have to be reached by trail, and guide and pack train would be needed. Excellent camp sites in abundance on this trip.

MOUNTAIN CLIMBING.¹

Electric Peak (11,155 feet).—Ten miles northwest by trail; 8 miles may be done with saddle horse, balance on foot, and a portion of it is difficult and somewhat dangerous. Highest mountain in the park. Fine view on all sides. Guide needed.

Bunsen Peak (8,600 feet).—South 7 miles. Saddle horse can be ridden to top. Fine view.

Mount Everts (7,900 feet).—Northeast. Saddle horse can be ridden up from either end, over the top, and down the other end; total distance, about 15 miles.

Sepulcher Mountain (9,500 feet).—West 5½ miles by well-marked saddle-horse trail. Fine view. Return trip may be made via Snow Pass.

MAMMOTH HOT SPRINGS (M. S.) TO NORRIS JUNCTION (N. J.).

(20 miles.)

Three miles from Mammoth Hot Springs, on the road to Norris Junction (20 miles), are the *Silver Gate* and the *Hoodoos*, altitude 7,000 feet. The massive blocks of travertine, piled up in a most confused manner and covering several acres in the neighborhood of Silver Gate, were evidently thrown down from higher levels, probably as the result of some violent earthquake shock. One-half mile farther is *Golden Gate* (7,245 feet), where the concrete viaduct should be noted as part of the difficult engineering this pass presented. *Bunsen Peak* is on the left, *Terrace Mountain* on the right. At the head of Golden Gate Canyon is *Rustic Falls*, 70 feet high.

Immediately after passing Rustic Falls the road leads into *Swan Lake Basin*. The abrupt passing from the frowning walls of Golden Gate Canyon to this open, smiling mountain valley is typical of the many unexpected changes that form the scenery along the park roads.

On the right are the many peaks of the *Gallatin Range*. *Electric Peak* (altitude 11,155 feet), at the extreme north; then the long, flat summit of *Quadrant Mountain* (10,200), then *Bannock Peak* (10,400), *Antler Peak* (10,200), *The Dome* (9,900), *Trilobite Point* (9,900), and *Mount Holmes* (10,300) on the extreme south. Mount Holmes, especially, is visible from many points along the road. *Glen Creek*, which flows through Swan Lake Basin, contains many red speckled brook trout. Camping is not allowed along Glen Creek or in Swan Lake Basin because drinking water for headquarters and the hotel and camps at Mammoth Hot Springs is taken from this region.

¹ There is no drinking water on top of any of these mountains.

Swan Lake (7,256 feet) is near the 5-mile post. After passing the 7-mile post, camping is permitted at any point over 100 feet from the road. Between 7-mile post and Apollinaris Spring, 10 miles from Mammoth Hot Springs, are many good camp sites. All the streams along the road have trout in them.

Gardiner River (7,300 feet) is crossed at the 7-mile post. Here the road enters *Willow Park* (7,300 feet), comprising the valley of *Obsidian Creek*, which is frequently crossed by the dams of beaver and dotted by their interesting houses.

At *Apollinaris Spring* (10 miles from Mammoth Hot Springs, altitude 7,300 feet) is a landing platform on the left of the road for those tourists who wish to stop and try this water. On the opposite side of the road is a good camping place, the next camp site being 4 miles farther on the right side of the road.

Obsidian Cliff (12 miles from Mammoth Hot Springs, altitude 7,350 feet) is a cliff of hard, black volcanic glass. It is the most prominent exposure of this rock in the park. Obsidian also occurs in the red and white forms. It was much used by Indians for arrow-heads and other stone implements, this being one of the few points in the park frequented by them before its discovery by white men. On the right at this point is *Beaver Lake*, the dam here being very long and heavy. An old beaver house can be seen near the south end of the lake.

A camp site (14 miles from Mammoth Hot Springs) is passed $1\frac{1}{2}$ miles south of Beaver Lake; next camp site is just south of *Bijah Springs*, 3 miles farther on.

Roaring Mountain ($15\frac{1}{2}$ miles from Mammoth Hot Springs, altitude 7,550 feet) is especially to be noted as a late development of thermal action. In 1902 this mountain side was covered by a heavy growth of pine timber, and the only evidence of subterranean heat was a small opening among the pines 30 feet square on the extreme top of the mountain, in which a little steam could be seen rising from the ground. In the year mentioned activity became greater; the formation gradually spread to its present size.

Twin Lakes (16 miles from Mammoth Hot Springs, altitude 7,513 feet) are two beautiful lakes very close together, connected by a small brook, yet they are of different color—one blue, the other green.

Bijah Spring (17 miles from Mammoth Hot Springs, altitude 7,500 feet) is alongside the road. There is a good camp site just south of this spring.

The *Frying Pan* (18 miles from Mammoth Hot Springs, altitude 7,500 feet) is a peculiar hot spring, stewing away in a manner that earned its name.

THE NORRIS RANGER STATION is at the crossing of the Gibbon River, where there is good fishing for rainbow trout. Back of the ranger station there is a small camp ground.

Just south of the Ranger Station is NORRIS JUNCTION (N. J.).

NORRIS JUNCTION (N. J.) TO CANYON JUNCTION (C. J.).

(11 miles.)

The road leading to the left at Norris Junction is the direct route to the Grand Canyon of the Yellowstone, but is used generally by the traveling public in coming from the Grand Canyon rather than in going to it from other points. This is due to the traffic rules of the park which guide travel around the loop-road system in a counter-clockwise direction. The Norris-Canyon road, however, is open for traffic in both directions at all times of the day or night. Its length is 11 miles.

NORRIS JUNCTION (N. J.) TO MADISON JUNCTION (M. J.).

(14.1 miles.)

The road leading to the right at Norris Junction is the regular loop road to the Lower and Upper Geyser Basins as well as to Norris Geyser Basin which is one-half mile south of the Junction.

NORRIS GEYSER BASIN.¹

(Altitude 7,470 feet.)

The path for viewing this formation starts immediately in front of the old lunch station and follows the boardwalk in a southwest direction to the road near *Black Growler*. Owing to the unsafe condition of the crust through this part of the trip it is not wise to step off the walk. *Constant Geyser*, *Whirligig Geyser*, *Valentine Geyser*, and the new opening of the *Black Growler* are passed in the order named. The new opening of the *Black Growler* first made its appearance in August, 1912, and has steadily increased in power ever since; it is about 100 feet from the old opening and farther down the hill. This serves to illustrate the main characteristic of this basin, which is its unstableness. The phenomena of this basin, with the possible exception of the Minute Man, are constantly changing in size, locality, character of eruption, and nature of contents of tube. The old opening of the *Black Growler* is near the road and is now inactive. Tourists now proceed southwest along the road to the *Bathtub*, on the left. Some seasons this is an active geyser, playing at intervals of a few minutes; in other years it boils violently, but does not throw out any water. From the *Bathtub* a path leads south past *Emerald Pool* and some small paint pots that have devel-

¹ For list of prominent geysers and springs in the park, see p. 61.

oped since 1905 to the *New Crater Geyser*. This geyser is a comparatively recent outbreak of a well-known old vent, but unknown to those who witnessed the first display of the so-called New Crater. The texture and color of the most recent deposits are due mainly to salts of iron derived from minerals in the fresh rock exposed by the opening of the New Crater. The floor of the Norris Geyser Basin consists of siliceous sinter similar in all respects to the sinter



SKETCH MAP OF NORRIS GEYSER BASIN.

bottoms of the other geyser basins. It is frequently covered with brilliantly tinted algous growths, which flourish luxuriantly in the warm waters. The path leads southwest down the hill past the Echinus Geyser to the formation near the *Minute Man Geyser*. Three hundred feet southeast of the Minute Man, near the base of the hill, is Norris's biggest geyser, the *Monarch*. Unfortunately this geyser has the varying habit, and it is almost impossible to foretell what its period between eruptions will be. During 1913 it played every hour, and further varied its custom by throwing black mud instead of clear water as it had previously done. Some seasons it has

been known to play only once or twice. The path continues south to *Fearless*, *Palpitator*, *Corporal*, *Vixen*, and *Pearl Geysers*, all small and with such uncertain periods of eruptions that they are unsatisfactory to visit.

Congress Pool is on the left of the road south of the old lunch station, and has at times been a quiet pool, a boiling pool, a steam vent, and a mud geyser, changes occurring so rapidly that one month it may have quite different characteristics from what it had the preceding month or what it may have the following month. The *Hurricane* is now a mud vent on the right of the road south of the Congress Pool.

ELK PARK, GIBBON MEADOWS. GIBBON CANYON.

From Norris Geyser Basin the road leads southwest to Madison Junction (14.1 miles). It passes through *Elk Park*, where there is a camp site, then runs along Gibbon River through a short canyon, interesting from the peculiar rock formations. Through *Gibbon Meadow*, 4 miles from Norris, altitude 7,315 feet, are good camp sites; the next camp site is below Gibbon Falls, 5 miles farther on.

At the south end of Gibbon Meadow a branch road leads to the left to *Gibbon (or Artist) Paint Pots*, located on the mountain side, 50 feet above the meadow level and a half mile from the loop road.

Just after crossing Gibbon River the first time (about 5 miles from Norris Junction) is a trail that leads back up the river, then up the mountain for about three-fourths mile to the *Monument Geyser Basin*, which is very interesting on account of the peculiar forms of the geyser cones and because it is the highest of all the park geyser formations. It is not, however, of enough interest to the casual visitor to pay for the visit, the thermal activity being practically extinct.

§ The road now leads through the main *Gibbon Canyon* for 5 miles, first on one bank of the rapidly flowing stream, then on the other. The canyon is characterized by fine views and many curiosities, but the tourist has time and inclination now only for the more prominent. *Beryl Spring* (5 miles from Norris, altitude 7,296 feet) is a fine boiling spring close to the road. *Iron Spring* (8 miles from Norris, altitude 7,100 feet) is a cold mineral spring that, like Apollinaris Spring, is usually sampled by tourists. *Gibbon Falls*, 80 feet high (8½ miles from Norris), is the very pretty waterfall of Gibbon River on the left as the road descends. One-half mile farther is a good camp site on the left.

The loop road continues down the Gibbon River, passing an interesting hot lake about 13 miles from Norris Junction, and near the point where the Gibbon and Firehole Rivers meet the road from

West Yellowstone, Mont., the western entrance (W. E.) enters the main highway system.

This is MADISON JUNCTION (M. J.),¹ altitude 6,900 feet.

MADISON JUNCTION (M. J.) TO OLD FAITHFUL (O. F.)

(16.1 miles.)

From the junction of the west entrance road with the loop highway the latter crosses the Gibbon River at a pretty spot, turning thence up the Firehole River. The mountain on the right is National Park Mountain, where the discoverers of the park, before their camp fire in 1870, formulated plans for securing the establishment of this great playground. At its foot the Gibbon and Firehole Rivers join, forming the Madison, one of the three great branches of the Missouri River. The Gallatin River, another branch, heads in the northwestern corner of the park. The confluence of the Madison, Gallatin, and Jefferson, the third branch, is at Three Forks, Montana. These streams were all named by Lewis and Clark while on their famous expedition in the early years of the last century.

At 2.3 miles from Madison Junction the loop road passes the *Cascades of the Firehole*. Above this point there is good fishing in the Firehole for eastern brook, Loch Leven, brown, native, and rainbow trout, and also whitefish. There are several good camp sites in the timber at the left of the road. Camping is not permitted between the road and the river.

FOUNTAIN RANGER STATION is situated on the left, 5.7 miles from Madison Junction. In front of this station a short road to Excelsior Geyser and Upper Geyser Basin branches out to the right. This short road, however, misses most of the Lower Geyser Basin. One-half mile from the Ranger station Nez Perce Creek is crossed. This is the last camp site till Excelsior Geyser, 4½ miles farther, is reached.

LOWER GEYSER BASIN.²

Lower or Fountain Geyser Basin (altitude 7,240 feet) is the largest of the park geyser basins, but its curiosities are too scattered to admit of more thorough examination than can be given to the more prominent ones along the road.

After passing the old Fountain Hotel and crossing a flat a few hundred feet wide the road ascends a low hill to the *Mammoth Paint Pots*, a striking example of what has been given the name "paint pots." They occur everywhere throughout the park, but the more prominent are here and at Thumb of Yellowstone Lake.

¹ The route from West Yellowstone, Mont., the western entrance (W. E.) is described on p. 50.

² For list of prominent geysers and springs in the park, see p. 61.

seated spring not unlike other vents of thermal waters. Through this vent, which usually stands full of clear, transparent water, numerous bubbles of mingled air and superheated steam rise gradually. Before reaching the surface they unite to form one large mass that in its upward passage strikingly resembles a flame of fire. This continues till the bubble disappears in the water, only to be followed by a repetition of the phenomenon. The phenomena are far better seen at Firehole Lake than elsewhere, but under favorable conditions they may be seen at other localities. On the return the road¹ branches to the left, leading to the *Great Fountain Geyser*, playing every 8 to 12 hours, and rightly considered as one of the sights of the park. Even during the quiescent period the beauty of its pool and the delicate tracery of its formation are worthy of close examination.

Between Firehole Lake and the Great Fountain, *Bath Lake* is passed; *Young Hopeful*, *Narcissus*, *Bead*, and *Pink Cone* are all small and interesting geysers.

To the west of Great Fountain a footpath a half mile in length runs past *Surprise*, *Diamond*, *Five Sisters*, and *Buffalo Springs*. All are worth visiting if one has the time.

From the Great Fountain two roads lead back to join the loop road. The one running northwest passes the imposing cone of the *White Dome*. This cone is large and interesting, but the geyser itself is too small to detain the tourist long.

The other road leads west, and about 200 feet from the Great Fountain is a violently boiling spring close to and at the right of the road. This is *Firehole Pool*, with phenomena similar to Firehole Lake, but it is often necessary to walk entirely around the spring to find a favorable point of view.

One hundred feet farther, at the right, is *Broken Egg Spring*, an exquisite dainty. For the next mile or two the road approaches *Twin Buttes*, a prominent landmark in the southern end of Lower Geyser Basin and west of Firehole River.

MIDWAY GEYSER BASIN.

Midway Geyser Basin (4.7 miles from Fountain Ranger Station) is, properly speaking, a part of the Lower Geyser Basin, but owing to the size of its features it has often been given a separate designation. There are numerous camp sites along the river above and below *Excelsior Geyser*. The next camp site is at *Biscuit Basin*, 3 miles farther on.

The greatest attraction here is *Excelsior Geyser*, which once was the largest geyser in the park, but which has not been active since

¹ This road is in disrepair. Motorists are advised not to use this road during 1922 season, but to return to the loop road and take the next left-hand turn to Great Fountain.

1888. The beautiful tints and colors of *Prismatic Lake* and *Turquoise Spring* make them worthy companions.

Biscuit Basin (8.1 miles from Fountain Ranger Station) is in reality the lower end of the Upper Geyser Basin. There is a good camp site here, the next being near Riverside Geyser, $1\frac{1}{2}$ miles farther. Fishing here, and in fact all the way from Nez Perce Creek is good, but the constant fishing makes the fish wary.

The road forks opposite Biscuit Basin; the road on the right should be taken if Biscuit Basin is to be visited. If no stop is to be made at Biscuit Basin, either road may be taken, as they unite near Mirror Geyser.

Biscuit Basin is on the west side of Firehole River and is reached by a footbridge. *Sapphire Pool*, one minute quiet and two or three minutes later violently boiling, is the attractive feature here. The peculiar formation at its south end gives the name of "Biscuit" to this basin. A short distance west the *Jewel* and *Silver Globe* are small geysers whose striking formations give them their characteristic names.

Mystic Falls is on Little Firehole River some distance to the west and rather difficult to find.

A half mile after leaving Biscuit Basin, at the right and below the road, is the *Artemisia Geyser*, which has a beautiful crater and throws a tremendous volume of water in action.¹

UPPER GEYSER BASIN.¹

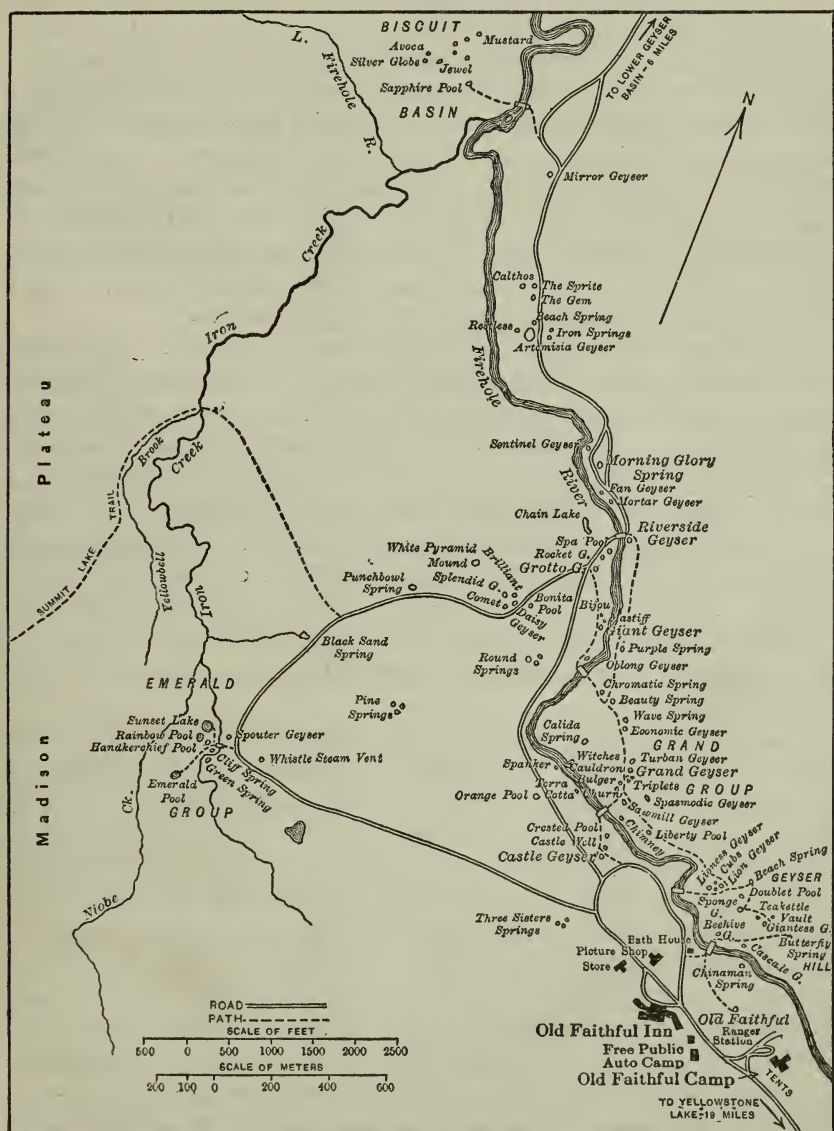
A mile and a half south of Biscuit Basin at the base of a small hill the road branches again. The road on the right should be taken, as on it is *Morning Glory Spring*, whose beautiful shape and color make it an object of universal admiration. At this point we enter the far-famed Upper Geyser Basin, where the largest and finest geysers of the world are gathered together in a small space only a mile north and south by a half mile or less wide.

The *Fan Geyser* is on the right between the road and the river. The *Mortar* is a few feet farther up the river. At their best these geysers are very interesting, but unfortunately have been seldom in eruption for the last few seasons.

At the left, just above the bridge on the extreme edge of the river, is the *Riverside*, one of the prominent geysers of the basin. Its period is very regular, ranging from six to seven hours. An overflow from the lower opening presages an eruption within an hour. A camp site is located on the knoll above the Riverside Geyser. The next camp site is southwest of Castle Geyser, nearly 1 mile by road

¹ For list of prominent geysers and springs in the park, see p. 61.

from this point. Special camp grounds for private parties traveling in automobiles are provided about 200 yards south of Old Faithful Geyser, and a little over 1 mile from the Riverside Geyser camp.



SKETCH MAP OF UPPER GEYSER BASIN.

At the left and close to the road is the *Grotto Geyser*, differing from most, in that the empty crater is more interesting than the eruption. At this point it is usual to follow the path instead of keeping to the road.

From here to Old Faithful Geyser there are two roads and a path. The road to the left is the direct road, but it does not pass any curiosities except Castle Geyser. (See description under the trip by path, below.) The road to the right (the Blacksand Road) is slightly longer and passes many curiosities.

The road to the right turns up the hill, and immediately beyond it comes close to a group of geysers and springs. Of these, the *Daisy* is a powerful little geyser that plays frequently and regularly. During the last few years it has been increasing in frequency and power. Next to it on the west is the hooded opening of the *Comet*, while over near the edge of the formation is the *Splendid*. The Comet and Splendid very seldom play. These three geysers, as well as all springs in this neighborhood, are connected. When one of the geysers of this group plays it appears to affect them all.

A quarter mile beyond, the road passes a crested spring on a mound on the right. This is the *Punchbowl*. Then the *Black Sand Spring*, *Specimen Lake*, and the *Spouter Geyser* are passed. Near the Spouter is a footbridge to the west bank of Iron Creek. On crossing the bridge, *Cliff Spring* is seen close to the bank of the stream on the left, immediately before one are the attractive *Sunset Lake*, *Handkerchief Pool*, and the *Rainbow Pool*, and to the south lies *Emerald Pool*, one of the most beautiful of the Upper Basin springs. As the road leads on across a more or less level stretch it passes the *Three Sisters* group of springs and shortly afterwards joins the main road a couple of hundred yards or so north of Old Faithful Inn.

The path that leaves the road at the Grotto Geyser leads past the shattered cone of the *Giant Geyser*, the greatest geyser of them all, but rather uncertain in its periods. At the north of the Giant are the *Bijou* and *Mastiff*, two small geysers that are playing most of the time. On the opposite side of the river east of the Giant are three pools, normally quiet, but apparently connected to the Giant, as the surface of their waters lower each time their big neighbor erupts. A short distance farther is the crater of the *Oblong Geyser*, beautiful to look at either while quiet or in action. Crossing the river on a footbridge and continuing, the path passes *Chromatic* and *Beauty Springs* and on to the *Economic Geyser*. For many years this small and active geyser played every three minutes, using the same water over and over again, but lately its action has been erratic and sometimes months pass without its being seen.

A quarter mile farther to the south, at the base of a rock-covered hill, is one of the finest geysers, the *Grand*, which plays 200 feet high in a series of eruptions, its eruptions being smooth, strong, and powerful, as well as beautiful to behold. Immediately to the north

is the *Turban Geyser*, so called because of the image of a turban seen in a detached piece of its northern rim. All the springs and geysers in this section seem to be more or less connected to the Grand, for while each geyser plays independently their water supply seems to be affected by the action of the Grand.

The *Triplets*, *Bulger*, and *Chimney* are for the most part quiet pools, but sometimes violently agitated. The *Tardy* is a very powerful little geyser, with such a small opening that there is a sharp whistling noise to each eruption. The *Spasmodic* is a small geyser. But the important member of this group is the *Sawmill Geyser*. Here the violent whirling motion of its waters in action is due, no doubt, to the explosion of bubbles of superheated steam, aided, perhaps, by some peculiarity of its crater.

It is usual here to turn to the right and cross the river on the footbridge. The path then leads up the hill to the *Crested Pool*, a beautiful open spring of great depth. It never boils, nor is it at all affected by the eruption of the near-by *Castle Geyser*. This is another powerful geyser, and is, so far as known, unconnected with any other spring or geyser. It is also peculiar, in that it frequently spurts up 15 or 20 feet, just as if it might play. This spurting sometimes continues for several days and is usually an indication that the geyser will *not* play. This geyser has the highest and probably the most remarkable cone of any.

From this point the path leads to old ranger station on the river bank, where the river is crossed again to the east side on another footbridge. Immediately in front and a hundred yards from the river is a rounded hill of geyser formation, with a group of four geysers on its top. These are the *Lion*, *Lioness*, and two cubs. The *Lioness*, which is the large open crater of boiling water, and the large cub, the smaller of the two cones, are very seldom in eruption. But the little cub, the smallest opening, plays every hour or two, and the *Lion*, the largest of the cones, plays frequently.

To the west on the next elevation is the *Devil's Ear*, and a little farther on is the *Doublet*, both quiet boiling springs. Then the path turns to the south to the *Sponge Geyser*, remarkable for the color and texture of its formation and the explosiveness of its eruptions, although it only throws its water 2 or 3 feet.

Next a low mound to the south is ascended, and on it are located three open pools, sometimes quiet, sometimes boiling, and sometimes in action. The connection between all three is very close. The first pool with the raised rim is the *Teakettle*; the second, the smaller of the rimless pools, is the *Vault*; the largest pool is the crater of the *Giantess*, a large, powerful, and uncertain geyser. It is just as well

not to approach the *Giantess* too close. It has not much consideration for the safety of its visitors and has been known to break forth into eruption with no warning whatever from its quiet, smiling crater. When this geyser does start the vast masses of eruptive water are wonderful to behold.

Now the path turns south and then down toward the river, but the tourist should keep far enough to the south to avoid the small openings that indicate the dangerous nature of the ground between *Giantess* and the nearest point of the river.

On the edge of the high bank of the river is the broken crater of the old *Cascade Geyser*. Immediately opposite, on the west side of the river, is the small, round opening of the *Chinaman Spring*.

At this point the tourist turns a little north of west to the crater of the *Beehive*, the most artistic and symmetrical of all.

Crossing the bridge below the *Beehive* and going south to the very head of the basin, the visitor arrives at *Old Faithful Geyser*, the tourists' friend. Other geysers may be more powerful, others may throw their water higher, others may have more beautiful craters, but *Old Faithful* has some of each of these qualities, and in addition it plays often and with regularity. It had the honor of welcoming the first explorer, and never since that day has it failed any tourist.

OLD FAITHFUL (O. F.) is the general designation of the head of the Upper Geyser Basin. It is 55.2 miles from Gardiner (N. E.), 29.9 from Mammoth Hot Springs (M. S.), 29.9 from West Yellowstone (W. E.), 16.1 from Montana, the western entrance (W. E.), and 16.1 miles from Madison Junction (M. J.).

Here is located *Old Faithful Inn* and *Old Faithful Camp*. The general store, bathhouse, and picture shop are located near the other establishments. Here also, just south of *Old Faithful Geyser*, is a large free public automobile camp ground.

The OLD FAITHFUL RANGER STATION AND COMMUNITY CENTER is located south of *Old Faithful Geyser* and between *Old Faithful Inn* and *Old Faithful Permanent Camp*. It also adjoins the free public automobile camp.

SIDE TRIPS FROM OLD FAITHFUL INN AND CAMP.

Shoshone Lake and Geyser Basin.—Four and one-half miles from the road via Lone Star Geyser, thence 8 miles via well-marked trail to Union Geyser, 100 feet high; Bronze Geyser. Fishing for lake and eastern brook trout.

Jackson Hole and Lake.—Sixty-seven miles (25 outside of park) to Lewis Lake and Falls. Teton Mountains in Jackson Hole; Grand Teton, 13,747 feet. Fishing for native and lake trout. Automobile road. Board and lodging at Sheffield's resort, \$4 per day and up.

OLD FAITHFUL (O. F.) TO WEST THUMB OF YELLOWSTONE LAKE (W. T.).

(18.9 miles.)

As the road leaves Upper Geyser Basin it begins its long climb to the *Continental Divide*, first along Firehole River and then up Spring Creek Canyon. Two miles from Upper Basin there is a platform on the right to enable one to view the pretty *Kepler Cascades*.

At the junction of Firehole River and Spring Creek ($3\frac{1}{2}$ miles from Upper Basin) the road leaves the Firehole, but there is a branch road to the right running three-quarters of a mile to the *Lone Star Geyser*, which plays for 10 minutes at intervals of 3 hours, height 40 to 60 feet, altitude 7,600 feet. On this branch road are good camp sites, the next being $6\frac{1}{2}$ miles farther up the main road at *De Lacy Creek*.

The first crossing of the *Continental Divide*, $8\frac{1}{2}$ miles from Old Faithful, at an altitude of 8,240 feet, is through *Craig Pass* alongside of a little lily-covered lake, *Isa Lake*, whose waters in spring-time hesitate whether to flow out one end into Pacific waters or out the other into Atlantic waters and usually compromise by going in both directions.

Then the road turns down the narrow and tortuous *Corkscrew Hill* to a little valley at *De Lacy Creek*, hemmed in by pine-covered heights on all sides. Here is the last good camp site before reaching the Thumb, 9 miles from De Lacy Creek.

Soon after leaving De Lacy Creek the road comes out on *Shoshone Point*, from which *Shoshone Lake* is in plain sight and the *Teton Mountains* can be seen on a clear day. There is fine fishing in Shoshone Lake, which can be reached by a trail following down De Lacy Creek for a distance of about 3 miles from the main road.

The road descends a little from Shoshone Point and then climbs to the *Continental Divide* again at an altitude of 8,345 feet ($15\frac{1}{2}$ miles from Old Faithful).

From this point it pitches rapidly down through dense timber until within 1 mile of the Thumb, when a glimpse of *Yellowstone Lake* (altitude 7,741 feet) is had. A little later *Duck Lake* is passed far below the road on the left.

As the road leads out to the lake shore the road forks. The road to the right leads to the boat landing, Lewis Lake, the South Boundary, and Jackson Lake. The road to the left is the loop road.

THE WEST THUMB (W. T.).

THE THUMB RANGER STATION is on the left just beyond the forks of the road. The automobile camp grounds are on the right.

At the Thumb the tourist should see *The Paint Pots*. They are not so large as the ones in the Lower Geyser Basin, but are more brilliantly colored. The *Fishing Cone* is situated on the margin of Yellowstone Lake (altitude 7,741 feet), a quarter mile north of the boat landing. The *Lakeshore Geyser*, which frequently plays to a height of 30 feet, is on the lake shore, 200 feet north of the boat landing. This locality is more or less dangerous, as the crust is thin, and it is sometimes very slippery around The Paint Pots.

The Thumb is 19 miles from Old Faithful (O. F.), 17 miles from Lake Junction (L. J.), 23.5 miles from the South Entrance (S. E.), and 48.5 miles from Moran, Wyo., on Jackson Lake.¹

WEST THUMB (W. T.) TO LAKE JUNCTION (L. J.).

(17 miles.)

The road from Thumb follows the shore of Lake Yellowstone for about 5 miles. There are camp sites 2 miles from Thumb, 5 miles from Thumb, and on Bridge Creek, 11 miles from Thumb.

As the road passes around Thumb Bay fine views of *Mount Sheridan* to the south are had. Near the top of the hill is obtained a fine view of Thumb Bay on the right; a little later the *Knotted Woods* on the left are passed. The road then traverses a rolling table-land covered with dense pines. At a point 10 miles from Thumb the road crosses Bridge Creek; a half-mile farther is a camp site. The *Natural Bridge* is about 11½ miles from Thumb; it is 200 yards from the road on the left and in plain sight. There is a camp site at this point, and from here to the Yellowstone Canyon good camp sites are numerous. A special site and a free public automobile shelter for motorists desiring to make camp are reserved near Lake Outlet.

LAKE HOTEL AND LAKE CAMP.

Near the *Lake Hotel* (15.1 miles from Thumb) is the boat landing, and a general store selling supplies and curios. *Lake Camp* is a short distance east of the hotel. There is good fishing all along Yellowstone Lake, but especially at the outlet of the lake, 1¼ miles north. Boats and tackle may be rented at the boat landing. The United States Fish Hatchery is a short distance west of the Lake Hotel.

LAKE RANGER STATION is a short distance north of the Lake Camp.

SIDE TRIPS FROM LAKE HOTEL AND CAMP.

Jackson Hole and Lake.—Sixty-two miles (25 outside of park), Lewis Lake and Falls. Teton Mountains in Jackson Hole; Grand

¹ The route from Moran, Wyo., is described on p. 53.

Teton, 13,747 feet. Fishing for native and lake trout. Automobile road.

Heart Lake and Geyser Basin.—Twenty-eight miles south by trail. Guide needed. Fishing for lake and native trout.

Southeast Arm of Yellowstone Lake.—This trip is made by boat.

LAKE JUNCTION (L. J.).¹

Nearly 2 miles from Lake Hotel and Camp the road to East Boundary and Cody branches off to the right. It is 26.6 miles from this point to the East Entrance (E. E.) and 82.2 miles to Cody, the east gateway city, 14.3 miles to Canyon Junction (C. J.), and 17 miles from West Thumb (W. T.).

LAKE JUNCTION (L. J.) TO CANYON JUNCTION (C. J.).

(14.3 miles.)

Six miles from Lake Junction is the *Mud Geyser* and *Dragon's Mouth Springs*, located 100 yards to the left of the road, and around the next corner down a steep bank between the road and the river, some fine examples of paint pots may be seen. There is good fishing all along the river. The road soon enters and crosses *Hayden Valley* and then enters a narrow valley by side of the Yellowstone River.

Thirteen and a half miles from Lake Junction, and right at the head of the rapids, a branch road leads to and across the *Chittenden Bridge* to the *Canyon Camp*. This camp is most attractively located among the trees on the rim of the canyon and the roar of Upper Falls is ever present. The road extends to *Artist Point*. There is a path along the rim that can be followed on foot, and a great many magnificent views of the Upper Falls, the Lower Falls, and the Grand Canyon may be seen to advantage.

The loop road leads to the left. In about a half mile the platform at *Upper Falls*, 109 feet high, is reached; steps lead down to the rim of the falls. A few hundred feet farther on the left are the special camp site and free public automobile grounds for private parties traveling in automobiles, and opposite, on the right, is the CANYON RANGER STATION.

A short distance west of the ranger station is a general store where supplies of all kinds can be purchased, and immediately beyond there is a fork in the road.

CANYON JUNCTION (C. J.).

This is *Canyon Junction*, 14.3 miles from *Lake Junction*, 41 miles from the *East Entrance*, 20 miles from *Tower Falls Junction*, 11 miles from *Norris Junction*, 10 miles from *Summit of Mount Wash-*

¹ The route from Cody, Wyo., is described on p. 51.

burn, 1 mile from *Canyon Hotel*, and 2 miles from *Canyon Camp*. The road turning to the left is the short cut to *Norris Junction*, 11 miles distant. The main loop road continues north to *Canyon Hotel*.

CANYON JUNCTION (C. J.) TO NORRIS JUNCTION (N. J.).

(11 miles.)

On the crossroad from Canyon Junction to Norris there is a steep hill for the first mile and then the road winds through timber-covered rolling country to *Virginia Meadows*, altitude 7,765 feet, 7 miles from Canyon Junction, where there is a camp site, and the fishing is good. This is the only camp site between Canyon Junction and Norris. At the lower end of the meadow Gibbon River is crossed and the road continues down its northern bank past the *Virginia Cascades* (65 feet) to Norris Junction, 11 miles from Canyon Junction.

GRAND CANYON.

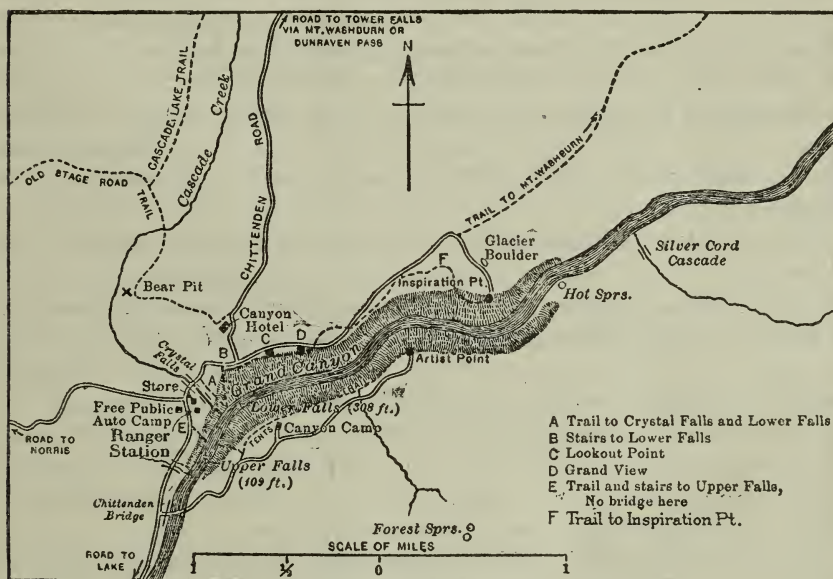
If the canyon is to be viewed from the northern rim, the road to the right is taken. A high steel bridge is crossed over Cascade Creek. At the east end of the bridge a path leads to the right down the edge of the gulch to *Crystal Falls*, a lovely little falls that is often overlooked in the presence of the larger attractions. This path can be followed to top of the Lower Falls of the Yellowstone, 308 feet high. Another path from the end of the bridge leads to the left; this is a short cut to the Canyon Hotel. The loop road winds up the hill, affording here and there glimpses of the Grand Canyon. At the top of the hill are stairs to the *Lower Falls*. A few hundred feet farther the road forks. The loop road turns out to the left and leads to Canyon Hotel, Dunraven Pass, Mount Washburn, and Tower Falls. The road to the right leads to Inspiration Point.

On the branch road about 1 mile from Canyon Junction is *Lookout Point*, reached by walking a hundred feet out to the right of the road. Down the gulch to the right of Lookout Point is a rather steep trail leading to *Red Rock*, a fine point from which to view the Lower Falls. *Grand View* and *Castle Ruins* are other good points from which to view the canyon.

But better yet is *Inspiration Point*, at the end of this road. This point, Artist Point, Lookout Point, and the edge of the Lower Falls are the best places from which to view the wonders of the canyon. The view from each is different from the others, and each merits a careful inspection from the tourist. This canyon is some 20 miles in length, but it is only the first 3 miles below the Lower Falls that carry these wonderful colors. This is due to the fact that in times gone by fumes rising from hot springs deep in the ground

have moved through the rhyolite rock of this 3-mile section until the rock has been decomposed and changed. The remainder of the canyon has not been acted on by the hot-spring fumes and hence retains its dark-gray walls.

A short distance from Inspiration Point, on the east side of and close to the road, is the *Glacier Boulder*, not by any means the only glacier boulder in the park, but the most striking example of this force. This boulder must have been brought a distance of at least 20 miles by the ancient glacier that carried it and dropped it here for the wonder of the tourist.



SKETCH MAP OF GRAND CANYON.

There are several most interesting side trips for sight-seeing, fishing, etc., to be made from Grand Canyon on foot or on horseback, via good trails. Most of these can be made safely without a guide, if careful inquiry is made beforehand.

CANYON JUNCTION (C. J.) TO TOWER FALLS JUNCTION (T. J.).

(20 miles.)

In honor of Gen. Hiram M. Chittenden, the engineer officer to whom the excellence of the present park roads is largely due, the road from Canyon Junction to the top of Mount Washburn is known as the "Chittenden Road." It is usually not free from snow until about July 1. It leads up past the Canyon Hotel. Camp sites are

scattered all along this road, the best being at *Dunraven Pass*, 7 miles from Canyon Junction, at an altitude of 8,800 feet. These are not very good, owing to lack of water, the first water to be counted on being at Tower Creek, 17 miles from Canyon Junction by the loop road through Dunraven Pass and 20 miles by road over Mount Washburn.

At *Dunraven Pass* the road forks; the road to the left is the loop road to Tower Falls, shorter and avoiding the heavy grades of Mount Washburn, that to the right leading to the top of *Mount Washburn* (automobiles can be driven to the extreme top and down the northern side). It is well to get up Mount Washburn as early in the day as possible, on account of the heavy winds that spring up later. The climb is long, but the views constantly unfurling as the tourist rises are unrivaled, and the time taken in the slow climb is put to good advantage by the sight-seer. The view from the top of Mount Washburn, altitude 10,100 feet, is equaled only by that from Electric Peak and Mount Sheridan, both of which are as yet too inaccessible to be climbed readily.

Beyond Mount Washburn the road enters an open country free from heavy timber, and so affords numberless opportunities to view the surrounding region. The grade is a steadily descending one for 7 miles to Tower Creek, altitude 6,400 feet. A good camp is located in front of the little store at Tower Falls. Owing to the congested condition of the road below, it is better to leave cars here, then go down the trail to Tower Falls, 132 feet high. An excellent view of the falls is obtained from the crest of the hill. The two columnar walls in the sides of the canyon across the Yellowstone should be noted. Fishing in the river at this point is good.

The next camp site is near Tower Falls Ranger Station, 2 miles farther on. The road after leaving Tower Creek passes first the towers, or minarets, that give this section its name; then passes close to a wonderful cliff of columnar basalt that overhangs the road. This is the famous *Overhanging Cliff*. Shortly after the *Needle* is reached. This is a long, slender spire that starts at the river's edge and mounts up nearly 300 feet.

Shortly after, the bottom of the long descent from Mount Washburn is reached, 2 miles from Tower Falls. Here a branch road leads to the left to Camp Roosevelt. There is a very pretty walk back of Camp Roosevelt, up through *Lost Creek Canyon* and past *Lost Creek Falls*. Northwest of Camp Roosevelt and several hundred yards distant is TOWER FALLS RANGER STATION.

TOWERS FALLS JUNCTION (T. J.).

The ranger station is also regarded as Tower Falls Junction (T. J.) because just before this point is reached a road leaves the

loop system and leads into the region of the Lamar River, thence up the valleys of the Lamar and Soda Butte Creek to the mining community of Cooke City, beyond the boundaries of the park.

SIDE TRIPS FROM TOWER FALLS JUNCTION AND CAMP ROOSEVELT.

Numerous streams and lakes teeming with fish are easily accessible from the ranger station and Camp Roosevelt. Many of these waters may be reached by automobile, but others lie at considerable distances from the roads, and can only be reached with saddle-horse outfit. Saddle horses and full equipment, including supplies and fishing tackle, may be procured at Camp Roosevelt.

From the standpoint of scenery and natural phenomena and prevalence of wild life, this section of the park is second to no other in interest. Furthermore, its opportunities for rest and recreation are unsurpassed.

The following trips are worthy of special mention: *Tower Falls* (132 feet), 2 miles distant on the loop road between the Junction and Mount Washburn. Beautiful falls and mountain scenery. Guide not necessary.

Petrified Trees, 1 mile west on loop road, thence southeast three-fourths of a mile on side road. Standing trunks of two petrified trees.

"*Yanceys*."—This is a beautiful place where a famous old character, "Uncle" John Yancey lived for many years. Fishing is usually good 2 miles below.

Buffalo Ranch.—On the Lamar River, near the mouth of Rose Creek, 11 miles from the ranger station and Camp Roosevelt, is the big Buffalo Ranch, where more than 500 head of pure-bred bison are cared for. In summer the herd is ranging in the hills.

Specimen Ridge and *Fossil Forest*, 6 miles distant by trail. East of Yellowstone River and south of the Lamar River.

Soda Butte, 17 miles distant, is a mound that was formerly a huge hot spring crater. It is chiefly interesting because there are no other objects, even remotely similar, anywhere else in this section of the park. At this point SODA BUTTE RANGER STATION is located.

Soda Butte Canyon, beginning 17 miles northeast of Camp Roosevelt, is a gorge of unusual beauty, which offers splendid opportunities for the study of glacial erosion. The road to the northeast corner of the park traverses its entire length.

Cooke City.—This is a picturesque old mining camp, and lies just beyond the park boundary at the northeast corner of the reservation. Above it rise *Pilot Knob* (altitude 11,977 feet) and *Index Peak* (altitude 11,740 feet), two extraordinary mountains that were used

in early days as important landmarks by travelers moving back and forth in a wholly unsettled region.

Grasshopper Glacier.—A few miles beyond Cooke City is a glacier in which millions of grasshoppers are embedded. These insects were caught in the snows of the remote past, and have for centuries formed a part of a body of ice of huge proportions.

TOWER FALLS JUNCTION (T. J.) TO MAMMOTH HOT SPRINGS (M. S.)

(18 miles.)

The first camp site beyond the ranger station is 1 mile west, where a side road bears off to the left to the *Petrified Trees*, three-fourths of a mile from the loop road. The next good camp site is at Blacktail Deer Creek, 10 miles farther.

After leaving Petrified Trees Junction the road climbs a hill 3 miles long, then traverses *Crescent Gulch* to the *Blacktail Deer Divide*, from which point there is a long, steady descent to Gardiner River, within 2 miles of Mammoth Hot Springs.

At *Blacktail Deer Creek* is a good camp site, and there is good fishing for native and rainbow trout. A trail to the right, just beyond the bridge, leads to Yellowstone River, 3 miles away, where there is more good fishing. Twelve and one-half miles from (T. J.) there is a very fine beaver dam and house on the left of the road.

Just beyond the road crosses *Lava Creek*, and a few hundred yards below is *Undine Falls* (60 feet), remarkable for the development of basalt in the walls of its canyon (East Gardiner or Lava Creek Canyon). It is 5 miles from Mammoth Hot Springs, and there is a good camp site. Good fishing for native and eastern brook trout.

At *Gardiner River*, 16 miles from Tower Falls Junction, the road crosses on the highest and longest steel bridge in the park, 2 miles from Mammoth Hot Springs.

WEST YELLOWSTONE, MONT., THE WESTERN ENTRANCE (W. E.), TO MADISON JUNCTION (M. J.).

(13.8 miles.)

West Yellowstone, Mont., is the terminus of the Oregon Short Line Railroad, and is the western entrance to the park. Guides, outfits, and supplies for park trips can be secured. This is the post office for tourists entering and leaving via the western entrance.

The road lies up *Madison River* to Madison Junction at the confluence of the *Gibbon* and *Firehole Rivers* (13.8 miles), where the loop road is reached.¹ At West Yellowstone the road lies through a level

¹ See p. 35.

country, and, as the river is ascended, low hills appear on either side. They increase in height as the river is ascended until they culminate in *Mount Haynes* on the right and *Purple Mountain* on the left. Camp sites occur 3 miles, 7½ miles, 12 miles, and 13 miles from West Yellowstone. There is fine fishing at all points for trout.

CODY, WYO., VIA EASTERN ENTRANCE (E. E.) TO LAKE JUNCTION (L. J.).

(82 miles.)

Cody, Wyo., is the terminus of a branch line of the Chicago, Burlington & Quincy Railroad. It is located 55.4 miles from the eastern entrance of the park. The Yellowstone Park Transportation Co. operates automobile stages from Cody daily. Guides, outfits, and supplies may be secured here. For the first 40 miles, most of the available space is occupied by farms and ranches. After this point is gained there are frequent camp sites to the park boundary.

Cody was founded by the famous scout, the late Col. Wm. F. Cody, "Buffalo Bill," many years ago, and is a typical western plains town. It is situated on a bench or shelf above the Shoshone River, and below the table-land that stretches away toward the east. It is therefore invisible to the traveler on the roads from Thermopolis, Basin, Powell, and other Wyoming towns to the eastward until he comes very near to the limits of the town.

Leaving Cody for the trip to Yellowstone Park, the road leads into the Shoshone Gorge, across the Shoshone River, and thence to the plain opposite the town. From here the road turns southwestward through the plains and runs for several miles through an arid, treeless waste. The sulphur mill on the east side of the river stands out prominently a short distance from Cody.

The wonders of the trip to the park begin with the entrance to the *Shoshone Canyon*, the stupendous gorge through which the Shoshone River takes its course. On the right lies *Rattlesnake Mountain* and on the left *Cedar Mountain*. The two constituted a single mountain until the river cut a deep, narrow gash through its center of solid rock. The walls of the canyon are nearly perpendicular, and yet along the face of Rattlesnake Mountain the Reclamation Service of the Department of the Interior blasted from the solid rock a splendid road 8 miles long. In many places the road passes through tunnels in the granite walls. This is the road that is traveled through the gorge and out to the park. The Government found it necessary to construct this road through the apparently inaccessible canyon in order to provide the means of transporting materials to construct

the great dam of the Shoshone reclamation project. At the upper end of the canyon the *Shoshone Dam* itself is reached. This dam is the second highest in the world, 328 feet from the lowest foundation to the top of the parapet, being 48 feet higher than the Flatiron Building in New York. At its base it is 108 feet thick up and down stream and only 80 feet long. On top it is 200 feet long and 10 feet thick. The cost of its construction was \$1,356,585, but the value of the crops raised by the use of the stored water in 1916 was \$601,000, and only about one-sixth of the irrigable area was cropped.

Leaving the dam the road follows the shore of the beautiful *Shoshone Lake*, which was formed by closing, with a great wedge of concrete, the narrow gash in the rock walls of the canyon. Scientists state that this lake occupies the basin of an ancient body of water which existed thousands of years ago. Where this lake overflowed the water gradually wore a passageway through the solid granite mountain, and in the course of numberless centuries formed the Shoshone gorge.

At the upper end of the lake the road turns into the valley of the *North Fork of the Shoshone River* and skirts the boundaries of several large ranches, many of which are favorite resorts of the big-game hunter. As the road continues westward beyond the ranch lands, a very mountainous region appears. The *Shoshone National Forest* is entered at a point where the valley suddenly narrows to a deep canyon. High mountains on each side of the river stand like huge sentinels at the gates of the forest.

Proceeding into the canyon, many wonderful natural features appear on every side. The mountains are composed principally of red volcanic rock and have been carved into a million fantastic shapes by wind and water erosion. Signs attract the attention of visitors to the peculiarly shaped formations, the most interesting of which are *Holy City*, *Chimney Rock*, *Clock Tower*, *Hole in the Wall*, *Dead Indian*, *Elephant's Head*, *Duck*, *Maimed Hand*, and *Pinnacle Point*. As the park boundary is approached the mountains become more rugged and timber growth becomes heavier. The principal species of trees are Lodgepole pine, Douglas fir, and Engleman spruce.

Just after crossing the North Fork of the Shoshone River and leaving it to the right, as the road proceeds up *Middle Creek*, *Pahaska Tepee* is reached. This is an old hunting lodge, built and owned for many years by Buffalo Bill, and is very beautifully situated in the forest. Supplies of various kinds may be obtained at this point.

Two and four-tenths miles farther up Middle Creek the park boundary at the *Eastern Entrance (E. E.)* is reached.

At the *eastern entrance to the park* is located the SYLVAN PASS RANGER STATION, and 1 mile farther is a good camp site. On both Shoshone River and Middle Creek there is good fishing for native

trout. The next camp site is at *Sylvan Lake*, 10 miles farther. At *Sylvan Pass*, altitude 8,650 feet, 8 miles from eastern boundary, the road leaves Middle Creek and passes between high frowning cliffs on either side.

Two beautiful small lakes are passed, the first being *Lake Eleanor* and the second *Sylvan Lake*, a dainty sheet of water, set in the midst of heavy timber, surrounded by high and rugged peaks. *Sylvan Lake* is 10 miles from the eastern boundary and its altitude is 8,350 feet. At this point is a camp site; the next one is at *Cub Creek*, 4 miles farther. There is another camp site 4 miles beyond *Cub Creek*.

Turbid Lake, altitude 7,900 feet, 21 miles from the eastern boundary, has a camp site at its southern end. This lake is remarkable for the innumerable hot springs and steam openings in its bottom and along its shores. These springs keep the water more or less agitated and muddy, but there is good water for camp purposes in *Bear Creek*, flowing into *Turbid Lake* from the southeast. The next camp site is at *Indian Pond*, near the north shore of the *Yellowstone Lake*, 3 miles farther. The junction point of this road and the loop road is nearly 2 miles north of the *Lake Hotel* and 27 miles from the eastern boundary of the park. This is LAKE JUNCTION (L. J.).¹

MORAN, WYO., VIA SOUTHERN ENTRANCE (S. E.) TO LOOP ROAD AT WEST THUMB (W. T.).

(48.5 miles.)

Moran, Wyo., is located on *Jackson Lake*, 25 miles south of the southern boundary of *Yellowstone Park*. B. D. Sheffield operates an excellent permanent camp on the north side of *Snake River* just below the great reclamation dam. The location is opposite the magnificent elevation of the *Teton Mountains*, 9 miles westward across the lake.

This mountain group is an imposing outcropping of granite rising abruptly from the plains to the east and west. It begins in low elevations just south of the southern boundary of *Yellowstone National Park* and rises rapidly to its culmination, 30 miles south, in the *Grand Teton*; south of the *Grand Teton* it subsides. Only few peaks of the many are officially named. These are, from north-south, *Survey Peak*, altitude 9,200 feet; *Forrellen Peak*, altitude 9,700 feet; *Mount Moran*, altitude 12,100 feet; and the *Grand Teton*, altitude 13,747 feet. The level of *Jackson Lake* from which these mountains rise is at 6,733 feet of altitude. The *Grand Teton*, therefore, rises apparently perpendicularly more than 7,000 feet from the water.

¹ See p. 45.

These mountains wear their winter cloaks of snow far into the summer. They carry, among their peaks and spires, many small glaciers. They constitute, therefore, a supreme scenic climax to the far different volcanic grandeur of the Yellowstone.

The country east of Jackson Lake is a fine rolling plateau, thickly grown with grass and wild flowers in parklike glades among forest patches. This is the home of an elk herd of very large size, which is separate from the elk herd that makes the northern section of the Park its principal home. Game preserves protect the elk as far south as Snake River. Below that large numbers are killed by hunters in season, doubtless including many of the natural denizens of the National Park which have strayed across the river.

There are fertile farms south of Snake River. From Jackson Lake reclaimed waters fertilize a large area west of the Tetons in Idaho. The dam at Moran is 86 feet high and 650 feet long. Its distribution system includes 713 miles of canals. The power and transmission lines have a length of 69 miles.

At the southern entrance of the park, altitude 6,850 feet, is the ranger station. A good camp site is near and there is good fishing for whitefish, native, Loch Leven, and lake trout in Lewis and Snake Rivers. Next camp site is 8 miles farther on.

Moose Falls is on *Crawfish Creek*, $1\frac{1}{2}$ miles north of southern boundary and 100 yards east of road. The road leads over the hills west of and parallel with the *Lewis River* to the upper *Lewis Falls* (80 feet high), altitude 7,650 feet, 10.4 miles from south boundary. While climbing the hill through the burned section the tourist should look back at the Teton Mountains to the south. A good camp site is just north of Lewis Falls on *Aster Creek*, up which the road turns. The next camp site is at the north end of *Lewis Lake*, 4 miles farther on.

Lewis Lake, altitude 7,720 feet, is a heart-shaped lake, 3 miles north and south by 2 miles wide, lying to the west of *Mount Sheridan*. It has an extensive hot springs basin on its northwestern shore. *Lewis River*, which rises in *Shoshone Lake* farther north, flows through this lake on its way to Snake River. There is good fishing in Lewis Lake and its inlet for lake trout. The next camp sites after leaving Lewis Lake are 2 and 7 miles north.

From Lewis Lake the road climbs gradually up the *Continental Divide*, altitude 8,000 feet, and then drops down to Yellowstone Lake, a mile and a half south of the Thumb, 23 miles from the southern boundary of the park.¹

¹ See p. 44.

TOWER FALLS JUNCTION (T. J.) TO BUFFALO RANCH, SODA BUTTE, AND COOKE CITY, MONT.

Two hundred yards east of Tower Falls Ranger Station, 18 miles from Mammoth Hot Springs, the road to the mining town of Cooke City, Mont., branches off from the loop road northeast across the flat. Good camp sites are frequent and there is good fishing for native trout to Soda Butte. The *Yellowstone River* is crossed on the longest single-span steel bridge in the park. *Junction Butte* is on the left. The road runs across open, grassy flats, strewn with granite boulders dropped by the glacier, to the bridge across Lamar River, 5 miles from Tower Falls Junction. Two miles beyond the bridge the Lamar Canyon is entered. Here the smooth, round, glacier boulders lie piled in immense masses.

Leaving the canyon, the road passes up the north side of the upper Lamar Valley, past the Buffalo Ranch (11 miles from Tower Falls Junction), where a herd of over 400 head of buffalo (bison) are maintained by the Government. Five miles beyond the road leaves the Lamar Valley and turns northeast up the Soda Butte Valley. As one ascends this valley he is treated to some of the finest mountain scenery in the park. Soda Butte, an old hot spring or geyser cone so named by the old trappers, lies alongside the road on the right 17 miles from Tower Falls Junction, with the Soda Butte Ranger Station on the left. Good camp sites continue frequently for 5 miles beyond the Butte, the next good camp site being 10 miles beyond the Butte. The northeast boundary is crossed (35 miles from Tower Falls Junction and 53 miles from Mammoth Hot Springs) in the midst of a heavy forest, 3 miles before reaching Cooke City. From Soda Butte the road follows up Soda Butte Creek through the heart of magnificent mountain scenery.

TRAILS IN AND ABOUT YELLOWSTONE NATIONAL PARK.¹

The following notes on Yellowstone trails were prepared for this publication by Mrs. Robert C. Morris, of New York City, after she returned from an extensive horseback tour of the park which occupied the entire summer of 1917.

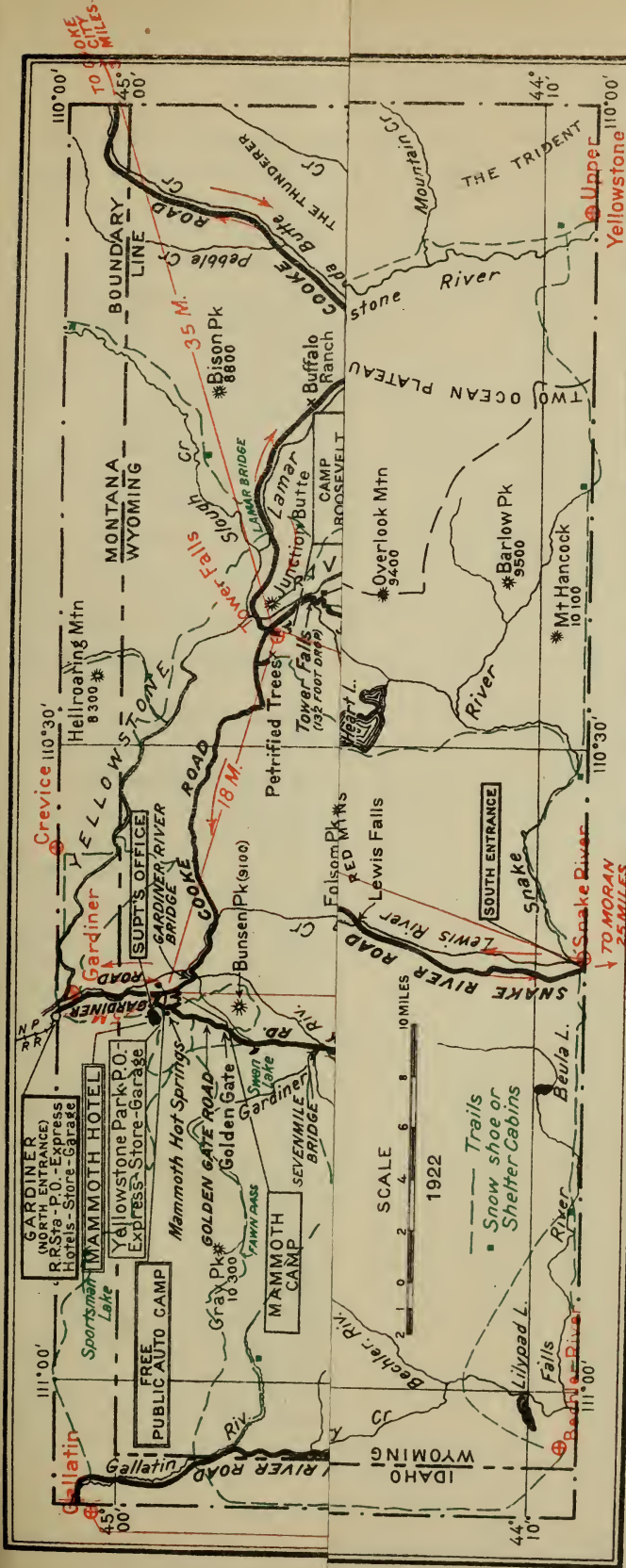
There are various ways by which the park may be entered by trail, but the best starting points for trail trips are the hotels and camps in the park itself. Parties may be outfitted, however, at Gardiner, Mont.; West Yellowstone, Mont.; and Cody, Wyo. From Cody the road must be followed a considerable distance until trails can be reached.

¹ Trails are printed in green on map in center of this circular.

Starting from the northern gateway at Gardiner, the trail of the old military road leads to Mammoth Hot Springs, and thence through Snow Pass to Swan Lake Flats and to the valley of the Galatin River on the west side of the park, by way of either Sportsman Lake or Fawn Pass. There is a good camp site back of the hotel at Mammoth Hot Springs and another at Gardiner River, 7 miles from Mammoth Hot Springs, in the direction of Norris Geyser Basin. At the bridge near this latter camp site the Riverside-Willow Park trail starts and leads westward to Riverside Ranger Station, where it connects with the trail running to Fountain Ranger Station. From the latter station the easterly section of the park may be reached by taking the trail up Nez Perce Creek.

Another trail from Gardiner into the park may be followed by crossing the Gardiner River just inside the line and following the Turkeypen trail until it strikes the road, and thence to the ranger station at Tower Falls, from which point the road to Cooke City, Mont., may be followed across the bridge spanning the Yellowstone River, and continuing until the bridge at the Lamar River is reached. At this point there are two trails which can be taken—one leading to Slough Creek, the other back to Gardiner along the north bank of the Lamar and Yellowstone Rivers. These routes from Gardiner to the Lamar bridge and back are very attractive because of the country they traverse, which is high and rolling, with beautiful trees, abundant grass, and much wild life. Elk and antelope are frequently met, a few buffalo graze on the meadows and side hills, and in the wooded places there are many bear. The country can be readily traveled, and there are plenty of good camp sites with fine water.

About a mile after crossing the bridge at the Yellowstone, before mentioned, the Specimen Ridge trail leaves the road from the right-hand side and follows up the point of Specimen Ridge and along the westerly slope until reaching Amethyst Mountain, where it descends sharply down the valley of Chalcedony Creek to the valley of the Lamar, where connection may be made with the Mary Bay-Lamar River trail at the ford of the Lamar above the mouth of Soda Butte Creek. At the eastern end of Amethyst Mountain is located the great fossil forest. Here is a cliff composed of 12 different volcanic strata, and in each stratum can be seen standing the trunks of petrified trees. During 12 distinct geological epochs forests thrived here and be buried by volcanic material. Some trunks stand as high as 40 feet, and they vary from 1 to 10 feet in diameter. Redwood, walnut, oak, and many other trees not now growing in the park have been identified.



MAP OF YELLOWSTONE NATIONAL PARK

⊕ Denotes Ranger Station ↖ Direction of Travel
Distances given are between main points by road.
NOTE THE MILE-POST SIGNS!

The trail to Slough Creek leaves the road on the other side of the Lamar bridge and runs thence through a canyon, continuing up the valley of Slough Creek until it leaves the park at the Ames ranch. From this point the Tucker Creek trail can be taken over the mountains to Buffalo Fork, and from there over a high plateau and down to Hellroaring River, which can be readily forded. From this ford a well-defined trail leads over the mountains by the old mining town of Jardine, Mont., from whence the road must be followed back to Gardiner. This route from Slough Creek to Gardiner runs through the Absaroka National Forest, which is one of the few accessible places adjacent to the park still open to big game hunting. The best camp sites are along the three streams, Hellroaring River, Buffalo Fork, and Slough Creek.

On leaving the Ames ranch a trip by trail may be continued outside of the park up Slough Creek past Duret's ranch to Lake Abundance, at either end of which are good sites for a camp. This lake received its name because of the abundance of fish to be found in its waters, and, although it is much visited, the supply seems to be inexhaustible.

Leaving Lake Abundance the trail runs to the Stillwater Basin, where it branches, one part leading to Cooke City and the other down the Stillwater River, a two days' journey, to the ranch lands in the foothills of the Absaroka Range. This trail is rough but entirely passable. The trail to Cooke City is about 9 miles in length from Lake Abundance.

Cooke City, a quaint little mining camp, is a rare reminder of pioneer days. It is surrounded by some of the most imposing mountains in this section, and radiating from it are numerous paths which can be followed on horseback. One may go up into the Granite Range to Goose Lake, which lies at an altitude of 10,000 feet, by a rough wagon road, a distance of about 12 miles.

Goose Lake is volcanic in its surroundings, but sufficient grazing for horses can be found there; and from the head of the lake a gradual climb of about a mile and a half brings one to the Grasshopper Glacier, so named because of the fact that the remains of grasshoppers are embedded in the ice where they were caught by a snow-storm at some remote time in a flight across the pass. This glacier is the source of the West Rosebud River, which forms itself into a series of lakes and is practically inaccessible.

Another trail from Cooke City follows the wagon road to Clarks Fork and thence to the southward over Dead Indian Hill through Sunlight Basin to Cody, where the road leads back into the park over Sylvan Pass to Yellowstone Lake. In starting from Cody this route can be reversed if desired.

Many trails lead from Cooke City into the rough and jagged Granite Range to beautiful and seldom-visited lakes and streams, where excellent fishing may be obtained. There is also the main road leading back into the park, which may be followed to the Lamar River.

On the upper waters of the Lamar are various tributary creeks. One of these is Cache Creek, on which is located Death Gulch, a place where deadly fumes are said to issue from the ground and where Wahb, that famous grizzly of fiction, passed on to the happy hunting grounds of his fathers. Another is Miller Creek, leading to the Hoodoo region, a section of weird and fantastic formations, which was regarded by the Indians in the old days with superstitious awe.

From the Lamar River a trail may be struck as shown on the map, which will lead to Mary Bay on Yellowstone Lake, or where the Jones Creek trail is met it may be followed past Pahaska Tepee, Buffalo Bill's former hunting lodge, to Cody. This trail can be taken from Cody, either to reverse the trail above described or to strike the trail leading to Mary Bay for the trip to the south around Yellowstone Lake.

Taking the trail at Mary Bay a trip can be made to one of the most unfrequented portions of the park, which lies east and south of Yellowstone Lake. For several miles the pebble beach of the eastern shore of the lake is followed, though at times the shore line is left and the forest entered, affording attractive scenes through glades which form vistas of water and distant mountains. From some of the rocky headlands a sweeping view of from 50 to 60 miles may be obtained. At the southern end of the lake the trail follows the valley of the upper Yellowstone River to Bridger Lake, which lies at the foot of Hawks Rest, and in which excellent fishing can be had. This valley is one vast tract of beaver operations, and moose abound as well as other large game, such as elk, deer, and bear. The mountains to the east are rugged and picturesque. The Trident and Colters Peak loom impressively, forming an ever-changing aspect while following the trail.

From Bridger Lake a trail can be taken over Two Ocean Pass by following up Atlantic Creek and down Pacific Creek to the famous Jackson Hole country. Two Ocean Pass presents one of the most remarkable geological phenomena in the world; here two streams, one flowing north and the other south, empty into a pass which runs east and west. Each stream divides, one-half of it flows east to the Atlantic, the other half west to the Pacific, thus forming a continuous water route over the Continental Divide. It is assumed that it was by this way that trout first worked into Yellowstone Lake, which is

otherwise naturally inaccessible to them owing to the two falls of the Yellowstone River.

At the old snowshoe cabin on Thorofare Creek, which empties into the Yellowstone River about 2 miles north of the park line, the south boundary trail can be struck and followed westward to the west boundary of the park. This trail crosses the Continental Divide and Big Game Ridge and then follows down the Snake River Valley to the Snake River Ranger Station. Crossing Big Game Ridge one of the most extended and beautiful views of the park is obtained. Heart Lake is plainly seen, with Mount Sheridan and the Tetons in all their majesty. Much game may be observed, as this is one of the favorite summer ranges of the elk, which roam this country in large numbers.

On leaving the ranger station at Snake River the road can be taken south to Jackson Lake and Moran, Wyo. The Jackson Hole country is a veritable paradise for fishermen, and it also is one of the most beautiful sections of this country from a scenic standpoint, as it is barricaded by the Teton Range of snow-covered peaks rising to an altitude of nearly 14,000 feet. From Snake River Ranger Station the trail to the west connects with the west boundary at Bechler Ranger Station.

As will be seen by the map a trail branches to the northward at a point on the westerly base of Big Game Ridge, which leads to Heart Lake, where large native trout may be caught. This lake is dominated on the west by impressive Mount Sheridan and is very picturesque. The trail leads on to Lewis Lake, which is beside the main road running between Yellowstone Lake and Jackson Hole. From Lewis Lake the road must be followed north about 2 miles, where the trail strikes northwest to Shoshone Lake outlet. This lake is noted for its enormous Mackinaw trout and is an ideal spot for the fisherman.

Leaving the outlet the trail can be followed in two ways—one, around the eastern end along De Lacy Creek and through Norris Pass to the road between Upper Basin and the Thumb, and thence either to Yellowstone Lake or to Old Faithful; the other leads by the south side of the lake up Shoshone Creek to Lone Star Geyser, which is 4 miles by trail to Old Faithful. From Old Faithful, which is at Upper Basin, the trail runs westward past Summit Lake to the west boundary of the park, which is followed by a trail for a distance of about 56 miles north and south, the south trail leading to Bechler Ranger Station and the north trail to Gallatin Ranger Station.

From Upper Basin the road must be taken for about 9 miles until Nez Perce Creek is reached, up which one can travel on the old mili-

tary trail which Gen. O. O. Howard made when in pursuit of Chief Joseph on the wonderful march of that great warrior in the Indian campaign of 1877. The route passes Mary Lake and continues to Alum Creek. This creek runs through Hayden Valley, a great rolling prairie where the wild buffalo formerly roamed and where now some bands of elk can be seen during the summer months. From the point where Alum Creek intercepts the road the distance is about 3 miles to the Canyon Hotel and about 2 miles to the Canyon Camp. Before reaching the camp the graceful Chittenden Bridge over the Yellowstone River must be crossed. At the easterly end of this bridge is a trail leading up the east side of the Yellowstone Valley to the bridge crossing the river at the outlet of the lake. Here the road can be followed eastward to Indian Pond, where striking to the south the trail may be found which runs to Mary Bay for the upper Yellowstone. This road also leads to Cody and the Lamar River trail is met about a quarter of a mile east of Indian Pond.

Both the Canyon Hotel and the Canyon Camp have various trails branching out from them which offer day trips; but the main trails are to Norris Basin by way of Cascade Lake, Grebe Lake, Virginia Meadows, and the road, and to Tower Falls by way of Blacktail Ridge Trail to Petrified Trees and the road to Tower Falls Ranger Station.

There is also an excellent trail—and, by the way, this is one of the oldest trails in the park—which leaves the Inspiration Point road at the glacial boulder known as the Devil's Watchcharm and follows around the easterly base of Mount Washburn to Tower Creek bridge, where it joins the road to Tower Falls Ranger Station, and branch trails may be taken to the top of the mountain from either side. It is in good condition and presents a most attractive route, passing through a section of beautiful scenery and towering mountains.

From Tower Falls, as has been previously stated, connecting trails can be found reaching the north boundary by the way of Slough Creek and the trail on the north bank of the Lamar and Yellowstone Rivers back to Gardiner.

The traveler by horse, or the camper, need not confine himself to the trails here described, as there are many directions in which he can go if he will do some pioneer work. These notes are merely intended to give a general view of the leading trails in an extensive system which is being developed from year to year.

PROMINENT GEYSERS AND SPRINGS.

The most important geysers and springs are listed below.

[Based upon observations, season 1921.]

NORRIS BASIN.

Name.	Height of eruption.	Duration of eruption.	Interval between eruptions.	Remarks.
	<i>Feet.</i>			
Black Growler.....				Steam vent only.
Constant.....	15-35	5 to 15 seconds.....	20 to 55 seconds.....	
Congress Pool.....				Large boiling spring.
Echinus.....	30	3 minutes.....	45 to 50 minutes.....	
Emerald Pool.....				Beautiful hot spring.
Hurricane.....	6-8			Continuous.
Minute Man.....	8-15	15 to 30 seconds.....	1 to 3 minutes.....	Sometimes quiet for long periods.
Monarch.....	100-125	6 minutes.....	Irregular.....	
New Crater.....	6-25	1 to 4 minutes.....	2 to 5 minutes.....	
Valentine.....	60	15 to 60 minutes.....	Irregular.....	
Whirligig.....	10-15	10 seconds.....	do.....	Near Constant Geyser.

LOWER BASIN.

Black Warrior.....		Continuous.....		} Small but interesting geysers.
White Dome.....	40	1 minute.....	40 to 60 minutes.....	
Clepsydra.....	10-40	Few seconds.....	3 minutes.....	
Fountain Geyser.....	75	10 minutes.....	2 hours.....	Played only once in 1921.
Firehole Lake.....				Peculiar phenomena.
Great Fountain.....	75-150	45 to 60 minutes.....	8 to 12 hours.....	Spouts 4 or 5 times.
Mammoth Paint Pot.....				Basin of boiling clay.
Excelsior.....	200-300	About $\frac{1}{2}$ hour.....		Ceased playing in 1888.
Prismatic Lake.....				Size about 250 by 400 feet; remarkable coloring.
Turquoise Spring.....				About 100 feet in diameter.

UPPER BASIN.

Artemisia.....	50	10 to 15 minutes.....	24 to 30 hours.....	Varies.
Atomizer.....	2			
Beehive.....	200	6 to 8 minutes.....	3 to 5 times at 12-hour intervals following Giantess.	Played only twice in 1921.
Cascade.....				Quiet again.
Castle.....	50-75	30 minutes.....	Irregular.....	Quiet 4 to 7 days, then plays 3 or 4 times at intervals stated.
Cub, large.....	60	8 minutes.....	With Lioness.....	} Short chimneys to Lion and Lioness.
Cub, small.....	10-30	17 minutes.....	1 to 2 hours.....	
Daisy.....	70	3 minutes.....	80 to 90 minutes.....	
Economic.....	20	Few seconds.....		Seldom in eruption.
Fan.....	15-25	10 minutes.....	Irregular.....	
Giant.....	200-250	60 minutes.....	6 to 14 days.....	
Giantess.....	150-200	12 to 36 hours.....	Irregular, 10 to 20 days.	
Grand.....	200	15 to 30 minutes.....	10 to 12 hours.....	
Grotto.....	20-30	Varies.....	2 to 5 hours.....	
Jewel.....	5-20	About 1 minute.....	5 minutes.....	
Lion.....	50-60	About 2 to 4 minutes.....	Irregular.....	Usually 2 to 17 times a day.
Lioness.....	80-100	About 10 minutes.....	do.....	Played once in 1910, once in 1912, once early in 1914, and once in 1920.
Mortar.....	30	4 to 6 minutes.....	do.....	
Oblong.....	20-40	7 minutes.....	8 to 15 hours.....	
Old Faithful.....	120-170	4 minutes.....	60 to 80 minutes.....	Usual interval 65 minutes.
Riverside.....	80-100	15 minutes.....	6 to 7 hours.....	Very regular.
Sawmill.....	20-35	1 to 3 hours.....	Irregular.....	Usually 5 to 8 times a day.
Spasmodic.....	4	20 to 60 minutes.....	do.....	Usually 1 to 4 times a day.
Splendid.....	200	10 minutes.....		Not played since 1892.
Sponge.....		1 minute.....	3 minutes.....	A small but perfect geyser.
Turban.....	20-40	10 minutes to 3 hours.....	Irregular.....	

Notable springs.—Black Sand Springs (about 55 by 60 feet), Chinaman, Emerald Pool, Morning Glory, Punch Bowl, Sponge, Sunset Lake.

FISHING IN THE YELLOWSTONE PARK.

To thoroughly enjoy the fishing of the Yellowstone National Park, waters as remote as possible should always be sought. Most of the streams and lakes in the park from timberline down to the lowest altitudes contain trout of one or more species, and a few contain whitefish and grayling. But the more accessible waters are fished so steadily by our thousands of visitors that the trout become educated and wary. Back in the depths of the mountain fastnesses are fish that are much less disturbed and that can be caught more readily.

Fishing tackle may be purchased at the general store and post office at Mammoth, and at the general stores at Upper Geyser Basin, Lake, and Canyon Junction. It may be rented of the porters at the Mammoth Hotel, Old Faithful Inn, and Grand Canyon Hotel, and of the Yellowstone Park Boat Co. at the lake. At the various camps of the Yellowstone Park Camps Co. fishing tackle may be rented or purchased as desired.

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. The species that now abound in the park comprise some of the best game fishes. Persons planning to fish should provide themselves with the pamphlet entitled "Fishes of the Yellowstone National Park," by Hugh M. Smith and William C. Kendall, of the United States Bureau of Fisheries. This pamphlet contains a description of the park waters, a figure of each kind of fish in the park, together with notes on size, distribution, habits, game qualities, etc. It is a public document and is sold for 5 cents a copy. It may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C., and in Yellowstone National Park at the information office, Mammoth Hot Springs, but the latter office can not fill mail orders.

WILD ANIMALS.

Bears are seen daily in summer at garbage dumps near all hotels and camps and occasionally elsewhere; but most of the other wild animals live high up in the mountains or in remote parts of the park during the summer, and tourists who see more than occasional deer and coyotes and the antelope which frequent the valley near Gardiner may consider themselves fortunate unless they are willing to take the time to visit their summer habitats. Then, with care, they may see many.

In winter, elk, mule deer, and white-tailed deer, antelope, and mountain sheep may be viewed at close quarters along the northern line of the park, and a lover of wild animals would be well repaid for taking a trip to Gardiner and Mammoth Hot Springs to see them.

The following data on the mammals of the park have been collected and prepared for publication by Mr. Vernon Bailey, of the Bureau of Biological Survey of the Department of Agriculture.

Order UNGULATA. Cattle, Sheep, Goats, Antelope, and Deer.

Family BOVIDAE: Cattle, Sheep, and Goats.

Bison or Buffalo.—*Bison bison bison* (Linnaeus).—At the present time there are two buffalo herds in the park, known as the tame herd and the wild herd. The tame herd has increased from 20 animals, introduced in 1902, to about 520 in October, 1921. During the winter this herd is kept under fence at the buffalo ranch on Lamar River below the mouth of Soda Butte Creek, where the animals are fed on hay. In summer they are driven up the Lamar River, where they spend most of the season. The wild herd is a remnant of the native buffalo of the park which summer in the mountains between Yellowstone Lake and the upper Lamar River and winter in the valley of Pelican Creek. During the summer of 1912, 37 animals were counted in this herd; in 1914, 38; and in the spring of 1917, 67 were reported.

Mountain sheep.—*Ovis canadensis canadensis* Shaw.—Mountain sheep occupy most of the higher ranges in the Yellowstone Park during summer and come down into the lower valleys and canyons before the deep snows of winter. In 1907, 200 were estimated within the area of the park by the park rangers and about 70 were fed hay along the road between Gardiner and Fort Yellowstone. During the winter of 1910–11 about 60 were counted along this part of the road and 150 were reported on the Buffalo Plateau, near Tower Falls, and on Mount Everts. During the spring of 1916, 46 sheep were counted along the Gardiner River Canyon and on the slopes of Mount Everts; 44 on Specimen Ridge and along the Yellowstone River below the Grand Canyon; 17 on Mount Norris; and a few on Junction Butte and the Buffalo Plateau; but the actual number of individuals was not determined with any degree of accuracy. It is probable that there are not more than 250 sheep in the park at the present time. In winter they are among the tamest of the wild animals, and often allow teams to pass within a few feet, and even pedestrians with cameras to approach within a short distance as they feed on the hay that has been scattered for them along the roads.

[**Mountain Goat.**—*Oreamnos montanus missoulæ* Allen.—Mountain goats have been reported from the Teton Mountains and Yellowstone Park, but there is no authentic record of their occurrence nearer to the park than the Bitterroot Mountains in western Montana and the Lost River Mountains in Idaho.]

Family ANTILOCAPRIDAE: Prong-horned Antelope.

Prong-horned Antelope.—*Antilocapra americana americana* (Ord).—Antelope are still common in the northern part in the open valleys of the Yellowstone, Gardiner, and Lamar Rivers, in summer; but with the first heavy snows they drift down into the Gardiner Valley, where they spend the winter between Mount Everts and the fence along the northern line of the park. In April most of the antelope scatter out over the higher valleys for their summer range, where the young are born and raised, but a few usually remain in the Gardiner Valley, where they form one of the interesting features of animal life along the stage road or in the alfalfa patch in front of the town. At present, it is estimated that there are about 300 of these animals.

Family CERVIDAE: Moose, Elk, and Deer.

Yellowstone Moose.—*Alces americanus shirasi*, Nelson.—This peculiar variety of the moose is found in considerable numbers along the valley of the Upper Yellowstone River from the south end of the lake to the south boundary. From this valley the moose have spread to the west around the south end of Yellowstone Lake to Heart and Lewis Lakes, down the Snake River Valley, and across to the Falls River Basin. But the stock is still increasing, and little colonies have established themselves near the west, northwest, and east entrances, and on the headwaters of Hellroaring, Slough, Soda Butte, and Eagle Creeks. As a rule, moose keep to the thickets of spruce, willow, and alders of the valley bottoms, but they wander a good deal and occasionally are seen by tourists and then they rightly cause the wildest enthusiasm. Being wary and more or less solitary, it is difficult to estimate their number, but it is believed there are about 800 in the park.

American Elk, or Wapiti.—*Cervus canadensis canadensis* Erxleben.—At certain times elk occupy the Yellowstone Park in great numbers, but with these gregarious and migratory animals any statement of the actual numbers within the park limits must be modified according to season and conditions. In winter the numbers may run below 10,000 and in summer as high as 30,000. During the spring elk drift back toward the higher mountains, where they spend most of the midsummer near or above timberline. The herds gather into these elevated areas from all directions, but as soon as the snows of autumn begin to fall they start on their annual journey to the lower country, and in a winter of deep snow a great part of the animals leave the park. Large numbers usually winter in the Yellowstone and Gardiner River Valleys, and a few small herds and especially the old bulls remain scattered through many of the middle valleys of the park, where they are able to paw through deep snow for sufficient grass to carry them through the winter. During the tourist season but few elk are seen along the roads, as they are mostly in

the high mountains at that time, but some may usually be seen on Mount Washburn or in Sylvan Pass. Side trips may easily be made from the north end of Yellowstone Lake to the summer elk range, and considerable numbers of the animals may be seen in a single day's trip. They may be seen also on the mountains west of Mammoth Hot Springs and on Specimen Ridge. In autumn they are often driven down to the vicinity of the roads by early snows before the park season closes, and during the winter they sometimes congregate in large numbers along the roads from Gardiner to Mammoth Hot Springs.

Mule Deer.—*Odocoileus hemionus hemionus* (Rafinesque).—The mule deer (erroneously called blacktail) are common, and in summer are generally distributed over the park. In winter they drift to the lower levels and several hundred sometimes congregate in the valley along the Gardiner and Yellowstone Rivers. They become very tame around Fort Yellowstone and along the road, where they are fed hay with the other animals during the time of deep snows.

The very large ears and small white tails with black tips and the white rump patches distinguish the mule deer from the small-eared and bushy-tailed white-tail deer.

White-tail Deer.—*Odocoileus virginianus macrourus* (Rafinesque).—The white-tail deer are comparatively scarce in the park and much more limited in range than the mule deer. There are a considerable number, however, along the Gardiner River and about Yanceys, and in summer a few extend back into the park as far as the north end of Yellowstone Lake. There are also a few in the Snake River Valley at the southern entrance of the park. One hundred individuals have been estimated in the park during the winter when many come down to the feeding grounds for a share of the hay that is being distributed for deer, elk, and sheep. During the summer they hide in the thickets and forest and are not often seen, but in winter they are conspicuous and tame along the roads where they are feeding.

Order RODENTIA: Gnawing Animals.

Family PETAURISTIDAE: Flying Squirrels.

Flying Squirrel.—*Glaucomys sabrinus bangsi* (Rhoads).—These large flying squirrels are common in all of the forest area surrounding the park and undoubtedly through the park also, although there are but few reports of their occurrence within its limits. They are strictly nocturnal in habits, and, as they glide from tree to tree on their furry membranes with owl-like silence, are rarely observed even where common.

Family SCIURIDAE: Squirrels, Chipmunks, Woodchucks, and Prairie Dogs.

Pine Squirrel.—*Sciurus hudsonicus ventorum* Allen.—These little reddish brown tree squirrels are abundant throughout all the forest area of the Yellowstone Park and are conspicuous and unafraid in the

trees about the hotels and camps and along the roadsides. Their scurry and chatter and scoldings are among the cheerful animal features of the forest.

Yellow-bellied Chipmunk.—*Eutamias luteiventris* (Allen).—This is the abundant little striped chipmunk seen throughout most of the park along the roads and trails and around the camp sites where they gather scattered grain and crumbs. In places they do some mischief if food and grain are not protected, but nothing of importance compared with the interest and pleasure which they afford the sightseeing public. The absence of cats and dogs from the park allows such little animals to become quite fearless and they can often be studied at close quarters without being nervous or unnatural in their habits.

Large-tailed Chipmunk.—*Eutamias umbrinus* (Allen).—A few of these larger, bushy-tailed chipmunks have been seen along the Cooke City stage road between Gardiner River bridge and Undine Falls where they live in the edge of the forest and often sit on the rocky walls which support the road grade. They probably occupy other low areas in the northern part of the park, but this seems to be the only place where they have been observed. No specimens were obtained, but the animals were evidently the same as those collected in Montana a little farther west.

Little Sagebrush Chipmunk.—*Eutamias consobrinus clarus* Bailey.—These little gray chipmunks have been observed in Swan Lake Valley running on the ground among the scattered sagebrush, and specimens collected in 1917 show them to be a gray form of *consobrinus*, closely resembling *pictus* of the Great Basin region. They have recently been described under the name here used.

Mantled Ground Squirrel.—*Callospermophilus lateralis cinerascens* (Merriam).—While these little animals are generally called chipmunks, they are in fact a small ground squirrel with the broad stripes arranged along the sides instead of over the back. They have a heavier build and shorter ears than the chipmunks and in habits are more restricted to the ground or logs and rocks. They are generally distributed over the park region and may be seen along the roadsides, in woods or on rocks, or around camps and hotels, where they become very familiar.

Kennicott Ground Squirrel.—*Citellus armatus* (Kennicott).—These little, dark gray ground squirrels, or picket-pins, are often erroneously called gophers, but they belong to the squirrel family and live in burrows in the ground in open country. They are abundant all over the valleys of the northern part of the park, along the Yellowstone, Gardiner, Lamar, Slough Creek, and Soda Butte Creek Valleys, and in Hayden Valley and Norris Geyser Basin. Their numbers are legion and their shrill little trill may be heard on all sides as one passes through parks and meadows.

Woodchuck; Golden-mantled Marmot.—*Marmota flaviventris nosophora* Howell.—The woodchucks, rockchucks, or groundhogs, as they are variously called, are among the abundant and interesting small mammals of the park mainly in open or rocky situations. They are rarely found in dense forest, but make their homes among rocks or

around old logs and stumps and are usually seen sitting up on guard watching for their numerous enemies. At Mammoth Hot Springs and Yanceys they are especially common and tame, allowing visitors to come within a short distance and often to secure good photographs.

[Black-tailed Prairie Dog.—*Cynomys ludovicianus ludovicianus* (Ord).—There are no prairie dogs actually within the Yellowstone Park, but an extensive colony of these interesting little relatives of the ground squirrels is located along both sides of the railroad near the station of Emigrant, between Gardiner and Livingston, and every visitor to the park going in or out at the north entrance has a good opportunity to see them if the train passes through the dog town on a sunshiny day.]

Family MURIDAE: Mice and Rats.

Bushy-tailed Woodrat.—*Neotoma cinerea cinerea* (Ord).—Woodrats, pack rats, or trade rats, as they are variously called, are common in the rocks and broken cliffs along the Gardiner and lower Yellowstone and Lamar River valleys in the open country, and are generally distributed over the park. As they are strictly nocturnal animals, they are rarely seen, but their presence may be detected in the little caves and openings in the rocks by sticks and rubbish piles which they have built up about their dens, and by their musky odor, and the various signs which they leave to indicate their presence. Frequently they get into camps and cabins and do some damage to food and supplies and furnish material for fabulous stories of their commercial habits.

House Mouse.—*Mus musculus* Linnæus.—This introduced mouse has become well established in the homes and stables at Gardiner and Mammoth Hot Springs and possibly at some of the hotels and camps in the park, but fortunately it is not yet so common as to be a serious pest.

Grasshopper Mouse.—*Onychomys leucogaster missouriensis* (Aud. and Bach.).—This interesting little insect-eating rodent has been reported from the park, but no specimens have been obtained, and there is no evidence of its presence other than that it occupies similar country a little farther down the Yellowstone River. It will probably be found in the sagebrush in the Gardiner River valley, however, where conditions are suitable for it.

White-footed Mouse.—*Peromyscus maniculatus artemisiae* (Rhoads).—These mice have been taken at Mammoth Hot Springs and near the mouth of the Lamar River and are abundant over most of the park region. They are nocturnal in habits and are rarely seen unless disturbed from their nests among the rocks or in hollow trees or buildings. They are bright, pretty little animals, with interesting habits, although at times they do some mischief in the camps and cabins.

Mountain Lemming Mouse.—*Phenacomys orophilus* Merriam.—A specimen of this rare little ground mouse was taken at Tower Falls in 1894; and as the species occupies the surrounding mountain country, it probably covers the park in scattered colonies, but is nowhere abundant.

Red-backed Mouse.—*Evotomys gapperi galei* Merriam.—A specimen of this little red-backed mouse was collected at Tower Falls in 1894; and as it is a species occupying the surrounding country, it is undoubtedly common throughout the forested area of the park.

Saguache Meadow Mouse.—*Microtus pennsylvanicus modestus* (Baird).—Two specimens from Mammoth Hot Springs and one from Lower Geyser Basin indicate a general range of this dusky meadow mouse over the open areas of the park.

Little Mountain Meadow Mouse.—*Microtus nanus nanus* (Merriam).—A specimen of this little gray meadow mouse was picked up by Col. Roosevelt in the Lower Geyser Basin in 1903 and sent to the Biological Survey for identification. Specimens have also been taken at Mammoth Hot Springs, Yellowstone Lake, and on Mist Creek, and runways and burrows and winter nests are abundant in every little meadow and grassy park throughout the higher elevations of the region.

Rocky Mountain Meadow Mouse.—*Microtus mordax mordax* (Merriam).—Specimens of these long-tailed meadow mice have been taken near Tower Falls and Mammoth Hot Springs, and as they are abundant along every stream and in every meadow throughout the mountain region surrounding the park, they unquestionably occur also throughout this area.

Large-footed Meadow Mouse.—*Microtus richardsoni macropus* (Merriam).—Specimens of the largest of all the western meadow mice have been taken close to the northwest and southwest corners of the park, and their big runways and characteristic signs are seen along many of the streams in the park.

Muskrat.—*Fiber zibethicus osoyoosensis* Lord.—Muskrats are not abundant, but a few have been seen in the streams and ditches near Gardiner and in many of the lakes and ponds and streams over the park. They seem to be generally distributed in the quiet waters. Some large muskrat houses may be seen close to the stage road in the marsh in Swan Lake valley.

Family CASTORIDAE: Beavers.

Beaver.—*Castor canadensis canadensis* Kuhl.—Beavers are more or less abundant in most of the streams, and in many places their houses and dams are an interesting feature of the wild life of the park. They are perhaps most in evidence along Obsidian Creek, where for a long distance their dams and houses are close to the stage road, and occasionally in the morning or evening hours the animals are seen swimming about or working at their dams.

Family ZAPODIDAE: Jumping Mice.

Jumping Mouse.—*Zapus princeps princeps* Allen.—These long-tailed, long-legged jumping mice are often seen in the meadows and open country throughout the park. Although mainly nocturnal, they are often disturbed by day in their grassy nests on the surface of the ground and go bounding away in long leaps through the grass, but if stealthily approached can usually be caught in the hands.

Family ERETHIZONTIDÆ: Porcupines.

Yellow-haired Porcupine.—*Erethizon epixanthum epixanthum* Brandt.—Porcupines are common in all parts of the Yellowstone Park, especially in the higher and timbered parts. Their presence is made known by the trees from which they have peeled the bark for food.

Family GEOMYIDÆ: Pocket Gophers.

Brown Pocket Gopher.—*Thomomys fuscus fuscus* Merriam.—Little mounds of earth may be seen scattered over the meadows and open areas in all parts of the park, but the animals making them work almost entirely below the surface and are very rarely seen, unless a glimpse of one is obtained as he pushes the earth up from below, and then securely closes the doorway to his underground tunnel. By patient watching the habits of pocket gophers may be studied at close range and some of the interesting details of their life history observed.

Order LAGOMORPHA: Conies and Rabbits.

Family OCHOTONIDÆ: Conies.

Cony.—*Ochotona princeps* (Richardson).—These tiny rabbitlike animals are common in rocky places and especially in extensive masses of slide rock along the base of cliffs at many places in the park. Along the Obsidian Cliffs and in Spring Creek Canyon they may be seen and heard close to the road in the slide rock, and late in summer their little stacks of hay can usually be found among the rocks. Just south of Lewis Lake another colony is located in the slide rock close to the roadside along Aster Creek, where they may be seen and heard by passers-by. At Yanceys they live in the broken rock with the woodchucks just back of the old stage barn.

Family LEPORIDÆ: Rabbits and Hares.

Cottontail Rabbit.—*Sylvilagus nuttalli grangeri* (Allen).—Cottontails are abundant in the sagebrush near Gardiner, but they do not extend back over the higher parts of the park.

Snowshoe Rabbit.—*Lepus bairdi bairdi* Hayden.—Common in all the timbered area of the region but rarely seen, as in summer they are of the brown color of dead pine needles and in winter as white as the drifted snow over which they scamper along their trails through the pine woods.

Prairie Jack Rabbit.—*Lepus townsendi companius* Hollister.—These big jack rabbits are common in the northern edge of the park, extending up the valleys to Mammoth Hot Springs, Blacktail Basin, Yanceys, and the Lamar River valley. While not numerous, they are often seen in the summer with their gray coat and big white tail, and in winter they hop about the grounds at Fort Yellowstone in their pure white winter coats and are comparatively tame.

Order CARNIVORA: Flesh Eaters.

Family FELIDÆ: Cats.

Mountain Lion.—*Felis hipposlestes* Merriam.—These most destructive of the predatory animals in the park have been hunted and destroyed until at the present time there are comparatively few remaining. A small number are still to be found within the park, however, where they continually destroy the game animals such as elk, deer, and mountain sheep.

Canada Lynx.—*Lynx canadensis canadensis* Kerr.—A few of these big cats are found scattered over the timbered area of the park, where they feed largely on snowshoe rabbits, but where also they are suspected of destroying much game in the way of young elk, deer, and sheep.

Bobcat.—*Lynx unita* Merriam.—A few bobcats are found at the lower levels near the northern edge of the park, especially in the rough country along the Yellowstone and Lamar Rivers. Fortunately they do not range over the higher parts of the park and their destruction of game is confined to a limited area.

Family CANIDÆ: Dogs. Wolves. and Foxes.

Gray Wolf.—*Canis nubilus* Say.—These big wolves, although not present in great numbers, are sufficiently numerous to cause the destruction of much game. They follow the elk herds back into the mountains in summer and return with them in winter to the lower levels, especially the Lamar and lower Yellowstone Valleys and Blacktail and Hellroaring regions. They are great wanderers and quickly seek fresh hunting grounds if disturbed or if game becomes scarce in their accustomed haunts.

Coyote.—*Canis latrans* Say.—Coyotes are abundant throughout the park, especially in the open areas, but their tracks may be found on the trails through forest areas as they pass from one opening to another of their favorite hunting grounds. Hundreds have been killed in the park for the protection of game animals, but their numbers are still sufficient to form a serious check on the increase of many species.

Mountain Red Fox.—*Vulpes fulva macroura* Baird.—Foxes are occasionally seen in the park, but they are by no means numerous. They are apparently scattered over the whole area and occasionally one is seen or its characteristic tracks observed in the trails and roads. Most of those seen are the red, or cross foxes, but the silver and black varieties have been reported. These however, are only color phases of the same species.

Family MUSTELIDÆ: Otters, Martens, Minks, Weasels, etc

Otter.—*Lutra canadensis canadensis* Schreber.—Otters are common along many of the streams and lakes throughout the park, especially along the Lewis River and along the edges and tributaries of Yellowstone Lake. They are also found along the Lamar and lower Yellowstone Rivers and on Hellroaring Creek.

Mink.—*Lutreola lutreocephala* (Harlan).—A few minks are found in the park along the streams, especially at the lower levels, but they are not very common.

Arizona Weasel.—*Mustela arizonensis* (Mearns).—Weasels are fairly common throughout the Yellowstone Valley in the northern part of the park and also over the whole region. They are occasionally seen in the summer brown coat, hunting for ground squirrels and mice in the meadows, and in winter their tracks are often seen over the snowfields, and occasionally the white-coated animals come into camps and cabins and become very tame if not molested.

Least Weasel.—*Mustela cicognanii lepta* (Merriam).—A little weasel is reported as occasionally seen in the park, and some very small tracks are seen on the snow, but no specimens have been taken for positive identification.

Marten.—*Martes americana caurina* (Merriam).—Martens are especially common in much of the timbered area of the park, where they are occasionally seen along the trails and where their tracks in winter are more common than those of the mink or weasel.

Fisher.—*Martes pennanti pennanti* (Erxleben).—This is a rare animal in any part of the United States, and apparently there is but one record for the Yellowstone Park. This is based on a skin taken from poachers by Gen. Anderson and recorded by Seton (Wild Animals at Home, p. 225).

Wolverine.—*Gulo luscus luscus* (Linnæus).—Tracks of wolverines are occasionally seen in the park, and trappers around the borders obtain more specimens than in any other part of the United States. The park evidently serves as a breeding and recruiting ground which has kept this interesting and rare animal from local extermination.

Northern Skunk.—*Mephitis hudsonica* Richardson.—Skunks are common in the lower parts of the park area, especially in the valleys of the Yellowstone and Gardiner Rivers, and are occasionally met with in the interior basins.

Badger.—*Taxidea taxus taxus* (Schreber).—Badgers are especially abundant in the low valleys along the Yellowstone River and its tributaries in the northern part of the park, but they are also found scattered throughout the open areas over most of the higher parts. As usual, they are concentrated where the ground squirrels are most abundant and their favorite food easily obtained.

Family PROCYONIDÆ: Raccoons.

[**Raccoon.**—*Procyon lotor lotor* (Linnæus).—Raccoons have been reported in the park, but I have been unable to find any evidence of their presence even along the Yellowstone and Gardiner Rivers, where they would be most likely to occur. They are found farther down the Yellowstone River and may at times extend up into the edge of the park.]

Family URSIDÆ: Bears.

Black and Cinnamon Bears.—*Ursus americanus* Pallas.—Black and cinnamon bears are especially common in the park, where they gather about the hotels and camps and feed on the garbage that is thrown out. Ten or a dozen of these bears, of various shades from light brown to glossy black, are often seen feeding at a garbage pile

during the early evening or morning hours, and sometimes 20 or 30 gather at a time at one favorite heap. They are generally distributed throughout the forest over the park, and apparently many of them do not come to the hotels, but remain as wild bears, subsisting on such food as the forest affords.

Grizzly Bear; Silvertip.—*Ursus horribilis* Ord.—While much less numerous than the blacks, the grizzly bears are still more common in the Yellowstone Park than in any other part of the United States. Those which come to feed on the garbage probably represent but a small proportion of the numbers scattered over the park area, but often from two or three to seven or eight may be seen at a time. Their tracks and unmistakable signs are found throughout the forests, and in summer over the tops of the high ridges near or above timberline; and many are killed around the borders of the park when they wander outside.

Order INSECTIVORA: Insect Eaters.

Family SORICIDAE: Shrews.

Dusky Shrew.—*Sorex obscurus obscurus* Merriam.—A few specimens of this shrew have been taken in the park, and it is probably the commonest of the several species that occur there. They are so small and secretive in their habits, however, that few are ever seen unless systematic search for them is made.

Masked Shrew.—*Sorex personatus personatus* I. Geoffroy.—A specimen of this tiny shrew was collected on Mountain Creek in the southeastern part of the park by P. Holt in February, 1904. It is also found in surrounding country and probably occurs all over the park.

Water Shrew.—*Neosorex palustris navitator* Baird.—Specimens taken at Mammoth Hot Springs and others on different sides indicate that this aquatic shrew inhabits the whole park region, as it does most of the Rocky Mountain country. It is the largest of the shrews of the region and may occasionally be seen darting about in the water with great skill in pursuit of its insect prey.

Order CHIROPTERA: Bats.

Family VESPERTILIONIDAE: Bats.

Long-eared Bat.—*Corynorhinus macrotis pallescens* Miller.—These large, dark colored bats with long ears are usually found hanging in clusters on the walls of the Devil's Kitchen, a warm cave just back of Mammoth Hot Springs, and they are probably one of the common bats seen flying in the evening about Mammoth Hot Springs and Gardiner. It is doubtful if they occur at any higher levels, however, as they are a southern species, reaching their northern limit at this point.

Yellowstone Bat.—*Myotis carissima* Thomas.—These little dusky bats with gray edges to the tail membranes may be found during the summer months clinging by hundreds to the walls of the Devil's Kitchen, and probably are the most abundant small bats seen flying at dusk about Mammoth Hot Springs and Gardiner. The first

known specimen of this bat was collected at Yellowstone Lake, and the species probably has a considerable range over the park region.

Brown Bat.—*Eptesicus fuscus fuscus* (Beauvois).—No specimens of this large brown bat have been collected in the park, but many of the individuals seen flying about in the evening over the higher levels are of its size and general appearance and undoubtedly belong to the species, which is common throughout the general region.

Silver-haired Bat.—*Lasionycteris noctivagans* (Le Conte).—These large, almost black, bats have been reported from observation as they flew about through the timbered areas in the park, but no specimens have been collected for positive identification.

Hoary Bat.—*Nycteris cinerea* (Beauvois).—A few very large bats seen flying at dusk in the forest areas of the park undoubtedly belong to this large Boreal species, although no specimens have been obtained, owing to the danger of disturbing larger game by shooting within the park.

BIRDS.

(By M. P. SKINNER, Park Naturalist.)

The class of birds is well represented in the park, as this list will show. But birds are not common in forests; and as the loop road and approaches lie mainly through the pine timber, the visitor will not see many birds unless they are sought for in more open places. Ducks, geese, and other water birds are numerous and very tame. So, too, are the big hawks and eagles. Many of the water birds remain all winter on streams that are fed by hot springs and consequently never freeze. For the use of tourists wishing to identify birds, a short description and the best "field marks" of recognition are given here in the case of common summer birds.

Order PYGOPODES: Diving Birds.

Family COLYMBIDAE. Grebes.

Western Grebe. *Aechmophorus occidentalis*. Rare migrant.

Horned Grebe. *Colymbus auritus*. Rare migrant.

Eared Grebe. *Colymbus nigricollis californicus*. Common summer resident. Seen on surface of ponds and sluggish streams, seldom on shore or in the air. Conspicuous tawny ear tufts against a black ground. Upper parts, throat, and breast, brown-black; belly, white. Length, 13 inches. Young: Throat and ear patch, white; above, dusky; below, white; tufts, missing. The ear tufts are the best field mark.

Pied-billed Grebe. *Podilymbus podiceps*. Occasional migrant. The best field mark is a blank band around the bill near the tip.

Family GAVIIDAE. Loons.

Loon. *Gavia immer*. Very rare migrant.

Order LONGIPENNES: Long-winged Swimmers.

Family LARIDAE. Gulls and Terns.

California Gull. *Larus californicus*. Common summer resident. Seen about Lake and Yellowstone River and on the "bear dumps." General color, white; end of wings, black with white tip. Length, 20 inches; larger than crow. Field mark, vermillion spot near tip of bill. Young: Wings, black; body, mottled with dusky.

Ring-billed Gull. *Larus delawarensis*. Occasional summer resident. Similar to last, but a trifle smaller. Field mark, black band encircling bill near tip.
 Bonaparte Gull. *Larus philadelphia*. Very rare migrant.
 Caspian Tern. *Hydroprogne tschegrava imperator*. Very rare; seen in May.
 Black Tern. *Hydrochelidon nigra surinamensis*. Very rare migrant.

Order STEGANOPODES: Totipalmate Swimmers.

Family PELECANIDAE. Pelicans.

White Pelican. *Pelecanus erythrorhynchos*. Abundant summer resident on Yellowstone Lake and River. General color, white; tip of wings, black. Length, 60 inches, a little smaller than a swan. Field mark, long yellow bill with pouch underneath.

Order ANSERES: Lamellirostral Swimmers.

Family ANATIDAE. Ducks, Geese, and Swans.

Merganser. *Mergus americanus*. Common summer resident, especially on larger lakes and rivers. Male: Head and short crest, black with greenish sheen; shoulders, black; fore part of wings black and the remainder white; neck and sides, white; breast, white or pale salmon. Female: Head, neck, and long thin crest, reddish-brown; above, blue-gray, except white patch on the wings; underparts, white. Size of common barnyard duck. Field marks are the large amount of white and the fact that this duck flies close to water surface as a rule.

Red-breasted Merganser. *Mergus serrator*. An occasional migrant. Similar to last, but the breast crossed by broad cinnamon band streaked with black.

Mallard. *Anas platyrhynchos*. Abundant resident. Patch on the wing, purple bordered by black and white. Male: A narrow white ring around neck between the green head and the chestnut breast; belly and sides, gray; lower back, black. Female: The entire plumage dusky brown mottled by tawny-brown relieved only by the wing patch. Males after breeding season are similar to the females. Size of barnyard duck. Field mark, the tail shows a white V as the bird flushes.

Gadwall. *Chaulestasmus streperus*. Occasional migrant.

Baldpate. *Mareca americana*. Common migrant, occasional resident, but very rarely seen in summer.

Green-winged Teal. *Nettion carolinense*. Occasional resident but seldom seen in summer. On small ponds and streams. Our smallest duck, even smaller than a crow.

Blue-winged Teal. *Querquedula discors*. Common summer resident. Fore part of wing, blue. Male: A white crescent in front of eye; head and neck, grayish; upperparts, various tones of brown; underparts, purplish gray, with rather large round black spots. Female: Upperparts streaked with several shades of brown; underparts, lighter and mottled by dull spots. Smaller than a crow but still larger than the last. Field mark is the blue wing.

Cinnamon Teal. *Querquedula cyanoptera*. Occasional migrant and very rare in summer.

Shoveller. *Spatula clypeata*. Occasional migrant and very rare in summer.

Pintail. *Dafila acuta tzitzihua*. Occasional migrant and very rare in summer.

Wood Duck. *Aix sponsa*. A very rare summer resident.

Redhead. *Marila americana*. Occasional migrant, not seen in summer.

Canvas-back. *Marila valisineria*. Occasional migrant, not seen in summer.

Scaup Duck. *Marila marila*. Occasional migrant, seldom seen in summer.

Lesser Scaup Duck. *Marila affinis*. Occasional migrant, seldom seen in summer.

Golden-eye. *Clangula clangula americana*. A common winter resident.

Barrow Golden-eye. *Clangula islandica*. Common summer resident and sometimes in winter. Wing patch, white. Male: Head, purplish-black with a white crescent at the base of the bill; rest of the plumage, black and white. Female: Head and throat brown and a white throat ring; breast and back, gray; belly, white. Smaller than barnyard duck.

Buffle-head. *Charitoneitta albeola*. Common migrant to larger lakes and rivers. Wing patch, white. Male: Head and neck, blue and green and purple with a white band from eye to eye across back of head; a prominent crest; back, black; underparts, white. Female: A white patch on each side of the head; throat and upperparts, fuscous-brown; underparts, white. A very small and chunky duck, smaller than a crow.

Pacific Harlequin Duck. *Histrionicus histrionicus pacificus*. Very rare anywhere at any time.

Scoter. *Oidemia americana*. A rare visitor to Yellowstone Lake.

White-winged Scoter. *Oidemia deglandi*. A rare visitor to the Yellowstone.

Ruddy Duck. *Erismatura jamaicensis*. Occasional summer resident. Tail feathers narrow and stiff; bill, short and broad. Male: Cheeks, white; cap, black; bill, blue; neck, sides, and back, chestnut; underparts, silky white. Female: Crown, brown with a light streak through dusky cheeks; back, brown; underparts, grayish. Smaller than a crow. A good field mark is the stiff, erect tail.

Snow Goose. *Chen hyperboreus hyperboreus*. Rare migrant.

Canada Goose. *Branta canadensis canadensis*. A common resident. A white patch on the cheeks and throat; rest of the head and neck, black; upper parts, gray-brown; underparts, paler; rump, white.

Hutchins Goose. *Branta canadensis hutchinsi*. A rare migrant. A smaller edition of the last.

Whistling Swan. *Olor columbianus*. Common fall migrant; appears in October and later.

Trumpeter Swan. *Olor buccinator*. Rare summer resident.

Order HERODIONES: Herons, Storks, Ibises, etc.

Family ARDEIDAE. Herons, Bitterns, etc.

Great Blue Heron. *Ardea herodias herodias*. Occasional summer resident in meadows and along streams. General color, slate-blue, with markings of white, black, and rusty. Larger than a goose. Field marks are the color, the long neck that is folded back upon itself in flight, and the long, dagger-like bill.

Black-crowned Night Heron. *Nycticorax nycticorax naevius*. Rare; has been recorded only once.

Order PALUDICOLAE: Cranes, Rails, etc.

Family GRUIDAE. Cranes.

Whooping Crane. *Grus americana*. Rare; has been seen only once and now nearly extinct everywhere.

Little Brown Crane. *Grus canadensis*. Rare. A small edition of the next.

Sandhill Crane. *Grus mexicana*. Occasional summer resident. Larger and browner than the great blue heron; not necessarily seen near water; flies with head and neck outstretched, and usually utters a loud, resonant call.

Family RALLIDAE. Rails, Gallinules, and Coots.

Sora. *Porzana carolina*. Occasional summer resident about small, reedy ponds; very seldom seen.

Coot. *Fulica americana*. Occasional summer resident. Bill, white; upper parts, black; underparts, paler. Frequent small ponds of the lower elevations about Mammoth and Tower Falls only. Field marks are the white bill, a peculiar nodding of the head while swimming, and the difficulty with which the bird gets started in flight. Shorter than a crow but heavier.

Order LIMICOLAE: Shore Birds.

Family PHALAROPODIDAE. Phalaropes

Northern Phalarope. *Lobipes lobatus*. Rare migrant in September and October.

Wilson Phalarope. *Steganopus tricolor*. An occasional summer resident. Contrary to the rule, the female of this species is the larger and more brightly colored. Female: Sides of neck, black and chestnut; crown and back,

gray; underparts, white. Male: Smaller and dull; sometimes a rufous tinge on the back. Young: Crown and back, black, edged with reddish; underparts, white. Smaller than a robin. Field mark is the fact that it is almost always swimming on the open water.

Family RECURVIROSTRIDAE. Avocets and Stilts.

Avocet. *Recurvirostra americana*. Very rare.

Family SCOLOPACIDAE. Snipes, Sandpipers, etc.

Wilson Snipe. *Gallinago delicata*. Occasional migrant, not apt to be seen in summer.

Pectoral Sandpiper. *Pisobia maculata*. Rare migrant.

Baird Sandpiper. *Pisobia bairdi*. Occasional migrant to the shores of Yellowstone Lake; not apt to be seen in summer.

Least Sandpiper. *Pisobia minutilla*. Occasional fall migrant.

Greater Yellow-legs. *Totanus melanoleucus*. Rare migrant.

Yellow-legs. *Totanus flavipes*. Rare migrant.

Western Solitary Sandpiper. *Helodromas solitarius cinnamomeus*. Occasional migrants in late summer and fall to damp, springy places. Underwings and tail feathers, barred black and white; upper parts, dark-greenish gray; head and neck, streaked with white; back spotted with round, brownish-white spots; underparts, white; throat and breast, streaked with dusky. Smaller than robin. Lacks the black spots on breast of the spotted sandpiper, the only bird with which it might be confused.

Western Willet. *Catoptrophorus semipalmatus inornatus*. Occasional fall migrant. Upperparts, brownish-gray, black, and a little buff; underparts, white marked with black; wings, black with a broad white band; bill, $2\frac{1}{2}$ inches long. Smaller than crow. Field marks: The long bill, the largest of our waders, and the white wing bars.

Spotted Sandpiper. *Actitis macularia*. Abundant summer resident on every pond, lake, and stream, at all altitudes. Upper parts, brownish gray, with black markings; underparts, white, thickly spotted with black. Larger than sparrow. Its distinguishing marks are its abundance, its flight on bowed wings, and its cry of "peet-weet, peet-weet."

Long-billed Curlew. *Numenius americanus*. Rare migrant.

Family CHARADRIIDAE. Plovers.

Killdeer. *Oxyechus vociferus*. Common summer resident. Upperparts, grayish-brown and rusty; underparts, white with two black bands across the throat; rump, rusty. Same size as a robin. Field marks are the rusty rump and the noisy call of "kildee, kildee, kildee."

Order GALLINAE: Gallinaceous Birds.

Family TETRAONIDAE. Grouse, etc.

Richardson Grouse. *Dendragapus obscurus richardsoni*. A common resident. Upperparts, blackish with fine rusty and grayish markings; underparts, grayish-slate. A little smaller than a chicken. The only large bluish grouse.

Franklin Grouse. *Canachites franklini*. Very rare.

Gray Ruffed Grouse. *Bonasa umbellus umbelloides*. Common resident. Prevailing color of upperparts, rusty-gray or gray; a tuft of soft, glossy, greenish-black feathers on each side the neck; gray tail with subterminal band of black. Size of crow and smaller than Richardson grouse. Field mark, the black ruffs or epaulets.

Columbian Sharp-tailed Grouse. *Pedioecetes phasianellus columbianus*. Rare resident.

Sage Grouse. *Centrocercus urophasianus*. Rare resident about Soda Butte.

Order COLUMBAE: Pigeons.

Family COLUMBIDAE. Pigeons.

Western Mourning Dove. *Zenaidura macroura marginella*. General color brownish-olive tinged with pink on the breast; tail, edged with white. The only representative of the pigeon or dove in the park.

Order RAPTORES: Birds of Prey.

Family BUTEONIDAE. Hawks, Eagles, Kites, etc.

Marsh Hawk. *Circus hudsonius*. Common summer resident. Adults. Upperparts, gray or ashy; underparts, with rusty spots; base of tail, white. Young. Upperparts, brownish-black with more or less rusty; underparts, brownish-rusty with black streaks on the breast. The old birds rarely show the ideal plumage, but verge toward the above-given young bird coloration, but the white ring above the tail is diagnostic of all. This hawk usually seen skimming along but a few feet above the ground.

Sharp-shinned Hawk. *Accipiter velox*. Rare.

Cooper Hawk. *Accipiter cooperi*. Rare.

Western Goshawk. *Astur atricapillus striatulus*. Very rare.

Western Redtail. *Buteo borealis calurus*. Abundant over the open parts of the park. Upperparts, sooty-brown; underparts, rusty white. Recognized by large size and red tail.

Swainson Hawk. *Buteo swainsoni*. Abundant over the open parts of the park. Similar to last except tail brownish-black and a rusty-brown band across the breast.

Rough-legged Hawk. *Archibuteo lagopus santi-johannis*. An occasional visitor in winter; first appears after the park season closes.

Ferruginous Roughleg. *Archibuteo ferrugineus*. Rare summer visitor.

Golden Eagle. *Aquila chrysaetos*. Occasional resident. Recognized by the dark upper and under parts relieved only by lighter crown and nape, and white at base of tail. Far larger than any of the hawks.

Bald Eagle. *Haliaeetus leucocephalus leucocephalus*. Easily recognized by superior size, the white head and neck, and the white tail. Rather rare and not often seen in summer.

Family FALCONIDAE. Falcons, etc.

Prairie Falcon. *Hierofalco mexicanus*. Rare summer resident.

Duck Hawk. *Falco peregrinus anatum*. Rare summer resident.

Pigeon Hawk. *Falco columbarius columbarius*. Occasional summer resident. Above, slaty-blue; tail, four black bands. The female and young are blackish-brown above, and the males tend toward this plumage also. Distinguished in the field by its long wings and rapid wing strokes. Larger than robin.

Desert Sparrow Hawk. *Falco sparverius phalaena*. Abundant summer resident of all open spaces. Male. Top of head, bluish; two black stripes down the cheeks and three others around nape; back, rufous; wings, ashy-blue; tail, chestnut with subterminal black band. Female. Back, wings, and tail, barred with dusky. Size of a robin.

Family PANDIONIDAE. Ospreys.

Osprey. *Pandion haliaetus carolinensis*. Abundant summer resident especially about Yellowstone Lake and Canyon. Head, neck, and underparts white; upperparts, dark brown touched with white; a few brownish spots on the breast. Size of other large hawks, smaller than eagles. The white head and underparts are diagnostic.

Family BUBONIDAE. Horned Owls, etc.

Long-eared Owl. *Asio wilsonianus*. Rare resident.

Short-eared Owl. *Asio flammeus*. Occasional summer resident. Ear tufts, short; eyes, yellow. Upperparts, brown mottled with other shades of brown; underparts, tawny streaked with brown. Size of crow. Seen hunting the open country, sometimes by daylight.

- Rocky Mountain Screech Owl. *Otus asio maxwelliae*. Rare visitant.
 Western Horned Owl. *Bubo virginianus pallescens*. Common resident. Varied in color, but a white cravat is a constant mark; ear tufts, almost black; eyes, yellow; ring around facial disk, black; upperparts, tawny, heavily mottled with blackish and white; underparts, gray mottled and barred with brown. As large as the big hawks. Usually flushed from heavy timber, sometimes in daylight.
 Hawk Owl. *Surnia ulula caparoch*. Rare.
 Rocky Mountain Pygmy Owl. *Glaucidium gnoma pinicola*. Rare resident.

Order COCCYGES: Cuckoos, etc.

Family ALCEDINIDAE. Kingfishers.

- Belted Kingfisher. *Streptoceryle alcyon*. Common summer resident. Crest, blue; general color, blue marked with white and black. Larger than a robin and has a characteristic rattling call as he flies up or down a stream. A few stay about open streams all winter.

Order PICI. WOODPECKERS.

Family PICIDAE. Woodpeckers.

- Rocky Mountain Hairy Woodpecker. *Dryobates villosus monticola*. Common summer resident of the forests. Male. Upperparts, black with white stripe down the back; back of head, scarlet spot; wings, black with white spots; underparts, white. The female lacks the scarlet. Size of a robin. Field marks are the scarlet spot and the white stripe down the back.
 Batchelder Woodpecker. *Dryobates pubescens homorus*. Similar to last except smaller and having a dingy white forehead. Larger than a sparrow.
 Arctic Three-toed Woodpecker. *Picoides arcticus*. Rare summer visitor. The males may be identified by the yellow patch on the crown.
 Alpine Three-toed Woodpecker. *Picoides americanus dorsalis*. Rare summer resident. The males may be identified by the yellow patch on the crown. Distinguished from last by a white stripe down the back.
 Red-naped Sapsucker. *Sphyrapicus varius nuchalis*. Occasional summer resident. Male: Crown and throat, red; red stripe from eye to eye over the back of the head; black breast patch; belly, yellow; upperparts, black and white. Female has white throat. Smaller than a robin. The yellow belly distinguishes the bird.
 Williamson Sapsucker. *Sphyrapicus thyroideus*. Common summer resident. Belly, yellow; rump, white. Male: Upperparts, black; wings with white patches; a narrow red necktie; throat and breast black. Female and young: Head, brown; back, barred with brown; no necktie. Smaller than robin. Field marks are the yellow belly of the sapsuckers and the red necktie.
 Red-headed Woodpecker. *Melanerpes erythrocephalus*. Rare summer resident.
 Lewis Woodpecker. *Asyndesmus lewisi*. Rare spring visitor.
 Red-shafted Flicker. *Colaptes cafer collaris*. Abundant summer resident. Upperparts, brown barred with black; linings of wings and under tail, red; rump, white. Larger than a robin. The red markings and white rump are the field marks.

Order MACROCHIRES: Goatsuckers, Swifts, etc.

Family CHORDEILIDAE. Nighthawks.

- Pacific Nighthawk. *Chordeiles virginianus hesperis*. Common summer resident. A white patch on the black wings; general color, gray-black; throat and tail band, white. The female has no tail band. Size of a robin. Field marks are the long wings with white patch, erratic flight, and call, a nasal "peent" as the bird flies over.

Family MICROPODIDAE. Swifts.

- White-throated Swift. *Acronautes melanoleucus*. Rare summer resident.

Family TROCHILIDAE. Hummingbirds.

Broad-tailed Hummingbird. *Selasphorus platycercus*. Rare summer visitor.
 Rufous Hummingbird. *Selasphorus rufus*. Rare summer resident.
 Calliope Hummingbird. *Stellula calliope*. Occasional summer resident. The only hummingbird likely to be seen and easily identified by small size.

Order PASSERES: Perching Birds.

Family TYRANNIDAE. Tyrant Flycatchers.

Kingbird. *Tyrannus tyrannus*. Occasional summer resident. Underparts and end of tail, white; head and tail, black; upperparts slate-gray. The young birds are duller and tinged with brownish. Smaller than robin. The white terminal to tail is a good field mark.
 Arkansas Kingbird. *Tyrannus verticalis*. Rare summer resident.
 Say Phoebe. *Sayornis sayus*. Occasional summer resident. Above, dark gray; head and tail, still darker; below, gray in front and brownish in the rear. Larger than a sparrow.
 Olive-sided Flycatcher. *Nuttallornis borealis*. Rare.
 Western Wood Pewee. *Myiochanes richardsoni richardsoni*. Above, pale brown; below, paler and tinged with dark gray; belly and undertail, light gray. A trifle larger than a sparrow. More often heard than seen. Note, a nasal "peo-a."
 Western Flycatcher. *Empidonax difficilis difficilis*. General color is distinctly yellow. Above, olive-green; two buffy bars on each wing; below, dull yellow tinged with brown across breast; bright yellow belly and undertail. Size of a sparrow.
 Traill Flycatcher. *Empidonax trailli trailli*. Rare summer resident.
 Hammond Flycatcher. *Empidonax hammondi*. Rare summer resident.
 Wright Flycatcher. *Empidonax wrighti*. Common summer resident. Above, grayish with slight olive tint; two white wing bars sometimes tinged with yellow; underparts, grayish-olive verging into yellow at the tail. Size of a sparrow.

Family ALAUDIDAE. Larks.

Hoyt Horned Lark. *Otocoris alpestris hoyti*. Rare winter visitor.
 Desert Horned Lark. *Otocoris alpestris leucolaema*. Common summer resident. Above, brown; below, white; white and black marks on the head; black hornlike tufts over each ear. Smaller than a robin. Field marks are the "horns" and a yellow throat.

Family CORVIDAE. Crows, Jays, Magpies, etc.

Black-billed Magpie. *Pica pica hudsonia*. Common winter resident; not seen in summer as a rule.
 Black-headed Jay. *Cyanocitta stelleri annectens*. Occasional resident. Head and crest, black; back, dark slate-blue, lighter below. Larger than a robin. The dark-blue color and the crest are the field marks.
 Rocky Mountain Jay. *Perisoreus canadensis capitalis*. Common resident. Crown, white; nape, dark gray; rest of plumage, lighter gray. Larger than a robin. This is the "camp robber." Known by its general gray color.
 Raven. *Corvus corax sinuatus*. A common resident. Uniform glossy black. Larger than crow. Can be distinguished from the crow by short periods of soaring during flight and its hoarse croak.
 Western Crow. *Corvus brachyrhynchos hesperis*. Common summer resident below 6,300 feet. Field marks: Does not soar as raven does; note, the well-known "caw-caw-caw."
 Clarke Nutcracker. *Nucifraga columbiana*. Common resident. Bill, long, black, and slightly decurved; general color, gray; wings and tail, black, marked with white. Larger than robin. Known from jay by black and white markings and longer bill.
 Pinon Jay. *Cyanocephalus cyanocephalus*. Rare visitor.

Family ICTERIDAE. Blackbirds, Orioles, etc.

- Cowbird. *Molothrus ater ater*. Rare summer resident.
- Yellow-headed Blackbird. *Xanthocephalus xanthocephalus*. Occasional summer resident. Black with head and breast, orange-yellow. Slightly smaller than robin.
- Thick-billed Red-wing. *Agelaius phoeniceus fortis*. This blackbird is an occasional summer resident.
- Western Meadowlark. *Sturnella neglecta*. Abundant summer resident of the open spaces. Above, grayish-brown with darker streaks; below, yellow with black crescent across breast; outer tail feathers, white. Larger than a robin. Field mark is the white tail feathers.
- Bullock Oriole. *Icterus bullocki*. Rare summer resident.
- Brewer Blackbird. *Euphagus cyanocephalus*. Abundant summer resident. Black with iridescence; yellow eyes in male, the female having brown eyes. Slightly smaller than robin. Our commonest blackbird, seen in large flocks.

Family FRINGILLIDAE. Finches, Sparrows, etc.

- Western Evening Grosbeak. *Hesperiphona vespertina montana*. A rare, erratic visitor.
- Rocky Mountain Pine Grosbeak. *Pinicola enucleator montana*. A rare summer resident, more numerous during migration.
- Cassin Purple Finch. *Carpodacus cassinii*. Common summer resident. Male. Bright crimson on top of head; back, pink-brown streaked with brown; below, pale pink fading to white in rear. Female and young are gray above and streaked below. Slightly larger than sparrow. The reddish tinge is the best field mark.
- Crossbill. *Loxia curvirostra minor*. Rare visitor.
- White-winged Crossbill. *Loxia leucoptera*. Rare migrant.
- Gray-crowned Rosy Finch. *Peucosticte tephrocotis tephrocotis*. Common winter resident.
- Hepburn Rosy Finch. *Leucosticte tephrocotis littoralis*. Common winter resident.
- Black Rosy Finch. *Leucosticte atrata*. Occasional winter resident.
- Redpoll. *Acanthis linaria linaria*. Occasional winter visitor.
- Pale Goldfinch. *Astragalinus tristis pallidus*. Rare summer resident.
- Pine Siskin. *Spinus pinus*. Common summer resident. Looks like a small sparrow but rump and edges of wing feathers are yellow. Very partial to dandelion seeds.
- English Sparrow. *Passer domesticus hostilis*. Becoming common about Mammoth.
- Snow Bunting. *Plectrophenax nivalis nivalis*. Rare migrant.
- Alaska Longspur. *Calcarius lapponicus alascensis*. Occasional winter visitor.
- Western Vesper Sparrow. *Poecetes gramineus confinis*. Abundant summer resident in the open country. Above, gray-brown streaked with black, gray, and pale bay; below, white. A small sparrow can be distinguished by white feathers at either side of tail.
- Western Savannah Sparrow. *Passerculus sandwichensis alaudinus*. Common summer resident, but stays so well hidden as not to be found unless searched for in the higher meadows. Above, gray-brown; below, white; streaked everywhere.
- Western Lark Sparrow. *Chondestes grammacus strigatus*. Rare summer resident.
- White-crowned Sparrow. *Zonotrichia leucophrys leucophrys*. Abundant summer resident. Head, striped black and white; white stripe does not extend in front of eye; other parts, gray and brown. A large sparrow. Can be distinguished by its abundance and the white on the head.
- Gambel Sparrow. *Zonotrichia leucophrys gambeli*. Occasional migrant. Like last, except that white line extends through the eye to the bill.
- White-throated Sparrow. *Zonotrichia albicollis*. A very rare accidental.
- Western Tree Sparrow. *Spezeila monticola ochracea*. Common winter visitor.
- Western Chipping Sparrow. *Spizella passerina arizonae*. Common summer resident. Above, brown streaked with black; below, white or grayish. A small sparrow marked by a chestnut crown.

- Brewer Sparrow. *Spizella breweri*. A rare habitant of the lower sagebrush areas.
- Intermediate Junco. *Junco hyemalis connectens*. Rare migrant.
- Montana Junco. *Junco hyemalis montanus*. Occasional migrant.
- Pink-sided Junco. *Junco hyemalis mearnsi*. Abundant summer resident. Head, neck, and chest, slate color; back, brown; belly, white; sides, pink. Size of sparrow. Bright white feathers at side of tail mark this forest bird as they do vesper sparrow of the open.
- Mountain Song Sparrow. *Melospiza melodia montana*. Common summer resident below 6,000 feet elevation. Crown, dull bay; above, gray streaked with black and brown; below, white streaked with brown. The distinguishing mark of this sparrow is a brownish patch in the center of the breast.
- Lincoln Sparrow. *Melospiza lincolni lincolni*. An abundant, but shy, summer resident of meadows above 7,000 feet elevation. Below, white, with a brownish-yellow belt across breast, sides of body, and neck, all of which are streaked sharply with dusky; above, grayish-brown streaked with black; crown, streaked brown, black, and ashy.
- Slate-colored Fox Sparrow. *Passerella iliaca schistacea*. Rare summer resident.
- Spurred Towhee. *Pipilo maculatus megalonyx*. Rare summer visitor.
- Green-tailed Towhee. *Oreospiza chlorura*. Common summer resident below 6,500 feet. Crown, chestnut; throat, white; upper parts, grayish-green. Larger than a sparrow. The chestnut crown that is often erected into a crest is the best field mark.
- Black-headed Grosbeak. *Zamelodia melanocephala*. A rare migrant in spring.
- Lazuli Bunting. *Passerina amoena*. Occasional summer resident below Mammoth. Above, bright blue; neck, blue; breast, chestnut-brown. Smaller than sparrow.
- Lark Bunting. *Calamospiza melanocorys*. Common spring migrant.

Family TANGARIDAE. Tanagers.

- Western Tanager. *Piranga ludoviciana*. Occasional summer resident. Male. Head and neck, scarlet; above, black with yellow spot on rump; below, yellow. In winter, head yellow and back tinged with yellow. Female. Above, olive-green; no scarlet, and other parts tinged with gray. Larger than a sparrow.

Family HIRUNDINIDAE. Swallows.

- Cliff Swallow. *Petrochelidon lunifrons lunifrons*. Common summer resident. Forehead, white; crown and back, black; dark blue patch on the breast; throat and sides of head, rufous. Smaller than sparrow but wings are longer. The white forehead distinguishes this swallow.
- Barn Swallow. *Hirundo erythrogastra*. Rare summer resident.
- Tree Swallow. *Iridoprocne bicolor*. Common summer resident. Below, white; above, dark steel green; wings and tail, black. Size of sparrow but wings larger. The white underparts distinguish this swallow.
- Northern Violet-green Swallow. *Tachycineta thalassina lepida*. Occasional summer resident. Same as last except that upper parts are green glossed with purple and violet.
- Bank Swallow. *Riparia riparia*. Common summer resident in a few localities. Above, mouse-brown; below, white with breast band of mouse-brown. Size of sparrow but with longer wings.
- Rough-winged Swallow. *Stelgidopteryx serripennis*. Rare summer resident.

Family BOMBYCILLIDAE. Waxwings.

- Bohemian Waxwing. *Bombycilla garrula*. Occasional migrant.
- Cedar Waxwing. *Bombycilla cedrorum*. Occasional migrant.

Family LANIIDAE. Shrikes.

- Northern Shrike. *Lanius borealis*. Rare winter visitor.
- White-rumped Shrike. *Lanius ludovicianus excubitorides*. Rare summer resident.

Family VIREONIDAE. Vireos.

Western Warbling Vireo. *Vireosylva gilva swainsoni*. Common summer resident. Above, gray olive-green; crown, gray; below, white tinged with yellow and the sides with olive. Slightly smaller than a sparrow.

Family MNIOTILTIDAE. Wood warblers.

Calaveras Warbler. *Vermivora rubricapilla gutturalis*. A rare accidental.

Orange-crowned Warbler. *Vermivora celata celata*. Rare summer resident.

Yellow Warbler. *Dendroica aestiva aestiva*. Occasional summer resident. Male.

Below, yellow; breast and belly streaked with orange-brown; above, yellowish-green, brightest on rump. Female and young. Above, darker than male; below, paler and duller and not usually streaked. Smaller than sparrow. The brown streaks are the field marks.

Hoover warbler. *Dendroica coronata hooveri*. Rare migrant.

Audubon warbler. *Dendroica auduboni auduboni*. Abundant summer resident.

Crown, throat, sides, and rump, yellow; above, bluish gray streaked with black; tail, black with gray edges and white spots; below, black, yellow, and white. The female is smaller and duller. Slightly smaller than sparrow. The yellow markings are good field marks.

Townsend Warbler. *Dendroica townsendi*. Occasional summer resident about Mammoth.

Macgillivray Warbler. *Oporornis tolmiei*. Rare summer resident to the low section between Gardiner and Mammoth.

Western Yellow-throat. *Geothlypis trichas occidentalis*. Common summer resident in brush thickets below Mammoth. Male. Front and sides of the head, black bordered by white; above, olive green; below, yellow. Female. No black nor white; above, tinged with brown; below, paler yellow. Smaller than sparrow. The black and yellow markings are distinctive.

Pileolated Warbler. *Wilsonia pusilla pileolata*. Common summer resident. Crown, black; rest of plumage yellow; forehead, often touched with orange. Smaller than a sparrow.

Family MOTACILLIDAE. Wagtails and Pipits.

Pipit. *Anthus rubescens*. Common summer resident. Above, greenish brown; wing, dark brown with two buff bars; tail, dark brown with outer feathers white; below, buff; breast streaked. Larger than a sparrow. Seen only on high, bare ridges in summer.

Family CINCLIDAE. Dippers.

Dipper; Water Ousel. *Cinclus mexicanus unicolor*. Common resident. Dark slate gray above and below. Larger than a sparrow. Always seen above, on, or in the water.

Family MIMIDAE. Thrashers, Mockingbirds, etc.

Sage Thrasher. *Oreoscoptes montanus*. Rare summer resident.

Catbird. *Dumetella carolinensis*. Rare summer resident.

Family TROGLODYTIDAE. Wrens.

Rock Wren. *Salpinctes obsoletus obsoletus*. Common summer resident in a few localities.

Western House Wren. *Troglodytes aedon parkmani*. Rare summer resident. Above, dull brown waved with dusky; below, dingy lightly barred with brown. Smaller than a sparrow. More often heard than seen.

Western Marsh Wren. *Telmatodytes palustris plesius*. Rare summer resident near Tower Falls.

Family CETHIIDAE. Creepers.

Rocky Mountain Creeper. *Certhia familiaris montana*. Occasional resident of the fir forests.

Family SITTIDAE. Nuthatches.

- Rocky Mountain Nuthatch. *Sitta carolinensis nelsoni*. Occasional resident. Crown and back of head, black; sides of head, white; below, white; back, gray; wings and tail, marked with black and white. Size of a sparrow. The white sides of the head are distinctive.
- Red-breasted Nuthatch. *Sitta canadensis*. Common resident. Crown, black; white stripe over eye; black stripe through eye; below, red-brown. Much smaller than a sparrow. The red-brown underparts are distinctive.
- Pygmy Nuthatch. *Sitta pygmaea pygmaea*. A rare visitor.

Family PARIDAE. Titmice.

- Long-tailed Chickadee. *Penthestes atricapillus septentrionalis*. Rare resident.
- Mountain Chickadee. *Penthestes gambeli gambeli*. An abundant resident. Cap and throat, black; a white streak over eye; a black streak through eye; sides of head, white; above, gray; below, white. Smaller than sparrow. The white stripe over the eye is distinctive of this chickadee.

Family SYLVIIDAE. Gnatcatchers, Kinglets, etc.

- Western Golden-crowned Kinglet. *Regulus satrapa olivaceus*. Rare summer resident.
- Ruby-crowned Kinglet. *Regulus calendula calendula*. A common summer resident.

Family TURDIDAE. Thrushes, Bluebirds, etc.

- Townsend Solitaire. *Myadestes townsendi*. Common resident but keeps so well hidden that it is seldom seen in summer.
- Willow Thrush. *Hylocichla fuscescens salicicola*. A rare summer resident at lowest altitudes.
- Olive-backed Thrush. *Hylocichla ustulata swainsoni*. Occasional summer resident in northern parts of the Park.
- Audubon Hermit Thrush. *Hylocichla guttata auduboni*. Occasional summer resident in dark, shady places.
- Western Robin. *Planesticus migratorius propinquus*. Common summer resident. So like the eastern robin that the two can not be distinguished in the field.
- Western Bluebird. *Sialia mexicana occidentalis*. Rare migrant.
- Mountain Bluebird. *Sialia currucoides*. Abundant summer resident. Male: Above, azure-blue; below, pale greenish-blue; in winter, tinged with brown. Female and young: Brownish but wings and tail, blue. Larger than a sparrow. Lacks the chestnut breast of the eastern bird.

TREES.

In Yellowstone Park, as everywhere in the West, the trees are nearly all "evergreens," or members of the Pine Family. In most parts of the East the forests are composed of broad-leaved deciduous trees.

Lodgepole pine (*Pinus contorta*).—Sometimes known as jack pine. The most common tree of the Park, abundant at low and middle altitudes and extending nearly up to timberline; probably three-fourths of the forest of the Park is composed of this tree. The pines are distinguished from other evergreen trees by having their long slender leaves in bundles of two or more, instead of being attached singly to the branches. In the lodgepole pine there are two leaves in each bundle.

Limber pine (*Pinus flexilis*).—In the West often known as white pine. Occasional at low and middle altitudes, chiefly on dry, rocky ridges, the trees usually scattered among those of other kinds. Leaves five in each bundle; cones 3 to 6 inches long, green when young, opening when mature; bark blackish, rough.

White-bark pine (*Pinus albicaulis*).—Found only about timberline. Leaves five in each bundle; cones 2 to 3 inches long, brown-purple when young, remaining closed when mature; bark whitish, smooth. A low, stunted tree.

Firs.—The firs have flat, blunt-tipped leaves 1 to 2 inches long. The cones are borne at the top of the tree and they stand erect on the branches like candles on a Christmas tree; when ripe they fall apart. The bark of the firs is smooth and pale, and scattered over it are numerous blisters filled with liquid resin.

Alpine fir (*Abies lasiocarpa*).—Common about timberline and also at middle altitudes. Leaves rounded at the tip, not notched, those of the lower branches scattered irregularly on the upper side of the twigs. About timberline usually stunted and often lying flat on the ground; at lower altitudes a fine, large tree.

Grand fir (*Abies grandis*).—Frequent at low and middle altitudes, especially along streams. Leaves usually notched at the tip, those of the lower branches arranged in two rows along the twigs. A large tree.

Spruces.—These look much like the firs, but they have sharp-pointed four-sided leaves (about 1 inch long) and rough, blackish bark. The cones are borne near the top of the tree and they droop from the branches; they do not fall apart when ripe.

Engelmann spruce (*Picea engelmannii*).—The most common spruce, growing with lodgepole pine and Douglas fir, at middle altitudes. Twigs smooth, not hairy; cones $1\frac{1}{2}$ to 2 inches long.

Colorado blue spruce (*Picea pungens*).—Rather common, at about 7,000 feet. Twigs finely hairy; cones 2 to $3\frac{1}{2}$ inches long.

Douglas fir (*Pseudotsuga mucronata*).—Sometimes known as red fir. Common at middle altitudes. Leaves blunt-tipped, about an inch long, flat; bark dark and rough; cones scattered all over the tree, drooping from the branches, not falling apart when mature, with long, 3-lobed bracts which project beyond the scales of the cone. Easily recognized by the protruding bracts of the cones, a character found in none of our other evergreen trees. A large tree, the most important source of lumber in the West.

Western red cedar (*Juniperus scopulorum*).—Common at low and middle elevations, on rocky slopes. Closely resembling the common red cedar of the East; leaves very small and scalelike, attached by 2's or 3's and closely appressed to the twigs; fruit blue and berry-like; bark brown, easily peeled off in long shreds. The creeping juniper (*Juniperus sibirica*), which is common at middle altitudes, is closely related. It is only a low shrub, however, and has needlelike leaves half an inch long or shorter which spread from the twigs.

Aspen (*Populus tremuloides*).—Sometimes known as quaking aspen or quaking asp. The only common broad-leaf tree; frequent on moist slopes at lower altitudes. A small, slender tree; bark smooth, whitish; leaves rounded, finely toothed. The leaves are on such

slender stalks that they are kept in motion by the least breath of wind.

Narrow-leaf cottonwood (*Populus angustifolia*).—Occasional along streams at low altitudes. A large tree with rough, pale bark; leaves resembling those of a willow, narrow, sharp pointed. The small seed pods contain numerous seeds, each of which bears a tuft of white hairs or "cotton."

Water birch (*Betula fontinalis*).—Usually a shrub but sometimes a small tree, growing along streams. Bark smooth, brown; twigs sticky; leaves broad, sharp pointed, coarsely toothed; flowers in catkins; fruit a small cone, which falls apart easily. Alders also grow along streams, but they are shrubs, never attaining the dimensions of trees. They look much like birches, but can be distinguished by the fact that their fruit cones are hard and woody, and do not fall apart like those of a birch.

RULES AND REGULATIONS.

(Approved January 24, 1922, to continue in force and effect until otherwise directed by the Secretary of the Interior.)

GENERAL REGULATIONS.

The following rules and regulations for the government of the Yellowstone National Park are hereby established and made public pursuant to authority conferred by section 2475, United States Revised Statutes, the act of Congress approved May 7, 1894 (28 Stat., 73), as amended June 28, 1916 (39 Stat., 238), and the act of August 25, 1916 (39 Stat., 535), as amended June 2, 1920 (41 Stat., 732).

1. *Preservation of natural features and curiosities*.—It is forbidden to remove or injure the sediments or incrustations around the geysers, hot springs, or steam vents; or to deface the same by written inscriptions or otherwise; or to throw any object or substance into the springs or steam vents; or to injure or disturb in any manner or to carry off any of the mineral deposits, specimens, natural curiosities, or wonders within the park; or to ride or drive upon any of the geyser or hot-spring formations, or to turn stock loose to graze in their vicinity.

The destruction, injury, defacement, or disturbance in any way of the public buildings, signs, equipment, or other property, or the trees, flowers, vegetation, rocks, mineral, animal, or bird, or other life is prohibited: *Provided*, That flowers may be gathered in small quantities when, in the judgment of the superintendent, their removal will not impair the beauty of the park.

2. *Camping*.—In order to preserve the natural scenery of the park and to provide pure water and facilities for keeping the park clean, permanent camp sites have been set apart for tourists visiting the park in their own conveyances and no camping is permitted outside the specially designated sites. These camps have been used during past seasons; they will be used daily this year and for many years to

come. It is necessary, therefore, that the following rules be strictly enforced for the protection of the health and comfort of the tourists who visit the park in their own conveyances.

(a) Combustible rubbish shall be burned on camp fires, and all other garbage and refuse of all kinds shall be placed in garbage cans, or, if cans are not available, placed in the pits provided at the edge of camp. At new or unfrequented camps, garbage shall be burned or carried to a place hidden from sight. *Keep the camp grounds clean.*

(b) There are thousands of visitors every year to each camp site, and the water in the creeks and streams adjacent is not safe to drink. The water supply provided is pure and wholesome and must be used. If, however, the water supply is not piped to grounds, consult rangers for sources to use. Tourists out on hiking parties must not contaminate watersheds of water supplies. They are indicated by signs, pipe lines, and dams. *There is plenty of pure water; be sure you get it.*

(c) Campers and others shall not wash clothing or cooking utensils or pollute in any other manner the waters of the park, or bathe in any of the streams near the regularly traveled thoroughfares in the park without suitable bathing clothes.

(d) Stock shall not be tied so as to permit their entering any of the streams of the park. All animals shall be kept a sufficient distance from camping grounds in order not to litter the ground and make unfit for use the area which may be used later as tent sites.

(e) Wood for fuel only can be taken from dead or fallen trees.

3. *Fires.*—Fires constitute one of the greatest perils to the park; they shall not be kindled near trees, dead wood, moss, dry leaves, forest mold, or other vegetable refuse, but in some open space on rocks or earth. Should camp be made in a locality where no such open space exists or is provided, the dead wood, moss, dry leaves, etc., shall be scraped away to the rock or earth over an area considerably larger than that required for the fire. Fires shall be lighted only when necessary, and when no longer needed, shall be completely extinguished and all embers and bed smothered with earth or water so that there remains no possibility of reignition.

Especial care shall be taken that no lighted match, cigar, or cigarette is dropped in any grass, twigs, leaves, or tree mold.

4. *Hunting.*—The park is a sanctuary for wild life of every sort, and hunting, killing, wounding, capturing, or frightening any bird or wild animal in the park, except dangerous animals when it is necessary to prevent them from destroying life or inflicting injury, is prohibited.

The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing birds or wild animals, or in possession of game

killed on the park lands under circumstances other than prescribed above, shall be taken up by the superintendent and held subject to the order of the Director of the National Park Service, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person or persons violating this regulation and the actual owner was not a party to such violation. Firearms are prohibited in the park except on written permission of the superintendent. Visitors entering or traveling through the park to places beyond shall, at entrance, report and surrender all firearms, traps, nets, seines, or explosives in their possession to the first park officer and in proper cases may obtain his written leave to carry them through the park sealed. The Government assumes no responsibilities for loss or damage to any firearms, traps, nets, seines, or other property so surrendered to any park officer nor are park officers authorized to accept responsibility of custody of any property for the convenience of visitors.

5. *Bears*.—Molesting or feeding the bears is prohibited.

6. *Fishing*.—Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and lines, or for merchandise or profit is prohibited. Fishing in particular waters may be suspended by the superintendent, who may also designate waters which shall be reserved exclusively for fishing with the artificial fly. All fish hooked less than 8 inches long shall be carefully handled with moist hands and returned at once to the water, if not seriously injured. Fish retained should be killed.

Ten fish shall constitute the limit for a day's catch from all waters within 2 miles of the main belt-line road system. In the case of other waters the superintendent of the park may authorize a limit of not exceeding 20 fish for a day's catch.

7. *Private operations*.—No person, firm, or corporation shall reside permanently, engage in any business, or erect buildings in the park without permission in writing from the Director of the National Park Service, Washington, D. C. Applications for such permission may be addressed to the Director or to the superintendent of the park. Permission to operate a moving-picture camera must be secured from the superintendent of the park.

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

9. *Advertisements*.—Private notices or advertisements shall not be posted or displayed within the park, excepting such as the park superintendent deems necessary for the convenience and guidance of the public.

10. *Mining*.—The location of mining claims is prohibited within the park.

11. *Grazing*.—The running at large, herding, or grazing of live stock of any kind in the park, as well as the driving of live stock over same, is prohibited, except where authority therefor has been granted by the superintendent. Live stock found improperly on the park lands may be impounded and held until claimed by the owner and the trespass adjusted.

12. *Authorized operators*.—All persons, firms, or corporations holding franchises in the park shall keep the grounds used by them properly policed and shall maintain the premises in a sanitary condition to the satisfaction of the superintendent. No operator shall retain in his employment a person whose presence in the park may be deemed by the superintendent subversive of good order and management of the park.

All operators shall require each of their employees to wear a metal badge with a number thereon, or other mark of identification, the name and the number corresponding therewith, or the identification mark, being registered in the superintendent's office. These badges must be worn in plain sight on the hat or cap.

13. *Dogs*.—Dogs are not permitted in the park, except that, by special authority of the superintendent, they may be transported through the park provided they are kept under leash, or in a crate, while within the confines of the park.

14. *Dead animals*.—All domestic and grazed animals that may die in the park at any tourist camp or along any of the public thoroughfares shall be buried immediately by the owner or person having charge of such animals at least 2 feet beneath the ground, and in no case less than one-fourth mile from any camp or thoroughfare.

15. *Travel*.—(a) Saddle horses, pack trains, and horse-drawn vehicles have right of way over motor-propelled vehicles at all times.

(b) On sidehill grades throughout the park motor-driven vehicles shall take the outer side of the road when meeting or passing vehicles of any kind drawn by animals; likewise, freight, baggage, and heavy camping outfits shall take the outer side of the road on sidehill grades when meeting or passing passenger vehicles drawn by animals.

(c) Load and vehicle weight limitations shall be those prescribed from time to time by the Director of the National Park Service and shall be complied with by the operators of all vehicles using the park roads. Schedules showing weight limitations for different roads in the park may be seen at the office of the superintendent and at the ranger stations at the park entrances.

(d) All vehicles shall be equipped with lights for night travel. At least one light shall be carried on the left front side of horse-drawn vehicles in a position such as to be visible from both front and rear.

16. *Miscellaneous*.—(a) Campers and all others, save those holding licenses from the Director of the National Park Service are prohibited from hiring their horses, trappings, or vehicles to tourists or visitors in the park.

(b) No pack train or saddle horse party will be allowed in the park unless in charge of a licensed guide. All guides shall pass an examination prescribed by and in a manner satisfactory to the superintendent of the park covering the applicant's knowledge of the park and fitness for the position of licensed guide.

(c) All complaints by tourists and others as to service, etc., rendered in the park should be made to the superintendent in writing before the complainant leaves the park. Oral complaints will be heard daily during office hours.

17. *Fines and penalties*.—Persons who render themselves obnoxious by disorderly conduct or bad behavior shall be subjected to the punishment hereinafter described for violation of the foregoing regulations, or they may be summarily removed from the park by the superintendent and not allowed to return without permission in writing from the Director of the National Park Service or the superintendent of the park.

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

AUTOMOBILE AND MOTORCYCLE REGULATIONS.

Pursuant to authority conferred by section 2475, United States Revised Statutes, the act of Congress approved May 7, 1894 (28 Stat., 73), as amended June 28, 1916 (39 Stat., 238), and the act of August 25, 1916 (39 Stat., 535), as amended June 2, 1920 (41 Stat., 732), the following regulations covering the admission of automobiles and motorcycles into the Yellowstone National Park are hereby established and made public:

1. *Entrances*.—Automobiles and motorcycles may enter and leave the park between 6 a. m. and 9.30 p. m. by any of the entrances, viz, northern or Gardiner entrance, western or West Yellowstone entrance, eastern or Cody entrance, southern or Snake River entrance.

The superintendent may in his discretion keep any or all the gateways open longer each day should the public convenience make this appear necessary.

2. *Automobiles*.—The park is open to automobiles operated for pleasure, but not to those carrying passengers who are paying, either directly or indirectly, for the use of machines (excepting, however, automobiles used by transportation lines operating under Government franchise).

Careful driving is demanded of all persons using the roads.

The Government is in no way responsible for any kind of accident.

3. *Motorcycles*.—Motorcycles are admitted to the park under the same conditions as automobiles and are subject to the same regulations, as far as they are applicable.

4. *Motor trucks*.—Motor trucks may enter the park subject to the weight limitations and entrance fees prescribed by the Director of the National Park Service. Schedules showing prescribed weight limitations and entrance fees for motor trucks may be seen at the office of the superintendent and at the ranger stations at the park entrances.

5. *Permits*.—The permits shall be secured at the ranger station where the automobile enters, and will entitle the permittee to operate the particular automobile indicated in the permit over any or all of the roads in the park. It is good for the entire season, expiring on December 31 of the year of issue, but is not transferable to any other vehicle than that to which originally issued. The permit shall be carefully kept so that it can be exhibited to park rangers on demand. Each permit shall be exhibited to the park ranger for verification on exit from the park. Duplicate permits will not be issued in lieu of original permits lost or mislaid.

6. *Fees*.—Fees for automobile and motorcycle permits are \$7.50 and \$2.50, respectively, and are payable in cash only.

7. *Direction*.—Automobiles shall pass around the road system forming the "loop" in the direction opposite to that of the hands of a clock, as indicated by the arrows printed in red on the automobile guide map. The reverse direction may be taken as follows:

Norris Junction (N. J.) to Mammoth Hot Springs (M. S.), between 11 a. m. and 1 p. m. and after 4.30 p. m.

Madison Junction (M. J.) to Norris Junction (N. J.) any time of day or night except the periods 10 a. m. to 1 p. m. and 3 p. m. to 6 p. m.

Upper Geyser Basin (Old Faithful—O. F.) to Western Entrance (W. E.), any time after 1 p. m.

Canyon Junction (C. J.) to Lake Junction (L. J.), any time, day or night.

Mammoth Hot Springs (M. S.) to Tower Falls, early enough to reach Tower Falls by 1 p. m.

Canyon Junction (C. J.) to Norris Junction (N. J.) direct, any time, day or night.

Summit of Mount Washburn (Mt. W.) down north side to junction of Dunraven Pass road, thence to Canyon Junction (C. J.), after 5 p. m.

The superintendent of the park has authority to change routing of cars if necessary.

8. *Distance apart, gears and brakes.*—Automobiles while in motion shall not be less than 50 yards apart, except for purpose of passing, which is permissible only on comparative levels or on slight grades. All automobiles, except while shifting gears, must retain their gears constantly enmeshed. The driver of each automobile will be required to satisfy the ranger issuing the permit that all parts of his machine, particularly the brakes and tires, are in first-class working order and capable of making the trip, and that there is sufficient gasoline in the tank to reach the next place where it may be obtained. The automobile shall carry at least one extra tire.

9. *Speeds.*—Speed is limited to 12 miles per hour on grades and when rounding sharp curves. On straight open stretches, when no vehicle is nearer than 200 yards, the speed may be increased to 25 miles per hour.

The speed of all motor trucks is limited not to exceed 15 miles per hour on all park roads.

10. *Horns.*—The horn shall be sounded on approaching curves or stretches of road concealed for any considerable distance by slopes, overhanging trees, or other obstacles, and before meeting or passing other machines, riding or driving animals, or pedestrians.

11. *Lights.*—All automobiles shall be equipped with head and tail lights, the headlights to be of sufficient brilliancy to insure safety in driving at night, and all lights shall be kept lighted after sunset when automobile is on the roads. Headlights shall be dimmed when meeting other automobiles or horse-drawn vehicles.

12. *Muffler cut-outs.*—Muffler cut-outs shall be closed while approaching or passing riding horses, horse-drawn vehicles, hotels, or camps.

13. *Teams.*—When teams, saddle horses, or pack trains approach, automobiles shall take the outer edge of the roadway, regardless of the direction in which they may be going, taking care that sufficient room is left on the inside for the passage of vehicles and animals. Teams have the right of way, and automobiles shall be backed, or otherwise handled as may be necessary, so as to enable teams to pass with safety. In no case shall automobiles pass animals on the road at a speed greater than 8 miles per hour.

14. *Overtaking vehicles.*—Any vehicle traveling slowly upon any of the park roads shall, when overtaken by a faster moving motor vehicle, and upon suitable signal from such overtaking vehicle, give way to the right, in case of motor-driven vehicles, and to the inside, or bank side of the road, in case of horse-drawn vehicles, allowing the overtaking vehicle reasonably free passage, provided the overtaking vehicle does not exceed the speed limits specified for the park highways.

When automobiles, going in opposite directions, meet on a grade, the ascending machine has right of way, and the descending machine shall be backed or otherwise handled, as may be necessary to enable the ascending machine to pass with safety.

15. *Accidents; stop-overs.*—Automobiles stopping over at points inside the park, or delayed by breakdowns or accidents of any other nature, shall be immediately parked off the road, or, where this is impossible, on the outer edge of the road.

16. *Fines and penalties.*—Any person who violates any of the foregoing regulations shall be deemed guilty of a misdemeanor and shall be subject to a fine of not more than \$500, or imprisonment not exceeding 6 months, or both, and be adjudged to pay all costs of the proceedings—or may be punished by revocation of the automobile permit and by immediate ejectment from the park or by any combination of these penalties. Such violation shall be cause for refusal to issue a new automobile permit to the offender without prior sanction in writing from the Director of the National Park Service or the superintendent of the park.

17. *Garages, repairs, supplies, free automobile camps.*—Gasoline, oils, tires, and accessories are available for purchase at regular supply stations at Mammoth Hot Springs, Upper Geyser Basin (Old Faithful), Yellowstone Lake, and Grand Canyon. Repair shops and garages are maintained at these points. Automobile supplies may also be procured at Camp Roosevelt. Prices of supplies and rates for repair work are strictly regulated by the National Park Service. Free public camps for motorists are maintained at points indicated on the automobile guide map.

18. *Reduced engine power; gasoline, etc.*—Due to the high altitude of the park roads, averaging nearly 7,000 feet, the power of all automobiles is much reduced, so that a leaner mixture and about 50 per cent more gasoline is required than at lower altitudes. Likewise, one lower gear will generally have to be used on grades than would be necessary elsewhere. A further effect that must be watched is the heating of the engine on long grades, which may become serious unless care is used.

Motorcycles equipped with single speed engines will encounter serious difficulties in negotiating the heavy mountain grades, and drivers are warned against making the attempt with this class of machines.

19. These regulations do not apply to motor traffic on the county road in the northwest corner of the park.

PANORAMIC VIEW.

The view described below may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C.:

Panoramic view of Yellowstone National Park; 18 by 21 inches; scale, 3 miles to the inch. Price, 25 cents.¹

This view is based on accurate surveys and gives an excellent idea of the configuration of the surface as it would appear to a person flying over it. The meadows and valleys are printed in light green, the streams and lakes in light blue, the cliffs and ridges in brown tints, and the roads in light brown. The lettering is printed in light brown and is easily read on close inspection, but merges into the other colors when the sheet is held at some distance.

MAPS.

Topographic maps of the park and adjacent areas may be purchased from the Director of the Geological Survey, Washington, D. C., at the prices indicated below, postage prepaid. Remittances should be made by cash or money order.

Map of Yellowstone National Park, size 28½ by 32 inches; scale, 2 miles to the inch. Price, 25 cents.¹

The roads, trails, and names are printed in black, the streams and lakes in blue, and the relief is indicated by brown contour lines.

The areas north, east, and south of the park are mapped on the atlas sheets of the Geological Survey listed below. These maps should be ordered by the names of the atlas sheets. They are printed in the same colors as the large map of the park described above.

Area north of park: Livingston sheet, scale 4 miles to the inch. Price, 10 cents.

Area east of park: Crandall and Ishawooa sheets, scale 2 miles to the inch. Price, 10 cents each.

Area south of park: Mount Leidy and Grand Teton sheets; scale, 2 miles to the inch. Price, 10 cents each.

LITERATURE.

GOVERNMENT PUBLICATIONS.

Government publications on Yellowstone National Park may be obtained as indicated below. Separate communications should be addressed to the officers mentioned.

DISTRIBUTED FREE BY THE NATIONAL PARK SERVICE.

The following publications may be obtained free on written application to the Director of the National Park Service or by personal application to the office of the superintendent of the park:

¹ May be purchased by personal application to the office of the superintendent of the park at Mammoth Hot Springs, but that office can not fill mail orders.

Automobile road map of Yellowstone National Park.

Shows the park road system, hotels, camps, free public auto camp grounds, garages, superintendent's office, routes to the park, etc. Also contains the automobile regulations.

Map of National Parks and Monuments.

Shows location of all the national parks and monuments administered by the National Park Service and all railroad routes to the reservations.

Manual for Railroad Tourists.

Contains time-tables of all park tours.

Manual for Motorists.

Contains information for the motorist and camper.

SOLD BY THE SUPERINTENDENT OF DOCUMENTS.

The following publications may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the prices given, postage prepaid. Remittances should be made by money order or in cash:

National Parks Portfolio, by Robert Sterling Yard. 248 pages, including 306 illustrations. Bound securely in cloth, \$1.¹

Contains nine chapters, each descriptive of a national park and one larger chapter devoted to other national parks and monuments.

Glimpses of Our National Parks. 72 pages, including 31 illustrations, 10 cents.¹

Contains descriptions of the most important features of the principal national parks.

Geological History of Yellowstone National Park, by Arnold Hague, 24 pages, including 10 illustrations, 10 cents.¹

This pamphlet contains a general résumé of the geologic forces that have been active in the Yellowstone National Park.

Geysers of Yellowstone National Park, by Walter Harvey Weed. 32 pages, including 23 illustrations, 10 cents.¹

In this pamphlet is a description of the forces which have produced the geysers, and the geysers of the Yellowstone are compared with those in Iceland and New Zealand.

Fossil Forests of the Yellowstone National Park, by F. H. Knowlton. 32 pages, including 15 illustrations, 10 cents.¹

This pamphlet contains descriptions of the fossil forests of the Yellowstone National Park and an account of their origin.

Fishes of the Yellowstone National Park, by Hugh M. Smith and W. C. Kendall (Bureau of Fisheries Document 904). 30 pages, including 16 illustrations, 5 cents.¹

Contains description of the park waters and notes on fishing.

BIBLIOGRAPHY.

ALLEN, E. F. A Guide to the National Parks of America. 1915. 286 pages.

BARNES, O. P. Fly fishing in wonderland. by Klahowya, 1910. 56 pp., illustrated.

BARTH, THEODOR. Amerikanisch Eindruck. 1907. 117 pp.

Yellowstone on pp. 62-67.

¹ May be purchased by personal application to the office of the superintendent of the park, at Mammoth Hot Springs, but that office can not fill mail orders.

- BRYCE, JAMES. University and historical addresses. 1913. 433 pp.
National parks—The need of the future on pp. 389–406.
- CAMPBELL, REAU. Complete guide and descriptive book of the Yellowstone Park, 1909. 173 pp., illustrated.
- CHITTENDEN, H. M. The Yellowstone National Park, historical and descriptive. 1915. 350 pp., illustrated.
- CRONAU, RUDOLF. Im wilden Westen. 1890. 383 pp., illustrated.
Yellowstone on pp. 163–185; Yosemite on pp. 259–275.
- DUMBELL, K. E. M. California and the Far West, 1914. 198 pages.
Yellowstone on pp. 83–90.
- DUNRAVEN, EARL OF. The Great Divide: Travels in the Upper Yellowstone in summer of 1874. 1876. 377 pp., illustrated. Reprinted in 1917 under title of Hunting in the Yellowstone, edited by Horace Kephart, 333 pp.
A good description of the park in its early days.
- EVARTS, HAL G. Passing of the Old West. 1921.
Relates to wild life of the park.
- The Cross Pull. 1920.
- FINCK, H. T. Pacific coast scenic tour. 1890. 309 pp., illustrated.
Yellowstone on pp. 279–293.
- FOUNTAIN, PAUL. The eleven eaglets of the West. London, 1906. 362 pp.
An account of travels in 11 Western States and Territories. Yellowstone Park on pp. 173–195.
- GUNNISON, ALMON. Rambles overland. 1884. 245 pp.
Yellowstone on pp. 27–82.
- HALLAHAN, D. F. Tourists in the Northwest, 1914. 151 pages.
Yellowstone on pp. 42–86.
- HARRISON, CARTER H. A summer's outing and the old man's story. 1891. 297 pp., illustrated.
Yellowstone on pp. 15–81.
- HAYNES, JACK E. Guide to the Yellowstone National Park. Published annually, 200 pp., illustrated.
- HERBERTSON, F. D. and A. J. Descriptive geography from original sources: North America. 1901. 252 pp.
Yellowstone on pp. 171–180.
- HESSE-WARTEGG, ERNEST VON. Nord-Amerika: Seine Städte und Naturwunder. 3 vols. 1880.
Yellowstone in vol. 2, pp. 228–242.
- HIRSCHBERG, JULIUS. Von New York nach San Francisco: Tagebuchblätter. 1888. 276 pp.
Yellowstone on pp. 77–111.
- HOLMES, BURTON. Travelogues, vol. 6: The Yellowstone National Park; the Grand Canyon of the Arizona; Moki Land. 1908. 336 pp., illustrated.
Yellowstone on pp. 5–112.
- HOUGH, EMERSON. Maw's vacation—a human being in the Yellowstone. 1921. 62 pp. octavo, illustrated.
- JOHNSON, CLIFTON. Highways and byways of the Rocky Mountains. 1910. 279 pp., illustrated.
Yellowstone on pp. 215–232.

KIPLING, RUDYARD. American notes.

Issued in several editions. One chapter contains an account of a trip through the Yellowstone Park in 1889.

KÜNTZEMULLER, A. Das Wunderland am Yellowstone. 1908. 40 pp.

LANGFORD, N. P. Diary of the Washburn expedition to the Yellowstone and Firehole Rivers in the year 1870. [1905.] 122 pp., illustrated.

A good account of one of the early expeditions to the park.

LECLERCQ, JULES. La Terre des merveilles: Promenade au parc national de l'Amérique du Nord. 1886. 384 pp., illustrated.

LEWIS, SINCLAIR. Free air.

Story of a motor tour across northern States, including trip through Yellowstone Park.

MILLS, ENOS A. Your National Parks. 532 pp., illustrated. Houghton-Mifflin Co. 1917.

Yellowstone on pp. 3-64, 433-443.

MORRIS, MRS. JAMES EDWIN. A Pacific coast vacation. 1901. 255 pp., illustrated.

Yellowstone on pp. 236-255.

MUIR, JOHN. Our national parks. 1909. 382 pp., illustrated.

Yellowstone on pp. 37-75.

MURPHY, JOHN. Rambles in northwestern America. 1879. 359 pp.

Yellowstone on pp. 209-222.

MURPHY, THOMAS D. Three wonderlands of the American West. 1912. 180 pp.

Yellowstone on pp. 1-58.

OLUFSEN, O. Yellowstone Nationalparken. 1916. 134 pp.

PECK, J. K. The seven wonders of the new world. 1885. 320 pp.

Yellowstone on pp. 71-114.

PIERREPONT, EDWARD. Fifth Avenue to Alaska. 1884. 329 pp.

Yellowstone on pp. 237-311.

PORTER, T. C. Impressions of America. 1899. 241 pp., illustrated.

Yellowstone on pp. 24-93.

PRICE, ROSE LAMBERT. A summer on the Rockies. 1898. 280 pp.

Yellowstone on pp. 166-217.

QUICK, HERBERT. Yellowstone Nights. 1911. 345 pp.

REIK, LIEUT. COL. H. OTTRIDGE. A tour of America's National Parks. 1920. 209 pp., illustrated.

Yellowstone on pp. 157-209.

RICHARDSON, JAMES. Wonders of the Yellowstone. 1873. 256 pp., illustrated.

ROBERTS, EDWARD. Shoshone and other Western wonders. 1888. 275 pp.

Yellowstone on pp. 202-245.

RYDBERG, PER AXEL. Catalogue of the flora of Montana and the Yellowstone National Park. Memoirs of the New York Botanical Garden, vol. 1. 1900. 492 pp., map.

SANDERS, H. F. History of Montana, vol. 1. 1913. 847 pp.

Yellowstone on pp. 650-684.

SCHAUFFLER, R. H. Romantic America. 1913. 339 pp.

Yellowstone on pp. 134-160.

SENN, NICHOLAS. Our national recreation parks. 1904. 147 pp., illustrated.

Yellowstone on pp. 17-92. Notes on fauna in addition to descriptive matter.

SESSIONS, FRANCIS C. From Yellowstone Park to Alaska. 1890. 186 pp., illustrated.

Yellowstone on pp. 9-39.

SMITH, F. DUMONT. Book of a hundred bears. 1909. 233 pp., illustrated.

STANLEY, EDWIN J. Rambles in wonderland or up the Yellowstone and among the geysers and other curiosities of the National Park. 1878. 179 pp., illustrated.

STEELE, DAVID M. Going Abroad Overland. 1917. Illustrated.

Yellowstone on pp. 102-124.

STODDARD, JOHN L. Lectures, vol. 10. Southern California, Grand Canyon of the Colorado River, Yellowstone National Park. 1911. 304 pp., illustrated.

Yellowstone on pp. 207-304.

STRAHORN, C. A. Fifteen thousand miles by stage. 1911. 693 pp., illustrated.

Early days in Yellowstone, pp. 254-286.

SYNGE, GEORGIANA M. A ride through Wonderland. 1892. 166 pp., illustrated.

TAYLOR, CHARLES MAUS, JR. Touring Alaska and the Yellowstone. (1901.) 388 pp., illustrated.

Yellowstone on pp. 283-388.

TISSANDIER, ALBERT. Six mois aux Etats Unis [1886], 298 pp.

Yellowstone on pp. 170-188.

TOMLINSON, EVERETT TITSWORTH. Four boys in the Yellowstone. [1906.] 399 pp., illustrated.

U. S. GEOLOGICAL SURVEY. Monograph 32, part 2. Descriptive geology, petrography, and paleontology of the Yellowstone National Park.

U. S. GEOLOGICAL SURVEY. Geologic Folio No. 30, containing topographic and geologic maps of the park and a description of the geology.

WILEY, WILLIAM H. and SARAH K. The Yosemite, Alaska, and the Yellowstone. [1893] 230 pp., illustrated.

Yellowstone on pp. 205-230.

WINGATE, GEORGE W. Through the Yellowstone Park on horseback. 1886. 250 pp., illustrated.

Contains notes on the fauna and flora.

YARD, ROBERT STERLING. The top of the Continent. 1917. 244 pp., illustrated.

Yellowstone on pp. 63-86.

—— The Book of National Parks. Scribners, 1919. 420 pp., 76 illustrations, 16 maps and diagrams.

Yellowstone on pp. 202-228.

OTHER NATIONAL PARKS.

Rules and Regulations similar to this containing information regarding the national parks listed below may be obtained free of charge by writing to the Director of the National Park Service, Washington, D. C.:

Crater Lake National Park.
Glacier National Park.
Grand Canyon National Park.
Hot Springs National Park.
Lafayette National Park.
Mesa Verde National Park.

Mount Rainier National Park.
Rocky Mountain National Park.
Sequoia and General Grant National Parks.
Wind Cave National Park.
Yosemite National Park.

AUTHORIZED RATES FOR PUBLIC UTILITIES, SEASON OF 1922.

HOTELS AND CAMPS.

YELLOWSTONE PARK HOTEL CO.

The Yellowstone Park Hotel Co. maintains four hotels in the park. These are located at Mammoth Hot Springs, the Upper Geyser Basin, the outlet of Yellowstone Lake, and the Grand Canyon of the Yellowstone.

The address of the hotel company is Yellowstone Park, Wyo., from June 15 to September 15, and Helena, Mont., thereafter. The authorized rates at the hotels are as follows:

RATES OF THE YELLOWSTONE PARK HOTEL CO.

HOTEL RATES.

Four and one-half day tours:

Fourteen meals and four lodgings, American plan, on standard tour of Yellowstone Park by passengers of Yellowstone Park Transportation Co.....	\$29.00
Board and lodging, American plan, regular accommodations (not including private bath), per day, each person.....	6.50
Board and lodging, including private bath, according to the room's location and number of occupants.....	7.50-11.00

(It is expressly understood that where connecting rooms have access to private bath, each room is to be considered as having private bath, unless one or more of the rooms are locked off from the bathroom.)

Meals or lodging, part of a day:

Lodging	2.25
Breakfast	1.25
Lunch	1.50
Dinner	1.50
Meals served in rooms, extra, each50
Children under 8 years of age, half rate.	
Shaving25
Hair cutting50
Shampoo, men50
Shampoo, ladies	1.00-1.50
Scalp treatment	1.00
Face massage, men50
Face massage, women	1.00
Clay pack	1.50
Ladies' hair dressing, plain50
Ladies' hair dressing, fancy	1.00-2.00
Bath50

NEWS STANDS.

Guide books, periodicals, magazines, etc., at customary rates.

TELEGRAMS.

From all points in the United States to connection with lines of Yellowstone Park Hotel Co. at Western Union rates.

Messages exchanged between offices in the park at the rate of 25 cents for 10 words and 2 cents for each additional word.

TELEPHONE MESSAGES.

Use of telephone from or to any point in the park, not to exceed 1 minute, 25 cents. Each additional minute, 15 cents.

YELLOWSTONE PARK CAMPS CO.

The Yellowstone Park Camps Co. maintains five permanent camps in the park. They are located at Mammoth Hot Springs, Upper Geyser Basin, Yellowstone Lake, Grand Canyon of the Yellowstone, and near Tower Falls. The address of the camps company is Yellowstone Park, Wyo., from June 15 to September 15, and Livingston, Mont., thereafter. The authorized rates at the permanent camps are as follows:

RATES OF THE YELLOWSTONE PARK CAMPS CO.

PERMANENT CAMP RATES.

Four and one-half day tours:

Fourteen meals and four lodgings, American plan, on standard tour of the Yellowstone Park by passengers of Yellowstone Park Transportation Co.	\$20.00
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Meals and lodgings, American plan:

Per day	4.50
Breakfast	1.00
Lunch	1.00
Dinner	1.00
Lodging	1.50

Weekly rate:

American plan, meals and lodgings	30.00
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Meals served in guests' sleeping tents, extra, each	.25
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(Children under 12, half of above rates.)

Shave	.25
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Hair cut	.50
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Shampoo:

Men, "plain"	.50
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Men, "tonic"	.75
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Women	1.00-1.50
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Scalp treatment	1.00
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All tonics	.25
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Face massage, men	.50
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Face massage, women	1.00
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Ladies' hair dressing, plain-----	\$0.50
Ladies' hair dressing, fancy-----	1.00-2.00
Manicuring-----	.50
Tub baths-----	.50
Swimming pool: Admission, suit, and towel-----	.50
Shoe polish-----	.15

GUIDES, HORSES, AND CONVEYANCES.

Saddle animals for riding trips of one day or less duration from permanent camps (rates do not include guide service):

Per full day-----	3.50
Per half day-----	2.50
Per hour-----	.75

(Full day will consist of 8 hours.)

(Half day will consist of 4 hours, terminating at 12 noon and 6 p. m.)

(Horses kept out over 8 hours will be charged hourly rates for each hour over the 8-hour period.)

Mounted guides for saddle-horse parties:

Per day of 8 hours-----	5.00
Per half day-----	3.00
Per hour-----	1.00

Personally conducted saddle-horse trips escorted by mounted guide are available from the following camps:

Canyon Camp—

To Sulphur Mountain and return-----	3.00
To Crystal Lake and return-----	3.00
To Elk Park and return-----	2.00
To Point Sublime and return-----	2.50

Mammoth Camp—

Over Mount Everts and return-----	4.00
To Mount Sepulcher and return-----	4.00
Through Snow Pass, around Bunsen Peak and return-----	4.00

Old Faithful Camp—

To Mallard Lake and return-----	3.00
To Lone Star Geyser and return-----	2.50

Camp Roosevelt—

To Garnet Hill and return-----	3.00
To Specimen Ridge and return-----	5.00
To Tower Falls and return-----	1.50

Fishing trips from all camps:

All day-----	5.00
Three-fourths day-----	4.00
One-half day-----	3.00

Surrey and coach trips from permanent camps:

Surrey with driver, local trips (minimum 3 persons)—

Per day per person-----	3.50
Per hour per person-----	.75

Personally conducted surrey and coach trips:

Canyon Camp to Inspiration Point-----	1.50
Mammoth Camp through Hot Springs District-----	1.00
Old Faithful Camp through Upper Geyser Basin-----	1.00
Camp Roosevelt to Petrified Trees-----	1.00

All-expense camping tours: The following rates for complete outfits for trip of 10 days or more, including the guides, packers, cooks, saddle animals, pack animals, canvas shelter, cooking utensils, and bedding necessary for the camping trip. The costs do not include provisions. These rates are quoted for trips of 10 days or more. Special arrangements may be made for trips of less than 10 days.

	Cost per day per person.
1 person-----	\$27. 00
2 persons-----	17. 00
3 persons-----	14. 00
4 persons-----	13. 00
5 persons-----	12. 00
6 persons-----	11. 00
7 persons or more-----	10. 00

FISHING TACKLE.

Outfit, consisting of rod, reel, line, and landing net:

First day-----	. 50
Each additional day-----	. 25

Charges may be made for broken rods or outfits lost. Flies and other fishing equipment are sold at reasonable prices, according to quality.

PHOTOGRAPHS OF THE PARK.

J. E. Haynes (address, Yellowstone Park, Wyo., in summer, and Selby Avenue at Virginia, St. Paul, Minn., at any season) maintains picture shops at Mammoth Hot Springs, Upper Geyser Basin, Grand Canyon, and Tower Falls, and sale stands in various hotels and camps for sale of photographs of his own manufacture in all sizes and styles, including hand-painted enlargements, lantern slides, moving pictures, souvenir post cards, a complete line of photographic supplies and guide books; and has laboratories in the park for developing, printing, and enlarging photographs for travelers.

SCHEDULE OF RATES OF THE OFFICIAL PHOTOGRAPHER.

Haynes Guide Book, 1922 edition (enlarged)-----	\$0. 75
Enlargements, plain, to order, 5 by 7 to 40 by 72-----	0. 75- 25. 00
Enlargements, hand painted, to order, 5 by 7 to 40 by 72-----	1. 50- 50. 00
Lantern slides, hand painted, each \$1.25; set of 100-----	100. 00
Photo color set of 12 views in red portfolio-----	1. 50
Souvenir folders, series "A" and "B," each 15 cents; 2 for-----	. 25
Souvenir playing cards, De Luxe deck, 53 park views-----	1. 00
Souvenir post cards, colored, 100 kinds, 3 for 5 cents; set of 50-----	. 60
Stock photographs, plain, unmounted, 4 by 5 to 16 by 21-----	0. 10- 3. 50
Stock photographs, hand painted, 7½ by 9½ to 16 by 21-----	2. 50- 8. 00
Transparencies, hand painted, framed, boxed, 12 by 17-----	15. 50
Photo miniatures, several series, 12 for-----	. 25

NOTE.—Albums, books, cameras, films, frames, games, maps, motion pictures, paintings, photogravures, sand souvenirs, supplies, etc., at current prices.

Rental of dark room (exclusive of materials), per hour-----	. 50
Services, mending cameras, etc., per hour-----	1. 00

Developing:

6 and 8 exposure roll films, $1\frac{1}{2}$ by 2 to $2\frac{1}{2}$ by $4\frac{1}{4}$ -----	\$0. 15
6 and 8 exposure roll films, $3\frac{1}{4}$ by $4\frac{1}{4}$ to 5 by 7-----	0. 20-. 45
10 and 12 exposure roll films, $2\frac{1}{4}$ by $4\frac{1}{4}$ -----	. 30
10 and 12 exposure roll films, $3\frac{1}{4}$ by $4\frac{1}{4}$ to 4 by 5-----	. 35-. 50
12-exposure film packs and plates, $1\frac{1}{8}$ by $2\frac{1}{2}$ to 11 by 14-----	. 35-2. 50

Prints, plain from film, or glass negatives:

$1\frac{1}{2}$ by $1\frac{1}{4}$ -----	. 04
$1\frac{1}{2}$ by 2 to $2\frac{1}{4}$ by $3\frac{1}{4}$ -----	. 05
$2\frac{1}{4}$ by $4\frac{1}{4}$ -----	. 06
$3\frac{1}{4}$ by $4\frac{1}{4}$ to 4 by 5-----	. 07
$4\frac{1}{4}$ by $6\frac{1}{2}$ to 11 by 14-----	. 15-1. 00

For other sizes, styles, and contents than above specified, see the complete itemized price lists at all Haynes's picture shops and Haynes's sales stands.

STORES AND NEWS STANDS.

General stores are maintained at Upper Geyser Basin (Old Faithful), West Thumb of Lake Yellowstone, and at the outlet of Yellowstone Lake near the Lake Hotel and Lake Camp by Mr. C. A. Hamilton. At Mammoth Hot Springs and at Grand Canyon general stores are maintained by Mr. George Whittaker, and at Tower Falls by Mr. J. E. Haynes. At Mammoth Hot Springs, Pryor & Trischman maintain a curio shop and ice cream parlor. In all of the hotels and permanent camps there are news stands at which curios, post cards, photographs, souvenirs, newspapers, magazines, tobacco, and smokers' supplies, etc., are available.

Complete lines of groceries, clothing, and campers' supplies of all kinds are available in the general stores.

All store and news-stand charges are subject to control by the park superintendent.

TRANSPORTATION IN THE PARK.

Under a franchise from the Department of the Interior, the Yellowstone Park Transportation Co. operates on the main park highways a line of specially built 7 and 10 passenger automobiles. This line is under the strict regulation of the Government as to the type of service it renders to the public and the rates that it is permitted to charge for such service. It operates as a public utility, and may be compared to a street-car system in a city.

Each day during the tourist season, regardless of weather or volume of travel, this transportation line meets all incoming and outgoing trains at the various park gateways.

The address of the company is Yellowstone Park, Wyo., between June 15 and September 15; thereafter, Helena, Mont.

RATES OF YELLOWSTONE PARK TRANSPORTATION Co.

PARK TOUR.

From any entrance—full park tour, and back to the same entrance, or to any other entrance-----	\$25.00
On regular park tour, cars will be routed over top of Mount Washburn, each passenger, extra-----	2.00
On regular park tour, passengers holding in Gardiner out Cody (G-C), or in Gardiner out West Yellowstone (G-W) tickets may make round trip from Grand Canyon to Camp Roosevelt, each passenger, extra----	5.00

SIDE TRIPS.

From Mammoth:	
Terraces and Buffalo Corral-----	1.00
Gardiner and return-----	1.50
Around Bunsen Peak, via Golden Gate and Osprey Falls-----	2.50
Camp Roosevelt (Tower Falls Junction):	
One way-----	3.50
Round trip-----	7.00
From Upper Basin:	
Hurry trips to geysers-----	1.00
Black Sand Basin-----	1.00
Lone Star Geyser-----	1.50
From Thumb (minimum 5 fares):	
Snake River and return-----	8.00
From Canyon:	
Top of Mount Washburn and return-----	4.00
Either side of canyon-----	1.00
Sulphur Mountain-----	2.50
From Tower Falls (minimum 5 fares):	
Buffalo Farm and return-----	5.00
Cooke City and return-----	14.00

LOCAL FARES.

Gardiner to:	
Mammoth-----	.75
Norris-----	5.00
West Yellowstone-----	10.50
Upper Basin-----	11.00
Canyon (via Norris)-----	7.50
West Yellowstone to Upper Basin-----	6.00
Upper Basin to:	
West Yellowstone-----	6.00
Thumb-----	4.00
Lake-----	7.00
Canyon (via Lake)-----	10.50
Lake to:	
Pahaska-----	6.00
Pahaska and return-----	10.00
Cody-----	12.50
Cody and return-----	22.50
Canyon-----	3.50
Mammoth-----	11.50

Cody to:

Pahaska-----	\$6. 50
Pahaska and return-----	12. 50
Lake-----	12. 50
Lake and return-----	22. 50
Canyon-----	16. 00

Mammoth to:

Gardiner-----	. 75
Norris-----	4. 00
West Yellowstone-----	9. 50
Upper Basin-----	10. 00
Canyon (via Norris)-----	6. 50

Pahaska to:

Cody-----	6. 50
Cody and return-----	12. 50
Lake-----	6. 00
Lake and return-----	10. 00
Canyon-----	9. 50
Mammoth-----	17. 50

Canyon to:

Lake-----	3. 50
Pahaska-----	9. 50
Cody-----	16. 00
West Yellowstone (via Norris)-----	8. 00
Tower Falls-----	4. 00
Mammoth (via Tower Falls)-----	8. 00
Mammoth (via Norris)-----	6. 00
Gardiner (via Tower Falls)-----	9. 00
Gardiner (via Norris)-----	7. 00

Tower Falls to:

Mammoth-----	3. 50
Gardiner-----	5. 00

RATES FOR CHILDREN.

Children under 12, one-half rates for all tours and trips scheduled above.

SPECIAL AUTOMOBILE SERVICE.

Special touring cars for complete park tours (minimum 5 fares), at \$25, plus \$25 per day, from time car is taken at park entrance until release of car at exit gateway, railway terminal, or station in the park.

Six-passenger touring cars for short trips in the vicinity of the various hotels and camps, when available for such service, maximum charge per hour-----

6. 00

Storage, per day-----

. 50

GASOLINE, OIL, ETC.

Gasoline prices shall not exceed 35 cents per gallon at Mammoth Hot Springs, and 40 cents per gallon at other points in the park.

Oil, garage repair service, parts and accessories of all kinds are available at prices subject to control by the park superintendent.

GUIDES, HORSES, AND SPECIAL TRIPS.

Saddle animals for riding trips of one day or less duration from all hotels (rates do not include guide service):

Per full day-----	\$3.50
Per half day-----	2.50
Per hour-----	.75

(Full day will consist of 8 hours. Half day will consist of 4 hours, terminating at 12 noon and 6 p. m.)

(Horses kept out over 8 hours will be charged hourly rates for each hour over the 8-hour period.)

Mounted guides for saddle-horse parties:

Per day of 8 hours-----	5.00
Per half day-----	3.00
Per hour-----	1.00

Personally conducted saddle-horse trips, escorted by mounted guide, are available from the following hotels:

Canyon Hotel—

To Cascade Lake and return-----	2.50
To Grebe Lake and return-----	3.00
To Silver Cord Cascade and return-----	3.00
To Sulphur Mountain and return-----	3.00
To Seven Mile Hole and return-----	4.00
To Devil's Ink Well and return-----	4.00

Old Faithful Hotel—

To Lone Star Geyser and return-----	2.50
To Mallard Lake and return-----	3.00
To Shoshone Lake and return-----	4.00
To Madison Lake and return-----	3.00
To Great Fountain Geyser and Surprise Pool and return-----	3.00

Mammoth Hotel—

Over Mount Everts and return-----	4.00
To Mount Sepulcher and return-----	4.00
Through Snow Pass, around Bunsen Peak, and return-----	4.00
To Gardiner and return via old road-----	2.50
Foot of Electric Peak and return—	
For 1 person-----	8.50
For 2 or more persons, each-----	6.00

BOAT SERVICE ON YELLOWSTONE LAKE.

The Yellowstone Park Boat Co., under contract with the department, maintains and operates power boats and rowboats on Yellowstone Lake. The service on this lake is not a part of the regular transportation of the park, and an extra charge is made, as shown in the schedule below. No power boats are permitted to be operated on this lake except those that have passed the inspection of the United States Steamboat-Inspection Service of the Department of Commerce.

RATES OF THE YELLOWSTONE PARK BOAT CO.

POWER BOATS.

Excursions to southeast arm of lake, per individual (this trip not made for less than \$40)-----	\$2. 00
33-foot cabin cruiser, with crew, per day-----	40. 00
For 2 or more days, per day-----	30. 00
16-foot and 18-foot launches:	
Per day (price includes use of fishing tackle)-----	20. 00
Per hour (price includes use of fishing tackle)-----	3. 50

ROWBOATS.

Per day-----	2. 50
Per hour-----	. 50

ROWBOATS EQUIPPED WITH MOTORS.

Per day-----	10. 00
Per hour-----	2. 50

Boat rental and services of motor boat and attendants' time commences from the moment of leaving the dock until return; or if boat is engaged in advance, charges start from time for which boat is engaged.

FISHING TACKLE.

Outfit, consisting of rod, reel, line, and landing net, per day-----	. 50
Same, free to each individual hiring launches. Charges may be made for broken rods or lost outfit at regular price.	
Flies and fishing accessories sold at regular prices, according to quality.	

BATHHOUSE.

Henry J. Brothers, of Salt Lake City, Utah, operates a pool bathhouse at Upper Geyser Basin. Rates, admission, suit, and towel, 50 cents in large pool, \$1 in private pool.

The Yellowstone Park Camps Co. operates a pool bathhouse at its Mammoth Hot Springs Camp. Rate, admission, suit, and towel, 50 cents.

PARK TOURS.

Four and one-half days represent the minimum time required for a sight-seeing tour of Yellowstone National Park. Rate for regular tour of the park, including meals, lodging, and transportation, also luncheon near the eastern gateway in connection with trips via the Cody route, \$45 if permanent-camp service is selected; \$54 if hotel service is selected. These rates cover 14 meals and 4 lodgings, including dinner the fifth day at Mammoth Hot Springs, West Yellowstone, or Cody. The tour can profitably be extended to a week, two weeks, or longer, giving time for recreation, fishing, mountain climbing, and other sports, and side trips to the scenic regions off the main roads.

Stop-overs are encouraged on all park tours. Charges for days spent in the park, beyond the minimum period of the tours listed

below, are made in accordance with the authorized rate schedules on pages 99 and 100.

SUMMER CAMP FOR BOYS.

Prof. Alvin G. Whitney, of the Roosevelt Wild Life Forest Experiment Station, Syracuse, N. Y., is director of the "Forest and Trail Camp," which occupies quarters at Camp Roosevelt, near Tower Falls. This boys' camp covers a term of about seven weeks, beginning July 1, and the schedule provides for a complete tour of the park. For information address Prof. Whitney, Syracuse, N. Y.

PERSONALLY CONDUCTED CAMPING PARTIES.

DUDE (TOURIST) RANCHES.

The dude ranch is a Wyoming institution that is very rapidly increasing in popularity as a tourist resort. It offers unique opportunities for healthful, outdoor recreation. There are several excellent dude ranches near Yellowstone Park from which horseback camping trips are made over the trail system of the park in charge of licensed park guides.

The names and addresses of these dude ranches and their tourist rates can be obtained by addressing the Superintendent of Yellowstone National Park, Yellowstone Park, Wyo.

CAMPING PARTIES WITH LICENSED GUIDES.

Several villages near the park boundaries are headquarters for guides and outfitters with whom arrangements can be made for saddle-horse and pack-train trips through the park. The names and addresses of these guides and outfitters and their tourist rates can be obtained by addressing the Superintendent of Yellowstone National Park, Yellowstone Park, Wyo.

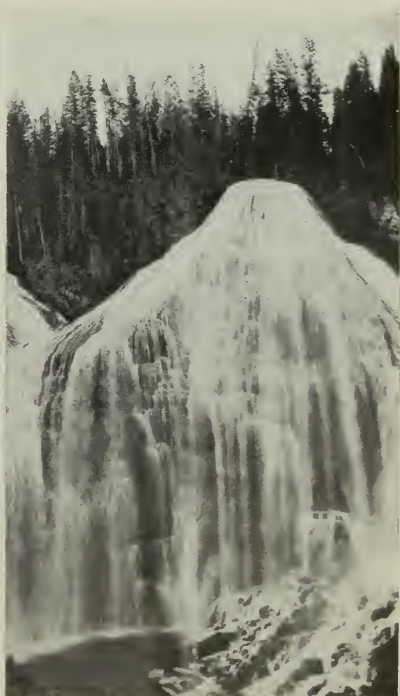
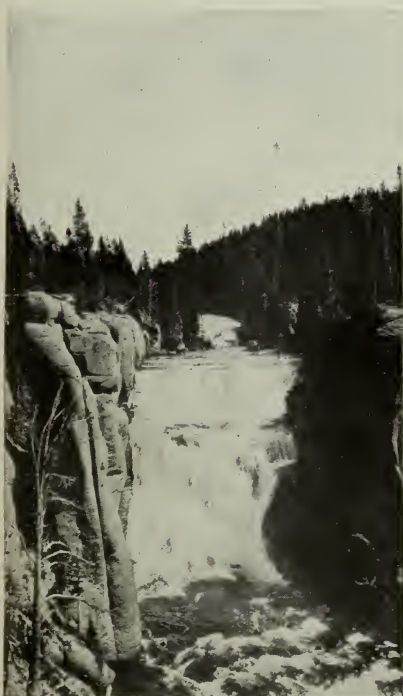
The Yellowstone Park Camps Co. will operate four personally conducted saddle-horse tours through the park. Tours will start from Mammoth Camp near park headquarters about July 1, July 15, August 1, and August 15. Each tour will be of 14 days' duration and will cover all the principal points of interest, including the geyser basins, Yellowstone Lake, the Grand Canyon, and the Tower Falls section. Camp will be made each night in the open. The authorized rate, which includes all expenses for the 14 days, is \$196 for each person for each tour. Tours will be under the personal management of Mr. Tex Holm, of Cody, Wyo. The address of the camps company is Yellowstone Park, Wyo., from June 15 to September 15, and Livingston, Mont., thereafter.



Haynes Photograph, St. Paul.

FOUNTAIN GEYSER.

Lower geyser basin.

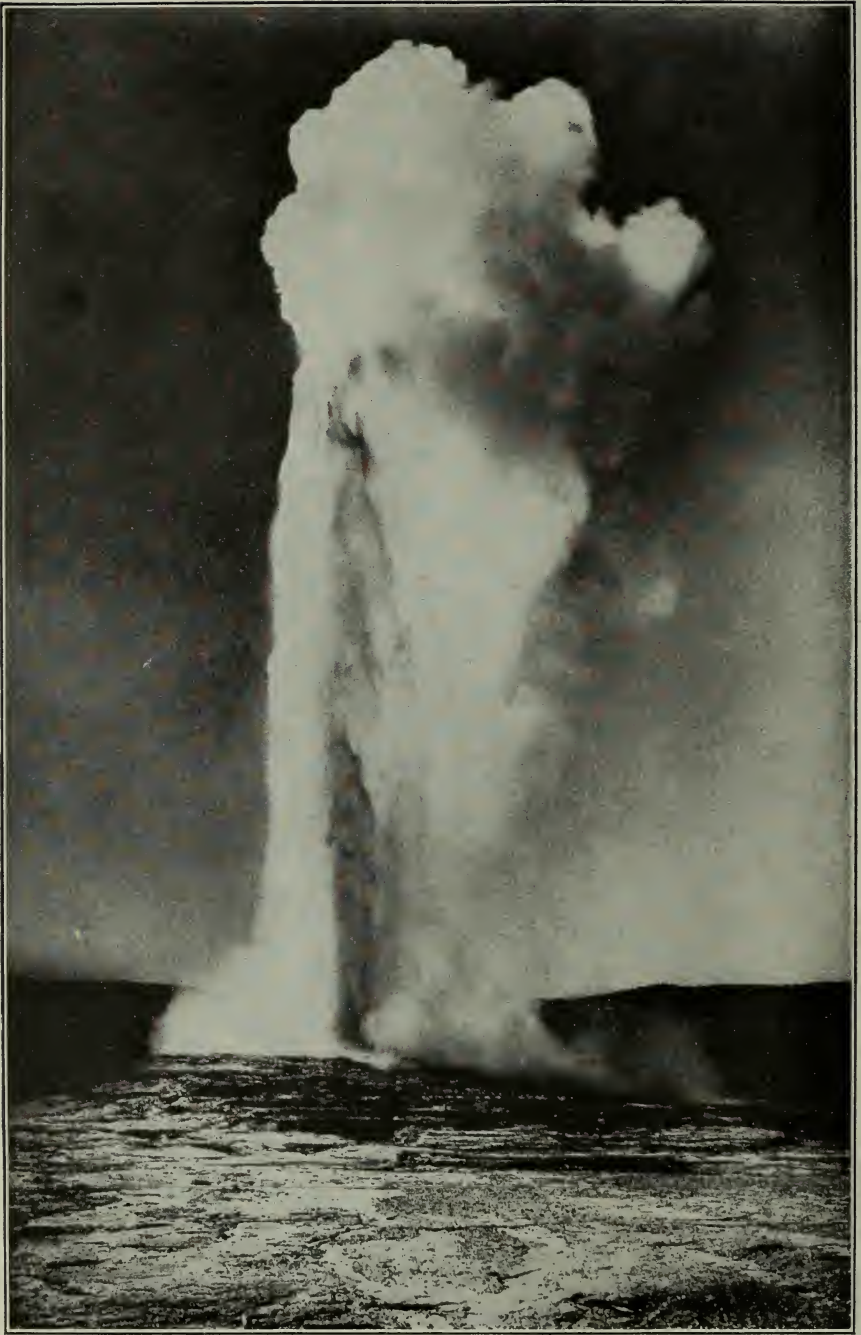


Photographs by Col. O. H. Birdseye, U. S. Geological Survey.

Terrace Falls.

Union Falls.

IN THE FALLS RIVER SECTION.



Photograph by J. E. Haynes, St. Paul.

OLD FAITHFUL GEYSER, YELLOWSTONE NATIONAL PARK.