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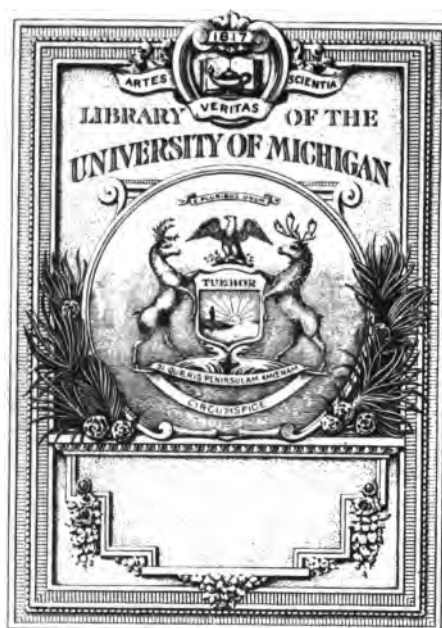
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DEPARTMENT OF THE INTERIOR

JOHN BARTON PAYNE, SECRETARY

NATIONAL PARK SERVICE

STEPHEN T. MATHER, DIRECTOR

RULES AND REGULATIONS

# GRAND CANYON NATIONAL PARK

1920

Open all the Year



WASHINGTON  
GOVERNMENT PRINTING OFFICE  
1920



Photograph by Pacific Storeopticon Co.

**HAVASUPAI INDIAN RESERVATION IN THE CATARACT CANYON.**

The walls are deep red sandstone. The older Indians regard the two upstanding rocks as sacred.



Copyright by F. H. Maude.

**HAVASUPAI INDIAN WOMAN GRINDING CORN IN A METATE.**

These Indians are extremely primitive in their methods and manner of life.

# THE NATIONAL PARKS AT A GLANCE.

[Number, 19; total area, 10,859 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—20 bath-houses under public control.
Yellowstone..... 1872	Northwestern Wyo- ming.	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 Cali- fornia.	252	The Big Tree National Park—12,000 sequoia trees over 10 feet in diameter, some 25 to 36 feet in diameter—Towering mountain ranges—Startling precipices—Cave of considerable size.
Yosemite..... 1890	Middle eastern Cali- fornia.	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 Cali- fornia.	4	Created to preserve the celebrated General Grant Tree, 35 feet in diameter—6 miles from Sequoia National Park.
Mount Rainier..... 1899	West central Wash- ington.	324	Largest accessible single peak glacier system—28 glaciers, some of large size—48 square miles of glacier, 50 to 500 feet thick—Wonderful sub-alpine 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 Colo- rado.	77	Most notable and best preserved prehistoric cliff dwellings in United States, if not in the world.
Glacier..... 1910	Northwestern Mon- tana.	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 Colo- rado.	397½	Heart of the Rockies—Snowy range, peaks 11,000 to 14,250 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 6,870 feet—Hot springs—Mud geysers.
Mount McKinley... 1917	South central Alaska..	2,200	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

By  
ROBERT STERLING YARD

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# GRAND CANYON NATIONAL PARK.

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## GENERAL DESCRIPTION.

The Grand Canyon National Park is in northern Arizona. Its 958 square miles inclose 56 miles of the Grand Canyon stretching west of its beginning at the mouth of the Marble Canyon. Through it winds the Colorado River. From rim to rim the canyon varies from 8 to 20 miles in width; it is more than a mile deep measured from the north rim, which averages nearly a thousand feet higher than the south rim. The eastern boundary includes the lofty painted walls east of which lies the Painted Desert. Its western boundary includes the broad Cataract Canyon, tributary from the south, in whose depths we find the Havasupai Indian Reservation and a group of fine waterfalls markedly different from any in our other national parks.

The park boundaries hug the rim closely. Very little of the country back of the rim is included in the reservation, scarcely enough in places to take care of the great increase of travel which national parkhood will bring to the Grand Canyon during the next several years. These border lands are wonderfully attractive. The northern rim is heavily forested with pine and spruce. The southern rim carries a slender semiarid flowering vegetation of rich beauty and wide variety, and south of the railroad station lie a few square miles of fine yellow pine forest.

The Grand Canyon was made a national park in February, 1919, thirty-three years after Benjamin Harrison, then Senator from Indiana, introduced the first of several bills to give it park status. Politics, local apathy, and private interests which sought to utilize its water power and to find minerals in its depths, were the principal causes of delay. All efforts failing to make it a national park, in 1908 President Roosevelt made it a national monument. Once a railroad was surveyed through it. A scenic railroad was projected along its south rim. Less than a year before it became a park, efforts were making in New York to raise money to dam its waters for power and irrigation.

## A MIGHTY SPECTACLE.

There is no doubt that the Grand Canyon is one of the world's very greatest spectacles. It is impossible to compare it with the tremendous white spectacle of the Himalayas, or with the House of Everlasting Fire of the Hawaii National Park, or with the 17,000

feet of snow and glacier which rise abruptly between the observer's eyes and the summit of Mount McKinley, because it has nothing in common with any of these. But of its own kind there is nothing in the world which approaches it in form, size, and glowing color; it is much the greatest example of stream erosion. And in its power to rouse the emotion of the looker-on, to stupefy or to exhilarate, it has no equal of any kind anywhere, unless it be the starry firmament itself.

Approaching by rail or road, the visitor comes upon it suddenly. Pushing through the woods from the motor camping ground, or climbing the stairs from the railroad station, it is there at one's feet, disclosed in the sublimity of its templed depths, in the bewildering glory of its gorgeous coloring. There is no preparation of mind and spirit. To some, the revelation is a shock, no matter what the expectation. The rim of the Grand Canyon is one of the stillest places on earth, even when it is crowded with people.

To describe the Grand Canyon is as impossible as it is unnecessary. Few natural spectacles have been so fully pictured, few are so familiar even to the untraveled. Its motionless unreality is one of the first and most powerful impressions it makes. And yet the Grand Canyon is really a motion picture. There is no moment that it does not change. Always its shadows are insensibly altering, disappearing here, appearing there; lengthening here, shortening there. There is continual movement. With every quarter hour its difference may be measured.

There is the Grand Canyon of the early morning, when the light slants lengthwise from the Painted Desert. The great capes of the northern rim shoot into the picture, outlined in golden light against which their shapes gloom in hazy blues. Certain temples seem to rise slowly from the depths, or to step forward from hiding places in the opposite walls. Down on the green floor the twisting inner gorge discloses here and there lengths of gleaming water, sunlit and yellow.

An hour later all is wholly changed. The dark capes have retired somewhat and now are brilliant-hued and thoroughly defined. The temples of the dawn have become remodeled, and scores of others have emerged from the purple gloom. The Granite Gorge, now detailed fully, displays waters which are plainly muddy even at this great distance. And now the opposite wall is seen to be convoluted, possessing many headlands and intervening gulfs.

And so, from hour to hour, the spectacle develops. Midday, with sun high behind the south rim, is the time of least charm, for the opposite walls have flattened and the temples of the depths have lost their defining shadows. But as afternoon progresses the spectacles of the morning creep back, now reversed and strangely altered

in outline. It is a new Grand Canyon, the same but wonderfully different.

And just after sunset the reds deepen to dim purples and the grays and yellows and greens change to magical blues. In the dark of a moonless night the canyon suggests unimaginable mysteries.

#### THE FIRST VIEW.

From the railroad station, the visitor ascends to the El Tovar Hotel and the view of the canyon at perhaps its showiest point. Here is where the temples loom their biggest and are nearest by. Opposite this point the greatest of the five great geologic faults which crack the canyon crosswise exhibits itself in the broad purpling of the Bright Angel Creek. Here the Granite Gorge approaches nearest to the south rim. The view at El Tovar is restricted by the extension of Grandeur Point and Hopi Point on either side. These cut off the view of the great reaches of the canyon east and west. The El Tovar view is a framed picture of limited size. It is better so; better for the newcomer to enter gradually into the realization of the whole which will come when he walks or rides out to the many points which push northward from the south rim; better also to return to after days spent on the rim or in the canyon's depths.

Having studied this view for general outlines and the canyon's conformation, stratification, and coloring, the visitor will find for himself, on foot or by motor stage or coach, many points which will afford him varied outlooks upon the broad reaches of the canyon. It is advisable to see the canyon from end to end from the rim before exploring the trails to the floor and the river.

It is a great mistake to suppose that the Grand Canyon can be seen in one or two days, and yet this is the time which most persons allot in advance for their visits. One day will only permit a confusing view from the rim, confusing because it takes much more than a first day to unravel the enormously complicated topography. Those who spend their only day in descending to the river fail to get much out of that experience because they do not know the canyon from the rim.

Those who allot two days for the visit—one for the rim and one to descend to the river—are much wiser, but still not wise. They get many times as much pleasure and comprehension from their visits as the one-day visitors, but carry away with them little more than the impression of a vast kaleidoscope. There is probably no spectacle in the world which requires so much looking at, so much comparing, studying, absorbing, and dreaming to attain a state of comprehension as the Grand Canyon, and there is no place which so fully rewards comprehension.

When you go to the Grand Canyon leave the duration of your stay open for decision when there. You will probably then remain from

five days to two weeks. Two weeks of fairly steady going will enable you to see the Grand Canyon thoroughly without undertaking trips which are a hardship to persons unaccustomed to trail riding.

#### LIVING AT THE GRAND CANYON.

Living is pleasant and comfortable. The El Tovar Hotel offers delightful conditions at rates reasonable in these times for its class of accommodations. Its porches are broad, its garden a collection of rich semiarid vegetation, its rim walks inspiring. There is horseback riding through many miles of yellow-pine forest and out to view points on the rim, but there are no sports. There is neither golf nor tennis. The canyon absorbs the whole attention of its visitors.

Adjoining the hotel there is a most comfortable hotel camp at rates extremely reasonable for times like these. There is a comfortable camp on the floor of the canyon at the foot of the Hermit Trail, and there are cottages at Desert View where one may spend a few nights. Camping trips along the rim and down to the Havasupai Indian Reservation and the waterfalls of Cataract Canyon can be arranged. It is possible to take your pack train across the river on flatboats and ascend the arduous but most interesting trail up Bright Angel Canyon to the excellent public camp on the north rim of the canyon. This trip is a matter of several days.

#### FREE PUBLIC CAMP GROUND.

From April to November the rim is free from snow and the free public camp ground near Grand Canyon Village is available to campers. Motorists are urged to bring their own camp equipment and make use of this camp. Sites will be allotted free of charge on application to the office of the superintendent of the park. There is a garage in the village where gasoline and oil can be procured. Groceries can also be purchased, but campers should bring a supply with them. It is necessary to purchase water in the village, as there is none at the Grand Canyon and it must be hauled from a distance by rail.

#### SEEING IT FROM THE RIM.

East of the hotel are several points reached by motor roads which afford fine views of the upper half of the Grand Canyon. The most famous of these is Grandview, where still stands the first regular hotel of the canyon, now private property. The eastern terminus of the road is Desert View, which offers a view up the Marble Canyon, and eastward over the famous Painted Desert. West of the hotel the auto stages stop at a succession of fine points, each with its own individual view of the mighty spectacle.

There is much to see also in the neighborhood of El Tovar. Besides the fine walk to Grandeur Point through the pine forest there is a faithful reproduction of a Hopi pueblo, and a camp of Navajo Indians.

## DESCENDING THE CANYON.

There are two practicable trails from the south rim to the river. The one commonly used starts from the El Tovar Hotel and descends the deep alcove between Grandeur and Hopi Points. This is the celebrated Bright Angel Trail, so named because it follows the line of the Bright Angel Fault and emerges on the river nearly opposite the mouth of Bright Angel Creek. This fault was formed by the cracking of the canyon across from rim to rim and the slipping of the western edge of the crack several hundred feet downward. The evidence of it may be seen plainly in the lower elevation of Hopi Point side of the gorge; and there is a place on the trail where travelers may see that strata once continuous no longer match.

The descent of this trail is usually done on muleback in parties led by guides. It is a sad mistake for persons not in the soundest physical training to attempt it on foot, for the apparent distance as seen from the rim is misleading, and the climb back is most arduous at that elevation. The south rim of the canyon at El Tovar is 6,866 feet above sea level. Nearly every day one or more trampers, overconfident of their endurance, fall by the trail on the way up and have to be rescued by guides and mules sent down for them from the rim.

The descent is an experience of great charm. The trail is excellently built and kept in fine condition. The traveler passes in review all the strata which form the canyon walls; their close examination will be a source of pleasure. Just under the rim the trail passes through a fine forest of spruce, and from this down to the sage desert of the green floor the traveler will also pass in review a series of vegetation which represents scores or hundreds of miles of surface growths. There are two steep cliffs which the trail descends in series of short hitches of zigzags, one of which, known as Jacob's Ladder, carries the traveler down the famous Redwall formation; which is so distinct a scenic feature of the canyon from every rim view. But there need be no alarm about these descents, for the zigzags, short and numerous though they are, maintain always a uniform safe grade. It may affect the unaccustomed nervously to see his mule hang his head over short abysses at the turns, but the traveler himself does not hang over them, and the mule is sure footed, stolid, and indifferent. There is only one creature with less imagination than a mule, and that is his cousin, the burro.

Indian Garden, which lies on the floor of the canyon, is so named because Havasupai Indians once cultivated the soil through which passes the stream which originates in springs below the Redwall. It is called Garden Creek. The Indian Garden now is a tangle of high brush, principally willow, through which the trail passes out upon the rolling floor, and presently plunges down the rocky gorge which leads to the edge of the muddy Colorado.

### THE HERMIT TRAIL.

A much finer trail, from every point of view, than the Bright Angel starts from Hermit Rest, south of Pima Point, and descends the Hermit Canyon. It begins 7 or 8 miles west of El Tovar. This is a two-days' journey, including a night spent in Hermit Camp well down in the canyon. It involves an experience worth many times the additional day which it requires.

The Hermit Canyon is one of extreme beauty; there is probably no other which equals it in gorgeous coloring and the variety of its rock forms. The trail, whose grade is less than that of the Bright Angel, is one of the finest in the world. It is longer than the Bright Angel Trail and leads out upon impressive points overlooking fascinating views. The descent of the Redwall is a masterpiece of trail building, and the only part of the Hermit Trail which gives an impression of steepness; but this may readily be walked down by the unaccustomed rider; its ascent is not nerve racking. The night at Hermit Camp, under a towering crimson gable, with colorful Hermit Canyon on the south and Grand Canyon opening northward over the green shale of the floor is as comfortable as it is fascinating. The trip to the river and back to the camp is usually made the first day.

### THE FLOOR TRAIL.

Too few visitors to Hermit Camp combine the two trail trips with a journey between them over the green shale floor. The descent is by the Hermit Trail with a night at its foot. The next morning, the journey is made on muleback up the canyon to the Indian Garden, and from there, after lunch by the stream side, up the Bright Angel Trail to El Tovar.

### THE CATARACT CANYON.

The Cataract Canyon in the far western end of the national park is rarely visited. The trail begins at the end of a long desert road by descending precipitously to a gorge through which the Havasupai Indian Reservation is reached. There are less than 200 Indians on the reservation. These live by farming the land irrigated from Cataract Creek; corn is their principal product, but melons, figs, and peaches are also produced. The reservation fills a broad amphitheater in the gorge surrounded by lofty red sandstone cliffs. There are no hotels or camps and the heat is intense in summer. The Cataract Creek water is strongly impregnated with mineral and unpalatable, though entirely wholesome. Nevertheless, the visit to the reservation is one of unusual character and charm for those who do not object to a little hardship.

Below the reservation the canyon breaks into a series of waterfalls, two of which are unusual in kind and beauty. These are the Havasu Fall and the Hualapai Fall. Both drop over lofty shelves which are

plastered on back and sides by richly carved festoons of brown travertine formation, deposited by the river in times of high water. Both the falls occur in the deep red limestone gorges. Bright green cottonwoods, cactus, and other desert vegetation enliven the scene, which is as different as imagination can well paint from anything else in the Grand Canyon National Park.

In the spring following the melting of the rim snows, there are various waterfalls in the Grand Canyon itself, several of which last for some months. These occur on the north side of the river, where there is a greater supply of water, the south side being arid except for brief periods following meltings and cloudbursts. One of these temporary north-side waterfalls, which has been seen by very few persons, is said to be more than a thousand feet in height. With the crossing of the river by camping-out parties, which surely will be one of the developments of the future, these and many other fascinating spectacles, now little known, will become familiar sights to many. The destiny of the Grand Canyon is to become one of the most used national parks.

#### ORIGIN OF THE GRAND CANYON.

One of the greatest rivers on the continent cuts the Grand Canyon. The Colorado River is formed in Utah by the confluence of the Green and the Grand Rivers. All three together drain 300,000 miles of Colorado, Wyoming, Utah, and Arizona. Including the Green River, the greater of the confluent streams, the main stream may be said to be 1,500 miles in length, collecting the drainage of the divide south and east of the Great Basin and of many ranges of the Rocky Mountain system. The Grand River contributes the drainage of the Rocky Mountains in western Colorado. It is the same Grand River which forms, through one of its forks, the western boundary of the Rocky Mountain National Park.

The Colorado began to cut the Grand Canyon several millions of years ago at about the same time that the Merced River began to cut the Yosemite Valley. Both are the results exclusively of stream erosion. The theory that volcanism had to do with the creation of the Grand Canyon is declared by modern science untrue, notwithstanding the fact that volcanic rock is found in the canyon's depths, as it is also found in many other parts of the United States. It is untrue also that the Colorado River assumed its east and west course through the Grand Canyon as the result of an east and west fault. All the faults of the region pass across the canyon north and south.

#### HISTORY OF THE CANYON.

El Tovar—a captain under Cardenas who led one of the expeditions of the Spanish explorer Diaz—discovered the Grand Canyon in 1540. The old records describe a river which seemed to be "more than three or four leagues" below the banks on which they stood.



It is next recorded as having been seen by a Spanish priest in 1776. The place which he crossed is still called "Vado de los Padres"—the crossing of the fathers—from which it appears that there were more than one.

For many years the Grand Canyon region was known only to the Indians, Mormon herdsmen, and the trappers who were among the earliest pioneers of every part of our land. The Sitgreaves expedition crossed the river about 150 miles above Yuma in 1851, and three years later Lieut. Whipple crossed it in surveying a route for a railroad along the 35th parallel. In 1857 the War Department sent Lieut. Ives with an expedition to ascend the Colorado and determine the head of navigation. For this purpose a steamboat was shipped to the Gulf of California in pieces and put together there. Ives steamed upstream to the head of the Black Canyon and then marched to Cataract Creek, and from there around the San Francisco peaks to Fort Defiance.

So nothing really became known until Maj. John Wesley Powell, a one-armed veteran of the Civil War, made his famous passage of the canyons of the Green and Colorado Rivers. He started with nine men and four boats from Green River City, Utah, on May 24, 1869. The huge waterfalls and underground passages described by the Indians were not found, but the trip was one of extreme hardship and danger. Almost daily the boats were upset, and the passage of many of the rapids was perilous to a degree. Often the party would embark upon long foaming slants without knowing what falls lay around the precipitous headlands in front of them. One of the boats, most of the scientific instruments, and nearly all of the food were lost. For weeks the clothing of the adventurers was never dry, and when they entered the Grand Canyon itself in September there was little food left.

There came a time when four men deserted, preferring to risk the dangers of hostile Indians on the rim than face longer the unknown dangers of the canyon. They were killed by the Indians on the rim. The second day after they left, Powell and his faithful five emerged in safety at the end of the Grand Canyon.

Powell's journal of this voyage is one of the most fascinating tales of adventure in literature. He saved his water-soaked notes, but in 1871 he repeated the trip for more complete scientific information. Afterward Powell became the Director of the United States Geological Survey.

#### THE CANYON AS A RESORT.

The Grand Canyon is very much more than a wonder place or a scientific museum on a titanic scale. It is a pleasure resort of the first order. It may be visited any day in the year. The railroad is

always running and the hotel always open. When most other resorts are closed the Grand Canyon is easily accessible.

During the winter snow falls in the pine forest along the rim; and though the upper portions are snow covered, the trails into the canyon are open and safe; the floor of the canyon is warm and comfortable the year around. When nipping frosts redden cheeks on the rim, the most fragile flowers are blooming in the canyon.

The weather in July and August is warm but not hot on the rim; the altitude takes care of that. There are cool mornings, evenings, and nights no matter how warm it may be at midday.

Arizona is a land of sunshine; the air is dry and the winds are light. While spring and fall are more attractive than midsummer or midwinter, all the seasons have each its special charm. From December to March snow is more or less abundant on the rim and a few hundred feet down the trail. Camping-out parties must then confine themselves to the canyon.

#### THE NORTH RIM OF THE CANYON.

There is a remarkable difference between the north and south rims. The north rim, a thousand feet higher, is a colder country clothed with thick, lusty forests of spruce and pine with no suggestion of the desert. Springs are found here and deer are plentiful. It is a region which will be frequented, in time, by campers-out.

The views from the north rim are markedly different. One there views close at hand the vast temples which form the background of the south rim view. One looks down upon them, and beyond them at the distant canyon floor and its gaping gorge which hides the river; and beyond these the south rim rises like a great streaked flat wall, and beyond that again, miles away, the dim blue San Francisco Peaks. It is certainly a spectacle full of sublimity and charm. There are those who, having seen both, consider it the greater. One of these was Dutton, whose description of the view from Point Sublime has become a classic. But there are many strenuous advocates of the superiority of the south rim view, which displays close at hand the detail of the mighty chasm of the Colorado, and views the monster temples at parade, far enough away to see them in full perspective.

The trail trip to the north side, which will be perfectly feasible with the completion of a suspension bridge at the foot of Bright Angel Trail, is not for the unaccustomed tourist. It is 30 miles from El Tovar to the Wylie Camp on Bright Angel Point, and the way up the Bright Angel gorge on the north side is exceedingly difficult. The mules ford the creek eighty-six times, and several times are in it to their middle. The problem of a good trail is difficult.

The best ways of reaching the north rim are described on page 22.

## ALTITUDES AND DISTANCES.

From Grand Canyon Village to—	Miles distant from El Tovar and direction.	By—	Altitude.	Attractions and remarks.
Hermit Rest.....	7½ W....	Road.....	<i>Feet.</i> 6,650	Interesting Harvey Rest House. Only 5 miles on foot or horseback through woods by cut-off roads and trails.
Natural Bridges.....	9 W....	Road trail.....		Natural bridges in limestone.
Hermit Basin.....	9 W....	do.....	5,250	Ranger cabin. Water. Pretty valley.
Dripping Springs.....	12 W....	do.....	5,500	Beautiful springs and fine trail.
Sta. Maria Springs.....	10 W....	do.....	5,250	On Hermit Trail.
Hermit Camp.....	15 W....	do.....	3,050	Down Hermit Trail to Tonto Plateau. Fine accommodations and beautiful creek. Camp open all year.
Colorado River at foot of Hermit Trail.	16 W....	do.....	2,400	Close view of rapids.
Grandview Point.....	14 E....	Road.....	7,406	Auto ride through forest. Magnificent view of Canyon, Painted Desert, and Navajo Mountain.
Desert View.....	32 E....	do.....	7,450	Auto ride through forest. View of Painted Desert, Grand Canyon, Cedar Mountain, and Palisades of the Desert.
Little Colorado.....	65 E....	Road trail.....	2,750	Auto ride through forest. View of Painted Desert. On trail to Hopi Land.
Painted Desert.....	75 E....	do.....	4,800	Desert extending from Grand Canyon to Petrified Forest, famed for its glowing colors.
Cataract Canyon.....	45 W....	do.....	6,000	Remarkable canyon and waterfalls near village of Havasupai Indians in primitive state.
Cable Crossing.....	11 NE....	Trail.....	2,450	Via Tonto Trail, east from Indian Gardens. Cable over Colorado River.
Tram Camp.....	11½ NE....	do.....	2,450	Ranger camp at mouth of Bright Angel Creek, on north bank of Colorado River.
North Rim (at Bright Angel Point).	28 N....	do.....	8,153	Via Tram Camp and Kaibab Trail up Bright Angel Creek.
Kanab, Utah.....	88 N....	do.....	4,750	Kaibab Trail to North Rim and road through forest to Kanab.
Williams, Ariz.....	66 S....	R. R. and auto road.	6,762	Nearest shopping town to Grand Canyon.
Flagstaff, Ariz.....	86 SE....	do.....	6,896	County seat, San Francisco Mountains, Lowell Observatory. Interesting center.
Los Angeles, Calif.....	574 SW....	do.....	293	State capital. Gateway to Tonto and other National Monuments and Roosevelt Dam.
Phoenix, Ariz.....	281 S....	do.....	1,090	State capital. Gateway to Tonto and other National Monuments and Roosevelt Dam.
Pictograph Rock.....	½ W....	Trail.....	6,800	Ancient Indian paintings, fine view. Interesting foot trail.
Picnic Rock.....	½ W....	do.....	7,000	Walk through woods. Fine view of San Francisco Mountains, etc.
Bass's Place.....	½ SW....	Road.....	6,850	On Ash Fork Road, through woods.
Rowes Well.....	4 SW....	do.....	6,681	On Cataract Canyon Road. Ranger station in big pine woods. Good water.
Grandeur Point.....	1½ E....	Road trail.....	7,000	Fine view of river. Good trail along rim of canyon.
Yavapai Point.....	2 E....	do.....	7,100	View of river. Good trail along rim of canyon.
Yaki Point.....	5 E....	Trail.....	7,250	Do.
Shoshone Point.....	9 E....	do.....	7,250	Sometimes called Inspiration Point. Fine view.
Mariopca Point.....	2 W....	Paved road.....	6,950	Powell Memorial and view.
Hopi Point.....	2½ W....	do.....	7,071	View into canyon. Known also as Sunset Point. Favorite point for sunset views.
Mohave Point.....	3 W....	do.....	7,000	View of canyon.
Pima Point.....	5 W....	do.....	6,750	View of canyon and river. Hermit Camp visible beneath.
Indian Garden.....	3½ N....	Trail.....	3,876	Down Bright Angel Trail. Fine creek of good water.
Lower Indian Garden.....	5 N....	do.....	2,700	Old Indian gardens and dwellings.
Plateau Point.....	5 N....	do.....	3,750	View into gorge.
Colorado River at foot of Bright Angel trail.	7 N....	do.....	2,436	Good trail from Rim to the Colorado River.
Havasupai Point.....	26 W....	Road.....	6,750	Excellent view of canyon.
Bass's Camp.....	24 W....	do.....	6,652	Prospector's camp.
Bright Angel Point.....	29 N....	Trail.....	8,153	On the North Rim. "Wiley Way." Tourist Camp.

## ALTITUDE AND DISTANCES—Continued.

From Grand Canyon Village to—	Miles distant from El Tovar and direction.	By—	Altitude.	Attractions and remarks.
Wiley Way Camp.....	29 N.....	Trail or auto road from Salt Lake City and Marysvale.	<i>Feet.</i> 8,153	On the North Rim. (See page 25.)
Point Sublime.....	.....	Trail from Bright Angel Camp.	7,464	Westernmost point of Kaibab Plateau on North Rim opposite Grand Canyon Village. Commands view of 250°.
Cape Final.....	.....	do.....	7,919	Easternmost point of Kaibab Plateau on North Rim opposite Grand Canyon Village. Commands view up Marble Canyon and down Grand Canyon; also of Painted Desert.

## HOW LONG TO STAY.

*Time required.*—While one ought to remain a week or two, a stop-over of three or four days from the transcontinental trip will be quite satisfactory. The Hermit overnight camping trip requires two days and a night. One day should be devoted to an auto ride along the Hermit Rim Road, and by auto to Grandview. Another day go down Bright Angel Trail and back. A fourth day spent in short walks to nearby points, or on horseback, will enable visitors to get more intimate views. Hermit Loop three-day camping trip, down one trail and up another, is well worth while.

The several trips mentioned above are all well worth while, and the high plateau above the rim affords many delightful horseback or hiking trips. Visitors to the North Rim may well spend as much time as can be spared.

The National Park Service of the Department of the Interior recommends to the traveling public that stop-overs of as long duration as practicable be planned at points within the Parks; that Grand Canyon National Park be regarded not alone as a region which may be glimpsed on a hurried trip, but also as a vacation playground for rest and recreation.

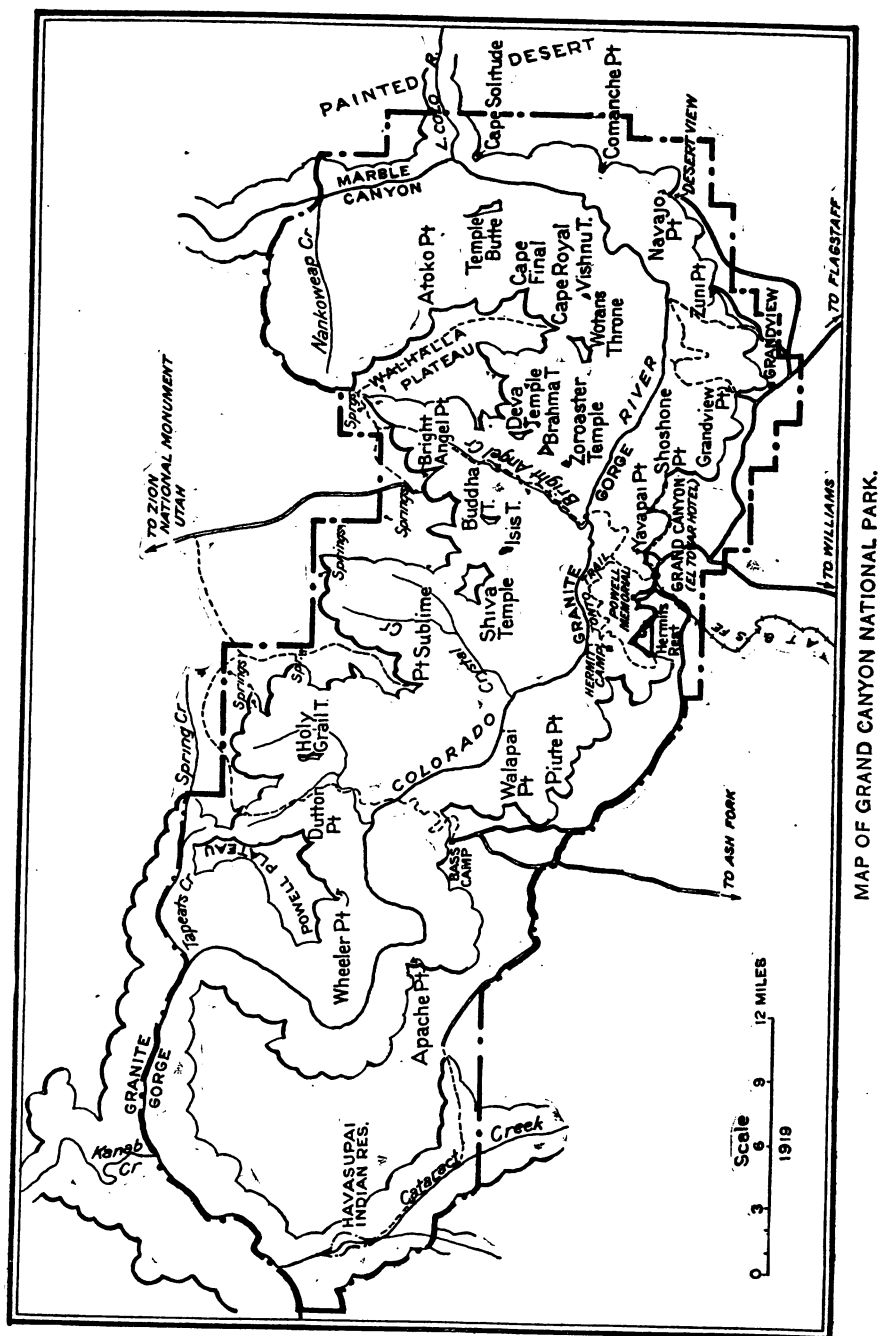
## WHAT TO WEAR.

If much tramping is done, stout, thick shoes should be provided. Ladies will find that short walking skirts are a convenience; riding trousers are preferable, but not essential, for the horseback journey down the zigzag trail. Traveling caps and (in summer) broad-brimmed straw hats are useful adjuncts. Otherwise ordinary clothing will suffice. Riding trousers, divided skirts, and straw hats may be rented at El Tovar Hotel.

## ADMINISTRATION.

Grand Canyon National Park is under the jurisdiction of the Director, National Park Service, Department of the Interior, Washington, D. C. The Park Superintendent is located at Grand Canyon,

GRAND CANYON NATIONAL PARK.



Ariz., and information, maps, and pamphlets may be obtained at the office, where visitors are cordially welcomed. The temporary office of the superintendent is south across the railroad tracks 200 yards from the Grand Canyon Railway Depot and on the paved road that passes the El Tovar Garage.

The park is accessible throughout the year. The El Tovar Hotel, Bright Angel and Hermit Camps, are always open.

### HOW TO REACH THE PARK.

#### BY RAIL.

The Grand Canyon National Park is directly reached by a branch line of the Atchison, Topeka & Santa Fe Railroad extending 64 miles northward from Williams, Ariz. On certain trains through standard sleeping cars are operated to and from Grand Canyon station. Passengers using other trains and stopping over at Williams will find adequate accommodations at the Fray Marcos, station hotel.

Stop-overs at Williams are permitted on both round-trip and one-way tickets, all classes, reading to points beyond. Side-trip fare from Williams to Grand Canyon and return is \$7.60.

Round-trip excursion tickets at reduced fares are on sale daily at practically all stations in the United States and Canada to Grand Canyon, as a destination.

Baggage may be checked through to Grand Canyon station, if required. Passengers making brief side-trips to Grand Canyon may check baggage to Williams only or through to destination. Certain regulations for free storage of baggage for Grand Canyon passengers are in effect.

For further information regarding railroad fares, service, etc., apply to railroad ticket agents; or address:

W. J. Black, passenger traffic manager, Atchison, Topeka & Santa Fe Railroad, Chicago, Ill.

J. J. Byrne, assistant passenger traffic manager, Atchison, Topeka & Santa Fe Railroad, Los Angeles, Calif.

#### BY AUTOMOBILE.

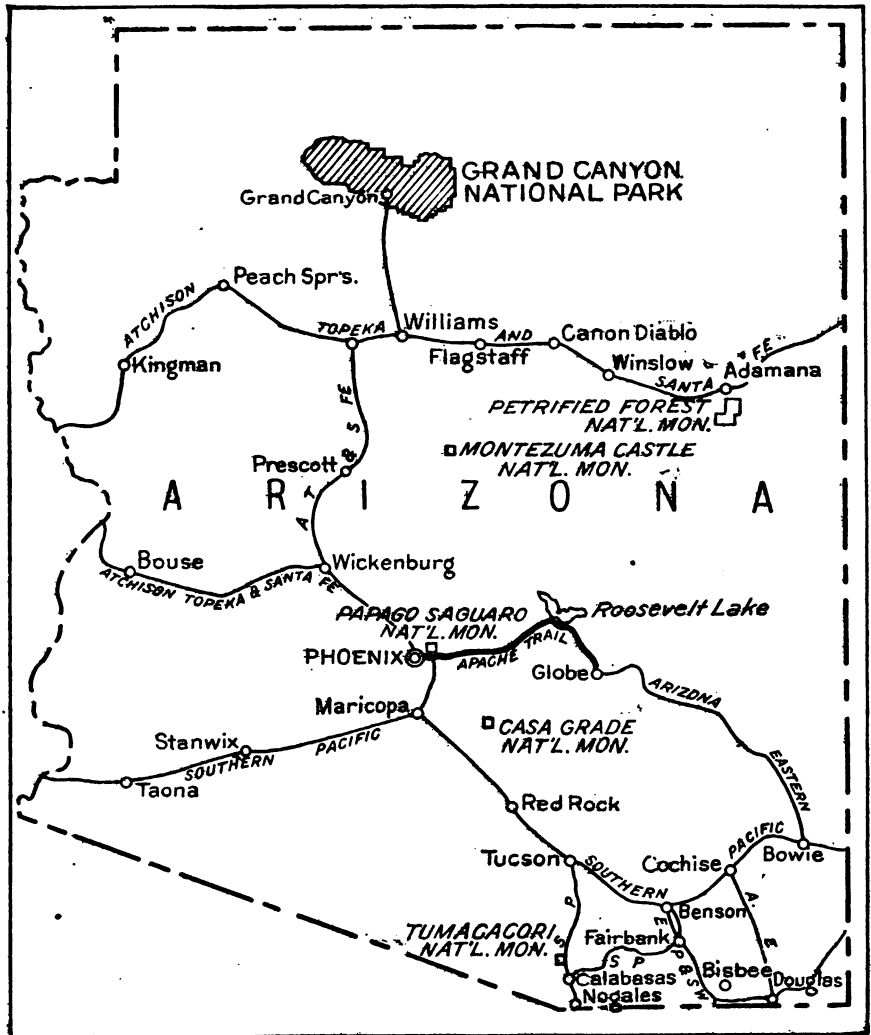
Automobile tourists may leave the main east and west highway through Arizona at either Williams or Flagstaff.

*Flagstaff.*—It is about 85 miles from El Tovar to Flagstaff, via Grandview, Lockett's Lake, Skinner's Wash, Noki Wash, and San Francisco Peaks, over a main traveled road, on which a good run is possible most of the year. The round trip requires about two days.

This is a very enjoyable drive through pine forests and across green mesas along the old-time stage route to the canyon. The town of Flagstaff is located in the heart of the San Francisco uplift. There are good stores and garage facilities in Flagstaff. In this vicinity are prehistoric cliff dwellings, extinct craters, volcanic cones,

lava beds, and ice caves. The summit of Humphreys Peak, one of the peaks forming the San Francisco Mountains, is 12,750 feet high.

*Williams.*—Williams is 34 miles west of Flagstaff, on the main east and west highway through Arizona. It is the nearest shopping



MAP OF ARIZONA SHOWING RAILROAD CONNECTIONS TO GRAND CANYON NATIONAL PARK.

center and its stores and garages carry a good stock of everything necessary to the automobile tourist. Special attention is paid to mail orders from Grand Canyon.

The route from Williams passes Red Lake, Howard Lake, and Anita, running along the line of the Grand Canyon Railway. No supplies can be purchased between Williams and Grand Canyon.

**AUTOMOBILE SUPPLIES.**

At Grand Canyon village is an excellent garage under the management of Fred Harvey. Storage, or repair service, as well as gasoline and oil, may be procured here.



MAP SHOWING PRINCIPAL AUTOMOBILE ROUTES IN COLORADO, UTAH, ARIZONIA AND NEW MEXICO.

**GROCERIES.**

The Independent Store carries a very limited supply of groceries. Tourists who expect to camp at Grandview or Grand Canyon should bring their supplies from Williams or Flagstaff.

**WATER.**

A supply of water for drinking purposes and for radiation, sufficient to last to Grand Canyon, should be brought from Williams or Flagstaff.



## REACHING THE NORTH RIM.

To those who enjoy extraordinary scenery and unusual experiences, the trip to the Wylie Way Camp on the north rim, either by rail and motor stage or by private motor, will make a strong appeal.

Coming by rail over the Salt Lake route, the tourist changes to auto stage at Lund, over the Denver & Rio Grande Railroad, at Marysville. Coming by private motor from Salt Lake City or Los Angeles, the Arrowhead Trail is followed to Cedar City, Utah.

From Cedar City the road leads over the plateau to Panguitch in the valley of the Sevier River, where it joins the road from Marysville. From Panguitch, one of Utah's spectacular scenic exhibits, Bryce Canyon is reached. Of Bryce Canyon John A. Witsoe, of the University of Utah, writes:

It is a box canyon 2 miles wide by 3 miles long, cut 1,000 feet into the top of Paunsagunt Plateau. It drains toward the southeast and overlooks the Colorado River, 75 miles distant. The strata in the canyon are flat, low-lying Tertiary sandstones and clayey sandstones, rather highly indurated. A wonderful variety of erosional forms are painted in every color, shade, and tint of the spectrum, including reds, pinks, creams, tans, lavenders, purples, blues, greens, chocolates, and whites.

This unparalleled array of erosional forms, coupled with wonderful coloring and dotted somewhat profusely with a variety of evergreen trees, constitutes perhaps the most gorgeous spectacle in the world.

The route from Panguitch to the north rim follows the Sevier River to its source, crossing the divide, and then rapidly descends under the vermilion cliffs and down the interesting Johnson Canyon to Kanab, a well-built town of 1,200 inhabitants. The road then leads out over the Kaibab Plateau, whose southern escarpment, at an altitude of 8,000 feet, is the northern wall of the Grand Canyon of the Colorado. The last 50 miles are through Kaibab Forest, a national reserve, which exhibits on a grand scale one of the largest forests of giant pines in the United States. The high, dry, bracing, pine-laden air, the forest aisles, and occasional glimpses of wild deer and white-tailed squirrels, make this ride a fitting prelude to the silent symphony of the Grand Canyon itself.

From Zion National Park a road leads to Kanab and the north rim of the Grand Canyon via Hurricane. Hurricane is the center of Utah's "Dixie," a garden spot of semitropical vegetation and quaint Mormon settlements. South of Hurricane the road leads across the land of Zane Grey's "Purple Sage" to Kanab, and thence by the road above described. While the road from Hurricane to Kanab is being improved, inquiry should be made concerning it before attempting this route.

**LUND, UTAH, NORTH RIM OF GRAND CANYON NATIONAL PARK  
SPECIAL TOUR.**

Plans are now being made to have available a special tour from Lund to the north rim of the Grand Canyon National Park, Ariz., including a side trip to Bryce Canyon on the going trip and Zion

National Park on the return trip. The tour will occupy eight days and the fare will include all automobile transportation service and hotel and camp accommodations.

The trip is planned on the following schedule:

Wednesday, Lund to Cedar City for lunch, to Panguitch for overnight; Thursday, Panguitch via Bryce Canyon to Kanab for overnight; Friday, Kanab to north rim of Grand Canyon National Park, arriving for late lunch at Wylie Way Camp; remain at north rim with bus at service of party until breakfast Sunday; Sunday, north rim to Kanab for lunch, to Panguitch for overnight; Monday, Panguitch to Cedar City for lunch, to Zion National Park; remain at Wylie Way Camp, Zion National Park, until after breakfast Wednesday; Wednesday, Zion National Park to Cedar City for lunch, to Lund for train. Total mileage for trip 668 miles. If the road from Kanab to Hurricane is in good shape, the return trip will be made that way, giving one day longer at the north rim, Grand Canyon National Park, or at Zion National Park at the option of the party.

*Authorized rate.*

Eight-day tour (minimum four persons or four fares)..... \$115

Each person will be allowed 25 pounds of baggage on stage. A charge of 10 cents per pound will be made for excess baggage.

**MARYSVALE, UTAH, NORTH RIM OF GRAND CANYON NATIONAL PARK  
SPECIAL TOUR.**

Plans are now being made to have available, commencing July 4, 1920, a special tour from Marysville, Utah, a station on a spur line of the Denver & Rio Grande Railroad to the north rim of the Grand Canyon National Park, Ariz., including a side trip to Bryce Canyon, one of Utah's spectacular scenic exhibits only recently discovered by tourists. The tour will occupy six days and the fare will include all automobile transportation service and hotel and camp accommodations. A 10-passenger automobile bus of the type used in Yellowstone National Park will be operated in this transportation service. Tickets must be obtained at the Salt Lake Sight-seeing Office, Salt Lake City, Utah.

A weekly trip is planned on the following schedule:

Monday, Marysville to Bryce Canyon for late lunch at Wylie Way Camp; Tuesday, Bryce Canyon to Kanab, luncheon en route; Wednesday, Kanab to north rim of Grand Canyon National Park, arriving for late lunch at Wylie Way Camp; remain at north rim with bus at service of party until after lunch Friday; Friday afternoon, north rim to Kanab; Saturday, Kanab to Marysville, luncheon en route. Hotel accommodations Sunday night and Saturday night at Marysville included in tour charge.

*Authorized rate.*

Six-day tour..... \$100

Each person will be allowed 25 pounds of baggage on stage.

A charge of 10 cents per pound will be made for excess baggage.

Touring cars will be furnished at same rate for same service any day in the week to parties of either 4 or 6; tickets must be obtained for this special service in Salt Lake City.

**HOTELS AND PUBLIC CAMPS.**

The following hotels, etc., are operated by Fred Harvey:

**EL TOVAR.**

The El Tovar is located at the railroad terminus, near the head of Bright Angel Trail, at an elevation of 6,866 feet above sea level, and open all the year. It is a long, low structure, built of native bowlders and pine logs. There are 93 sleeping rooms, accommodating 175 guests. Forty-six of these rooms are connected with private bath.

There is a music room and rendezvous. In the main dining room 165 persons can be seated at one time.

Hot and cold water, steam heat, and electric light are supplied. El Tovar also has a steam laundry.

*Authorized rates at El Tovar Hotel.***American plan:**

One person in room without bath, per day..... \$6. 00

One person in room with bath, per day..... 8. 00

There are few exceptional rooms with bath carrying an additional charge.

**Meals only:**

Breakfast..... 1. 25

Luncheon..... 1. 25

Dinner..... 1. 50

**BRIGHT ANGEL COTTAGES.**

Cozy lodgings in cottages or tents at Bright Angel Cottages, adjacent to El Tovar. The accommodations are clean and comfortable. There are four cottages, open the year round and several large tents for summer only. All of the cottages have steam heat and electric light; one cottage also has baths. About 150 persons can be accommodated here. Meals are furnished a la carte at the café. Kitchen facilities are ample for quick a la carte service.

*Authorized rates at Bright Angel cottages.*

Lodging only, per day, per person..... \$1. 50-\$2

**HERMIT CAMP.**

On Tonto Plateau at the foot of Hermit Trail; consists of a central dining room, lounge tent, and 11 sleeping tents, accommodations for 30 persons.

*Authorized rates at Hermit Camp.*

American plan, per day, per person..... \$5

**DESERT VIEW.**

Overlooking Painted Desert, Marble Canyon, and Grand Canyon, several cottages may be occupied for limited periods. See page 28.

**WILEY WAY CAMP ON NORTH RIM.**

At Bright Angel Point on the North Rim is "Wiley Way" Tourist Camp, consisting of a central dining tent and comfortable sleeping tents, with accommodations for 25 persons. Rates are \$6 per day.

**REST HOUSES.****THE LOOKOUT.**

The Lookout is a quaint observatory and rest house, built on the edge of the rim near the head of Bright Angel Trail. It is equipped with a large binocular telescope in the tower, for observing the most distant reaches of the canyon by day and for viewing the heavens by night. There is a small library for the layman and scientist. Canyon maps and photos are for sale. The reception room has spacious windows, a fireplace, Navajo rugs, and easy chairs; it is electric lighted and steam heated.

**HERMIT'S REST.**

Where Hermit Rim Road ends and Hermit Trail begins is a unique rest house, built into the hill, with a roofed-in porch and parapet wall. As the name implies, it is intended to provide rest and shelter for parties who take the Rim Road drive, or the Hermit Trail trip. Guests may sit at the tables outside or sheltered by the glass front inside, according to weather, and enjoy a light lunch in unusual surroundings. Admission is by ticket. Tickets may be obtained at El Tovar or Bright Angel Camp, at 50 cents.

**SHOPS AND STORES.****HOPÍ HOUSE.**

Opposite El Tovar is a reproduction of the dwellings of the Hopi Indians and several Navajo hogans.

In Hopi House are installed collections of Indian handiwork. Here also live a small band of Hopis, who are among the more primitive of our Indians. The men weave blankets and the women make pottery.

The homes of the Hopis are on the edge of the Painted Desert, perched on the crests of lofty mesas where they live as did their forbears and cling to their high dwelling place. They are industrious, thrifty, orderly, and mirthful. A round of ceremonies, each terminating in the pageants called "dances," marks the different seasons of the year. Subsisting almost wholly by agriculture in an arid region of uncertain crops, they find time between their labors for light-hearted dance and song, and for elaborate ceremonials,

which are grotesque in the Katchina, or masked dances, ideally poetic in the flute dance, and intensely dramatic in the snake dance. In the three and a half centuries of contact with the white race their manner of life has not materially changed. The Indian tribes that roamed over mountain and plain have become wards of the Government, but the Pueblo Indian has absolutely maintained his individuality.

The Navajo women weave fine blankets and many of the men are experts silversmiths who fashion bracelets, rings, and other articles from Mexican coin silver. The Navajo Indian Reservation—one of the largest in the United States—borders Marble Canyon on the east. They are a pastoral people, intelligent, and, like the Hopis, self-supporting. They own large numbers of sheep, cattle, and horses. The Navajos are tall, rather slender, and agile. They have been rightly called the Bedouins of the Desert. Nowhere are they gathered into permanent villages. Although "civilized," they still cling to old customs and old religious forms. The medicine man, or Shaman, has a large following, if not a large per cent of cures. Their dance ceremonies are weird in the extreme. The fire dance is a spectacular 10-day ceremony, seldom witnessed by white men, and occurring only once in seven years.

Supai Indians from Cataract Canyon frequently visit El Tovar.

*The Independent Store*, which is situated on the Rim just east of the Hopi House, carries a stock of Indian handiwork and curios in addition to a limited supply of groceries and dry goods.

*Kolb Bros. studio* is at the head of Bright Angel Trail. The Kolb Bros. give, each day at 5 p. m., an interesting lecture, illustrated with motion pictures, describing their boat trip through the canyons of the Green, Grand, and Colorado Rivers. Admission, 50 cents.

Here, too, visitors may view the canyon through a telescope. Photographic views of the canyon are for sale.

## PUBLIC UTILITIES AND CONVENIENCES.

### POST OFFICE.

The post office, which does all kinds of postal business, is situated near the Hermit Rim Road about 400 yards west of the railroad depot. It is open from 8 a. m. to 6 p. m. Mail trains arrive at 8.10 a. m. and 4.15 p. m., and leave at 8.10 a. m. and 9 p. m.

### TELEGRAPH.

The Postal Telegraph Office, at the railroad depot, is open for all business from 7.30 a. m. to 10 p. m.

### TELEPHONE.

There is telephone connection between the El Tovar Hotel, National Park Service Office, ranger stations, and Hermit Camp. There is no telephone connection outside of the park.

## NATIONAL PARK SERVICE STATIONS.

There are ranger stations or camps where assistance and shelter may in emergency be obtained at places here named. These may be unoccupied, and it is well to inquire at the superintendent's office:

Hermit Basin, Tram Camp, at mouth of Bright Angel Creek on north side of Colorado River; Pipe Creek, on Tonto Trail 2 miles east of Indian Garden; Salt Creek, on Tonto Trail 5 miles west of Indian Garden; Grandview Public Camp; Rowe Well; and Grand Canyon village.

## MEDICAL SERVICE.

There is no doctor within the park. The nearest doctor is at Williams, Ariz. There is a hospital at Flagstaff, Ariz. There is a trained nurse at the El Tovar Hotel.

## SIGHT-SEEING TRIPS BY ROAD.

## REGULAR TRIPS BY AUTOMOBILE.

The following trips are available every day in the year by automobile:

*Hermit's Rest.*—Stopping en route at Maricopa, Hopi, Mohave, and Pima Points. First trip starts at 10 a. m., returning to El Tovar and Bright Angel about 12 noon. Second trip starts at 2 p. m., returning to El Tovar and Bright Angel about 4 p. m. Third trip starts at 4 p. m., returning to El Tovar at 6 p. m. Rate, \$3. This rate includes use of facilities and light refreshments at Hermit's Rest. This drive is 15 miles round trip along the Rim Road. There is also a sunset trip to Hopi or Mohave Points, leaving El Tovar and Bright Angel Camp at 6.30 and returning about 7.45.

*Hopi Point.*—El Tovar to Hopi Point, 2 miles west; rate \$1.50.

*Mohave Point.*—Three miles west; rate \$2.

## REGULAR SUMMER TRIPS BY AUTOMOBILE.

The following trips are available through the summer season (approximately from Apr. 15 to Nov. 15).

*Grandview.*—Through forest of tall pines via Long Jim Canyon and Thor's Hammer, 13 miles each way; time about 3½ hours. Leave El Tovar 9.30 a. m. and 2 p. m. daily. Rates, \$4. From Grandview may be seen that section of the canyon from Bright Angel Creek to Marble Canyon, including the great bend of the Colorado. On the eastern wall are Moran, Zuni, Papago, Pinal, Lipan, Navajo (Desert View), and Comanche Points; and the mouth of the Little Colorado River. Still farther beyond is the Painted Desert and Navajo Mountain—the latter plainly seen, though 120 miles away. The rim trail to Moran Point is interesting. Grandview Trail enters the canyon near Grandview Point.

*Desert View.*—Thirty-two miles each way via Long Jim Canyon, Thor's Hammer, Grandview, Hull Tank, Trash Dam, Tanner Tank, Old Aztec Ruin, Lipan Point, and head of Tanner Trail. Two round trips a day, leaving El Tovar about 9 a. m., and returning by 1.30 p. m. Rate for one person, \$20; for two persons, \$10 each; for three or more persons up to capacity of car, \$8 each. Special auto for parties of six persons or less, \$48; lunch extra, except for El Tovar guests.

At this point there is a far outlook not only into the canyon above the Granite Gorge, where the river valley widens, but also across the Painted Desert, toward Hopi Land, and along the Desert Palisades to the mouth of the Little Colorado. At sunset and sunrise it is a glorious sight. For that reason one preferably should arrange to stay overnight—a camping trip elsewhere referred to. One and one-half miles west of Desert View is Lipan Point, affording an excellent view of this whole region.

#### SPECIAL SUMMER TRIPS BY AUTOMOBILE.

These trips depend upon condition of roads and may be at times discontinued.

*Bass's Camp*, 24 miles, and *Havasupai Point*, 1 mile beyond. Rate same as Desert View trip.

*Yavapai and Grandeur Points.*—This drive extends 2 miles east of El Tovar. Rate, \$1.

#### PRIVATE CONVEYANCE RATES.

Where special cars are desired, an extra charge of \$2 is made for entire party, besides the individual rate for regular service.

As an example: The rate for regular trip to end of Rim Road is \$3 each person. If one person desires to make this trip in a special conveyance, that person would pay \$5; if two persons go, the entire expense would be \$8; for three persons, \$11; and so on up to six. The \$2 extra is collected for the party as a whole, and not individually.

Other rates for special autos vary with service performed.

NOTE.—If the demand for regular-trip drives is so heavy as to require use of all conveyances available, private trips will be discontinued temporarily.

#### TRAIL TRIPS.

*Hermit Trail, stopping at Hermit Camp overnight.*—Time, two days and one night. Hermit Road by auto. Down Hermit Trail, stay overnight at Hermit Camp; go to river at mouth of Hermit Creek; return up Hermit Trail to Rim; thence to El Tovar over Hermit Rim Road. Trips leave El Tovar and Bright Angel Cottages at 10 a. m. and return next afternoon. Rates, \$16.25 each person, including guide, overnight accommodations, and meals en route and at Hermit Camp. Private guide, \$5 per day extra.

*Bright Angel Trail.*—The trail here is generally open the year round. In midwinter it is liable to be closed for a day or two at the top by snow, but such blockade is not frequent. The trail reaches from the hotel 7 miles to the Colorado River, with a branch terminating at the top of the granite wall immediately overlooking the river. At this latter point the stream is 1,272 feet below, while El Tovar Hotel on the Rim is 3,158 feet above. The trip is made on muleback, accompanied by a guide.

Those wishing to reach the river leave the main trail at Indian Garden and follow the downward course of Indian Garden and Pipe Creeks.

Leave at 8.30 a. m. for the river trip, 7 miles; return to Rim 5.30 p. m. Rate, \$5 each person. Leave 10.30 a. m. for trip to plateau, 5 miles; rate, \$4 each. Rates quoted above are for each person in parties of three or more. For special trips with less than three persons there is a party charge of \$5 extra for guide. Lunch extra, except for El Tovar room guests.

It is necessary that visitors who walk down Bright Angel Trail and desire that guide and mules be sent to meet them, be charged full price and special guide fee of \$5. This is unavoidable, as the mules and guides are not available for any other trip.

*Hermit-Tonto-Bright Angel Loop.*—This trip takes two days and one night. Hermit Rim Road to head Hermit Trail; down Hermit Trail; stay overnight at Hermit Camp; go to river foot of Hermit Creek; return along Tonto Trail to Indian Garden; thence up Bright Angel Trail.

Start from El Tovar or Bright Angel Cottages at 10 a. m., and return next afternoon. Round trip charge is \$23.25 for each person; private guide is \$5 a day extra; rate quoted includes regular guide, overnight accommodations, and meals en route.

NOTE.—This trip can be lengthened to three days and two nights by spending an extra night in the canyon, also going to river at foot of Bright Angel Trail—a 34-mile journey. Rate, \$14 a day, one person; \$8 a day extra each additional person; provisions extra; includes guide.

*Dripping Spring.*—This trip is made on horseback all the way, or auto to Rim, and saddle horses down trail; 10 miles west, starts at 8.30 a. m. Rate, \$5 each for three or more persons; for less than three persons, \$5 extra for guide. Private parties of three or more persons, \$5 extra for guide.

Recently many new bridle paths along the Rim and through the pines of Tusayan have been opened up by the National Park Service, so that horseback riding now is possible for all. The animals are well trained and dependable. Saddle horses cost \$4 a day, or \$2.50 a half day. English, McClellan, Whitman, or Western stock saddles



furnished as requested. Sidesaddles not provided. The rate for special guides is \$5 a day, or \$2.50 a half day. Horseback trips over any of the trails into the canyon are only permitted when accompanied by guide. This is necessary to avoid risk in meeting trail parties and pack trains.

There are several interesting foot trails near Grand Canyon village. Information as to these may be obtained at the superintendent's office.

### CAMPING TRIPS.

Camping trips with pack and saddle animals, or with wagons and saddle animals, are organized, completely equipped, and placed in charge of experienced guides.

For climatic reasons it is well to arrange so that camping trips during the season from October to April are mainly confined to the inner canyon. For the remainder of the year, i. e., April to October, they may be planned to include both the canyon itself and the rim country.

The rates vary from \$10 to \$15 a day for one person; \$6 to \$8 a day each additional person. Such rates specially include services of guide and camp equipment; provisions extra; figures quoted are approximate only, varying with different outings.

*Cataract Canyon and Havasupai village.*—The best time to visit this place is from May to October. A journey of about 50 miles, first by wagon or auto, 35 miles across a timbered plateau, then on horseback down Topocobya Trail, along Topocobya and Cataract Canyons, to the home of the Havasupai Indians.

The home of this little band of 200 Indians is in Cataract Canyon, a tributary of the Grand Canyon, deep down in the earth two-fifths of a mile. The situation is romantic and the surroundings are beautified by falls of water over precipices several hundred feet high, backed by grottoes of stalactites and stalagmites. This water all comes from springs that gush forth in surprising volume near the Havasupai village.

The baskets made by the Havasupai women consist of the burden basket, a shallow tray, and a water bottle of willow. Those made by the older weavers are of fine mesh, with attractive designs, and bring good prices. Havasupai means people of the blue water. Padre Garces was the first white man to visit their canyon home. In early days the Havasupais undoubtedly were cliff dwellers. They built nearly all the Grand Canyon trails, or rather their rude pathways were the advance guard of the present trails. Their summer homes resemble those of the Apaches. The winter homes afford more protection against the weather.

The round trip from El Tovar is made in three days, at an expense of \$15 a day for one person, \$20 a day for two persons, and \$25 a day

for three persons. Each additional member after party of three, \$5 a day; provisions extra. These rates include service for party of one or two persons, also cost of horse feed, but do not include board and lodging at Supai village for members of party and guide while stopping with Indian agent, who charges \$2 a day for each person.

For parties of three to six persons an extra guide is required, whose services are charged for at \$5 a day, besides his board and lodging at the village.

**NOTE.**—At the western end of the Granite Gorge is a trail down to the Colorado River and up the other side to Point Sublime and Powell's Plateau, the river being crossed by ferry. Reached by team from El Tovar, a distance of 24 miles, or it can be seen as a detour on the Cataract Canyon trip; rates on application.

*Desert View.*—Elsewhere reference is made to Desert View auto trip. When taken by wagon it occupies three days, leaving El Tovar morning of first day and returning afternoon of third day, with all night camp at destination. Rate, \$10 for one person and \$5 each additional person; provisions extra; rate named includes one guide; an extra guide costs \$5 a day.

*Little Colorado River.*—The trip to the mouth of the Little Colorado is a most interesting one. Leaving El Tovar in the morning by wagon, camp is made the first day at Deer Tank. The next day the cliff dwellings are visited and the plateau overlooking the Canyon of the Little Colorado is reached by midday. From the edge of the plateau to the bottom of the canyon is a straight drop of 2,500 feet. Rates on application.

*Painted Desert and Hopi Land.*—The trip is made with saddle and pack animals. The first night the camp is at Saddle Horse Tanks. Hopi Crossing of the Little Colorado is reached the next afternoon and Tuba City the third day. The Hopi village of Moenkopie is seen en route.

The Painted Desert country affords a most interesting study of a phase of Indian entertainment, little known to white people. Rates on application.

Other camping trips are being arranged for by the National Park Service. Information may be obtained at the Superintendent's Office.

### SADDLE-HORSE TRIPS ON THE NORTH RIM.

From the camp arrangements may be made for saddle-horse trips to various points of interest on the North Rim and in the canyon. Time required and rates are as follows:

Side trips and rates therefor from "Wiley Way" Camp, Bright Angel Point:

To Point Harris, 1-day trip.

To Point Sublime, 2-day trip.

To Cape Royal, 2-day trip.

Saddle horses for these trips or for special trips on the plateau, \$3 each per day.

Down Bright Angel Trail to river, a three-day trip, the rate is \$5 per day for each horse.

Guide for all trips, \$5 per day.

For all overnight trips one or more pack horses must accompany the party, the rates for these being the same as for saddle horses.

Bedding and provisions, \$2.50 per day for each person.

### **PETRIFIED FOREST NATIONAL MONUMENT.**

Tourists visiting Grand Canyon National Park either by rail or by automobile should plan a stopover at the Petrified Forest National Monument.

There are three groups of petrified trees in this reservation. The first forest lies 6 miles south of Adamana, Ariz., a station on the main line of the Atchinson, Topeka & Santa Fe Railroad, and the second forest is  $2\frac{1}{2}$  miles south of it. The third or Rainbow forest lies 13 miles south of Adamana and 18 miles southeast of Holbrook, Ariz. It is best to approach the third forest from Holbrook; the other two are best reached from Adamana.

This area is of great interest because of the abundance of petrified coniferous trees which lie scattered about in great profusion. None are standing as in the Yellowstone National Park. These trees probably at one time grew beside an inland sea; after falling they became water-logged, and during the decomposition the cell structure was entirely replaced by silica derived from sandstone in the surrounding land. Over a greater part of the entire area trees are scattered in all conceivable positions and in fragments of all sizes.

In the first forest may be seen the well-known natural bridge, consisting of a large petrified tree trunk 60 feet long spanning a canyon 45 feet wide, and forming a foot bridge over which anyone may easily pass. The trunks in the Rainbow forest are larger than elsewhere, more numerous and less broken. Several hundred entire trees are found here, some of which are more than 200 feet long. The color of the wood is deeper and more striking than in the other localities.

"There is no other petrified forest," says Prof. Lester F. Ward, "in which the wood assumes so many varied and interesting forms and colors, and it is these that present the chief attraction for the general public. The state of mineralization in which much of this wood exists almost places them among the gems or precious stones. Not only are chalcedony, opals, and agates found among them, but many approach the condition of jasper and onyx. The degree of hardness attained by them is such that they are said to make an excellent quality of emery."

## ADMINISTRATION.

Petrified Forest National Monument is under the jurisdiction of the Director, National Park Service, Department of the Interior, Washington, D. C. The Monument Custodian is located at Adamana, Ariz.

### COSTS OF TRIPS AND HOTEL ACCOMMODATIONS.

Except the small hotel, railway station, and store, there are few buildings at Adamana. Mr. Wm. Nelson has charge of the hotel and transportation accommodations. The hotel has sanitary plumbing, with hot and cold water. Board and lodging may be had at \$3 per day, American plan; 35 guests can be accommodated; in summer, tents also are provided for guests.

The round-trip fare to the first and second forests and natural bridge is \$5 for one person, \$3 per capita for two persons, and \$2.50 per capita for three or more.

To the third, Blue, or North Sigillaria forests and Painted Desert the fare is same as to the first and second forests.

Holbrook, the county seat town, has satisfactory hotel accommodations, with prices about the same as at Adamana.

The petrified forest may be visited any day in the year, except when high waters make the streams temporarily impassable.

### STOP-OVER ARRANGEMENTS.

Stop-overs are allowed at Adamana, not to exceed 10 days, on all one-way tickets, also on round-trip tickets within their limits.

To obtain stop-overs on one-way tickets, notify train conductor and deposit tickets with agent immediately after arrival; on round-trip tickets notify train conductors.

## RULES AND REGULATIONS.

### GENERAL REGULATIONS.

(In effect Mar. 1, 1920.)

The following rules and regulations for the government of Grand Canyon National Park are hereby established and made public, pursuant to authority conferred by the acts of Congress approved August 25, 1916 (39 Stat., 535), and February 26, 1919 (40 Stat., 1175).

1. *Preservation of natural features and curiosities.*—The destruction, injury, or defacement, or disturbance in any way of the public buildings, signs, equipment or other property, or the trees, flowers, vegetation, rocks, minerals, animal or bird or other life, or other natural conditions and curiosities in the park, is prohibited.

2. *Camping.*—No camp shall be made along roads except at designated localities. Blankets, clothing, hammocks, or any other article likely to frighten teams shall not be hung near the road.

Many successive parties camp on the same sites during the season; therefore camp grounds shall be thoroughly cleaned before they are abandoned. Tin cans, bottles, cast-off clothing, and all other débris shall be placed in garbage cans or pits provided for the purpose. When camps are made in unfrequented localities where pits or cans may not be provided, all refuse shall be burned or hidden where it will not be offensive to the eye.

Campers may use dead or fallen timber only, for fuel.

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 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 the responsibility of custody of any property for the convenience of visitors.

5. *Fishing*.—Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line, or for merchandise or profit, is prohibited. Fishing in particular water may be suspended, or the number of fish that may be taken by one person in any one day from the various streams or lakes may be regulated by the superintendent. All fish hooked less than 6 inches long shall be carefully handled with moist hands and returned at once to the water if not seriously injured. Fish retained shall be killed. Twenty fish shall constitute the limit for a day's catch, provided that no more than 20 pounds of trout, bass, crappie, or catfish may be taken in any one day.

6. *Private operations*.—No person, firm, or corporation shall reside permanently, engage in any business, operate a moving-picture camera, or erect buildings upon the Government lands 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.

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

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

9. *Mining*.—The location of mining claims on Government lands in the park is permitted only with the prior approval of the Secretary of the Interior.

10. *Patented lands*.—Owners of patented lands within the park limits are entitled to the full use and enjoyment thereof; the boundaries of such lands, however, shall be determined and marked and defined so that they may be readily distinguished from the park lands. While no limitations or conditions are imposed upon the use of private lands so long as such use does not interfere with or injure the park, private owners shall provide against trespass by their live stock upon the park lands, and all trespasses committed will be punished to the full extent of the law. Stock may be taken over the park lands to patented private lands with the written permission and under the supervision of the superintendent, but such permission and supervision are not required when access to such private lands is had wholly over roads or lands not owned or controlled by the United States.

11. *Grazing*.—The running at large, herding, or grazing of live stock of any kind on the Government lands 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. Google

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 and cats.*—Cats are not permitted on the Government lands in the park and dogs only to those persons passing through the park to the territory beyond, in which instances they shall be kept tied while crossing 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 on trails.*—Pedestrians on trails, when saddle or pack animals are passing them, shall remain quiet until the animals have passed.

Persons traveling on the trails of the park either on foot or on saddle animals shall not make short cuts but shall confine themselves to the main trails.

16. *Travel—general.*—(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) Wagons used in hauling heavy freight over the park roads shall have tires not less than 4 inches in width.

(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.

17. *Miscellaneous.*—(a) Campers and others shall not wash clothing or cooking utensils in the waters of the park, or in any way pollute them, or bathe in any of the streams near the regularly traveled thoroughfares in the park without suitable bathing clothes.

(b) 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.

(c) 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.

(d) 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.

18. *Fines and penalties.*—Persons who render themselves obnoxious by disorderly conduct or bad behavior shall be subjected to the punishment hereinafter prescribed for violation of the foregoing regulations and 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 fined not more than \$500 or imprisoned not more than one year, or both.

#### AUTOMOBILE AND MOTORCYCLE REGULATIONS.

Pursuant to authority conferred by the act of Congress approved August 25, 1916 (39 Stat., 535), and the act of Congress approved February 26, 1919 (40 Stat., 1175), the following regulations governing the admission of automobiles and motorcycles into the Grand Canyon National Park are hereby established and made public:

1. *Entrances and roads.*—Automobiles and motorcycles may enter and leave the park by, and travel over, any of the roads therein which are open to motor vehicles.

Careful driving is demanded of all persons using the roads. The Government is in no way responsible for any kind of accident.

2. *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. Automobiles and horse-drawn vehicles shall have the right of way over motorcycles.

3. *Hours.*—Automobiles shall not enter or leave the park or use the park roads before 5.30 a. m. or after 10.30 p. m. except in case of emergency.

4. *Intoxication.*—No person who is under the influence of intoxicating liquor, and no person who is addicted to the use of narcotic drugs shall operate or drive a motor vehicle of any kind on the park roads.

5. *Distance apart; gears and brakes.*—Automobiles while in motion shall be not less than 50 yards apart, except for purpose of passing, which is permissible only on comparatively level stretches of roads



or on slight grades. All automobiles, except while shifting gears, shall retain their gears constantly enmeshed. The driver of each automobile may be required to satisfy park officers 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. Motorcycles not equipped with brakes in good working order are not permitted to enter the park.

6. *Speeds*.—Speed is limited to 12 miles per hour on grades and when rounding sharp curves. On straight open stretches when no team is nearer than 200 yards the speed may be increased to 20 miles per hour.

7. *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 automobiles, motorcycles, riding or driving animals, or pedestrians.

8. *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 road. Headlights shall be dimmed when meeting other automobiles, motorcycles, riding or driving animals, or pedestrians.

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

10. *Teams*.—When teams, saddle horses, or pack trains approach, automobiles shall take the outer edge of the roadway regardless of the direction in which it 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 an hour.

11. *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 road in question.

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.

12. *Accidents, stop-overs.*—If, because of accident or stop for any reason, automobiles are unable to keep going, they shall be immediately parked off the road or, where this is impossible, on the outer edge of the road.

13. *Fines and penalties.*—The penalty provided by law for violation of any of the foregoing regulations is a fine of not exceeding \$500 or imprisonment for not exceeding one year, or both, and such violation shall subject the offender to immediate ejection from the park. Persons ejected from the park will not be permitted to return without prior sanction in writing from the Director of the National Park Service or the superintendent of the park.

### MAPS.

The following maps<sup>1</sup> may be obtained from the Director of the United States Geological Survey, Washington, D. C. Remittances should be made by money order or in cash.

SHINUMO, 28½ by 25 inches, scale about 1 mile to 1½ inches, contour interval 50 feet.

BRIGHT ANGEL, 26 by 20½ inches, scale about 1 mile to 1½ inches, contour interval 50 feet. Contains a geologic history of Bright Angel Quadrangle, by L. F. Nobel on reverse side of map.

VISHNU, 28 by 21 inches, scale about 1 mile to 1½ inches, contour interval 50 feet.

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

### LITERATURE.

#### GOVERNMENT PUBLICATIONS.

Government publications on Grand Canyon 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.

Glimpses of our National Parks. 48 pages.

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

Map of National Parks and National Monuments.

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

#### 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 indicated. Postage prepaid. Remittances should be made by money order or in cash.

The National Parks Portfolio. By Robert Sterling Yard. 260 pages, including 270 illustrations. Pamphlet edition, loose in flexible cover, 35 cents; book edition, containing same material securely bound in cloth, 55 cents.

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

<sup>1</sup> May be purchased also by personal application at the office of the superintendent of the park, but that office can not fill mail orders..

Guidebook of the Western United States, Part C, the Sante Fe Route, with a side trip of the Grand Canyon of the Colorado, by N. H. Darton and others. (Bulletin 613, U. S. Geological Survey.) 1915. 194 pages, 25 route maps, 42 plates, 40 text figures. 50 cents.

This guide describes the country along the Atchison, Topeka & Santa Fe Railroad from Kansas City to Los Angeles. Although the description of the rocks and their relations and the scenic features form a large proportion of the matter, nearly every page gives information as to notable historic events, industrial resources, plants, and animals. The story of the Indians, past and present, especially the characteristic Pueblo tribes, is told in some detail. Many of the facts regarding the rocks are here presented for the first time. The book contains numerous views of prominent scenic features and pictures of restoration of some of the very remarkable animals whose bones are found in the clays.

Exploration of the Colorado River of the West and its Tributaries, by John Wesley Powell. Explored in 1869, 1870, 1871, and 1872. Pp. 291. Under the direction of the secretary of the Smithsonian Institution. Illustrated. Government Printing Office, Washington, 1875. (Out of print.)

Pre-Cambrian Igneous Rocks of the Unkar Terrane, Grand Canyon of the Colorado, Ariz., by C. D. Walcott. U. S. Geol. Surv. 14th Ann. Rept., pt. 2, pp. 497-524, pls. 60-65. 1894. \$2.10.

The Grand Canyon. Senate Doc., No. 42, 65th Congress, 1st session, by Thomas Fulton Dawson, Government Printing Office, Washington, D. C., 1917. 67 pp. Price 10 cents.

An article giving credit of first traversing the Grand Canyon to James White, a Colorado gold prospector.

Tertiary History of the Grand Canyon District, by Clarence E. Dutton. U. S. Geol. Surv. Mon., 2,264 pp., ill. and atlas, 1882. \$10.

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"Breaking the Wilderness." Pp. 360. G. P. Putnam's Sons, New York, 1905. Fully illustrated. Grand Canyon chapter, pp. 318-327. Price, \$3.50.

"The Romance of the Colorado River." Pp. 401. G. P. Putnam's Sons, New York. Fully illustrated. (A complete account of the discovery and of the explorations from 1540 to the present time, with particular reference to the two voyages of Powell through the line of the great canyons.) Price, \$3.50.

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### OTHER NATIONAL PARKS.

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

Yellowstone National Park.	The Hot Springs of Arkansas.
Mount Rainier National Park	Glacier National Park.
Yosemite National Park.	Wind Cave National Park.
Mesa Verde National Park.	Rocky Mountain National Park.
Sequoia and General Grant National Parks.	Crater Lake National Park.

### NATIONAL MONUMENTS.

The following publication relating to the national monuments may be obtained free of charge by writing to the Director of the National Park Service, Washington, D. C.:

Casa Grande National Monument.

## AUTHORIZED RATES FOR PUBLIC UTILITIES, SEASON 1921.

### HOTELS AND PUBLIC CAMPS.

The following hotels, etc., are operated by Fred Harvey:

#### EL TOVAR.

The El Tovar is located at the railroad terminus, near the head of Bright Angel Trail, at an elevation of 6,866 feet above sea level, and open all the year. It is a long, low structure, built of native boulders and pine logs. There are 93 sleeping rooms accommodating 175 guests. Forty-six of these rooms are connected with private bath.

There is a music room and rendezvous. In the main dining room 165 persons can be seated at one time.

Hot and cold water, steam heat, and electric light are supplied. El Tovar also has a steam laundry.

#### *Authorized rates at El Tovar Hotel.*

##### American plan:

One person in room without bath, per day..... \$6. 00

One person in room with bath, per day..... 8. 00

There are few exceptional rooms with bath carrying an additional charge.

##### Meals only:

Breakfast..... 1. 25

Luncheon..... 1. 25

Dinner..... 1. 50

#### BRIGHT ANGEL COTTAGES.

Cozy lodgings in cottages or tents at Bright Angel Cottages, adjacent to El Tovar. The accommodations are clean and comfortable. There are four cottages, open the year round and several large tents for summer only. All of the cottages have steam heat and electric light; one cottage also has baths. About 150 persons can be accommodated here. Meals are furnished a la carte at the café. Kitchen facilities are ample for quick a la carte service.

#### *Authorized rates at Bright Angel cottages.*

Lodging only, per day, per person..... \$1. 50-\$2

**HERMIT CAMP.**

On Tonto Plateau at the foot of Hermit Train; consists of a central dining room, lounge tent, and 11 sleeping tents, accommodations for 30 persons.

*Authorized rates at Hermit Camp.*

American plan, per day, per person. .... \$5

**DESERT VIEW.**

Overlooking Painted Desert, Marble Canyon, and Grand Canyon, several cottages may be occupied for limited periods. See page 40.

**WYLIE WAY CAMP ON NORTH RIM.**

At Bright Angel Point on the North Rim is "Wylie Way" Tourist Camp, consisting of a central dining tent and comfortable sleeping tents, with accommodations for 25 persons. Rates are \$6 per day.

**REST HOUSES.****THE LOOKOUT.**

The Lookout is a quaint observatory and rest house, built on the edge of the rim near the head of Bright Angel Trail. It is equipped with a large binocular telescope in the tower, for observing the most distant reaches of the canyon by day and for viewing the heavens by night. There is a small library for the layman and scientist. Canyon maps and photos are for sale. The reception room has spacious windows, a fireplace, Navajo rugs, and easy chairs; it is electric lighted and steam heated.

**HERMIT'S REST.**

Where Hermit Rim Road ends and Hermit Trail begins is a unique rest house, built into the hill, with a roofed-in porch and parapet wall. As the name implies, it is intended to provide rest and shelter for parties who take the Rim Road drive, or the Hermit Trail trip. Guests may sit at the tables outside or sheltered by the glass front inside, according to weather, and enjoy a light lunch in unusual surroundings. Admission is by ticket. Tickets may be obtained at El Tovar or Bright Angel Camp, at 50 cents.

**SHOPS AND STORES.****HOPÍ HOUSE.**

Opposite El Tovar is a reproduction of the dwellings of the Hopi Indians and several Navajo hogans.

In Hopi House are installed collections of Indian handiwork. Here also live a small band of Hopis, who are among the more primi-

tive of our Indians. The men weave blankets and the women make pottery.

The homes of the Hopis are on the edge of the Painted Desert, perched on the crests of lofty mesas where they live as did their forebears and cling to their high dwelling place. They are industrious, thrifty, orderly, and mirthful. A round of ceremonies, each terminating in the pageants, called "dances," marks the different seasons of the year. Subsisting almost wholly by agriculture in an arid region of uncertain crops, they find time between their labors for light-hearted dance and song, and for elaborate ceremonials, which are grotesque in the Katchina, or masked dances, ideally poetic in the flute dance, and intensely dramatic in the snake dance. In the three and a half centuries of contact with the white race their manner of life has not materially changed. The Indian tribes that roamed over mountain and plain have become wards of the Government, but the Pueblo Indian has absolutely maintained his individuality.

The Navajo women weave fine blankets and many of the men are expert silversmiths, who fashion bracelets, rings, and other articles from Mexican coin silver. The Navajo Indian Reservation—one of the largest in the United States—borders Marble Canyon on the east. They are a pastoral people, intelligent, and, like the Hopis, self-supporting. They own large numbers of sheep, cattle, and horses. The Navajos are tall, rather slender, and agile. They have been rightly called the Bedouins of the Desert. Nowhere are they gathered into permanent villages. Although "civilized," they still cling to old customs and old religious forms. The medicine man, or Shaman, has a large following, if not a large per cent of cures. Their dance ceremonies are weird in the extreme. The fire dance is a spectacular 10-day ceremony, seldom witnessed by white men, and occurring only once in seven years.

Supai Indians from Cataract Canyon frequently visit El Tovar.

#### KOLB BROS.' STUDIO.

Kolb Bros.' studio is at the head of Bright Angel Trail. The Kolb Bros. give, each day, an interesting lecture, illustrated with motion pictures and slides, describing their boat trip through the canyons of the Green, Grand, and Colorado Rivers. Admission, 50 cents.

Here, too, visitors may view the canyon through a telescope and obtain reliable information. Photographic views and other pictures, representing their many years' exploration of the Grand Canyon, are for sale.

*The Independent Store*, which is situated on the Rim just east of the Hopi House, carries a stock of Indian handiwork and curios.



**SIGHT-SEEING TRIPS BY ROAD.****REGULAR TRIPS BY AUTOMOBILE.**

The following trips are available every day in the year by automobile:

*Hermit's Rest.*—Stopping en route at Maricopa, Hopi, Mohave, and Pima Points. First trip starts at 10 a. m., returning to El Tovar and Bright Angel about 12 noon. Second trip starts at 2 p. m., returning to El Tovar and Bright Angel about 4 p. m. Third trip starts at 4 p. m., returning to El Tovar at 6 p. m. Rate, \$3. This rate includes use of facilities and light refreshments at Hermit's Rest. This drive is 15 miles round trip along the Rim Road. There is also a sunset trip to Hopi or Mohave Points, leaving El Tovar and Bright Angel Camp at 6.30 and returning about 7.45.

*Hopi Point.*—El Tovar to Hopi Point, 2 miles west; rate, \$1.50.

*Mohave Point.*—Three miles west; rate, \$2.

**REGULAR SUMMER TRIPS BY AUTOMOBILE.**

The following trips are available through the summer season (approximately from Apr. 15 to Nov. 15).

*Grandview.*—Through forest of tall pines via Long Jim Canyon and Thor's Hammer, 13 miles each way; time about 3½ hours. Leave El Tovar 9.30 a. m. and 2 p. m. daily. Rates, \$4. From Grandview may be seen that section of the canyon from Bright Angel Creek to Marble Canyon, including the great bend of the Colorado. On the eastern wall are Moran, Zuni, Papago, Pinal, Lipan, Navajo, (Desert View), and Comanche Points; and the mouth of the Little Colorado River. Still farther beyond is the Painted Desert and Navajo Mountain—the latter plainly seen, though 120 miles away. The rim trail to Moran Point is interesting. Grandview Trail enters the canyon near Grandview Point.

*Desert View.*—Thirty-two miles each way via Long Jim Canyon, Thor's Hammer, Grandview, Hull Tank, Trash Dam, Tanner Tank, Old Aztec Ruin, Lipan Point, and head of Tanner Trail. Two round trips a day, leaving El Tovar about 9 a. m., and returning by 1.30 p. m. Rate for one person, \$20; for two persons, \$10 each; for three or more persons up to capacity of car, \$8 each. Special auto for parties of six persons or less, \$48; lunch extra, except for El Tovar guests.

At this point there is a far outlook not only into the canyon above the Granite Gorge, where the river valley widens, but also across the Painted Desert, toward Hopi Land, and along the Desert Palisades to the mouth of the Little Colorado. At sunset and sunrise it is a glorious sight. For that reason one preferably should arrange to stay overnight—a camping trip elsewhere referred to. One and one-half miles west of Desert View is Lipan Point, affording an excellent view of this whole region.

## SPECIAL SUMMER TRIPS BY AUTOMOBILE.

These trips depend upon condition of roads and may be at times discontinued.

*Bass's Camp*, 24 miles, and *Havasupai Point*, 1 mile beyond. Rate same as *Desert View* trip.

*Yavapai and Grandeur Points*.—This drive extends 2 miles east of *El Tovar*. Rate, \$1.

## PRIVATE CONVEYANCE RATES.

Where special cars are desired, an extra charge of \$2 is made for entire party, besides the individual rate for regular service.

As an example: The rate for regular trip to end of *Rim Road* is \$3 each person. If one person desires to make this trip in a special conveyance, that person would pay \$5; if two persons go, the entire expense would be \$8; for three persons, \$11; and so on up to six. The \$2 extra is collected for the party as a whole, and not individually.

Other rates for special autos vary with service performed.

NOTE.—If the demand for regular-trip drives is so heavy as to require use of all conveyances available, private trips will be discontinued temporarily.

## GARAGE SERVICE.

There is at *Grand Canyon* a large stone garage with ample facilities for repairing and supplying automobiles. The rate for storage of automobiles is \$1 per day.

## TRAIL TRIPS.

*Hermit Trail, stopping at Hermit Camp overnight*.—Time, two days and one night. *Hermit Road* by auto. Down *Hermit Trail*, stay overnight at *Hermit Camp*; go to river at mouth of *Hermit Creek*; return up *Hermit Trail* to *Rim*; thence to *El Tovar* over *Hermit Rim Road*. Trips leave *El Tovar* and *Bright Angel Cottages* at 10 a. m. and return next afternoon. Rates, \$18.25 each person, including guide, overnight accommodations, and meals en route and at *Hermit Camp*. Private guide, \$5 per day extra.

*Bright Angel Trail*.—The trail here is generally open the year round. In midwinter it is liable to be closed for a day or two at the top by snow, but such blockade is not frequent. The trail reaches from the hotel 7 miles to the *Colorado River*, with a branch terminating at the top of the granite wall immediately overlooking the river. At this latter point the stream is 1,272 feet below, while *El Tovar Hotel* on the *Rim* is 3,158 feet above. The trip is made on muleback, accompanied by a guide.

Those wishing to reach the river leave the main trail at Indian Garden and follow the downward course of Indian Garden and Pipe Creeks.

Leave at 8.30 a. m. for the river trip, 7 miles; return to Rim 5.30 p. m. Rate, \$6 each person. Leave 10.30 a. m. for trip to plateau, 5 miles; rate, \$5 each. Rates quoted above are for each person in parties of three or more. For special trips with less than three persons there is a party charge of \$5 extra for guide. Lunch extra, except for El Tovar room guests.

It is necessary that visitors who walk down Bright Angel Trail and desire that guide and mules be sent to meet them, be charged full price and special guide fee of \$5. This is unavoidable, as the mules and guides are not available for any other trip.

*Hermit-Tonto-Bright Angel Loop.*—This trip takes two days and one night. Hermit Rim Road to head Hermit Trail; down Hermit Trail; stay overnight at Hermit Camp; go to river foot of Hermit Creek; return along Tonto Trail to Indian Garden; thence up Bright Angel Trail.

Start from El Tovar or Bright Angel Cottages at 10 a. m., and return next afternoon. Round trip charge is \$23.25 for each person; private guide is \$5 a day extra; rate quoted includes regular guide, overnight accommodations, and meals en route.

NOTE.—This trip can be lengthened to three days and two nights by spending an extra night in the canyon, also going to river at foot of Bright Angel Trail—a 34-mile journey. Rate, \$14 a day, one person; \$8 a day extra each additional person; provisions extra; includes guide.

*Dripping Spring.*—This trip is made on horseback all the way, or auto to Rim, and saddle horses down trail; 10 miles west, starts at 8.30 a. m. Rate, \$5 each for three or more persons; for less than three persons, \$5 extra for guide. Private parties of three or more persons, \$5 extra for guide.

Recently many new bridle paths along the Rim and through the pines of Tusayan have been opened up, so that horseback riding now is possible for all. The animals are well trained and dependable. Saddle horses cost \$4 a day, or \$2.50 a half day. English, McClellan, Whitman, or Western stock saddles furnished as requested. Side-saddles not provided. The rate for special guides is \$5 a day, or \$2.50 a half day. Horseback trips over any of the trails into the canyon are only permitted when accompanied by guide. This is necessary to avoid risk in meeting trail parties and pack trains.

There are several interesting foot trails near Grand Canyon village. Information as to these may be obtained at the superintendent's office.

## CAMPING TRIPS.

Camping trips with pack and saddle animals, or with wagons and saddle animals, are organized, completely equipped, and placed in charge of experienced guides.

For climatic reasons it is well to arrange so that camping trips during the season from October to April are mainly confined to the inner canyon. For the remainder of the year, i. e., April to October, they may be planned to include both the canyon itself and the rim country.

The rates vary from \$10 to \$15 a day for one person; \$6 to \$8 a day each additional person. Such rates specially include services of guide and camp equipment; provisions extra; figures quoted are approximate only, varying with different outings.

*Cataract Canyon and Havasupai village.*—The best time to visit this place is from May to October. A journey of about 50 miles, first by wagon or auto, 35 miles across a timbered plateau, then on horseback down Topocobya Trail, along Topocobya and Cataract Canyons, to the home of the Havasupai Indians.

The home of this little band of 200 Indians is in Cataract Canyon, a tributary of the Grand Canyon, deep down in the earth two-fifths of a mile. The situation is romantic and the surroundings are beautified by falls of water over precipices several hundred feet high, backed by grottoes of stalactites and stalagmites. This water all comes from springs that gush forth in surprising volume near the Havasupai village.

The baskets made by the Havasupai women consist of the burden basket, a shallow tray, and a water bottle of willow. Those made by the older weavers are of fine mesh, with attractive designs, and bring good prices. Havasupai means people of the blue water. Padre Garces was the first white man to visit their canyon home. In early days the Havasupais undoubtedly were cliff dwellers. They built nearly all the Grand Canyon trails, or rather their rude pathways were the advance guard of the present trails. Their summer homes resemble those of the Apaches. The winter homes afford more protection against the weather.

The round trip from El Tovar is made in three days, at an expense of \$15 a day for one person, \$20 a day for two persons, and \$25 a day for three persons. Each additional member after party of three, \$5 a day; provisions extra. These rates include service for party of one or two persons, also cost of horse feed, but do not include board and lodging at Supai village.

For parties of three to six persons an extra guide is required, whose services are charged for at \$5 a day.

NOTE.—At the western end of the Granite Gorge is a trail down to the Colorado River and up the other side to Point Sublime and Pow-

ells Plateau, the river being crossed by ferry. Reached by team from El Tovar, a distance of 24 miles, or it can be seen as a detour on the Cataract Canyon trip; rates on application.

*Desert View.*—Elsewhere reference is made to Desert View auto trip. When taken by wagon it occupies three days, leaving El Tovar morning of first day and returning afternoon of third day, with all night camp at destination. Rate, \$10 for one person and \$5 each additional person; provisions extra; rate named includes one guide; an extra guide costs \$5 a day.

*Little Colorado River.*—The trip to the mouth of the Little Colorado is a most interesting one. Leaving El Tovar in the morning by wagon, camp is made the first day at Deer Tank. The next day the cliff dwellings are visited and the plateau overlooking the Canyon of the Little Colorado is reached by midday. From the edge of the plateau to the bottom of the canyon is a straight drop of 2,500 feet. Rates on application.

*Painted Desert and Hopi Land.*—The trip is made with saddle and pack animals. The first night the camp is at Saddle Horse Tanks. Hopi Crossing of the Little Colorado is reached the next afternoon and Tuba City the third day. The Hopi village of Moenkopie is seen en route.

The Painted Desert country affords a most interesting study of a phase of Indian entertainment, little known to white people. Rates on application.

Other camping trips are being arranged for by the National Park Service. Information may be obtained at the Superintendent's Office.

### SADDLE-HORSE TRIPS ON THE NORTH RIM.

From the camp arrangements may be made for saddle-horse trips to various points of interest on the North Rim and in the canyon. Time required and rates are as follows:

Side trips and rates therefor from "Wylie Way" Camp, Bright Angel Point:

To Point Harris, 1-day trip.

To Point Sublime, 2-day trip.

To Cape Royal, 2-day trip.

Saddle horses for these trips or for special trips on the plateau, \$3 each per day.

Down Bright Angel Trail to river, a three-day trip, the rate is \$5 per day for each horse.

Guide for all trips, \$5 per day.

For all overnight trips one or more pack horses must accompany the party, the rates for these being the same as for saddle horses.

Bedding and provisions, \$2.50 per day for each person.







A PORTION OF THE FIRST FOREST.

The profusion of petrified wood is clearly shown.



Photographs by Wm. Nelson.

ROOT OF PETRIFIED TREE, 7 FEET IN DIAMETER.

The profile resembles a dog's or lion's head.

PETRIFIED FOREST NATIONAL MONUMENT, ARIZONA.





Copyright by Fred Harvey.

COMING DOWN A STEEP STRETCH ON THE HERMIT TRAIL.

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SEP 27 1922

DEPARTMENT OF THE INTERIOR

ALBERT B. FALL, SECRETARY

NATIONAL PARK SERVICE

STEPHEN T. MATHER, DIRECTOR



RULES AND REGULATIONS

# GRAND CANYON

## NATIONAL PARK

### ARIZONA



GRAND CANYON FROM NEAR MOHAVE POINT.

OPEN ALL THE YEAR

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1922



Photograph by Pacific Stereopticon Co.

# HAVASUPAI INDIAN RESERVATION IN THE HAVASU CANYON.

The walls are deep red sandstone. The older Indians regard the two upstanding rocks as sacred.



Copyright by F. H. Maude.

# HAVASUPAI INDIAN WOMAN GRINDING CORN IN A METATE.

These Indians are extremely primitive in their methods and manner of life.

# THE NATIONAL PARKS AT A GLANCE.

[Number, 19; total area, 11,304 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 bath-houses under public control.
Yellowstone..... 1872	Northwestern Wyo- ming.	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 Cali- fornia.	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 Cali- fornia.	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 Cali- fornia.	4	Created to preserve the celebrated General Grant Tree, 35 feet in diameter—6 miles from Sequoia National Park.
Mount Rainier..... 1899	West Central Wash- ington.	324	Largest accessible single peak glacier system—28 glaciers, some of large size—48 square miles of glacier, 50 to 500 feet thick—Wonderful sub-alpine 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 Colo- rado.	77	Most notable and best preserved prehistoric cliff dwellings in United States, if not in the world.
Glacier..... 1910	Northwestern Mon- tana.	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 Colo- rado.	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 6,870 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 describing each of a national park, and one chapter devoted to other large monuments. 248 pages, 36 illustrations including

Sent postpaid, upon receipt of price in cash or money order, by the Superintendent of Documents, Government Printing Office, Washington, D. C.

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# GRAND CANYON NATIONAL PARK.

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## GENERAL DESCRIPTION.

The Grand Canyon National Park is in northern Arizona. Its 958 square miles inclose 56 miles of the Grand Canyon stretching west of its beginning at the mouth of the Marble Canyon. Through it winds the Colorado River for a distance of 103 miles. From rim to rim the canyon varies from 8 to 20 miles in width; it is more than a mile deep measured from the north rim, which averages nearly a thousand feet higher than the south rim. The eastern boundary includes the lofty painted walls east of which lies the Painted Desert. Its western boundary includes the broad Havasu Canyon, tributary from the south, in whose depths we find the Havasupai Indian Reservation and a group of fine waterfalls markedly different from any in our other national parks.

The park boundaries hug the rim closely. Very little of the country back of the rim is included in the reservation, scarcely enough in places to take care of the great increase of travel which national parkhood will bring to the Grand Canyon during the next several years. These border lands are wonderfully attractive. The northern rim is heavily forested with pine and spruce interspersed with beautiful glades of quaking aspen. The southern rim carries a slender semiarid flowering vegetation of rich beauty and wide variety and south of the railroad station lie a few square miles of fine yellow pine forest.

The Grand Canyon was made a national park in February, 1919, thirty-three years after Benjamin Harrison, then Senator from Indiana, introduced the first of several bills to give it park status. Politics, local apathy, and private interests, which sought to utilize its water power and to find minerals in its depths, were the principal causes of delay. All efforts failing to make it a national park, in 1908 President Roosevelt made it a national monument. Once a railroad was surveyed through it. A scenic railroad was projected along its south rim. Less than a year before it became a park efforts were making in New York to raise money to dam its waters for power and irrigation.

## A MIGHTY SPECTACLE.

There is no doubt that the Grand Canyon is one of the world's very greatest spectacles. It is impossible to compare it with the tremendous white spectacle of the Himalayas, or with the House of

Everlasting Fire of the Hawaii National Park, or with the 17,000 feet of snow and glacier which rise abruptly between the observer's eyes and the summit of Mount McKinley, because it has nothing in common with any of these. But of its own kind there is nothing in the world which approaches it in form, size, and glowing color; it is much the greatest example of stream erosion. And in its power to rouse the emotion of the looker-on to stupefy or to exhilarate, it has no equal of any kind anywhere, unless it be the starry firmament itself.

Approaching by rail or road, the visitor comes upon it suddenly. Pushing through the woods from the motor camping ground, or climbing the stairs from the railroad station, it is there at one's feet, disclosed in the sublimity of its templed depths, in the bewildering glory of its gorgeous coloring. There is no preparation of mind and spirit. To some, the revelation is a shock, no matter what the expectation. The rim of the Grand Canyon is one of the stillest places on earth, even when it is crowded with people.

To describe the Grand Canyon is as impossible as it is unnecessary. Few natural spectacles have been so fully pictured, few are so familiar even to the untraveled. Its motionless unreality is one of the first and most powerful impressions it makes. And yet the Grand Canyon is really a motion picture. There is no moment that it does not change. Always its shadows are insensibly altering, disappearing here, appearing there; lengthening here, shortening there. There is continual movement. With every quarter hour its difference may be measured.

There is the Grand Canyon of the early morning, when the light slants lengthwise from the Painted Desert. The great capes of the northern rim shoot into the picture, outlined in golden light against which their shapes gloom in hazy blues. Certain temples seem to rise slowly from the depths, or to step forward from hiding places in the opposite walls. Down on the green floor the twisting inner gorge discloses here and there lengths of gleaming water, sunlit and yellow.

An hour later all is wholly changed. The dark capes have retired somewhat and now are brilliant-hued and thoroughly defined. The temples of the dawn have become remodeled, and scores of others have emerged from the purple gloom. The Granite Gorge, now de-detailed fully, displays waters which are plainly muddy even at this great distance. And now the opposite wall is seen to be convoluted, possessing many headlands and intervening gulfs.

And so, from hour to hour, the spectacle develops. Midday, with sun high behind the south rim, is the time of least charm, for the opposite walls have flattened and the temples of the depths have lost their defining shadows. But as afternoon progresses the spec-

tacles of the morning creep back, now reversed and strangely altered in outline. It is a new Grand Canyon, the same but wonderfully different.

And just after sunset the reds deepen to dim purples and the grays and yellows and greens change to magical blues. In the dark of a moonless night the canyon suggests unimaginable mysteries.

#### THE FIRST VIEW.

From the railroad station the visitor ascends to the El Tovar Hotel and the view of the canyon at perhaps its showiest point. Here is where the temples loom their biggest and are nearest by. Opposite this point the greatest of the five great geologic faults which crack the canyon crosswise exhibits itself in the broad purpling of the Bright Angel Creek. Here the Granite Gorge approaches nearest to the south rim. The view of El Tovar is restricted by the extension of Grandeur Point and Maricopa Point on either side. These cut off the view of the great reaches of the canyon east and west. The El Tovar view is a framed picture of limited size. It is better so; better for the newcomer to enter gradually into the realization of the whole which will come when he walks or rides out to the many points which push northward from the south rim; better also to return to after days spent on the rim or in the canyon's depths.

Having studied this view for general outlines and the canyon's conformation, stratification, and coloring, the visitor will find for himself, on foot or by motor stage or coach, many points which will afford him varied outlooks upon the broad reaches of the canyon. It is advisable to see the canyon from end to end from the rim before exploring the trails to the floor and the river.

The traveler who is unlucky enough to have no more time at his disposal may, even in one day, see much of the Grand Canyon either from the rim or by mule-back descent to the depths as preference dictates. Probably the one-day visitor can see more by taking the 16-mile Hermit Rim Road drive west in the forenoon and the 60-mile drive east to Grand View and Desert View in the afternoon than in any other way. Both the rim drives and the descent into the canyon may be had in two days. Every day added to the schedule will give the visitor further novel experiences and glorious views, such as the Hermit Loop trip, the Phantom Ranch trip, or to the North Rim of the canyon, visiting Ribbon Falls en route.

When you go to the Grand Canyon leave the duration of your stay open for decision when there. You will probably then remain from five days to two weeks. Two weeks of fairly steady going will enable you to see the Grand Canyon thoroughly without undertaking trips which are a hardship to persons unaccustomed to trail riding.

**LIVING AT THE GRAND CANYON.**

Living is pleasant and comfortable. The El Tovar Hotel offers delightful conditions at rates reasonable in these times for its high-class accommodations. Its porches are broad, its garden a collection of rich semiarid vegetation, its rim walks inspiring. There is horseback riding through many miles of yellow-pine forest and out to viewpoints on the rim, but there are no sports. There is neither golf nor tennis. The canyon absorbs the whole attention of its visitors.

Adjoining the hotel there is a most comfortable annex of cottages and tents and café; rates are lower than those charged at the main hotel. There are comfortable tent cottages at Hermit Creek Cabins on the Hermit Trail, and at Phantom Ranch across the Colorado River. The cottages are built of the native rock with mess hall, etc. Both these camps are first class in every respect. There are cottages at Desert View, where one may spend a few nights. Camping trips along the rim and down to the Havasupai Indian Reservation and the waterfalls of Havasu Canyon can be arranged. It is possible to take your pack train across the river on the Kaibab Suspension Bridge, stay overnight at Phantom Ranch, and ascend the most interesting Kaibab Trail up Bright Angel Canyon to the excellent public camp on the north rim of the canyon. This trip is a matter of several days.

**FREE PUBLIC CAMP GROUND.**

From April to November the south rim is free from snow and the free public camp ground near Grand Canyon Village is available to campers. Motorists are urged to bring their own camp equipment and make use of this camp. Sites will be allotted free of charge on application to the office of the superintendent of the park. There is a garage in the village where gasoline and oil can be procured. There is also a general store where groceries can be purchased. It is necessary to purchase water in the village, as there is none at the Grand Canyon and it must be hauled from a distance by rail.

**SEEING IT FROM THE RIM.**

East of the hotel are several points reached by motor roads which afford fine views of the upper half of the Grand Canyon. The most famous of these is Grand View, where still stands the first regular hotel of the canyon, now private property. The eastern terminus of the road is Desert View, which offers a view up the Marble Canyon, and eastward over the famous Painted Desert. West of the hotel the auto stages stop at a succession of fine points, each with its own individual view of the mighty spectacle.

There is much to see also in the neighborhood of El Tovar.

The Grand Canyon Rim Foot Trail extends along the canyon rim east to Grandeur, Yavapai, and Yaki Points through the pine forest,

and west to Maricopa and Sentinel Points. The Hopi House is a faithful reproduction of a Hopi pueblo, and there is a camp of Navajo Indians.

### DESCENDING THE CANYON.

There are two practicable trails from the south rim to the river. The one commonly used starts from the El Tovar Hotel and descends the deep alcove between Grandeur and Maricopa Points. This is the celebrated Bright Angel Trail, so named because it follows the line of the Bright Angel Fault and emerges on the river nearly opposite the mouth of Bright Angel Creek. This fault was formed by the cracking of the canyon across from rim to rim and the slipping of the western edge of the crack several hundred feet downward. The evidence of it may be seen plainly in the lower elevation of Maricopa Point side of the gorge, and there is a place on the trail where travelers may see that strata once continuous no longer match.

The descent of this trail is usually done on muleback in parties led by guides. It is a sad mistake for persons not in the soundest physical training to attempt it on foot, for the apparent distance as seen from the rim is misleading, and the climb back is most arduous at that elevation. The south rim of the canyon at El Tovar is 6,866 feet above sea level. Nearly every day one or more trampers, overconfident of their endurance, find the way up too arduous and have to be assisted by guides and mules sent down for them from the rim.

The descent is an experience of great charm. The trail is excellently built and kept in fine condition. The traveler passes in review all the strata which form the canyon walls; their close examination will be a source of pleasure. Just under the rim the trail passes through a fine forest of spruce, and from this down to the sage desert of the green floor the traveler will also pass in review a series of vegetation which represents scores or hundreds of miles of surface growths. There are two steep cliffs which the trail descends in series of short hitches of zigzags, one of which, known as Jacob's Ladder, carries the traveler down the famous Redwall formation, which is so distinct a scenic feature of the canyon from every rim view. But there need be no alarm about these descents, for the zigzags, short and numerous though they are, maintain always a uniform safe grade. It may affect the unaccustomed nervously to see his mule hang his head over short abysses at the turns, but the traveler himself does not hang over them, and the mule is sure footed, stolid, and indifferent. There is only one creature with less imagination than a mule, and that is his cousin, the burro.

Indian Garden, which lies on the floor of the canyon, is so named because Havasupai Indians once cultivated the soil through which passes the stream which originates in springs below the Redwall. It is called Garden Creek. The Indian Garden now is a tangle of high brush, principally willow, through which the trail passes out

upon the rolling floor, and presently plunges down the rocky gorge which leads to the edge of the muddy Colorado.

#### THE HERMIT TRAIL.

A much finer trail, from every point of view, than the Bright Angel starts from Hermit Rest, south of Pima Point, and descends the Hermit Canyon. It begins 7 or 8 miles west of El Tovar. This is a two days' journey, including a night spent in Hermit Cabins well down in the canyon. It involves an experience worth many times the additional day which it requires.

The Hermit Canyon is one of extreme beauty; there is probably no other which equals it in gorgeous coloring and the variety of its rock forms. The trail, whose grade is less than that of the Bright Angel, is one of the finest in the world. It is longer than the Bright Angel Trail and leads out upon impressive points overlooking fascinating views. The descent of the Redwall is a masterpiece of trail building, and the only part of the Hermit Trail which gives an impression of steepness; but this may readily be walked down by the unaccustomed rider; its descent is not nerve racking. The night at Hermit Cabins, under a towering crimson gable, with colorful Hermit Canyon on the south and Grand Canyon opening northward over the green shale of the floor, is as comfortable as it is fascinating. The trip to the river and back to the camp is usually made the first day.

#### THE FLOOR TRAIL.

Too few visitors to Hermit Cabins combine the two trail trips with a journey between them over the green shale floor. The descent is by the Hermit Trail with a night at its foot. The next morning the journey is made on muleback up the canyon to the Indian Garden, and from there, after lunch by the stream side, up the Bright Angel Trail to El Tovar.

#### THE HAVASU CANYON.

The Havasu Canyon in the far western end of the national park is rarely visited. The trail begins at the end of a long desert road by descending precipitously to a gorge through which the Havasupai Indian Reservation is reached. There are less than 200 Indians on the reservation. These live by farming the land irrigated from Havasu Creek; corn is their principal product, but melons, figs, and peaches are also produced. The reservation fills a broad amphitheater in the gorge surrounded by lofty red sandstone cliffs. There are no hotels or camps and the heat is intense in summer. The Havasu Creek water is strongly impregnated with mineral and unpalatable, though entirely wholesome. Nevertheless, the visit to the reservation is one of unusual character and charm for those who do not object to a little hardship.

Below the reservation the canyon breaks into a series of waterfalls, two of which are unusual in kind and beauty. These are the Havasu Fall and the Hualapai Fall. Both drop over lofty shelves, which are plastered on back and sides by richly carved festoons of brown travertine formation, deposited by the river in times of high water. Both the falls occur in the deep red limestone gorges. Bright green cottonwoods, cactus, and other desert vegetation enliven the scene, which is as different as imagination can well paint from anything else in the Grand Canyon National Park.

In the spring, following the melting of the rim snows, there are various waterfalls in the Grand Canyon itself, several of which last for some months. These occur on the north side of the river, where there is a greater supply of water, the south side being arid except for brief periods following meltings and cloudbursts. One of these temporary north-side waterfalls in Clear Creek, which has been seen by very few persons, is said to be more than a thousand feet in height. With the crossing of the river, which is now possible over the Kaibab Suspension Bridge, these and many other fascinating spectacles, now little known, will become familiar sights to many. The destiny of the Grand Canyon is to become one of the most used national parks.

#### ORIGIN OF THE GRAND CANYON.

One of the greatest rivers on the continent cuts the Grand Canyon. The Colorado River, joined in Utah by the Green River, drains 300,000 miles of Colorado, Wyoming, Utah, and Arizona.

The Colorado began to cut the Grand Canyon several millions of years ago, at about the same time that the Merced River began to cut the Yosemite Valley. Both are the results exclusively of stream erosion. The theory that volcanism had to do with the creation of the Grand Canyon is declared by modern science untrue, notwithstanding the fact that volcanic rock is found in the canyon's depths, as it is also found in many other parts of the United States. It is untrue also that the Colorado River assumed its east and west course through the Grand Canyon as the result of an east and west fault. All the faults of the region pass across the canyon north and south.

#### HISTORY OF THE CANYON.<sup>1</sup>

Don Lopez de Cardenas, of Coronado's expedition, discovered the Grand Canyon in 1540, as a result of stories told by the Hopi (Moquis) Indians to Don Pedro de Tovar. The old records describe a chasm which seemed to be more than 3 or 4 leagues across in an air line—*"que avia mas de tres o quatro leguas por el ayre."*

For a long period thereafter the Grand Canyon region and the Colorado River remained practically unknown. It is next recorded

<sup>1</sup>Furnished by courtesy of Frederick S. Dellenbaugh.



as having been seen by two Spanish priests in 1776; Padre Garces crossing eastward from the lower Colorado to the Hopi towns, who halted, he says, "at the sight of the most profound cañones which ever onward continue, and within these flows the Colorado," and Padre Escalante, who, in searching for a place to cross from the north after his failure to proceed westward from Santa Fe to Monterey, finally found the old Ute ford, used by Indians for centuries, near the foot of Glen Canyon (in latitude 37°), and by means of it was able to reach Zuni. The ford then became known as *El Vado de los Padres*—the Crossing of the Fathers—for long the only known crossing of the Colorado in a distance of several hundred miles.

The first American to visit the region was James O. Pattie, accompanied by his father. They trapped beaver on the lower Colorado in 1825 and 1826. In 1826, returning eastward, they traveled for 13 days, following, apparently, the Grand Canyon as well as they could, but unable to reach the river at any point, till at last they arrived at a place where the river "emerges from these horrid mountains." This was the first extended trip on record of any human being along the brink of the Grand Canyon.

The same year that the Patties went to the lower Colorado, 1825, General Ashley, in pursuit of his fur-trading enterprise, attempted to descend Green River from near the present crossing of the Union Pacific Railway. They were forced after great hardship to give up the effort in the Uinta Valley.

The famous American trapper and pioneer, Jedediah Smith, crossed the river going west in the Mohave country in 1826 and again in 1827. In this latter year the Patties returned to the lower Colorado and trapped down the river from the mouth of the Gila in dugouts, the first navigators of this portion since Alarcon, of the Coronado expedition, came up in 1540. Quite unexpectedly they made the acquaintance of the great bore at the mouth of the river, where they were in waters that Lieutenant Hardy, of the British Navy, had entered the year before.

Other trappers after beaver then followed into the region, and the Government began sending out exploring parties. One of these under Sitgreaves crossed the Colorado in 1851 about 150 miles above Yuma, and three years later another under Whipple, surveying for a railway along the thirty-fifth parallel, crossed a few miles above the mouth of Bill Williams Fork.

When the California gold rush developed one trail of the Fortyniners led down the Gila and across the Colorado at its mouth, and now various activities on the lower river began. The first steamboat was brought to the mouth of the Colorado and up it in 1852. It was named the *Uncle Sam*.

Edward F. Beale, surveying a Government wagon road, crossed and recrossed in 1857 and 1858, near the mouth of Bill Williams Fork, and in 1858, January, the Government exploring expedition under Lieutenant Ives proceeded from the mouth up the river in a small, stern-wheel, iron steamer, the *Explorer*, as far as the foot of Black Canyon, whence the ascent was continued in a small boat to the mouth of the Vegas Wash. This was not the first steamer up, however, as Captain Johnson of a commercial navigation company had steamed up and passed with his steamboat clear through Black Canyon to its head, some days before mainly to "get ahead" of Ives who had earlier displeased Johnson. Ives then proceeded overland to the mouth of Diamond Creek and to the Hopi towns via Havasu Canyon.

"It seems intended by nature," says Lieutenant Ives, after vainly trying to reach the rim, "that the Colorado River, along the greater part of its lonely and majestic way, shall be forever unvisited and undisturbed."

This same year of 1858, saw the first crossing on record of the Colorado from the north, since Esclante, by white men. This was accomplished by Jacob Hamblin, a well-known Mormon, a missionary and Indian agent, from Utah to the Hopi towns. An Indian guided him to the Ute ford (Crossing of the Fathers) and he used it thereafter almost yearly. These Mormons for long were the only persons besides Navajos and Utes to cross the river anywhere. The ford known to few was difficult and dangerous at all times and impossible except at low water.

In 1862 Hamblin went around the Grand Canyon by the west end to the Hopi towns and returned by the Crossing of the Fathers at the east end, practically, as Marble Canyon begins a few miles below. The next year he went again around by the west end to the Hopis, visiting the "hermit" tribe, the Havasupais, in their deep canyon home, on the way, the first white man on record to do so after Lieutenant Ives. The party returned to St. George around the west end of the Grand Canyon. Nobody, as yet, went to the rim and there was no known crossing of the Grand Canyon itself anywhere by white men.

Another attempt to descend Green River from the California Trail (near the present Union Pacific Railway) was made in 1849, by William Manly and party. They expected to find a shorter and easier road to the California gold fields. After a hard time they emerged into Uinta Valley where they met the noted Ute chief Wakar ("Walker") who was good to them and urged them not to try to go further down the river.

In 1867 a man named James White was picked up from a raft near Callville, below the mouth of the Virgin, in an exhausted condition, and those who aided him immediately but erroneously assumed that he had come down through the Grand Canyon, the result of an ignor-

ance as great on their part as on that of White. He knew nothing about the interior of the great canyon and mentioned that he had run one big rapid, whereas he should have mentioned big rapids by the dozen.

So nothing became definitely known about the mysterious interior of the Grand Canyon or of the canyons of the Colorado River above as far as the Uinta Valley on Green River until Maj. John Wesley Powell, one-armed veteran of the Civil War, made his famous passage of all the canyons. He started with nine men and four boats from Green River City, Wyo. (on the Union Pacific Railway, then the only railway across the continent), on May 24, 1869. One of the men left the party (Goodman), disheartened, in the Uinta Valley.

The terrifying waterfalls and underground passages described by trappers and Indians were not found, but the declivity was often extremely great and continuous (as in Cataract Canyon, where it is continuous for about 20 miles), producing violent cataracts, with huge waves and a water velocity of over 20 miles an hour, frequently studded with giant rocks.

The trip was one of incredible hardship and danger, led by the Major with his one left arm, the other having been lost at the Battle of Shiloh. The plunging rapids in the whole length of the journey numbered several hundred to overcome the 6,000 feet difference in altitude between Green River City and the sea. The boats were often upset and the passage of many of the rapids was perilous to a degree. Frequently the party would be forced to embark on long foaming declivities without being able to discover what other, perhaps greater, falls might lie around the precipitously walled bends in front of them.

One of the boats, some of the scientific instruments, and a considerable amount of the food supply were lost in the Canyon of Lodore; and some that was rescued had to be left, as the remaining boats were overloaded. For weeks the clothing of the adventurers was never dry; and when they finally entered the mighty depths of the Grand Canyon itself, in August, there was little food remaining.

The sharpest rapids occur in the granite, and the first Granite Gorge, running past the Powell Monument, contains the worst portion of the whole river. When, therefore, another "Granite Gorge" developed below Diamond Creek, the men, stalwart and full of nerve though they were, having become somewhat demoralized by lack of food and the tremendous strain, were disheartened. Three of them, consequently, announced that they would go no farther.

This was desertion, but they preferred it to risking the difficulties they saw ahead. They believed they could climb out and reach the well-known Mormon settlements on the north, and they believed a river party would be lost or starve.

"At one time," says Powell in his report, "I almost concluded to leave the river. But for years I have been contemplating this trip.

To leave the exploration unfinished, to say that there is a part of the canyon which I can not explore, having already almost accomplished it, is more than I am willing to acknowledge, and I determine to go on. \* \* \* For the last time they entreat us not to go on, and tell us that it is madness to set out in this place." The same appeal that Dunn made to Hawkins, the cook of the party, as Hawkins himself tells it.

William R. Hawkins, writing of this in after years, says the three men had "made up their minds to go, and Dunn said he hated to leave Hall and myself, as we had been together a long time, and that we would perish in the river. [Note the fear of the river which had developed in the minds of at least three.] While we were talking, the major came up to me and laid his left arm [he had no right] across my neck, tears running down his cheeks. By that time the rest of the boys were present, and the major said to me: 'Bill, do you really mean what you say' [that he would stick to the major on the river]? I told him that I did, and he said that if he had one man that would stay with him that he would not abandon the river. I just simply said that he did not know his party."

He certainly had reason, with three men about to desert, to believe that others might. The other five were true, however, and it is only just to say that one of the deserters would have stood true, also, had it not been for his brother, who was determined to leave. They all then drank coffee together. The boat party went on, the deserters climbed out on the north, each party thinking the other party doomed. The deserters would have fared well enough and would have arrived at the Mormon settlements had it not been that the Shewits Indians on the plateau believed, or said later that they believed, that these were miners who had committed depredations on a tribe to the south. The men were therefore killed not far from Mount Dellenbaugh, and their clothing, rifles, etc., appropriated.

The place on the river where they left the major is now known as Separation Rapid. The day after they departed Powell and "the faithful five" reached the end of the great chasm without serious mishap. The names of the three deserters have justly been omitted from the roll of honor inscribed on the Powell Monument.

Powell's journal of this famous voyage is one of the most fascinating tales of adventure in literature. A large part of his meager notes having been lost, Powell repeated the trip on a more extensive basis in 1871 and 1872, obtaining then the data on which his report was based. There is no account of this second, vital expedition except in *A Canyon Voyage*, by Frederick S. Dellenbaugh, a member of that party. Afterwards Powell became director of the United States Geological Survey and of the Bureau of Ethnology, which he established.

### THE CANYON AS A RESORT.

The Grand Canyon is very much more than a wonder place or a scientific museum on a titanic scale. It is a pleasure resort of the first order. It may be visited any day in the year. The railroad is always running and the hotel always open. When most other resorts are closed the Grand Canyon is easily accessible.

During the winter snow falls in the pine forest along the rim; and though the upper portions are snow covered, the trails into the canyon are open and safe; the floor of the canyon is warm and comfortable the year around. When nipping frosts redden cheeks on the rim, the most fragile flowers are blooming in the canyon.

The weather in July and August is warm but not hot on the rim; the altitude takes care of that. There are cool mornings, evenings, and nights no matter how warm it may be at midday.

Arizona is a land of sunshine; the air is dry and the winds are light. While spring and fall are more attractive than midsummer or mid-winter, all the seasons have each its special charm. From December to March snow is more or less abundant on the rim and a few hundred feet down the trail. Camping-out parties must then confine themselves to the canyon.

### THE NORTH RIM OF THE CANYON.

There is a remarkable difference between the north and south rims. The north rim, a thousand feet higher, is a colder country clothed with thick, lusty forests of spruce and pine with no suggestions of the desert. Springs are found here and deer are plentiful. It is a region soon to be used by hundreds of campers-out.

The views from the north rim are markedly different. One there views close at hand the vast temples which form the background of the south rim view. One looks down upon them, and beyond them at the distant canyon floor and its gaping gorge which hides the river; and beyond these the south rim rises like a great streaked flat wall, and beyond that again, miles away, the dim blue San Francisco Peaks. It is certainly a spectacle full of sublimity and charm. There are those who, having seen both, consider it the greater. One of these was Dutton, whose description of the view from Point Sublime has become a classic. But there are many strenuous advocates of the superiority of the south rim view, which displays close at hand the detail of the mighty chasm of the Colorado, and views the monster temples at parade, far enough away to see them in full perspective.

The trail trip to the north rim is now perfectly feasible by the completion of the Kaibab suspension bridge over the Colorado River and the extensive repairs on the Kaibab Trail up Bright Angel Canyon. It is about 32 miles from Grand Canyon to the Wylie

Way Camp on Bright Angel Point. About 12 miles are made the first day, stopping overnight at Phantom Ranch; the remaining 20 miles are covered the second day.

The best ways of reaching this side of the park from the north are described on page 27.

## TABLES OF DISTANCES AND ALTITUDES.

### ROADS.

#### HERMIT RIM ROAD, GRAND CANYON TO HEAD OF HERMIT TRAIL AND HERMIT REST—7.9 MILES.

Place.	Distance from—		Altitude.	Remarks.
	Grand Canyon.	Hermit Trail.		
	<i>Miles.</i>	<i>Miles.</i>	<i>Feet.</i>	
Grand Canyon.....	0.0	7.9	6,875	Administrative headquarters of Grand Canyon National Park.
Road to Havasupai.....	.5	7.4	6,820	To Havasupai Indian Reservation, 47 miles distant.
Trail to Hermit Rest.....	1.4	6.5	6,960	By foot or horseback to Hermit Rest or Hermit Trail, 5 miles.
Powell Memorial.....	2.0	5.9	7,050	Memorial to Maj. John Wesley Powell, Sentinel Point.
Hopi Point.....	2.2	5.7	7,071	Fine view. Sometimes called Sunset Point.
Mohave Point.....	3.0	4.9	7,000	View of canyon and river.
The Abyss.....	4.2	3.7	6,850	Looking down from the Great Mohave Wall.
Cut-off to Hermit Rest...	5.2	2.7	6,800	Old road to Hermit Rest.
Piñon Cove.....	6.0	1.9	6,750	Grove of piñon pines.
Pima Point.....	6.7	1.2	6,750	Fine view of canyon and river, with Hermit Creek Cabins visible beneath.
Cut-off to Grand Canyon.	7.4	.5	6,700	Old road to Grand Canyon, 5 miles.
Hermit Rest.....	7.6	.3	6,690	Interesting Harvey rest house. Light refreshments.
Trail to Natural Bridges...	7.6	.3	6,680	Natural Bridges in limestone, $\frac{1}{2}$ mile.
Head of Hermit Trail....	7.9	.0	6,665	7.5 miles to Hermit Creek Cabins.

#### GRAND CANYON, GRAND VIEW, DESERT VIEW ROAD—GRAND CANYON TO DESERT VIEW—30 MILES.

Place.	Distance from—		Altitude.	Remarks.
	Grand Canyon.	Desert View.		
	<i>Miles.</i>	<i>Miles.</i>	<i>Feet.</i>	
Grand Canyon.....	0.00	30.00	6,875	Administrative headquarters of Grand Canyon National Park.
Road to Yavapai Point..	.60	29.40	6,940	View of Canyon and river. Kaibab Suspension Bridge visible beneath.
Motor crossing.....	.90	29.10	6,975	Cattle guard in drift fence that encircles headquarters district.
Trail to Yaki Point.....	1.50	28.50	6,925	Trail through forest. Sometimes called Cremation Point.
Moqui Trail.....	2.50	27.50	6,900	Saddle-horse trail to Grand View.
Rowe Well Road.....	3.50	26.50	6,925	Old road to Rowe Well Ranger Station.
Trail to Shoshone Point..	4.00	26.00	6,800	Locally called Inspiration Point, 4.5 miles.
Williams Road Junction	4.30	25.70	6,850	Checking station. Take right-hand road to Maine, Williams, and Flagstaff.
Long Jim Canyon.....	5.30	24.70	6,811	A typical surface canyon or wash.
Long Jim tool cache.....	6.10	23.90	6,860	A cache for tools used by rangers in fighting fire. Telephone.
Long Jim Canyon, east end.	8.60	21.40	7,175	
Thor's Hammer.....	10.10	19.90	.....	Notable columns of limestone.
To Grand View Point....	12.25	17.75	7,406	Magnificent view of canyon, Painted Desert, Navajo Mountain, river, etc.
Grand View Hotel.....	13.10	16.90	7,500	Old stage hotel. Not in operation for many years. Highest point on south rim.
Grand View Camp Grounds.	13.25	16.75	7,490	Public camp grounds and ranger station, season May to October.

## ROADS—Continued.

## GRAND CANYON, GRAND VIEW, DESERT VIEW ROAD—GRAND CANYON TO DESERT VIEW—30 MILES—Continued.

Place.	Distance from—		Altitude.	Remarks.
	Grand Canyon.	Desert View.		
	<i>Miles.</i>	<i>Miles.</i>	<i>Feet.</i>	
Hance ranch.....	14.20	15.80		Old home of Capt. John Hance, first settler on rim of Grand Canyon.
Park boundary.....	14.80	15.20		Grand View entrance to the park.
Flagstaff road.....	15.70	14.30		Old stage road from Flagstaff. Abandoned.
Park boundary.....	25.75	4.25	7,000	Desert View entrance to the park.
Lipan Point.....	27.90	2.10	7,359	Locally called Lincoln Point.
Desert View.....	30.00	0.00	7,450	Navajo Point. Fine view of Marble Canyon, Painted Desert, Navajo Mountain, etc.

## TOPOCOBYA ROAD, GRAND CANYON TO HILL TOP—HEAD OF HAVASU TRAIL VIA ROWE WELL—33.2 MILES.

Place.	Distance from—		Altitude.	Remarks.
	Grand Canyon.	Hill Top.		
	<i>Miles.</i>	<i>Miles.</i>	<i>Feet.</i>	
Grand Canyon.....	0.00	33.20	6,575	Administrative headquarters of Grand Canyon National Park.
Topocobya Road.....	.55	32.65	6,580	Road to Hill Top and Topocobya Spring the head of Havasu Trail, 15 miles to Havasupai Indian Reservation.
Trail to Hermit Rest.....	.70	32.50	6,590	
Drift fence.....	1.95	31.25		
Railroad crossing.....	2.35	30.85	6,650	
Old road to Grand View.....	2.45	30.75	6,625	
Railroad crossing.....	2.95	30.25		
Rowe Well Road.....	3.10	30.10	6,600	Road to Rowe Well ranger station.
Rowe Well ranger station.....	3.60	29.60	6,681	Ranger station, National Park Service. Telephone.
Waldron Trail.....	6.25	26.95	6,462	To Hermit Trail, Hermit Basin, and Hermit Rest.
Dripping Springs tool cache.....	7.00	26.20	6,375	Trail to Dripping Springs. Fine spring and good trail, 3 miles. Fire tools.
Bench mark, United States Geological Survey.....	9.90	23.30	6,340	
Road to Bass Camp.....	12.50	20.70	6,235	United States Geological Survey bench mark. Road to Havasupai Point.
Ranch.....	14.00	19.20		
Section corner 10 and 11.....	15.80	17.40		
Road to Bass Camp.....	17.60	15.60	6,154	United States Geological Survey bench mark.
Bench mark, United States Geological Survey.....	20.00	13.20	6,034	
Supai drift fence.....	21.40	11.80	6,061	United States Geological Survey bench mark. Indian pasture.
Top of mesa.....	27.00	5.20		
Top of grade.....	28.20	5.00		
Bench mark in Lee's Canyon.....	29.70	2.50	5,771	
Bench mark.....	31.20	1.00	5,772	
Supai warehouse.....	33.20	.00		Reservation storehouse at head of trail.
Topocobya Spring.....	33.70	.50		Water.

## ROADS—Continued.

## APPROACH ROAD, GRAND CANYON TO NATIONAL OLD TRAILS ROAD AND SANTA FE RAILROAD AT MAINE.

Place.	Distance from—		Altitude.	Remarks.
	Grand Canyon.	Maine, Ariz.		
	<i>Miles.</i>	<i>Miles.</i>	<i>Feet.</i>	
Grand Canyon .....	0.00	64.00	6,875	Administrative headquarters of Grand Canyon National Park. Hotels, information, etc.
Road to Yavapai Point..	.65	63.35	6,890	Fine view of canyon. Kaibab Suspension Bridge visible beneath.
Motor crossing .....	.90	63.10	.....	Cattle proof crossing through drift fence.
Williams Road checking station.	4.30	59.70	6,850	Ranger station. All cars stop and register.
Park entrance .....	5.50	58.50	5,718	South entrance to Grand Canyon National Park.
Rain tank .....	9.90	54.10	.....	Earth tank for cattle.
Fork of road .....	10.00	54.00	.....	Left-hand fork to Maine, Ariz.
Red Butte .....	20.00	44.00	.....	
Mortz Lake .....	49.00	15.00	.....	
Maine .....	64.00	.00	.....	Junction with Old Trails road.
Williams .....	79.00	15.00	6,762	Nearest shopping point to Grand Canyon.
Flagstaff .....	84.00	20.00	6,896	County seat of Coconino County.

## NORTH RIM GRAND CANYON NATIONAL PARK TO ZION NATIONAL PARK—170.9 MILES.

Place.	Distance from—		Altitude.	Remarks.
	North Rim.	Zion Park.		
	<i>Miles.</i>	<i>Miles.</i>	<i>Feet.</i>	
Wylie Way Camp .....	0.00	170.90	8,230	Accommodations for travelers on Bright Angel Trail, North Rim of Grand Canyon.
North Rim ranger station	2.00	168.90	8,100	National Park Service ranger station. Headquarters for North Rim.
North entrance Grand Canyon National Park.	4.20	166.70	8,450	North entrance to Grand Canyon National Park.
De Motte Park .....	14.40	156.50	8,900	A typical park or meadow. Range of mule deer.
Pleasant Valley .....	22.40	148.50	8,500	
Crane Lake .....	24.40	146.50	.....	
East Lake .....	26.00	144.00	.....	
Jacob's Lake lookout station.	29.20	141.70	.....	Range of white-tailed squirrels.
Jacob's Lake ranger station, Forest Service.	42.40	128.50	.....	Forest Service ranger station.
Drift fence .....	45.40	125.50	.....	Boundary line of proposed President's Forest.
Fredonia .....	75.40	95.50	.....	Only post office in Arizona north of the Grand Canyon.
Kanab .....	82.40	102.50	4,920	Most southerly town in Utah. Good hotel.
Pipe Springs .....	89.90	81.00	.....	Old Mormon fort. Spring formerly came out of the solid rock in the stockade.
Cedar Mountain .....	99.90	71.00	.....	
House, Antelope Springs.	121.00	49.00	.....	
Red Creek .....	125.40	45.50	.....	
Short Creek .....	126.00	35.00	.....	Sheep corrals.
Top Hurricane fault.	141.00	28.50	.....	Great Hurricane fault.
Hurricane .....	142.40	28.50	.....	Utah's Dixie. Population, 1,021.
Zion National Park .....	170.90	0.00	.....	Yuccaite done in oils.



## TRAILS.

GRAND CANYON TO NORTH RIM RANGER STATION VIA BRIGHT ANGEL, TONTO  
AND KAIBAB TRAILS—30 MILES.

Place.	Distance from—		Altitude.	Remarks.
	Grand Canyon.	North Rim.		
	<i>Miles.</i>	<i>Miles.</i>	<i>Feet.</i>	
Grand Canyon.....	0.00	30.00	6,875	Administrative headquarters of Grand Canyon National Park. Hotels, etc.
Head of Bright Angel Trail.....	.40	29.60	6,866	Foot trail to ancient Indian pictographs and hole in the wall.
Jacob's Ladder.....	2.50	27.50	4,850	The part of trail built through blue limestone 550 feet thick.
Indian Gardens.....	3.70	26.30	3,876	Grove of cottonwood trees watered by Garden Creek. Former home of Indians.
Tonto Trail.....	4.30	25.70	3,750	Left-hand fork to Plateau Point, 1.5 miles. Hermit Creek Cabins, 17 miles.
Do.....	5.00	25.00	-----	Left-hand fork to Colorado River at foot of Bright Angel Trail.
Pipe Creek.....	7.00	23.00	3,650	Ranger camp. Not always occupied.
Burro Springs.....	7.30	22.70	-----	Good water.
Head of Kaibab Trail.....	9.00	21.00	4,000	Left-hand fork to Kaibab Suspension Bridge and North Rim.
Kaibab Suspension Bridge.....	11.00	19.00	2,500	Built by National Park Service in 1921. Only bridge across Colorado for several hundred miles.
Phantom Ranch.....	11.50	18.50	2,550	Interesting new Harvey Camp, stone cottages. Well located for hiking, climbing, etc.
Phantom Creek.....	13.00	17.00	2,950	A deep canyon coming in from the west.
Head of Box Canyon.....	15.00	15.00	3,350	Near end of granite in Bright Angel Creek.
Ribbon Falls.....	17.00	13.00	3,750	Very beautiful falls where creek drops over red wall.
Wall Creek.....	17.80	12.20	3,850	Creek coming from the right. Old name is Beaver Creek.
Transept Creek.....	19.00	11.00	4,150	The Transept on left.
Roaring Springs.....	21.00	9.00	4,750	Large springs gushing out on left.
Last Crossing.....	22.00	8.00	5,050	Last crossing of Bright Angel Creek. Fill your canteens.
Troughs Spring.....	24.00	6.00	6,325	Spring on top of red wall.
Topping-out point.....	26.00	4.00	8,250	End of climb. North Rim.
DeWolley Cabin.....	29.00	1.00	8,200	Old ranger cabin. Headquarters of saddle-horse concessioners.
North Rim ranger station.....	30.00	.00	8,150	Ranger headquarters on North Rim. Register. Information service.

GRAND CANYON TO HERMIT CREEK CABINS VIA BRIGHT ANGEL AND TONTO  
TRAILS—21 MILES.

Place.	Distance from—		Altitude.	Remarks.
	Grand Canyon.	Hermit Cabins.		
	<i>Miles.</i>	<i>Miles.</i>	<i>Feet.</i>	
Grand Canyon.....	0.00	21.00	6,875	Administrative headquarters of Grand Canyon National Park. Hotels, post office, etc.
Jacob's Ladder.....	2.50	18.50	4,850	Trail through blue limestone, 550 feet.
Indian Gardens.....	3.70	17.30	3,876	Grove of cottonwood trees watered by Garden Creek. Former home of Indians.
Tonto Trail.....	4.30	16.70	3,750	Right-hand fork to Colorado River and Camp Roosevelt.
Plateau Point.....	4.70	16.30	3,750	Plateau Point, 1 mile.
Battleship.....	5.50	15.50	3,700	Battleship on left.
Horn Creek.....	7.20	13.80	3,550	
Dana Butte.....	9.00	12.00	3,650	View of gorge, river, etc.
The Inferno.....	11.50	9.50	3,400	Locally called Hell's Half Acre.
Salt Creek.....	12.30	8.70	3,440	
The Alligator.....	14.00	7.00	3,450	Butte called Alligator on left.
Cedar Spring.....	15.00	6.00	3,400	Good water.
Monument Creek.....	17.50	3.50	3,200	Very scenic.
Hermit Cabins.....	21.00	.00	3,050	Fine Fred Harvey camp.
Colorado River, foot Hermit Trail.....	23.00	2.00	2,440	Hermit Rapids.

## TRAILS—Continued.

## GRAND CANYON TO HERMIT CREEK CABINS THROUGH WOODS AND HERMIT TRAIL—12 MILES.

Place.	Distance from—		Altitude.	Remarks.
	Grand Canyon.	Hermit Cabins.		
	<i>Miles.</i>	<i>Miles.</i>	<i>Feet.</i>	
Grand Canyon.....	0.00	12.00	6,875	Administrative headquarters of Grand Canyon National Park.
Hermit Trail.....	5.00	7.00	6,665	Harvey corral.
Marshal Foch Rock.....	5.30	6.70	6,575	Rock where Marshal Foch sat for half hour or more smoking his pipe December, 1921.
Waldron Trail.....	6.00	6.00	5,270	Trail to Rowe Well Road.
Dripping Springs Trail..	5.50	6.50	5,260	Trail to Dripping Springs and Boucher Trail.
Santa Maria Spring.....	7.00	5.00	5,250	Good water. Rest pavilion.
Four Mile Spring.....	9.00	3.00	4,550	Good water.
Cathedral Stairs.....	10.00	2.00	4,530	
Hermit Cabins.....	12.00	.00	3,050	Fine Harvey camp.

## SHORT WALKS NEAR GRAND CANYON.

	Distance and direction from El Tovar.	By—	Altitude.	Remarks.
	<i>Miles.</i>		<i>Feet.</i>	
The Lookout Telescope..	0.3 west.....	Grand Canyon Rim Trail.	6,366	Observatory. Curios on sale. Pictures.
Kolb Bros. Studio.....	.4 west.....	.....do.....	6,850	Studio. Grand Canyon moving picture lecture daily of voyage through canyon.
Pictograph Rock, Holein Wall.	.6 west.....	Grand Canyon Rim Trail and foot trail.	.....	Interesting foot trail from Bright Angel Trail. Ancient Indian pictographs.
Picnic Rock.....	.8 west.....	Rim foot trail....	6,870	Walk through woods. Fine view of San Francisco peaks.
Maricopa Point.....	1.8 west.....	Grand Canyon Rim foot trail.	7,000	Fine view of canyon.
The Battleship.....	2.5 north.....	Bright Angel Trail.	5,867	Rough foot trail from Bright Angel Trail.
Indian Gardens.....	3.7 north.....	.....do.....	3,876	Fine creek of good water.
Independent Store.....	.3 east.....	Grand Canyon Rim foot trail.	6,880	Indian handiwork and curios.
Grandeur Point.....	1.3 east.....	.....do.....	7,050	Fine view. Kaibab Suspension Bridge visible.
Yavapai Point.....	1.5 east.....	.....do.....	.....	
Rowe Well.....	3.6 southwest....	Rowe Well Road..	6,681	Ranger station. Good water. Telephone.

## DERIVATION OF NAMES USED ON GRAND CANYON MAPS.

While some of them are purely descriptive, many commemorate scientists, explorers, Indian tribes, leaders of religion, mythologic and romantic personages. Aztec and Indian terms occur and the origin of a few names is unknown.

**Alarcon Terrace.**—Spanish navigator, first to ascend the Colorado River.

**Apache Point.**—Name of a large Indian tribe of Arizona and New Mexico region which was untiring in raiding and depredating both Pueblos and whites.

**Apollo Temple.**—The son of Jupiter and brother of Diana, god of the sun in Roman and Greek mythology.

**Awatubi Crest.**—Awatubi, village of the Hopi Indians on the Painted Desert, destroyed in 1770.

**Aztec Amphitheatre.**—General name for all Nahua tribes in Mexico at time of Cortez.

**Bass Camp.**—Owned by one of the pioneer settlers.

**Beale Point.**—Army officer who surveyed first road across the Arizona Plateau.

**Brahma Temple.**—In the Hindu triad Brahma was the evolver of the universe, Vishnu the redeemer, Siva or Shiva the destroyer.

**Buddha Temple.**—The title of Siddhartha, founder of Buddhism in fifth century B. C.

**Cardenas Butte.**—Member of Coronado's party and the first white man to see the Grand Canyon.

**Castor Temple.**—Castor and Pollux were inseparable brothers in Greek mythology.

**Centeotl Point.**—Probably an Aztec deity.

**Chemuhuevi Point.**—The southernmost of the Pinto Tribe in Lower California.

**Cheop's Pyramid.**—An Egyptian king of the fourth dynasty, builder of the famous pyramid at Gizeh.

**Chuas Butte and Creek.**—Name of Indian chief.

**Cocopa Point.**—A tribe of Yuma Indians living on the Colorado River.

**Cocconino Plateau.**—A name sometimes used for the Havasupai, who originally occupied much of the Arizona Plateau.

**Comanche Point.**—Plains Indians from farther east, whose raids were greatly feared by the Pueblos.

**Confucius Temple.**—The Chinese philosopher who taught practical morality. Lived in fourth century B. C.

**Conquistador Aisle.**—Spanish for "conqueror." The conquistadores were especially the members of Coronado's expedition.

**Cope Butte.**—E. D. Cope, 1840-1897. A great American naturalist, specializing in fossil animals.

**Coronado Butte.**—In 1540 Coronado led the great Spanish expedition that penetrated as far as Kansas.

**Dana Butte.**—James D. Dana, 1813-1895. Noted professor of geology at Yale for many years.

**Darwin Plateau.**—C. D. Darwin, famous English naturalist, founder of Darwinian theory of evolution.

**Deva Temple.**—Divine epithet, applied commonly to goddess Durga, wife of Shiva of the Hindu triad.

**De Vaca Terrace.**—Cabeza De Vaca was shipwrecked on the Gulf coast and wandered for eight years among Indians before reaching a Spanish settlement.

**Diana Temple.**—Roman goddess of the moon, sister to Apollo and daughter of Jupiter.

**Drummond Plateau.**—Henry Drummond, 1851-1897. A famous Scottish religious writer.

**Dutton Point.**—Maj. C. E. Dutton, United States Army, who wrote for the Government a monograph on the Grand Canyon.

**Elaine Castle.**—The lily maid of Astolat in Tennyson's poem, "The Idylls of the King."

**Escalante Butte.**—A Spanish missionary who crossed the Arizona Plateau in 1775.

**Excalibur.**—The magical sword of King Arthur of the Round Table.

**Fiske Butte.**—John Fiske, 1842-1901. American philosopher.

**Freya Castle.**—In Scandinavian mythology Freya is the goddess of love and womanly goodness.

**Galahad Castle.**—The purest knight of the Round Table, featured in "The Idylls of the King."

**Garces Terrace.**—A Franciscan who journeyed to the Hopi country in 1776.

**Gawain Abyss.**—Gawain the courteous, one of the principal knights of the Round Table.

**Geikie Peak.**—Sir Archibald Geikie, many years director British Geological Survey.

**Guinevere Castle.**—The wife of King Arthur of the Round Table.

**Gunter Castle.**—The Burgundian king of the Nibelungen epic, husband of Brunnhilde.

**Hance Creek.**—John Hance, a local character and pioneer.

**Havasupai Point.**—This tribe, formerly occupying Arizona Plateau, now live in Havasu Canyon about 60 miles from El Tovar.

**Hely Grail Temple.**—The cup used at the Last Supper, which the order of the Round Table was instituted to protect.

**Horus, Temple of.**—In Egyptian mythology the son of Osiris and Isis, principal deities.

**Hopi Point.**—The Hopis, sometimes called the Moquis, have maintained villages overlooking the Painted Desert since long before the Spanish invasion of 1540.

**Mount Huethewall.**—Indian word for observation point.

**Huxley Terrace.**—Famous English biologist, 1823-1895.

**Isis Temple.**—Principal female deity of Egypt, wife of Osiris, mother of Horus, and sometimes called "the daughter of Ra."

**Ives' Point.**—Lieut. Joseph C. Ives, United States Army, the leader of Colorado River exploration, 1857 and 1858.

**Jicarillo Point.**—An Apache Tribe of northeastern New Mexico, cruel raiders.

**Juno Temple.**—Wife and sister of Jupiter, queen of heaven in Roman mythology.

**Jupiter Temple.**—The supreme deity of the Romans.

**Kaibab Plateau.**—Piute word meaning mountain lying down.

**King Crest.**—Clarence King was the first director of the United States Geological Survey.

**King Arthur Castle.**—A British chieftain of the sixth century who with his knights of the Round Table has inspired romances galore.

**Krishna Shrine.**—In Hindu mythology Krishna is the name of the eighth of the ten incarnations of the supreme god Vishnu. The ninth was in the form of Buddha; the tenth is still to come.

**Kwagunt Butte and Creek.**—Probably a Shoshonean name.

**Lancelot Point.**—A knight of the Round Table, featured in Tennyson's poem, "The Idylls of the King."

**Leconte Plateau.**—Joseph LeConte was professor of geology in the University of California for over 30 years; died 1901.

**Lipan Point.**—An Apache Tribe.

**Lyell Butte.**—Sir Charles Lyell was a famous English geologist.

**Manu Temple.**—A Sanskrit word meaning "man," one of 14 demiurgic beings each of whom presided over a period of race progression. Manu Vaivasvata, the sun-born, is the manu of the present race of beings.

**Marcos Terrace.**—Fray Marcos de Niza led the first expedition into our country from Mexico in 1539 as far as Zuni. His accounts inspired Coronado's exploration.

**Maricopa Point.**—A tribe of Yuma Indians who moved from Colorado River to join the Pimas.

**Marsh Butte.**—O. C. Marsh, the paleontologist, who made a specialty of extinct animals.

**Mencius Temple.**—The Latin name of the Chinese philosopher, Meng, an early Confucian.

**Merlin Abyss.**—A semilegendary character of the fifth century who figures in Tennyson's "Idylls of the King."

**Mescalero Point.**—An Apache Tribe that roamed principally in New Mexico.

**Mimbreno Point.**—An Apache Tribe taking its name from the Mimbres Mountains in New Mexico.

**Modred Abyss.**—The treacherous nephew of King Arthur, King of the Round Table.

**Mohave Point.**—A Yuma Tribe living in vicinity of Needles, Calif.

**Montezuma Point.**—Montezuma, 1479-1520, ruled the Aztecs at the time of the Spanish conquest. He was regarded by later Indians as a deity.

**Moran Point.**—The artist who was with Major Powell, surveying Colorado River country in 1873.

**Natchi Point.**—A noted Apache warrior.

**Navaho Point.**—Nomadic Indians of the plateau region who maintained a long warfare against Pueblos and whites.

**Newberry Point and Butte.**—J. S. Newberry, geologist with Ives' expedition to the canyon. Long-time professor Columbia College, New York City.

**Newton Butte.**—Sir Isaac Newton, 1642–1727, famous English physicist who discovered law of gravitation.

**O'Neill Butte.**—Arizona politician, once governor.

**Osiris.**—Chief Egyptian deity of good, the principle of good closely associated with Ra.

**Papago Point.**—A branch tribe of Pima Indians of southern Arizona region.

**Pima Point.**—Popular name of tribes living in the valleys of Gila and Salt Rivers, Ariz.

**Pinall Point.**—An Apache tribe.

**Piute Point.**—A name applied to many Shoshonean Tribes, but perhaps belongs properly only to those living in southwestern Utah.

**Pollux Temple.**—The devoted brother of Castor, in the Greek legends.

**Powell Plateau.**—Maj. J. W. Powell made the first expedition down the Colorado River in 1868. Subsequently director of the United States Geological Survey and the Bureau of Ethnology.

**Quetzal Point.**—An Aztec word signifying a bird of iridescence.

**Ra, Tower of.**—The Egyptian sun god, type of supreme deity, always victorious.

**Rana Shrine.**—Hindu word for prince.

**Sagittarius Ridge.**—A zodiac constellation visible in southern United States in summer. Latin word signifying "Archer."

**Scorpion Ridge.**—One of the constellations of the zodiac.

**Scylla Butte.**—The promontory at the entrance of the strait between Italy and Sicily, around which ancient mariners feared to go.

**Set, Tower of.**—The brother or son of Osiris and his deadly enemy in Hindu mythology.

**Shaler Plateau.**—An American geologist, long-time professor at Harvard University.

**Sheba Temple.**—The ancient capitol of the Sabaeans in Arabia, whose queen visited Solomon.

**Shinumo Creek.**—Name applied by Powell to the Hopi confederacy.

**Shiva Temple.**—The avenging associate of Brahma and Vishnu in ruling the universe, now the most popular Hindu god.

**Solomon Temple.**—Solomon, 1033–975 B. C., son of David and Bathsheba, king of the Jews.

**Spencer Terrace.**—Herbert Spencer, 1820–1903, a distinguished English philosopher.

**Supai Formation.**—The colloquial name of the Havasupai, a small tribe now occupying Havasu Canyon.

**Thompson Point.**—A. H. Thompson, brother-in-law of Major Powell, who accompanied him in his famous boat trip down the canyon.

**Thor Temple.**—Second principal Norse deity, god of thunder, son of Odin the supreme being, and Jordh, the earth.

**Tiyo Point.**—Indian name.

**Tovar Terrace.**—Pedro de Tovar was sent by Coronado in 1540 to inspect the Hopi villages where he learned of the existence of the Grand Canyon.

**Toltec Point.**—The Toltecs were either an early tribe of the Aztecs or a people that preceded them on the Mexican Plateau.

**Tonto Platform.**—Spanish word "fool" applied to Indians of Arizona plateau, especially to the Apache Mohave.

**Topocobya Trail.**—Probably from an Aztec word.

**Tyndall Dome.**—John Tyndall, 1820–1893, a famous British physicist.

**Unkar Creek.**—A Piute tribe of southwestern Utah.

**Venus, Temple of.**—The Roman goddess of beauty and love.

**Vesta, Temple of**.—The Roman goddess of the hearth in whose honor the Vestal Virgins kept the symbolic fire burning.

**Vishnu Temple and Creek**.—In Hindu mythology the associate of Brahma and Shiva who was the redeemer of the universe.

**Walhalla Plateau**.—The great hall of the Scandinavian gods, the warriors' heaven of the Vikings.

**Wallace Butte**.—An English explorer and naturalist and authority on natural selection.

**Wheeler Point**.—Gen. George M. Wheeler, United States Army, in charge of surveys west of one-hundredth meridian in 1872-1879.

**Yaki Point**.—Probably a version of the name of the Yaquis, the unconquerable tribe of northwestern Mexico.

**Yavapai Point**.—These Indians are commonly known as the Apache Mohave, formerly roaming central Arizona.

**Yuma Point**.—Great family of Indians of several tribes in lower Colorado region. Called themselves Kwichana.

**Zoroaster Temple**.—Founder of the ancient religion now represented by the Guebers and Parsees of Persia and India.

**Zuni Point**.—The Zuni pueblo south of Gallup, N. Mex., is the remnant of the historic Seven Cities of Cibola.

### LIST OF BIRDS.

The following incomplete list of birds has been seen in and on the rim of Grand Canyon:

Western bluebird.....	<i>Sialia mexicana occidentalis.</i>
Western robin.....	<i>Merula migratoria propinqua.</i>
Mountain chickadee.....	<i>Parus gambeli.</i>
Gray titmouse.....	<i>Baeolophus inornatus griseus.</i>
Pygmy nuthatch.....	<i>Sitta pygmaea pygmaea.</i>
Slender-billed titmouse.....	<i>Sitta carolinensis aculeata.</i>
Canyon wren.....	<i>Catherpes mexicanus conspersus.</i>
Water ouzel.....	<i>Cinclus mexicanus.</i>
Black-throated gray warbler.....	<i>Dendroica nigrescens.</i>
Audubon warbler.....	<i>Dendroica auduboni auduboni.</i>
Northern green swallow.....	<i>Tachycineta thalassina lepidia.</i>
Black-headed grosbeak.....	<i>Zamelodia melanocephala.</i>
Spurred towhee.....	<i>Pipilo maculatus montanus.</i>
Desert sparrow.....	<i>Amphispiza bilineata deserticola.</i>
Red-backed junco.....	<i>Junco phaeonotus dorsalis.</i>
Western chipping sparrow.....	<i>Spizella socialis arizonae.</i>
English sparrow.....	<i>Passer domesticus.</i>
Green-backed goldfinch.....	<i>Astragalinus psaltria hesperophilus.</i>
House finch.....	<i>Carpodacus mexicanus frontalis.</i>
Piñon jay.....	<i>Cyanocephalus cyanocephalus.</i>
Woodhouse jay.....	<i>Aphelocoma woodhouseii.</i>
Long-crested jay.....	<i>Cyanocitta stelleri diademata.</i>
Western flycatcher.....	<i>Empidonax difficilis difficilis.</i>
Olive-sided flycatcher.....	<i>Nuttallornis borealis.</i>
Broad-tailed humming bird.....	<i>Selasphorus platycercus.</i>
Red-shafted flicker.....	<i>Colaptes cafer collaris.</i>
White-breasted woodpecker.....	<i>Dryobates villosus leucothorectus.</i>
Turkey vulture.....	<i>Cathartes aura septentrionalis.</i>
Western mourning dove.....	<i>Zenaidura macroura marginella.</i>

## HOW LONG TO STAY.

*Time required.*—While one ought to remain a week or two, a stop-over of three or four days from the transcontinental trip will be quite satisfactory. The Hermit Loop overnight trip, down one trail and up another, requires two days and a night, or more time may be taken and include Phantom Ranch. One day should be devoted to an auto ride along the Hermit Rim Road, and by auto to Grand View and Desert View. Another day go down Bright Angel Trail and back. A fourth day spent in short walks to nearby points or on horseback, will enable visitors to get more intimate views.

The several trips mentioned above are all well worth while, and the high plateau above the rim affords many delightful horseback or hiking trips. Visitors to the North Rim may well spend as much time as can be spared.

The National Park Service of the Department of the Interior recommends to the traveling public that stopovers of as long duration as practicable be planned at points within the park; that Grand Canyon National Park be regarded not alone as a region which may be glimpsed on a hurried trip, but also as a vacation playground for rest and recreation.

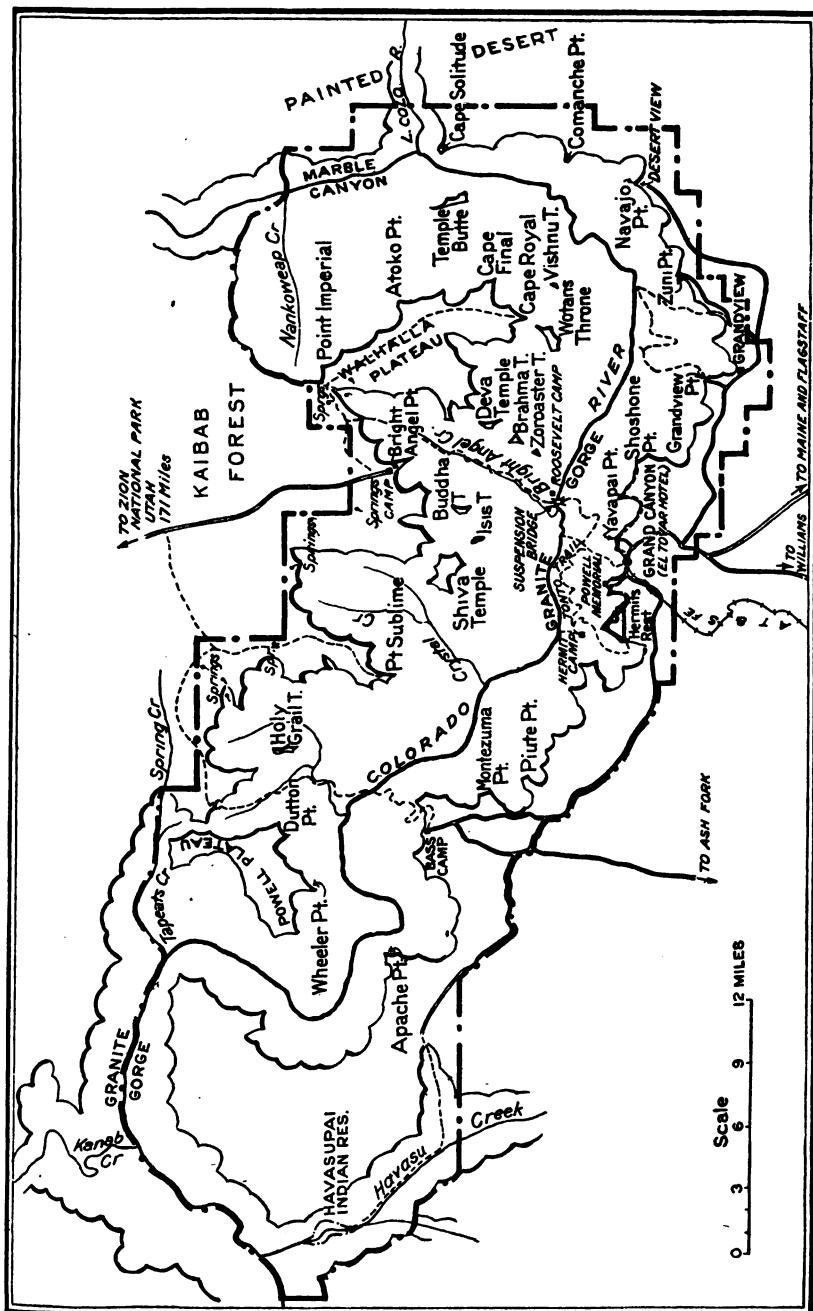
## WHAT TO WEAR.

If much tramping is done, stout, thick, hobnailed shoes should be provided. Ladies will find that short walking skirts are a convenience; riding trousers are preferable, but not essential, for the horseback journey down the zigzag trails. Traveling caps and (in summer) broad-brimmed straw hats are useful adjuncts. Otherwise ordinary clothing will suffice. Riding trousers, divided skirts, and straw hats may be rented at El Tovar Hotel.

## ADMINISTRATION.

Grand Canyon National Park is under the jurisdiction of the Director, National Park Service, Department of the Interior, Washington, D. C. The park superintendent, Mr. W. W. Crosby, is located at Grand Canyon, Ariz., and information, maps, and pamphlets may be obtained at the office, where visitors are cordially welcomed. The office of the superintendent is 100 yards east of the Grand Canyon Railway depot and on the paved road that passes the El Tovar garage.

The park is accessible throughout the year. The El Tovar Hotel, Bright Angel cottages, and the cabins at Hermit Creek and Phantom Ranch at the mouth of Bright Angel Creek are always open.



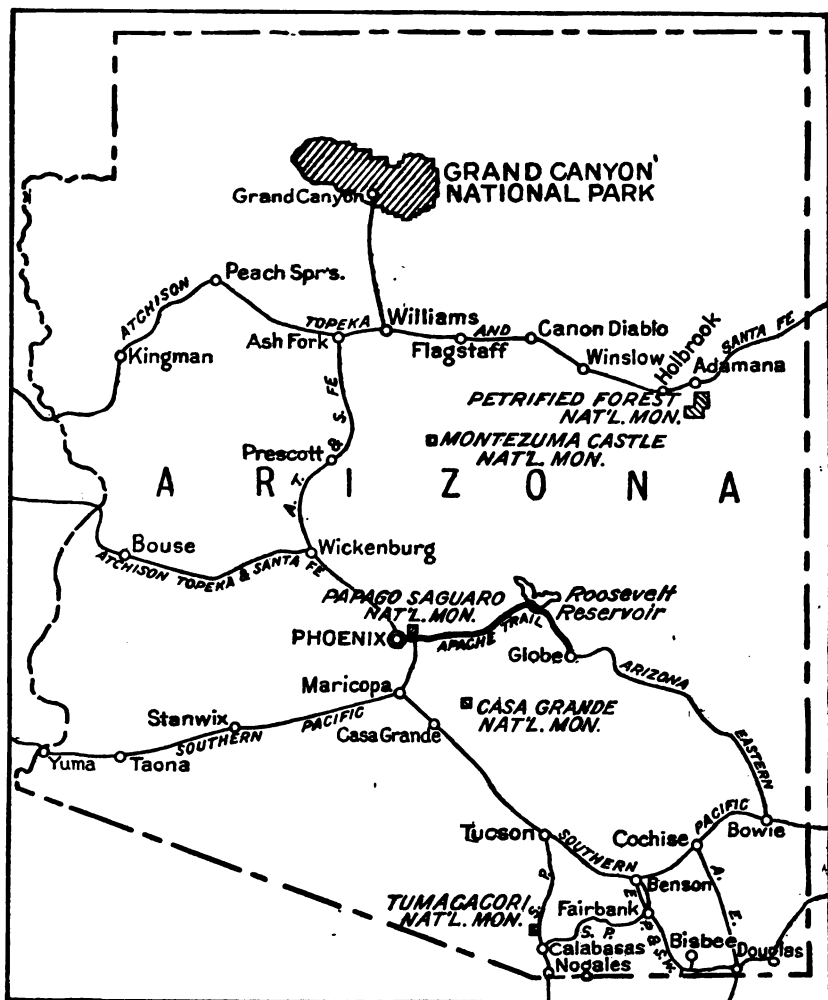
MAP OF GRAND CANYON NATIONAL PARK.



## HOW TO REACH THE PARK.

## BY RAIL.

The Grand Canyon National Park is directly reached by a branch line of the Atchison, Topeka & Santa Fe Railway extending 64 miles northward from Williams, Ariz. On certain trains through standard



MAP OF ARIZONA SHOWING RAILROAD CONNECTIONS TO GRAND CANYON NATIONAL PARK.

sleeping cars are operated to and from Grand Canyon station. Passengers using other trains and stopping over at Williams will find adequate accommodations at the Fray Marcos, station hotel.

Stop-overs, not to exceed 10 days, are granted at Williams on all classes of railroad tickets for a visit to the canyon. Limits of through

railroad tickets will be extended if necessary by agent at Grand Canyon. Through tickets may include side-trip coupons, Williams to Grand Canyon and return, at an additional charge of \$9.12.

Round-trip excursion tickets at reduced fares are on sale daily at practically all stations in the United States and Canada to Grand Canyon as a destination.

Baggage may be checked through to Grand Canyon station, if required. Passengers making brief side trips to Grand Canyon may check baggage to Williams only or through to destination. Certain regulations for free storage of baggage for Grand Canyon passengers are in effect.

For further information regarding railroad fares, service, etc., apply to railroad ticket agents, or address:

W. J. Black, passenger traffic manager, Atchison, Topeka & Santa Fe Railway system, Chicago, Ill.

J. J. Byrne, assistant passenger traffic manager, Atchison, Topeka & Santa Fe Railway system, Los Angeles, Calif.

#### BY AUTOMOBILE.

Automobile tourists may leave the main east and west highway through Arizona at Maine.

*Flagstaff.*—It is about 84 miles from Grand Canyon to Flagstaff, via Williams Road ranger station, south entrance. Rain Tank, Red Butte, Mortz Lake, and Maine, Ariz., over a main traveled road, on which a good run is possible most of the year. At times in late fall or early spring it is advisable to inquire at Williams or Flagstaff as to condition of the road. The round trip requires about two days.

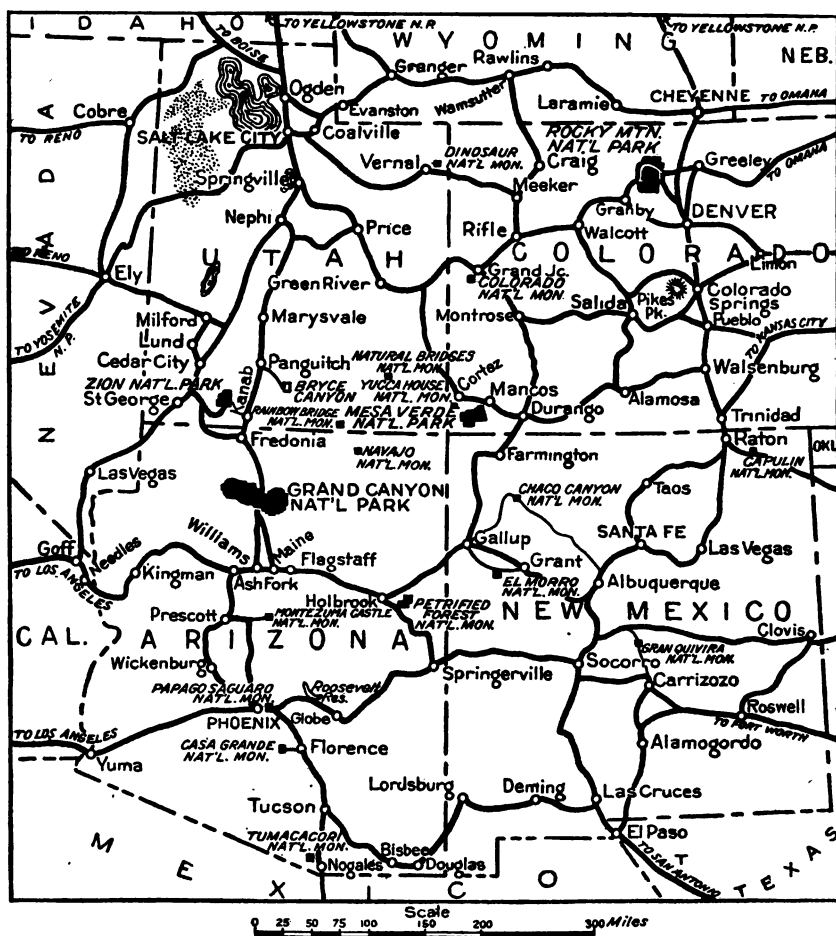
This is a very enjoyable drive through pine forests and across green mesas partly along the old-time stage route to the canyon. The town of Flagstaff is located in the heart of the San Francisco uplift. There are good stores and garage facilities in Flagstaff. In this vicinity are prehistoric cliff dwellings, extinct craters, volcanic cones, lava beds, and ice caves. The summit of Humphreys Peak, one of the peaks forming the San Francisco Mountains, is 12,750 feet above sea level.

*Williams.*—Williams is 34 miles west of Flagstaff and 15 miles west of Maine, on the main east and west highway through Arizona. It is the nearest shopping center and its stores and garages carry a good stock of everything necessary to the automobile tourist.

The route from Williams passes Bill Williams Mountain, elevation 9,264 feet, which has seven distinct crests, Red Lake, Howard Lake, and Anita, running along the line of the Grand Canyon Railway. No supplies can be purchased between Williams or Maine and Grand Canyon.

## AUTOMOBILE SUPPLIES.

At Grand Canyon village is an excellent garage under the management of Fred Harvey. Storage, or repair service, as well as gasoline and oil, may be procured here.



MAP SHOWING PRINCIPAL AUTOMOBILE ROUTES IN COLORADO, UTAH, ARIZONA, AND NEW MEXICO.

## GROCERIES.

The Babbitt-Polson general store at Grand Canyon carries a full line of groceries and campers' supplies.

The Independent Store carries a stock of curios and Navajo goods.

## WATER.

A supply of water for drinking purposes and for radiation, sufficient to last to Grand Canyon, should be brought from Williams or Flagstaff.

**PUBLIC UTILITIES AND CONVENIENCES.****POST OFFICE.**

The post office, which does all kinds of postal business, is situated near the Hermit Rim Road about 400 yards west of the railroad depot. It is open from 8 a. m. to 6 p. m. Mail trains arrive at 8.10 a. m. and 4.15 p. m. and leave at 8.10 a. m. and 7.25 p. m.

**TELEGRAPH.**

The Western Union office, at the railroad depot, is open for all business from 7.30 a. m. to 8 p. m.

**TELEPHONE.**

There is telephone connection between the El Tovar Hotel, National Park Service Office, ranger stations, Hermit Cabins, and Phantom Ranch. There is no telephone connection to points outside of the park.

**NATIONAL PARK SERVICE STATIONS.**

There are ranger stations or camps where assistance and shelter may in emergency be obtained at places here named. These may be unoccupied, and it is well to inquire at the office of the superintendent:

Hermit Basin, Cottonwood Camp, up Bright Angel Creek on north side of Colorado River; Pipe Creek, on Tonto Trail 2 miles east of Indian Garden; Salt Creek, on Tonto Trail 5 miles west of Indian Garden; Grand View Public Camp; Rowe Well; and Grand Canyon.

**MEDICAL SERVICE.**

There is a Public Health Service doctor of long experience in the park. There is a trained nurse at the El Tovar Hotel. The nearest hospital is at Williams, Ariz. There is a hospital at Flagstaff, Ariz.

**REACHING THE NORTH RIM.**

To those who enjoy extraordinary scenery and unusual experiences the trip to the Wylie Way Camp on the North Rim, either by rail and motor stage or by private motor, will make a strong appeal.

Coming by rail over the Salt Lake route of the Union Pacific system, the tourist changes to auto stage at Lund; over the Denver & Rio Grande Western Railroad, at Marysville. Coming by private motor from Salt Lake City or Los Angeles, the Arrowhead Trail is followed to Anderson's Ranch, where the Zion Park approach road is followed to Hurricane. A side trip should by all means be made into Zion National Park. Hurricane is the center of Utah's "Dixie," a garden spot of semitropical vegetation and quaint Mormon settlements. South of Hurricane the road leads across the land of Zane

Grey's "Purple Sage" to Kanab, a well-built town of 1,200 inhabitants. The road then leads out over the Kaibab Plateau, whose southern escarpment, at an altitude of 8,000 feet, is the northern wall of the Grand Canyon of the Colorado. The last 50 miles are through the Kaibab Forest, a national reserve, which exhibits on a grand scale one of the largest and most beautiful forests of giant pines, spruce, fir, and quaking aspen in the United States. The high, dry, bracing, pine-laden air, the forest aisles, and frequent glimpses of wild deer and white-tailed squirrels, make this ride a fitting prelude to the silent symphony of the Grand Canyon itself.

Return is made to Kanab, thence north by way of Johnson Canyon ascending under the vermilion cliffs to the Divide, thence following down the Sevier River almost to the town of Panguitch where a crossroad leads east to one of Utah's spectacular exhibits, Bryce Canyon. From Bryce Canyon the return is made to Panguitch, where the north road may be followed to Marysville, or at Orton's Ranch a crossroad may be followed west reaching the Arrowhead Trail at Paragonah. From Paragonah the Arrowhead Trail may be followed north to Salt Lake City or south to Los Angeles. From Cedar City a new road leads east, climbing to the summit of the plateau and reaching Cedar Breaks, an area somewhat similar in formation to Bryce Canyon, exhibiting in less degree the erosional forms of the latter but displaying the same wonderful coloring. Indeed, Bryce Canyon and Cedar Breaks are the best exhibits of Nature's coloring of the materials of the earth.

Of Bryce Canyon John A. Witsoe, of the University of Utah, writes:

It is a box canyon 2 miles wide by 3 miles long, cut 1,000 feet into the top of Paun-sagunt Plateau. It drains toward the southeast and overlooks the Colorado River, 75 miles distant. The strata in the canyon are flat, low-lying Tertiary sandstones and clayey sandstones, rather highly indurated. A wonderful variety of erosional forms are painted in every color, shade and tint of the spectrum, including reds, pinks, creams, tans, lavenders, purples, blues, greens, chocolates, and whites.

This unparalleled array of erosional forms, coupled with wonderful coloring and dotted somewhat profusely with a variety of evergreen trees, constitutes perhaps the most gorgeous spectacle in the world.

For transportation service and rates from Lund and Marysville to the north rim of Grand Canyon to include visits to Bryce Canyon, Cedar Breaks, and Zion National Parks see pages 49-50.

### PETRIFIED FOREST NATIONAL MONUMENT.

Tourists visiting Grand Canyon National Park either by rail or by automobile should plan a stopover at the Petrified Forest National Monument.

There are three groups of petrified trees in this reservation. The first forest lies 6 miles south of Adamana, Ariz., a station on the main line of the Atchison, Topeka & Santa Fe Railway, and the

second forest is  $2\frac{1}{2}$  miles south of it. The third or Rainbow forest lies 13 miles south of Adamana and 18 miles southeast of Holbrook, Ariz. It is best to approach the third forest from Holbrook; the other two are best reached from Adamana.

This area is of great interest because of the abundance of petrified coniferous trees which lie scattered about in great profusion. None are standing as in the Yellowstone National Park. These trees probably at one time grew beside an inland sea; after falling they became water-logged and during the decomposition the cell structure was entirely replaced by silica derived from sandstone in the surrounding land. Over a greater part of the entire area trees are scattered in all conceivable positions and in fragments of all sizes.

In the first forest may be seen the well-known natural bridge, consisting of a large petrified tree trunk 60 feet long spanning a canyon 45 feet wide, and forming a foot bridge over which anyone may easily pass. The trunks in the Rainbow forest are larger than elsewhere, more numerous and less broken. Several hundred entire trees are found here, some of which are more than 200 feet long. The color of the wood is deeper and more striking than in the other localities.

"There is no other petrified forest," says Prof. Lester F. Ward, "in which the wood assumes so many varied and interesting forms and colors, and it is these that present the chief attraction for the general public. The state of mineralization in which much of this wood exists almost places them among the gems or precious stones. Not only are chalcedony, opals, and agates found among them, but many approach the condition of jasper and onyx. The degree of hardness attained by them is such that they are said to make an excellent quality of emery."

#### ADMINISTRATION.

Petrified Forest National Monument is under the jurisdiction of the Director, National Park Service, Department of the Interior, Washington, D. C. The Monument Custodian is located at Adamana, Ariz.

#### COSTS OF TRIPS AND HOTEL ACCOMMODATIONS.

Adamana is a small place, consisting chiefly of hotel, post office, railway station, and a small store (does not handle films or other camera supplies). Mr. Wm. Nelson has charge of the hotel and transportation accommodations. The hotel has electric lights, sanitary plumbing, with hot and cold water. Rates: \$5 per day, American plan; 35 guests can be accommodated; in summer, tent houses also are provided for guests.

From Adamana the following auto trips are made: (1) To the First and Second Forests and the Natural Bridge; (2) to the Third

Forest; (3) to the Blue Forest; (4) to the Painted Desert and the North Sigillaria Forest.

The round-trip fare on either of the above trips is: \$5 for one person, \$3 per capita for two persons, and \$2.50 per capita for three or more. About one-half day is allotted to each trip, although three trips can be made in a day. For a one-day stop-over the trips numbered 1 and 4 are perhaps best suited to give the widest variety in sight-seeing at this place.

Holbrook, the county seat of Navajo County, has satisfactory hotel accommodations, with prices about the same as at Adamana.

The Petrified Forest may be visited from Adamana any day in the year, except when high waters make the streams temporarily impassable.

#### STOP-OVER ARRANGEMENTS.

Stop-overs are allowed at Adamana, not to exceed 10 days, on all one-way railroad tickets, also on round-trip railroad tickets within their limits.

To obtain stop-overs on one-way railroad tickets, notify train conductor and deposit tickets with agent immediately after arrival; on round-trip tickets notify train conductors.

#### RULES AND REGULATIONS.

(Approved February 20 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 Grand Canyon National Park are hereby established and made public pursuant to authority conferred by the act of Congress approved August 25, 1916 (39 Stat. 536), as amended June 2, 1920 (41 Stat. 732), and the act of February 26, 1919 (40 Stat. 1175):

1. *Preservation of natural features and curiosities.*—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.*—No camp shall be made along roads except at designated localities. Blankets, clothing, hammocks, or any other article likely to frighten teams shall not be hung near the road.

Many successive parties camp on the same sites during the season; therefore camp grounds shall be thoroughly cleaned before they are abandoned. Tin cans, bottles, cast-off clothing, and all other débris shall be placed in garbage cans or pits provided for the purpose.

When camps are made in unfrequented localities where pits or cans may not be provided, all refuse shall be burned or hidden where it will not be offensive to the eye.

Campers may use dead or fallen timber only for fuel.

3. *Fires*.—Fires constitute one of the greatest perils to the park; they shall not be kindled near trees, deadwood, 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 deadwood, moss, dry leaves, etc., shall be scrapped 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 beds 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 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 the responsibility of custody of any property for the convenience of visitors.

5. *Fishing*.—Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line, or for merchandise or profit, is prohibited. Fishing in particular water may be suspended, or the number of fish that may be taken by one person in any one day from the various streams or lakes may be regu-



lated by the superintendent. All fish hooked less than 6 inches long shall be carefully handled with moist hands and returned at once to the water if not seriously injured. Fish retained shall be killed. Twenty fish shall constitute the limit for a day's catch, provided that no more than 20 pounds of trout, bass, crappie, or catfish may be taken in any one day.

6. *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.

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

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

9. *Mining*.—The location of mining claims on Government lands in the park is permitted only with the prior approval of the Secretary of the Interior.

10. *Patented lands*.—Owners of patented lands within the park limits are entitled to the full use and enjoyment thereof; the boundaries of such lands, however, shall be determined and marked and defined so that they may be readily distinguished from the park lands. While no limitations or conditions are imposed upon the use of private lands so long as such use does not interfere with or injure the park, private owners shall provide against trespass by their live stock upon the park lands, and all trespasses committed will be punished to the full extent of the law. Stock may be taken over the park lands to patented private lands with the written permission and under the supervision of the superintendent, but such permission and supervision are not required when access to such private lands is had wholly over roads or lands not owned or controlled by the United States.

11. *Grazing*.—The running at large, herding, or grazing of live stock of any kind on the Government lands 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 con-

dition 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 and cats.*—Cats are not permitted on the Government lands in the park and dogs only to those persons passing through the park to the territory beyond, in which instances they shall be kept tied while crossing 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 on trails.*—Pedestrians on trails, when saddle or pack animals are passing them, shall remain quiet until the animals have passed.

Persons traveling on the trails of the park either on foot or on saddle animals shall not make short cuts but shall confine themselves to the main trails.

16. *Travel—general.*—(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.

17. *Miscellaneous.*—(a) Campers and others shall not wash clothing or cooking utensils in the waters of the park, or in any way pollute them, or bathe in any of the streams near the regularly traveled thoroughfares in the park without suitable bathing clothes.

(b) 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.

(c) 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.

(d) 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.

18. *Fines and penalties.*—Persons who render themselves obnoxious by disorderly conduct or bad behavior shall be subjected to the punishment hereinafter prescribed for violation of the foregoing regulations and 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 the act of Congress approved August 25, 1916 (39 Stat. 535), as amended June 2, 1920 (41 Stat. 732), and the act of February 26, 1919 (40 Stat. 1175), the following regulations covering the admission of automobiles and motorcycles into the Grand Canyon National Park are hereby established and made public:

1. *Entrances and roads.*—Automobiles and motorcycles may enter and leave the park by, and travel over, any of the roads therein which are open to motor vehicles.

Careful driving is demanded of all persons using the roads. The Government is in no way responsible for any kind of accident.

2. *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. Automobiles and horse-drawn vehicles shall have the right of way over motorcycles.

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

4. *Hours.*—Automobiles shall not enter or leave the park or use the park roads before 5.30 a. m. or after 10.30 p. m. except in case of emergency.

5. *Intoxication.*—No person who is under the influence of intoxicating liquor, and no person who is addicted to the use of narcotic drugs, shall operate or drive a motor vehicle of any kind on the park roads.

6. *Distance apart; gears and brakes.*—Automobiles while in motion shall be not less than 50 yards apart, except for purpose of passing, which is permissible only on comparatively level stretches of roads or on slight grades. All automobiles, except while shifting gears, shall retain their gears constantly enmeshed. The driver of each automobile may be required to satisfy park officers 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. Motorcycles not equipped with brakes in good working order are not permitted to enter the park.

7. *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 20 miles per hour.

8. *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 automobiles, motorcycles, riding or driving animals, or pedestrians.

9. *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 road. Headlights shall be dimmed when meeting other automobiles, motorcycles, riding or driving animals, or pedestrians.

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

11. *Teams.*—When teams, saddle horses, or pack trains approach, automobiles shall take the outer edge of the roadway regardless of the direction in which it 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 an hour.

12. *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 road in question.

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.

13. *Accidents, stop-overs*.—If, because of accident or stop for any reason, automobiles are unable to keep going, they shall be immediately parked off the road or, where this is impossible, on the outer edge of the road.

14. *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, and such violation shall subject the offender to immediate ejection from the park. Persons ejected from the park will not be permitted to return without prior sanction in writing from the Director of the National Park Service or the superintendent of the park.

## MAPS.

The following maps<sup>2</sup> may be obtained from the Director of the United States Geological Survey, Washington, D. C. Remittances should be made by money order or in cash.

SHINUMO, 28½ by 25 inches, scale about 1 mile to 1½ inches, contour interval 50 feet.

BRIGHT ANGEL, 26 by 20½ inches, scale about 1 mile to 1½ inches, contour interval 50 feet. Contains a geologic history of Bright Angel Quadrangle, by L. F. Nobel on reverse side map.

VISHNU, 28 by 21 inches, scale about 1 mile to 1½ inches, contour interval 50 feet.

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

## LITERATURE.

### GOVERNMENT PUBLICATIONS.

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

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<sup>2</sup> May be purchased also by personal application at the office of the superintendent of the park, but that office can not fill mail orders.

## 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.

## Map of National Parks and National Monuments.

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

## 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 indicated. Postage prepaid. Remittances should be made by money order or in cash.

**Glimpses of our National Parks.** 72 pages, including 31 illustrations, 10 cents.<sup>3</sup>

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

**The National Parks Portfolio.** By Robert Sterling Yard. Third edition. 248 pages, including 306 illustrations. Bound securely in cloth. \$1.<sup>3</sup>

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

**Guidebook of the Western United States, Part C, the Santa Fe Route,** with a side trip to the Grand Canyon of the Colorado, by N. H. Darton and others. (Bulletin 613, U. S. Geological Survey.) 1915. 194 pages, 25 route maps, 42 plates, 40 text figures. 50 cents.<sup>3</sup>

This guide describes the country along the Atchison, Topeka & Santa Fe Railway from Kansas City to Los Angeles. Although the description of the rocks and their relations and the scenic features form a large proportion of the matter, nearly every page gives information as to notable historic events, industrial resources, plants, and animals. The story of the Indians, past and present, especially the characteristic Pueblo tribes, is told in some detail. Many of the facts regarding the rocks are here presented for the first time. The book contains numerous views of prominent scenic features and pictures of restoration of some of the very remarkable animals whose bones are found in the clays.

**Exploration of the Colorado River of the West and its Tributaries,** by John Wesley Powell. Explored in 1869, 1870, 1871, and 1872. Pp. 291. Under the direction of the Secretary of the Smithsonian Institution. Illustrated. Government Printing Office, Washington, 1875. (Out of print.)

**Pre-Cambrian Igneous Rocks of the Unkar Terrane, Grand Canyon of the Colorado, Ariz.,** by C. D. Walcott. U. S. Geol. Surv. 14th Ann. Rept., pt. 2, pp. 497-524, pls. 60-65. 1894. \$2.10.

**The Grand Canyon.** Senate Doc., No. 42, 65th Congress, 1st session, by Thomas Fulton Dawson, Government Printing Office, Washington, D. C., 1917. 67 pp. Price 10 cents.

An article giving credit of first traversing the Grand Canyon to James White, a Colorado gold prospector.

**Tertiary History of the Grand Canyon District,** by Clarence E. Dutton. U. S. Geol. Surv. Mon., 2,264 pp., ill. and atlas, 1882. \$10.

<sup>3</sup>May be purchased also by personal application at office of the superintendent of the park, but that office can not fill mail orders.

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### OTHER NATIONAL PARKS.

Rules and Regulations similar to this for 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.

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.

Yellowstone National Park.

Yosemite National Park.

## AUTHORIZED RATES FOR PUBLIC UTILITIES, SEASON, 1922.

### HOTELS AND PUBLIC CAMPS.

The following hotels, etc., are operated by Fred Harvey:

#### EL TOVAR.

The El Tovar is located at the railroad terminus, near the head of Bright Angel Trail, at an elevation of 6,866 feet above sea level, and open all the year. It is a long, low structure, built of native bowlders and pine logs. There are 93 sleeping rooms, accommodating 175 guests. Forty-six of these rooms are connected with private bath.

There is a music room and rendezvous. In the main dining room 165 persons can be seated at one time.

Hot and cold water, steam heat, and electric light are supplied. El Tovar also has a steam laundry.

#### *Authorized rates at El Tovar Hotel.*

##### American plan:

One person in room without bath, per day.....	\$6. 00
One person in room with bath, per day.....	8. 00

There are few exceptional rooms with bath carrying an additional charge.

##### Meals only:

Breakfast.....	1. 25
Luncheon.....	1. 25
Dinner.....	1. 50

#### BRIGHT ANGEL COTTAGES.

Cozy lodgings in cottages or tents at Bright Angel Cottages, adjacent to El Tovar. The accommodations are clean and comfortable. There are four cottages, open the year round and several large tents for summer only. All of the cottages have steam heat and electric light; one cottage also has baths. About 150 persons can be accommodated here. Meals are furnished a la carte at the café. Kitchen facilities are ample for quick a la carte service.

#### *Authorized rates at Bright Angel Cottages.*

Lodging only, per day, per person.....	\$1. 50-\$1. 75
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**HERMIT CABINS.**

On Tonto Plateau at the foot of Hermit Trail; consists of a central dining room, lounge cottage, and 11 sleeping cottages; accommodations for 30 persons.

*Authorized rates at Hermit Cabins.*

American plan, per day, per person..... \$5

**PHANTOM RANCH.**

On the north side of the Colorado River near the mouth of Bright Angel Creek; consists of well-built stone cottages with mess hall and rendezvous with excellent accommodations.

*Authorized rates at Phantom Ranch.*

American plan, per day, per person..... \$6

**REST HOUSES.****THE LOOKOUT.**

The Lookout is a quaint observatory and rest house, built on the edge of the rim near the head of Bright Angel Trail. It is equipped with a large binocular telescope in the tower, for observing the most distant reaches of the canyon by day and for viewing the heavens by night. There is a small library for the layman and scientist. Canyon maps and photos are for sale. The reception room has spacious windows, a fireplace, Navajo rugs, and easy chairs: it is electric lighted and steam heated.

**HERMIT'S REST.**

Where Hermit Rim Road ends and Hermit Trail begins is a unique rest house, built into the hill, with a roofed-in porch and a parapet wall. As the name implies, it is intended to provide rest and shelter for parties who take the Rim Road drive, or the Hermit Trail trip. Guests may sit at the tables outside or sheltered by the glass front inside, according to weather, and enjoy a light lunch in unusual surroundings. Admission is by ticket. Tickets may be obtained at El Tovar or Bright Angel Camp, at 50 cents.

**SHOPS AND STORES.****HOPÍ HOUSE.**

Opposite El Tovar is a reproduction of the dwellings of the Hopi Indians and several Navajo hogans.

In Hopi House are installed collections of Indian handiwork. Here also live a small band of Hopis, who are among the more primitive of our Indians. The men weave blankets and the women make pottery.

The homes of the Hopis are on the edge of the Painted Desert, perched on the crests of lofty mesas where they live as did their

forebears and cling to their high dwelling place. They are industrious, thrifty, orderly, and mirthful. A round of ceremonies, each terminating in the pageants, called "dances," marks the different seasons of the year. Subsisting almost wholly by agriculture in an arid region of uncertain crops, they find time between their labors for light-hearted dance and song, and for elaborate ceremonials, which are grotesque in the Katchina, or masked dances, ideally poetic in the flute dance, and intensely dramatic in the snake dance. In the three and a half centuries of contact with the white race their manner of life has not materially changed. The Indian tribes that roamed over mountain and plain have become wards of the Government, but the Pueblo Indian has absolutely maintained his individuality.

The Navajo women weave fine blankets and many of the men are expert silversmiths, who fashion bracelets, rings, and other articles from Mexican coin silver. The Navajo Indian Reservation—one of the largest in the United States—borders Marble Canyon on the east. They are a pastoral people, intelligent, and, like the Hopis, self-supporting. They own large numbers of sheep, cattle, and horses. The Navajos are tall, rather slender, and agile. They have been rightly called the Bedouins of the Desert. Nowhere are they gathered into permanent villages. Although "civilized," they still cling to old customs and old religious forms. The medicine man, or Shaman, has a large following, if not a large per cent of cures. Their dance ceremonies are weird in the extreme. The fire dance is a spectacular 10-day ceremony, seldom witnessed by white men, and occurring only once in seven years.

Supai Indians from Havasu Canyon frequently visit El Tovar.

#### KOLB BROS.' STUDIO.

Kolb Bros.' studio is at the head of Bright Angel Trail. The Kolb Bros. give, each day, an interesting lecture, illustrated with motion pictures and slides, describing their boat trip through the canyons of the Green, and Colorado Rivers. Admission, 50 cents.

Here, too, visitors may view the canyon through a telescope and obtain reliable information. Photographic views and other pictures representing their many years' exploration of the Grand Canyon, are for sale.

#### SIGHT-SEEING TRIPS BY ROAD.

##### REGULAR TRIPS BY AUTOMOBILE.

The following trips are available every day in the year by automobile:

*Hermit's Rest.*—Stopping en route at Maricopa, Hopi, Mohave, and Pima Points. First trip starts at 9.30 a. m., returning to El Tovar and Bright Angel about 12 noon. Second trip starts at 1.30

p. m., returning to El Tovar and Bright Angel about 4 p. m. Rate, \$3. This rate includes use of facilities and light refreshments at Hermit's Rest. This drive is 15 miles round trip along the Rim Road. There is also a sunset trip to Hopi or Mohave Points, leaving El Tovar and Bright Angel Camp at 6.30 and returning about 7.45.

*Hopi Point.*—El Tovar to Hopi Point, 2 miles west; rate, \$1.50.

*Mohave Point.*—Three miles west; rate, \$2.

#### REGULAR SUMMER TRIPS BY AUTOMOBILE.

The following trips are available through the summer season (approximately from April 15 to November 15).

*Grand View.*—Through forest of tall pines via Long Jim Canyon and Thor's Hammer, 13 miles each way; time about 3½ hours. Leave El Tovar 9.30 a. m. and 1.30 p. m. daily. Rates, \$4. From Grand View may be seen that section of the canyon from Bright Angel Creek to Marble Canyon, including the great bend of the Colorado. On the eastern wall are Moran, Zuni, Papago, Pinal, Lipan, Navajo, (Desert View), and Comanche Points; and the mouth of the Little Colorado River. Still farther beyond is the Painted Desert and Navajo Mountain—the latter plainly seen, though 120 miles away. The rim trail to Moran Point is interesting. Grand View Trail enters the canyon near Grand View Point.

*Desert View.*—Thirty-two miles each way via Long Jim Canyon, Thor's Hammer, Grandview, Hull Tank, Trash Dam, Tanner Tank, Old Aztec Ruin, Lipan Point, and head of Tanner Trail. Two round trips a day, leaving El Tovar 9 a. m., and 1.30 p. m. Rate for one person, \$20; for two persons, \$10 each; for three or more persons up to capacity of car, \$8 each. Special auto for parties of six persons or less, \$48; lunch extra, except for El Tovar guests.

At this point there is a far outlook not only into the canyon above the Granite Gorge, where the river valley widens, but also across the Painted Desert, toward Hopi Land, and along the Desert Palisades to the mouth of the Little Colorado. At sunset and sunrise it is a glorious sight. For that reason one preferably should arrange to stay overnight—a camping trip elsewhere referred to. One and one-half miles west of Desert View is Lipan Point, affording an excellent view of this whole region.

#### SPECIAL SUMMER TRIPS BY AUTOMOBILE.

These trips depend upon condition of roads and may be at times discontinued.

*Bass's Camp*, 24 miles, and Havasupai Point, 1 mile beyond. Rate same as Desert View trip.

*Yavapai and Grandeur Points.*—This drive extends 2 miles east of El Tovar. Rate, \$1.

**PRIVATE CONVEYANCE RATES.**

Where special cars are desired, an extra charge of \$2 is made for entire party, besides the individual rate for regular service.

As an example: The rate for regular trip to end of Rim Road is \$3 each person. If one person desires to make this trip in a special conveyance, that person would pay \$5; if two persons go, the entire expense would be \$8; for three persons, \$11; and so on up to six. The \$2 extra is collected for the party as a whole, and not individually.

Other rates for special autos vary with service performed.

NOTE.—If the demand for regular-trip drives is so heavy as to require use of all conveyances available, private trips will be discontinued temporarily.

**GARAGE SERVICE.**

There is at Grand Canyon a large stone garage with ample facilities for repairing and supplying automobiles. The rate for storage of automobiles is \$1 per day.

**TRAIL TRIPS.**

*Hermit Trail, stopping at Hermit Cabins overnight.*—Time, two days and one night. Hermit Road by auto. Down Hermit Trail, stay overnight at Hermit Cabins; go to river at mouth of Hermit Creek; return up Hermit Trail to Rim; thence to El Tovar over Hermit Rim Road. Trips leave El Tovar and Bright Angel Cottages at 9. 30 a.m. and return next afternoon. Rates \$18.25 each person, including guide, overnight accommodations, and meals en route and at Hermit Cabins. Private guide, \$5 per day extra.

*Bright Angel Trail.*—The trail here is generally open the year round. In midwinter it is liable to be closed for a day or two at the top by snow, but such blockade is not frequent. The trail reaches from the hotel 7 miles to the Colorado River, with a branch terminating at the top of the granite wall immediately overlooking the river. At this latter point the stream is 1,272 feet below, while El Tovar Hotel on the Rim is 3,158 feet above. The trip is made on muleback, accompanied by a guide.

Those wishing to reach the river leave the main trail at Indian Garden and follow the downward course of Indian Garden and Pipe Creeks.

Leave at 8.30 a. m. for the river trip, 7 miles; return to Rim 5 p. m. Rate, \$6 each person. Leave 10.30 a. m. for trip to plateau, 5 miles; rate, \$5 each. Rates quoted above are for each person in parties of three or more. For special trips with less than three persons there is a party charge of \$5 extra for guide. Lunch extra, except for El Tovar room guests.

It is necessary that visitors who walk down Bright Angel Trail and desire that guide and mules be sent to meet them, be charged full price and special guide fee of \$5. This is unavoidable, as the mules and guides are not available for any other trip.

*Hermit-Tonto-Bright Angel Loop.*—This trip takes two days and one night. Hermit Rim Road to head Hermit Trail; down Hermit Trail; stay overnight at Hermit Cabins; go to river foot of Hermit Creek; return along Tonto Trail to Indian Garden; thence up Bright Angel Trail.

Start from El Tovar or Bright Angel Cottages at 9.30 a. m., and return next afternoon. Round trip charge is \$23.25 for each person; private guide is \$5 a day extra; rate quoted includes regular guide, overnight accommodations, and meals en route.

NOTE.—This trip can be lengthened to three days and two nights by spending an extra night in the canyon, also going to river at foot of Bright Angel Trail—a 34-mile journey. Rate, \$14 a day, one person; \$8 a day extra each additional person; provisions extra; includes guide.

*Three-Day Ribbon Falls trip.*—Leave about 9 a. m. Down Bright Angel Trail, crossing the Colorado River by new steel suspension bridge and reaching Phantom Ranch early afternoon. Overnight at Phantom Ranch, following morning by way of Kaibab Trail in Bright Angel Canyon, 5 miles to Ribbon Falls, beautiful clear waterfall in the form of a crystal ribbon shedding its waters on a natural rock altar in the midst of a verdant amphitheater. Box lunch at falls, and return to Phantom Ranch for overnight. On third day the return to El Tovar completes a never-to-be-forgotten experience. The all-expense rate for this trip, for parties of three or more, is \$30 per person. For parties of less than three, a party charge of \$5 per day for guide, extra.

*Across Grand Canyon to Kaibab National Forest on North Rim.*—This combines an instructive and interesting excursion across the whole width of the Grand Canyon, from rim to rim, with a visit to the Kaibab National Forest. This beautiful virgin forest is the home of thousands of deer and the haunt of the mountain lion and the bobcat. Starting from the South Rim, the round trip is made in five days, including one day spent in the forested section. The route is by the Bright Angel and Tonto Trails across the Kaibab Suspension Bridge to Phantom Ranch; thence along Kaibab Trail and up Bright Angel Canyon to Wylie Way Camp at Bright Angel Point on the North Rim. On the return Ribbon Falls visited en route. For those who may wish to spend some time in the Kaibab National Forest, saddle stock and camping outfits are available at Wylie Way Camp. Approximate expense, except personal accommodation in Wylie Way Camp, \$70 per person for the five-day trip.

Wylie Way Camp, \$6 per day extra. For full particulars and advance reservations address Manager, Transportation Department, The Fred Harvey Co., Grand Canyon, Ariz.

*Dripping Spring.*—This trip is made on horseback all the way, or auto to Rim, and saddle horses down trail; 10 miles west, starts at 8.30 a. m. Rate, \$5 each for three or more persons; for less than three persons, \$5 extra for guide. Private parties of three or more persons, \$5 extra for guide.

### SADDLE HORSES.

Recently many new bridle paths along the Rim and through the pines of Tusayan have been opened up, so that horseback riding now is possible for all. The animals are well trained and dependable. Saddle horses cost \$4 a day, or \$2.50 a half day. English, McClellan, Whitman, or western stock saddles furnished as requested. Side-saddles not provided. Rates quoted include, for parties of three or more, the services of a guide. For a guide for parties of less than three or for a private guide the rate is \$5 a day, or \$2.50 a half day. Horseback trips over any of the trails into the canyon are only permitted when accompanied by guide. This is necessary to avoid risk in meeting trail parties and pack trains.

There are several interesting foot trails near Grand Canyon village. Information as to these may be obtained at the superintendent's office.

### CAMPING TRIPS.

Camping trips with pack and saddle animals, or with wagons and saddle animals, are organized, completely equipped, and placed in charge of experienced guides.

For climatic reasons it is well to arrange so that camping trips during the season from October to April are mainly confined to the inner canyon. For the remainder of the year, i. e., April to October, they may be planned to include both the canyon itself and the rim country.

The rates vary from \$10 to \$15 a day for one person; \$6 to \$8 a day each additional person. Such rates specially include services of guide and camp equipment; provisions extra; figures quoted are approximate only, varying with different outings.

*Havasü Canyon and Havasupai village.*—The best time to visit this place is from May to October. A journey of about 50 miles, first by wagon or auto, 35 miles across a timbered plateau, then on horseback down Topocobya Trail along Topocobya and Havasü Canyons, to the home of the Havasupai Indians.

The home of this little band of 200 Indians is in Havasü Canyon, a tributary of the Grand Canyon, deep down in the earth two-fifths of a mile. The situation is romantic and the surroundings are beautified



by falls of water over precipices several hundred feet high, backed by grottoes of stalactites and stalagmites. This water all comes from springs that gush forth in surprising volume near the Havasupai village.

The baskets made by the Havasupai women consist of the burden basket, a shallow tray, and a water bottle of willow. Those made by the older weavers are of fine mesh, with attractive designs, and bring good prices. Havasupai means people of the blue water. Padre Garces was the first white man to visit their canyon home. In early days the Havasupais undoubtedly were cliff dwellers. They built nearly all the Grand Canyon trails, or rather their rude pathways were the advance guard of the present trails. Their summer homes resemble those of the Apaches. The winter homes afford more protection against the weather.

The round trip from El Tovar is made in three days, at an expense of \$15 a day for one person, \$20 a day for two persons, and \$25 a day for three persons. Each additional member after party of three, \$5 a day; provisions extra. These rates include service for party of one or two persons, also cost of horse feed, but do not include board and lodging at Supai village.

For parties of three to six persons an extra guide is required, whose services are charged for at \$5 a day.

**NOTE.**—At the western end of the Granite Gorge is a trail down to the Colorado River and up the other side to Point Sublime and Powell's Plateau, the river being crossed by ferry. Reached by team from El Tovar, a distance of 24 miles, or it can be seen as a detour on the Havasu Canyon trip; rates on application.

*Desert View.*—Elsewhere reference is made to Desert View auto trip. When taken by wagon it occupies three days, leaving El Tovar morning of first day and returning afternoon of third day, with all night camp at destination. Rate, \$10 for one person and \$5 each additional person; provisions extra; rate named includes one guide; an extra guide costs \$5 a day.

*Little Colorado River.*—The trip to the mouth of the Little Colorado is a most interesting one. Leaving El Tovar in the morning by wagon, camp is made the first day at Deer Tank. The next day the cliff dwellings are visited and the plateau overlooking the Canyon of the Little Colorado is reached by midday. From the edge of the plateau to the bottom of the canyon is a straight drop of 2,500 feet. Rates on application.

*Painted Desert and Hopi Land.*—The trip is made with saddle and pack animals. The first night the camp is at Saddle Horse Tanks. Hopi Crossing of the Little Colorado is reached the next afternoon and Tuba City the third day. The Hopi village of Moenkopie is seen en route.

The Painted Desert country affords a most interesting study of a phase of Indian entertainment, little known to white people. Rates on application.

Other camping trips are being arranged for by the National Park Service. Information may be obtained at the superintendent's office.

## THE NORTH RIM.

### AUTO TRANSPORTATION FROM UTAH POINTS.

The North Rim of the Grand Canyon National Park is reached from Lund, Utah, on the Union Pacific System, and from Marysville, Utah, on the Denver & Rio Grande Western Railroad, by automobiles operated by the Zion National Park Co., Cedar City, Utah.

Special all-expense tours are offered combining visits to Zion National Park, Cedar Breaks, and Bryce Canyon. These tours are scheduled to leave Lund on odd calendar days of the month from June 15 to October 15, and from Marysville on even calendar days of the month from June 16 to October 14.

#### *Authorized rates.*

From Lund, Utah, to Zion National Park, Grand Canyon National Park, Cedar Breaks, Bryce Canyon, and return to Lund, an eight-day trip, per person, minimum of four passengers.....	\$125
From Marysville, Utah, to Grand Canyon National Park, Bryce Canyon, and return to Marysville, a five-day trip, per person, minimum of four passengers *.	110
From Marysville, Utah, to Bryce Canyon, Grand Canyon National Park, Zion National Park, Cedar Breaks, and return to Marysville, an eight-day trip, per person, minimum of four passengers *.....	140

Above rates include automobile transportation and meals and lodgings en route. Children under 12 years of age, one-half fare. Twenty five pounds of baggage on full-fare tickets and 12½ pounds on half-fare tickets will be transported free; excess baggage will be charged for at rate of 10 cents per pound.

Arrangements also can be made with H. E. Bowman, of Kanab, Utah, for special automobiles from Marysville, Utah, to Bryce Canyon, North Rim of the Grand Canyon National Park, Zion National Park, and Cedar Breaks and return to starting point for a flat rate of \$75 for each person, a minimum of four persons. Bowman will also furnish special cars carrying four people for 50 cents per mile and cars carrying six people for 60 cents per mile, these cars to be operated at the pleasure of the occupants as to distance traveled each day and as to places visited, with the proviso that a minimum charge will be made for 20 miles in any one day whether traveled or not. Twenty five pounds of free baggage will be allowed each person; excess baggage will be charged for at the rate of 10 cents per pound. Two children under 6 years of age will be carried in lieu of one adult.

\* On trips from Marysville, Transportation Manager, Zion National Park Co., Cedar City, Utah, must be notified at least six hours in advance of arrival of passengers at Marysville.

### WYLIE WAY CAMP.

On the North Rim at Bright Angel Point, situated in a shady grove of pines, is a Wylie Way Camp, consisting of a central dining tent and comfortable sleeping tents; everything is spotlessly clean. Camp opens about June 20 and closes about October 1. There are accommodations for about 25 people.

Authorized rate at Wylie Way Camp, American plan, per person, per day, \$6.

### SADDLE-HORSE TRIPS.

Arrangements may be made at the Wylie Way Camp or by writing to Jensen & Vaughn, Fredonia, Ariz., for saddle-horse trips to various points of interest on the North Rim and in the canyon. Time required and rates are as follows:

Side trips and rates therefor from Wylie Way Camp, Bright Angel Point:

To Point Imperial, one-day trip.

To Point Sublime, two-day trip.

To Cape Royal, two-day trip.

Saddle horses for these trips or for special trips on the plateau, \$3 each per day.

Down Bright Angel Trail to Colorado River, a three-day trip, overnight accommodations in the canyon at Phantom Ranch, the rate is \$6 per day for each horse.

Guide for all trips, \$6 per day.

For all overnight trips from Wylie Way Camp on the North Rim one or more pack horses must accompany the party, the rates for these being the same as for saddle horses.

Bedding and provisions, \$2.50 per day for each person.





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**A PORTION OF THE FIRST FOREST.**  
 The profusion of petrified wood is clearly shown.



**Photograph by Wm. Nelson.**

**ROOT OF PETRIFIED TREE, 7 FEET IN DIAMETER.**  
 The profile resembles a dog's or lion's head.  
**PETRIFIED FOREST NATIONAL MONUMENT, ARIZONA.**



Copyright by Fred Harvey.

COMING DOWN A STEEP STRETCH ON THE HERMIT TRAIL.

GRAND CANYON NATIONAL PARK.

JUL 25 1923

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DEPARTMENT OF THE INTERIOR  
HUBERT WORK, SECRETARY  
NATIONAL PARK SERVICE  
STEPHEN T. MATHER, DIRECTOR

RULES AND REGULATIONS

# GRAND CANYON

## NATIONAL PARK

### ARIZONA



GRAND CANYON FROM NEAR EL TOVAR

1923  
OPEN ALL THE YEAR





Photograph by Pacific Stereopticon Co.

**HAVASUPAI INDIAN RESERVATION IN THE HAVASU CANYON.**

**The walls are deep red sandstone of the Supai formation. The older Indians regard the two upstanding rocks as sacred.**



Copyright by F. H. Maude.

**HAVASUPAI INDIAN WOMAN GRINDING CORN IN A METATE.**

**These Indians are extremely primitive in their methods and manner of life.**

# THE NATIONAL PARKS AT A GLANCE.

[Number, 19; total area, 11,872 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—20 bath-houses under public control.
Yellowstone..... 1872	Northwestern Wyo- ming.	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 Cali- fornia.	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 Cali- fornia.	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 Cali- fornia.	4	Created to preserve the celebrated General Grant Tree, 35 feet in diameter—6 miles from Sequoia National Park.
Mount Rainier..... 1899	West Central Wash- ington.	324	Largest accessible single peak glacier system—28 glaciers, some of large size—48 square miles of glacier, 50 to 500 feet thick—Wonderful sub-alpine 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 Colo- rado.	77	Most notable and best preserved prehistoric cliff dwellings in United States, if not in the world.
Glacier..... 1910	Northwestern Mon- tana.	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 Colo- rado.	397½	Heart of the Rockies—Snowy range, peaks 11,000 to 14,255 feet altitude—Remarkable records of glacial period.
Hawaii..... 1916	Hawaii.....	186	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 6,870 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)

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# GRAND CANYON NATIONAL PARK.

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## GENERAL DESCRIPTION.

The Grand Canyon National Park is in northern Arizona. Its 958 square miles inclose 56 miles of the Grand Canyon stretching west of its beginning at the mouth of the Marble Canyon. Through it winds the Colorado River for a distance of 103 miles. From rim to rim the canyon varies from 8 to 20 miles in width; it is more than a mile deep measured from the north rim, which averages nearly a thousand feet higher than the south rim. The eastern boundary includes the lofty painted walls east of which lies the Painted Desert. Its western boundary includes the broad Havasu Canyon, tributary from the south, in whose depths we find the Havasupai Indian Reservation and a group of fine waterfalls markedly different from any in our other national parks.

The park boundaries hug the rim closely. Very little of the country back of the rim is included in the reservation, scarcely enough in places to take care of the great increase of travel which national parkhood will bring to the Grand Canyon during the next several years. These border lands are wonderfully attractive. The northern rim is heavily forested with pine and spruce interspersed with beautiful glades of quaking aspen. The southern rim carries a slender semiarid flowering vegetation of rich beauty and wide variety and south of the railroad station lie a few square miles of fine yellow pine forest.

The Grand Canyon was made a national park in February, 1919, thirty-three years after Benjamin Harrison, then Senator from Indiana, introduced the first of several bills to give it park status. Politics, local apathy, and private interests, which sought to utilize its water power and to find minerals in its depths, were the principal causes of delay. All efforts failing to make it a national park, in 1908 President Roosevelt made it a national monument. Once a railroad was surveyed through it. A scenic railroad was projected along its south rim. Less than a year before it became a park efforts were making in New York to raise money to dam its waters for power and irrigation.

## A MIGHTY SPECTACLE.

There is no doubt that the Grand Canyon is one of the world's very greatest spectacles. It is impossible to compare it with the tremendous white spectacle of the Himalayas, or with the House of

Everlasting Fire of the Hawaii National Park, or with the 17,000 feet of snow and glacier which rise abruptly between the observer's eyes and the summit of Mount McKinley, because it has nothing in common with any of these. But of its own kind there is nothing in the world which approaches it in form, size, and glowing color; it is much the greatest example of stream erosion. And in its power to rouse the emotion of the looker-on to stupefy or to exhilarate, it has no equal of any kind anywhere, unless it be the starry firmament itself.

Approaching by rail or road, the visitor comes upon it suddenly. Pushing through the woods from the motor camping ground, or climbing the stairs from the railroad station, it is there at one's feet. disclosed in the sublimity of its templed depths, in the bewildering glory of its gorgeous coloring. There is no preparation of mind and spirit. To some, the revelation is a shock, no matter what the expectation. The rim of the Grand Canyon is one of the stillest places on earth, even when it is crowded with people.

To describe the Grand Canyon is as impossible as it is unnecessary. Few natural spectacles have been so fully pictured, few are so familiar even to the untraveled. Its motionless unreality is one of the first and most powerful impressions it makes. And yet the Grand Canyon is really a motion picture. There is no moment that it does not change. Always its shadows are insensibly altering, disappearing here, appearing there; lengthening here, shortening there. There is continual movement. With every quarter hour its difference may be measured.

There is the Grand Canyon of the early morning, when the light slants lengthwise from the Painted Desert. The great capes of the northern rim shoot into the picture, outlined in golden light against which their shapes gloom in hazy blues. Certain temples seem to rise slowly from the depths, or to step forward from hiding places in the opposite walls. Down on the green floor the twisting inner gorge discloses here and there lengths of gleaming water, sunlit and yellow.

An hour later all is wholly changed. The dark capes have retired somewhat and now are brilliant-hued and thoroughly defined. The temples of the dawn have become remodeled, and scores of others have emerged from the purple gloom. The Granite Gorge, now de-detailed fully, displays waters which are plainly muddy even at this great distance. And now the opposite wall is seen to be convoluted, possessing many headlands and intervening gulfs.

And so, from hour to hour, the spectacle develops. Midday, with sun high behind the south rim, is the time of least charm, for the opposite walls have flattened and the temples of the depths have lost their defining shadows. But as afternoon progresses the spec-

tacles of the morning creep back, now reversed and strangely altered in outline. It is a new Grand Canyon, the same but wonderfully different.

And just after sunset the reds deepen to dim purples and the grays and yellows and greens change to magical blues. In the dark of a moonless night the canyon suggests unimaginable mysteries.

### THE FIRST VIEW.

From the railroad station the visitor ascends to El Tovar Hotel and the view of the canyon at perhaps its showiest point. Here is where the temples loom their biggest and are nearest by. Here the Granite Gorge approaches nearest to the south rim. The view of El Tovar is restricted by the extension of Grandeur Point and Maricopa Point on either side. These cut off the view of the great reaches of the canyon east and west. El Tovar view is a framed picture of limited size. It is better so; better for the newcomer to enter gradually into the realization of the whole which will come when he walks or rides out to the many points which push northward from the south rim; better also to return to after days spent on the rim or in the canyon's depths.

Having studied this view for general outlines and the canyon's conformation, stratification, and coloring, the visitor will find for himself, on foot or by motor stage or coach, many points which will afford him varied outlooks upon the broad reaches of the canyon. It is advisable to see the canyon from end to end from the rim before exploring the trails to the floor and the river.

The traveler who is unlucky enough to have no more time at his disposal may, even in one day, see much of the Grand Canyon either from the rim or by mule-back descent to the depths as preference dictates. Probably the one-day visitor can see more by taking the 16-mile Hermit Rim Road drive west in the forenoon and the 60-mile drive east to Grand View and Desert View in the afternoon than in any other way. Both the rim drives and the descent into the canyon may be had in two days. Every day added to the schedule will give the visitor further novel experiences and glorious views, such as the Hermit Loop trip, the Phantom Ranch trip, or to the North Rim of the canyon, visiting Ribbon Falls en route.

When you go to the Grand Canyon leave the duration of your stay open for decision when there. You will probably then remain from five days to two weeks. Two weeks of fairly steady going will enable you to see the Grand Canyon thoroughly without undertaking trips which are a hardship to persons unaccustomed to trail riding.



**PARK SERVICE INFORMATION BUREAU.**

A free information bureau is maintained by the National Park Service in the Administration Building, where the superintendent's offices are. Park visitors are welcomed and are advised to apply to the attendant in charge of this bureau for official information of any kind.

A suitable reference library is being accumulated for the use of visitors, and the Government maps and other publications may be consulted or secured here.

Automobile arrivals are requested to register at this bureau, unless previously registered at a checking station.

**LIVING AT THE GRAND CANYON.**

Living is pleasant and comfortable. El Tovar Hotel offers delightful conditions at rates reasonable in these times for its high-class accommodations. Its porches are broad, its garden a collection of rich semiarid vegetation, its rim walks inspiring. There is horse-back riding through many miles of yellow-pine forest and out to viewpoints on the rim, but there are no sports. There is neither golf nor tennis. The canyon absorbs the whole attention of its visitors.

Adjoining the hotel there is a most comfortable annex of cottages and tents and café; rates are lower than those charged at the main hotel. There are comfortable tent cottages at Hermit Creek Cabins on the Hermit Trail, and at Phantom Ranch across the Colorado River. The latter cottages are built of the native rock, with mess hall, etc. Both these resorts are first class in every respect. There are cottages at Desert View, where one may spend a few nights. Camping trips along the rim and down to the Havasupai Indian Reservation and the waterfalls of Havasu Canyon can be arranged. It is possible to take your pack train across the river on the Kaibab Suspension Bridge, stay overnight at Phantom Ranch, and ascend the most interesting Kaibab Trail up Bright Angel Canyon to the excellent public camp on the north rim of the canyon. This trip is a matter of several days.

**FREE PUBLIC CAMP GROUND.**

From April to November the south rim is free from snow and the free public camp ground near Grand Canyon Village is available to campers. Motorists are urged to bring their own camp equipment and make use of this camp. Sites will be allotted free of charge on application to the office of the superintendent of the park. There is a garage in the village where gasoline and oil can be procured.

There is also a general store where groceries can be purchased. It is necessary to purchase water in the village, as there is none at the Grand Canyon and it must be hauled from a distance by rail.

### SEEING IT FROM THE RIM.

East of the hotel are several points reached by motor roads which afford fine views of the upper half of the Grand Canyon. The most famous of these is Grand View, where still stands the first regular hotel of the canyon, now private property. The eastern terminus of the road is Desert View, which offers a view up the Marble Canyon, and eastward over the famous Painted Desert. West of the hotel the auto stages stop at a succession of fine points, each with its own individual view of the mighty spectacle.

There is much to see also in the neighborhood of El Tovar.

The Grand Canyon Rim Foot Trail extends along the canyon rim east to Grandeur, Yavapai, and Yaki Points through the pine forest, and west to Maricopa, Sentinel, and Hopi Points.

Numerous paths lead out both east and west from Grand Canyon Village through the woods to advantageous points of view on the rim. These paths are inviting to the hiker, or, if one desires to combine horseback riding with viewing the spectacle thus reached, he may do so over these paths, where the footing invites a canter, the surroundings furnish shade and beauty, and automobiles do not intrude.

### DESCENDING THE CANYON.

There are two practicable trails from the south rim to the river. The one commonly used starts from El Tovar Hotel and descends the deep alcove between Grandeur and Maricopa Points. This is the celebrated Bright Angel Trail.

The descent of this trail is usually done on muleback in parties led by guides. It is a sad mistake for persons not in the soundest physical training to attempt it on foot, for the apparent distance as seen from the rim is misleading, and the climb back is most arduous at that elevation. The south rim of the canyon at El Tovar is 6,866 feet above sea level. Nearly every day one or more trampers, overconfident of their endurance, find the way up too arduous and have to be assisted by guides and mules sent down for them from the rim.

The descent is an experience of great charm. The trail is well built and kept in good condition. The traveler passes in review all the strata which form the canyon walls; their close examination will be a source of pleasure. Just under the rim the trail passes through a fine forest of spruce, and from this down to the sage desert of the

green floor the traveler will also pass in review a series of vegetation which represents scores or hundreds of miles of surface growths. There are two steep cliffs which the trail descends in series of short hitches of zigzags, one of which, known as Jacob's Ladder, carries the traveler down the famous Redwall limestone, which is so distinct a scenic feature of the canyon from every rim view. But there need be no alarm about these descents, for the zigzags, short and numerous though they are, maintain always a uniform safe grade. It may affect the unaccustomed nervously to see his mule hang his head over short abysses at the turns, but the traveler himself does not hang over them, and the mule is sure-footed, stolid, and indifferent. There is only one creature with less imagination than a mule, and that is his cousin, the burro.

Indian Garden, which lies on the floor of the canyon, is so named because Havasupai Indians once cultivated the soil through which passes the stream which originates in springs below the Redwall. It is called Garden Creek. The Indian Garden now is a tangle of high brush, principally willow, through which the trail passes out upon the Tonto Platform, and presently plunges down the rocky gorge which leads to the edge of the muddy Colorado.

#### THE HERMIT TRAIL.

A much finer trail from every point of view than the Bright Angel starts from Hermit Rest, south of Pima Point, and descends the Hermit Canyon. It begins 7 or 8 miles west of El Tovar. This is a two days' journey, including a night spent in Hermit Cabins well down in the canyon. It involves an experience worth many times the additional day which it requires.

The Hermit Canyon is one of extreme beauty; there is probably no other which equals it in gorgeous coloring and the variety of its rock forms. The trail, whose grade is less than that of the Bright Angel, is one of the finest in the world. It is longer than the Bright Angel Trail and leads out upon impressive points overlooking fascinating views. The descent of the Redwall limestone is a masterpiece of trail building, and the only part of the Hermit Trail which gives an impression of steepness; but this may readily be walked down by the unaccustomed rider; its descent is not nerve racking. The night at Hermit Cabins, under a towering crimson gable, with colorful Hermit Canyon on the south and Grand Canyon opening northward over the green shale of the Tonto Platform, or "lower plateau," is as comfortable as it is fascinating. The trip to the river and back to the camp is usually made the first day.

### THE TONTO TRAIL.

Too few visitors to Hermit Cabins combine the two trail trips with a journey between them over the Tonto Platform. The descent is by the Hermit Trail with a night at its foot. The next morning the journey is made on muleback up the canyon to the Indian Garden, and from there, after lunch by the stream side, up the Bright Angel Trail to El Tovar.

### THE HAVASU CANYON.

The Havasu Canyon in the far western end of the national park is rarely visited. The trail begins at the end of a long desert road by descending precipitously to a gorge through which the Havasupai Indian Reservation is reached. There are less than 200 Indians on the reservation. These live by farming the land irrigated from Havasu Creek; corn is their principal product, but melons, figs, and peaches are also produced. The reservation fills a broad amphitheater in the gorge surrounded by lofty red sandstone cliffs of the Supai formation. There are no hotels or camps and the heat is intense in summer. The Havasu Creek water is strongly impregnated with lime and unpalatable, though entirely wholesome. Nevertheless, the visit to the reservation is one of unusual character and charm for those who do not object to a little hardship.

Below the reservation the canyon breaks into a series of waterfalls, two of which are unusual in kind and beauty. These are the Havasu Fall and the Hualapai Fall. Both drop over lofty shelves, which are plastered on back and sides by richly carved festoons of lime travertine. Both the falls occur in deep gorges in the Redwall limestone. Bright green cottonwoods, cactus, and other desert vegetation enliven the scene, which is as different as imagination can well paint from anything else in the Grand Canyon National Park.

In the spring, following the melting of the rim snows, there are various waterfalls in the Grand Canyon itself, several of which last for some months. These occur on the north side of the river, where there is a greater supply of water, the south side being arid except for brief periods following meltings and cloudbursts. One of these temporary north-side waterfalls in Clear Creek, which has been seen by very few persons, is said to be more than a thousand feet in height. With the crossing of the river, which is now possible over the Kaibab Suspension Bridge, these and many other fascinating spectacles, now little known, will become familiar sights to many. The destiny of the Grand Canyon is to become one of the most used national parks.

ORIGIN AND GEOLOGIC HISTORY OF THE GRAND CANYON.<sup>1</sup>

The Grand Canyon is the deepest and widest of a long series of canyons through which the Colorado River flows for 500 miles across a region of high table-lands known as the plateau province or the Colorado Plateaus. These canyons are unusually steep sided and unusually deep, but they are merely parts of the valley of the river, and, like most other river valleys, they have been formed by the stream that occupies them; they are not, as some who are unfamiliar with geologic processes have supposed, due to any violent or catastrophic breaking of the earth's crust. The Grand Canyon is perhaps the world's most spectacular illustration of the accumulated results of erosion—of the combined action of running water, rain, wind, and the various atmospheric agencies that attack the rocks and sculpture them into the forms that give character to a landscape.

## A PECULIAR TYPE OF LAND SCULPTURE.

The scenery of the Grand Canyon is the supreme expression of a type of land sculpture that is peculiar to the plateau country, a type whose elements are cliffs and tabular forms—butes, mesas, terraces, and plateaus. The high plateau into which the river has cut its way is built up of layer upon layer of rock beds that lie nearly level and that extend continuously over great distances. These beds, as one may see in the walls of the canyon, consist of sandstone, shale, and limestone, which have been grouped by geologists into the formations shown in the generalized columnar section forming Figure 1. This figure presents a summary of the facts relating to the character of the rocks exposed in the Grand Canyon National Park and the thickness, attitude, order of accumulation, and structural relations of the formations.<sup>2</sup>

## ARCHITECTURAL FORMS DOMINATE THE CANYON.

As the formations lie in orderly horizontal layers, like beds of masonry, they have been carved into definite architectural forms, which are everywhere nearly identical in profile though varied and irregular in plan, and as they vary in their resistance to erosion, some being hard, some soft, every part of the canyon wall, every pinnacle and butte, is characterized by its own steplike alternation of cliff, slope, and shelf. Each resistant bed stands forth as a cliff,

<sup>1</sup> By L. F. Noble, geologist, U. S. Geological Survey.

<sup>2</sup> The term "formation" is generally applied to a group of rock beds that are of about the same age, as shown by the fossils they contain, or that are considered together for convenience in mapping or description. A formation is named from the place where it was first studied or from some place or region where it is well exposed. The Kaibab limestone, for example, is so named because it is well exposed on the Kaibab Plateau.

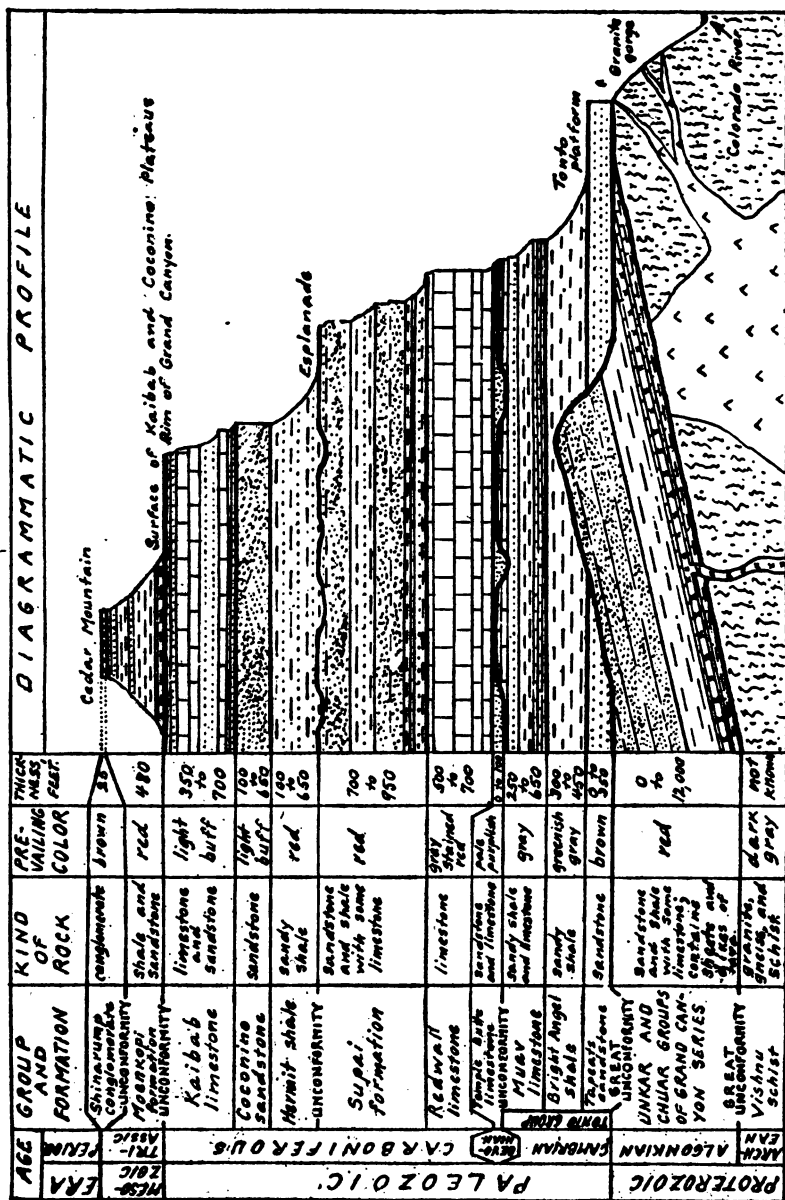


FIGURE 1.—Generalized columnar section showing position and structural relations of the rocks of the Grand Canyon National Park, and the age, character and thickness of the groups and formations into which they are divided.

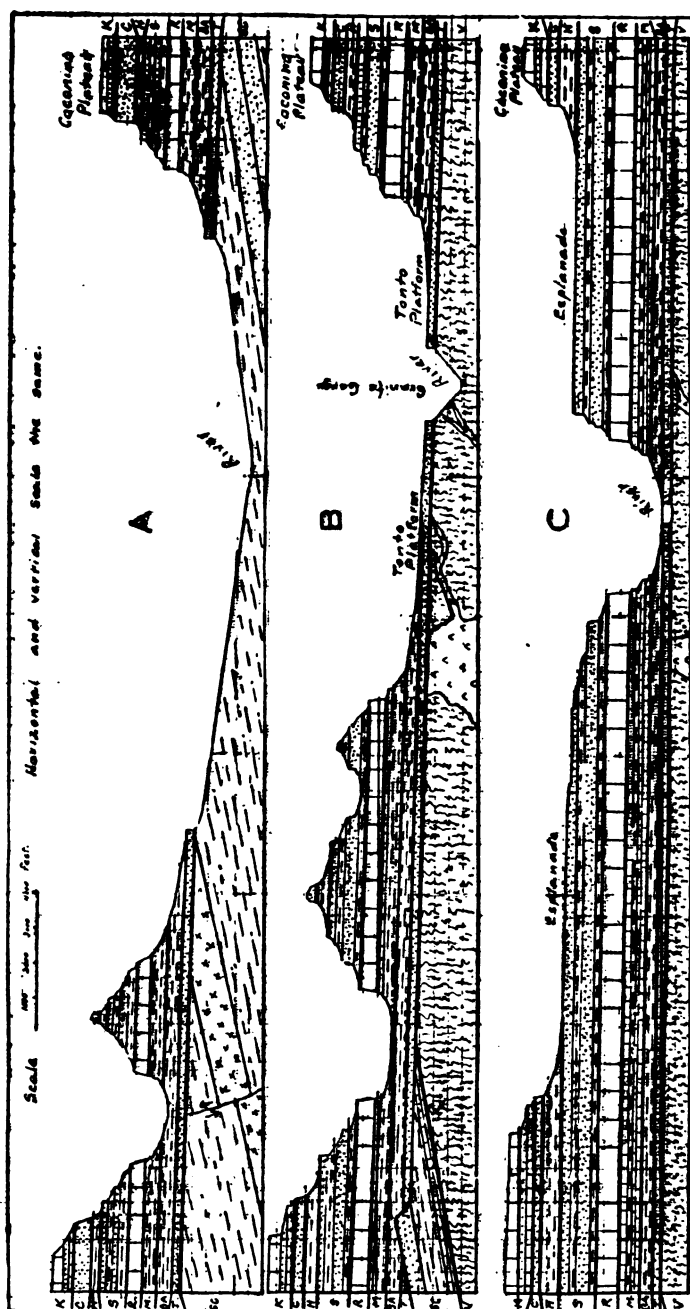


FIGURE 2.—Generalized sections across Grand Canyon, looking up Colorado River. A, in Eastern Kaibab division, east of Desert View Camp; B, in Central Kaibab division, near Hermit trail; C, in western Kaibab division, west of Bass Camp. K, Kaibab limestone; C, Coconino sandstone; H, Hermitt shale; S, Supai formation; R, Redwall limestone; M, Temple Butte and Muav limestones; BA, Bright Angel shale; T, Tapeats sandstone; GC, Grand Canyon series; V, Vishnu schist. The different profiles exhibited by the canyon in these sections are due to changes in the character and thickness of the rocks, as explained in the text.

and each weak bed is marked by a slope. Each shelf or platform is made by the wasting back of a weak stratum that lies upon a resistant, cliff-making stratum, and the greater the thickness of the weak stratum the broader the shelf. The plateaus that border the canyon are themselves simply great terraces developed on a resistant formation, the Kaibab limestone, from which overlying softer beds have been washed away. As erosion goes on parts of the canyon wall or plateau become separated by the widening of branch canyons or ravines and stand as solitary outliers capped by remnants of a hard bed of rock. These remnants are the buttes and temples. The great height of the plateau gives rapid fall to the streams that enter the canyon and enables them to cut powerfully and deeply and thus to carve the rocks into forms that are fashioned on a gigantic scale. The erosion accomplished by these streams, though spasmodic, because the streams are mainly fed by spasmodic rainstorms in an arid climate, is none the less effective. The slopes here are partly bare of vegetation because the desert plants grow far apart, and the concentrated energy of a single torrential shower may therefore wreak more havoc than would be caused by a season's rainfall on plant-covered slopes in a humid region. It is this prevailing aridity that, by retarding the growth of vegetation and the formation of soil, keeps sharp and fresh profiles that in a moister region would soon be dulled or obscured.

#### SECTIONS ACROSS THE CANYON.

The three sections across the Grand Canyon shown in Figure 2 (*A*, *B*, *C*) illustrate the intimate relation between the profile of the wall and the character of the rocks. In *A*, where the rocks along the river are the weak shales of the Algonkian Grand Canyon series, the bottom of the canyon is a broad valley having gently sloping sides. In *B* these weak stratified rocks are replaced by the hard Archean crystalline rocks, and the river occupies a narrow gorge—the Granite Gorge. As these hard crystalline rocks are not arranged in beds and are all about equally resistant to erosion the walls of the Granite Gorge have a steep, continuous slope, which presents a striking contrast to the steplike profile of the wall in the overlying bedded Paleozoic rocks. In *C* the river occupies a narrow box-shaped vertical-walled canyon in the hard Tapeats sandstone, the basal formation of the horizontal Paleozoic beds.

In *C* the weak Hermit shale, in the upper wall of the canyon, is thick and consequently wastes far back from the summit of the underlying hard Supai sandstone, leaving a wide platform known as the Esplanade. This platform, because of its great width and its



conspicuous red color, is the dominant feature of the canyon landscape in all the western part of the national park. But the Hermit shale steadily gets thinner eastward in the canyon, as may be seen in sections *B* and *A*, whereas the overlying cliff-making Coconino sandstone, which defends the retreat of the wall above the Esplanade, gets steadily thicker in the same direction. The Esplanade thus becomes a narrow bench in *B* and fades to an inconspicuous ledge in *A*.

In *B* the weak Bright Angel shale has determined a similar platform in the bottom of the canyon. This platform, known as the Tonto platform, or the "lower plateau," is widest in the region about and east of Bright Angel and Hermit trails, where it is a familiar feature to tourists. It gets narrower westward as the overlying Muav and Redwall formations grow thicker and become firmer in texture.

This marvelous adjustment of external form to the inequalities of rock structure and character affords to the geologist the strongest evidence that the canyon is the work of erosion.

#### 'A UNIQUE REVELATION OF GEOLOGIC HISTORY.

A large part of ancient geologic history is revealed more clearly in the walls of the Grand Canyon than in any other place in the world. The beds of rock seen in the canyon were all laid down in water as layers of sand, mud, and limy ooze and in time were hardened into rock by the great weight of the layers above them, the lime and silica that they contained cementing their particles together. As rocks of this kind are composed of sediment deposited in water the geologist calls them sedimentary rocks, and as they are piled in beds or strata one above another they are said to be stratified, and the beds are called strata.

The horizontal strata seen in the walls of the canyon were formed during the Paleozoic era (the era of "old life"); they represent the oldest series of rocks that have yielded clearly identifiable traces of life. Many of the strata contain the remains of marine animals and were therefore evidently laid down on the bottom of the sea, although the region now stands high above the present sea level. Others, notably certain beds of red shale and sandstone in the Supai and Hermit formations (see fig. 1), appear to have been spread out as mud and sand on low-lying land or on delta plains by shifting streams; and one formation, the Coconino sandstone, is regarded by some geologists as a sand-dune deposit. Nearly all the Paleozoic formations contain some traces of life—in the Kaibab and the Redwall limestones there are corals and many kinds of marine shells; in the formations of the Tonto group, the remains of primitive shellfish,

worm trails, and impressions of seaweeds; in the Temple Butte limestone, the remains of an ancient type of fish; and in the Hermit shale, impressions of long-extinct plants. Fossil tracks of small animals, probably older forms of amphibia, occur in the Coconino sandstone along the Hermit trail. The aggregate thickness of the Paleozoic rocks varies from place to place, but in the part of the Grand Canyon that is included within the National Park it averages 4,000 feet.

#### ROCKS OLDER THAN THE PALEOZOIC.

Ancient as are the formations of the Paleozoic era, two great systems of rocks—the Algonkian and the Archean—are buried beneath their base and appear only in the depths of the canyon. The rocks of the older system, the Archean, form the walls of the Granite Gorge. They are the foundation rocks of the region, and they are totally unlike the Paleozoic rocks, for they are entirely crystalline, are not stratified, and show a crumpled banding due to the arrangement of their constituent minerals in parallel layers, an arrangement produced by heat, pressure, and recrystallization. The Archean rocks are mainly of the type known as gneiss and schist, but they include granite in large masses and dikes that have been intruded while molten into the gneiss and schist. The Archean rocks have been named the Vishnu schist. They contain no traces of life.

The rocks of the younger of these two systems, the Algonkian, are intermediate in age between the Archean and the Paleozoic rocks and occur here and there in the depths of the canyon in wedge-shaped masses that lie between the Archean and the Paleozoic. They can be easily distinguished by the casual observer in the region between Grand View and the mouth of the Little Colorado, where at least 12,000 feet of them remain. Small masses are exposed near the mouth of Bright Angel Creek opposite El Tovar, on Crystal Creek, on Shinumo Creek, and along Colorado River west of Powell Plateau. These rocks, like the Paleozoic, are stratified and do not differ greatly in character and appearance from some of the Paleozoic strata, notably the red Supai and Hermit formations, but, unlike the Paleozoic strata, they have been tilted from the horizontal position in which they were originally deposited, so that they are inclined at various angles. These Algonkian rocks have been named the Grand Canyon series. The few obscure fossils found in them are so poorly preserved that they tell very little concerning the primitive life of the period.

#### GREAT UNCONFORMITIES.

Each of these two great rock systems—the Archean and the Algonkian—is separated from the one that overlies it by a nearly even

surface that cuts across or truncates all underlying beds or masses. This truncation marks what is known to geologists as an **unconformity**. Each unconformity means that the rocks below it were worn down by streams or waves to a nearly level surface before the material that formed the overlying rocks was deposited.

The top of the **Paleozoic** series is also marked as an unconformity, for although the Paleozoic beds are the highest that appear in the wall of the Grand Canyon they actually once lay beneath a later thick series of horizontal deposits. The traveler who comes to the Grand Canyon from the north descends step by step in southern Utah a great series of cliffs and terraces carved in horizontal beds, much like the Paleozoic. The most noted scenic features of southern Utah—Zion Canyon, Bryce Canyon, and the Vermilion, White, and Pink cliffs—are carved in these beds, which overlie the Paleozoic and represent deposits of later systems, the Triassic, Jurassic, and Cretaceous, which are of Mesozoic age, and part of a still later system, the Tertiary. These later beds once extended across the entire region in which the Grand Canyon lies, covering it to a thickness at least twice as great as the canyon is deep, but nearly all of them have been worn away by erosion. A few small masses of them still remain as buttes on the Coconino Plateau south of the Grand Canyon. One of these, Red Butte, lies 15 miles south of El Tovar. Another, Cedar Mountain, lies 2 miles east of the rim of the Grand Canyon near Desert View. Cedar Mountain is interesting because the formation that caps it, the Shinarump conglomerate, contains logs of petrified wood. The petrified forests of Arizona (Petrified Forest National Monument), which lie southeast of the Grand Canyon region, occur in a formation that immediately overlies the Shinarump conglomerate and that is exposed over wide areas but has been removed from Cedar Mountain and Red Butte by erosion.

The rock record just described is laid bare in the Grand Canyon and in the cliffs of southern Utah with the clearness of a diagram, so that the sequence of geologic events in the region can be read from it with ease and certainty. The unconformity that truncates the Archean rocks means that an enormous thickness of overlying rock had been removed from them before the Algonkian beds that now lie upon them were deposited, and consequently that a vast region, once high and mountainous, was reduced by erosion through long ages to the level plain represented by the unconformity.

When the land had been worn down to a plain it sank and was buried under at least 12,000 feet of mud and sand that now form the Grand Canyon series of Algonkian age. After these beds had thus accumulated they were uplifted, tilted, and broken into huge

blocks that must have formed high ranges of mountains. Then followed a long period of erosion, during which the mountains were worn down nearly to a plain. This plain is represented by the unconformity that separates the eroded Archean and Algonkian rocks from the overlying horizontal Paleozoic strata. Exposed as it is for the entire length of the Granite Gorge and for many miles upstream from the Granite Gorge, and visible everywhere from the rim of the canyon, this unconformity is the most spectacular known illustration of such a feature. It was not so even a surface as the older unconformity, for some of the hard sandstones of the tilted Algonkian blocks long resisted erosion and stood as low hills on the plain. A section of one of these hills is visible in the canyon wall from El Tovar. It lies under Cheops Pyramid, just west of the mouth of Bright Angel Creek, and it rises well above the base of the Paleozoic beds, which were deposited around it.

#### SUBMERGENCE, DEPOSITION, UPLIFT, AND EROSION.

At the end of Algonkian time the land was again submerged, and the horizontal Paleozoic, Mesozoic, and early Tertiary strata were slowly deposited. The time consumed by the deposition of these strata, whose aggregate thickness exceeds 15,000 feet, was long, even in the geologic sense of the word "long," for it must be estimated in millions rather than in thousands of years, spanning as it does the countless ages during which life was evolved from the primitive marine shellfish to the apelike predecessor of man. Yet it was short in comparison with the time consumed by the succession of events recorded before the Paleozoic strata were laid down, for that earlier period was inconceivably long, certainly far longer than all the time that has elapsed from the beginning of the Paleozoic era to the present day.

In Tertiary time the region was again uplifted and a period of erosion began. Streams cut channels into the surface of the land and in time formed broad valleys, which thus continued to expand until at last most of the land stood but little above the level of the sea. At the end of this period of erosion, which is sometimes called the great denudation, most of the strata above the Paleozoic had been removed from the Grand Canyon region; their edges had been worn back northward 50 miles to the border of Utah, and the surface of the region had been reduced to a nearly even plain. The present course of the Colorado River must have been determined by a topography different from that of to-day, for in most of the region that lies within the National Park, as one may see at El Tovar, the land south of the canyon slopes directly away from its rim, so that the canyon runs across instead of down a slope.

## FOLDING AND FAULTING.

The uplifts of the region that raised the Paleozoic and Mesozoic strata in Tertiary time were very different from those recorded beneath the unconformities in the canyon walls. The rocks were not compressed and folded, like the Archean, nor were they broken into tilted masses, like the Algonkian; instead, the whole region was lifted bodily, the strata still preserving essentially the horizontal attitude in which they were laid down. Yet the uplift was not equal over all parts of the region. If, for example, we should cross the Kaibab Plateau from east to west, say from House Rock Valley to Ryan, we should find the limestone strata at its western margin ending suddenly in a cliff and appearing again 1,500 feet below, on the surface of the plateau on the west—the Kanab Plateau. Such a break, along which the strata on one side have slipped past those on the other, is known as a fault. At the eastern margin of the plateau we should find the strata bending suddenly downward in a great curve returning again as sharply to a horizontal attitude, and continuing eastward as the surface of the Marble Platform. This type of dislocation is known as a flexure, or fold.

The uplifted Grand Canyon region is divided into great horizontal plateau blocks like the Kaibab Plateau by dislocations of the type just described, either folds or faults, that trend north and south; and the Grand Canyon crosses these plateaus from east to west. The name of each plateau has been given to the section of the canyon that crosses it. Thus the section of the canyon that transects the Kaibab Plateau is known as the Kaibab division. The Grand Canyon National Park includes all the Kaibab and part of the next western division—the Kanab.

In addition to the great dislocations that separate the plateaus there are numerous small faults and folds in the region, some of them in the Grand Canyon. Many visitors who have noticed the faults ask whether the canyon does not owe its origin or at least its course to a fault, but although geologists have studied the canyon at many places they have found no evidence of the existence of such a fracture. If it existed it could not have escaped notice, so perfect are the exposures of the beds in the rocky walls along the numerous turns of the river. Nor do any considerable parts of the canyon coincide with faults. On the other hand, it may be said that faults have guided the course of many tributary gorges in the Grand Canyon, and even some parts of the course of the river, though not in the way popularly supposed. Erosion, not dislocation, has been the chief agent that determined the course of each gorge. Movement along some of the faults, by crushing the adjacent rock, has formed zones of weakness, which, under the searching action of erosion, have become ravines or gorges. An example is the gorge of Garden Creek,

which is followed by the Bright Angel trail in front of El Tovar. The course of this gorge has been determined by a small fault, which has shattered the great cliffs of the Coconino sandstone and Redwall limestone and has made possible the construction of the trail. The strata have been displaced about 100 feet by the faults, those on the west side having been relatively elevated.

#### THE WORK OF MAKING THE CANYON.

During the last great uplift of the region, which may still be in progress and which has raised the plateau to its present height, the land rose so gradually that the river remained in its original channel and kept cutting deeper and deeper. The canyon is thus deep because the land is high and because, in this arid region, the river, fed by the rains and snows of the Rocky Mountains and armed with great quantities of mud and sand and gravel, washed into it by its tributaries, has lowered its bed faster than its tributaries could lower the adjacent plateau. But, although the Colorado River has thus dug the canyon, the various forms of rock sculpture seen in the walls of the canyon have been determined by variations in the behavior of the beds under the attack of the agents of erosion. And this erosion is still going on. The observer of to-day who stands in awe on the brink of the canyon or who finds his way precariously down the trails that lead to its depths should realize that the work of making this mighty chasm is not yet finished. The various agents that have modeled the canyon—the rushing torrent below and the small streams that descend to join it, the intermittent rain and snow and frost, and those subtle yet effective chemical activities that aid in the decay of the rocks, and, above all, the ever dominant pull of gravity on all loose particles—all are still at work on this wonderful piece of earth sculpture. In the Grand Canyon of to-day we see the accumulated results of the action of powers that apparently leave from year to year but slight traces of their action but that, persisting in their work through uncomputed ages, have produced results of marvelous immensity.

#### HISTORY OF THE CANYON.

Don Lopez de Cardenas, of Coronado's expedition, discovered the Grand Canyon in 1540, as a result of stories told by the Hopi (Moquis) Indians to Don Pedro de Tovar. The old records describe a chasm which seemed to be more than 3 or 4 leagues across in an air line—*"que avia mas de tres o quatro leguas por el ayre."*

For a long period thereafter the Grand Canyon region and the Colorado River remained practically unknown. It is next recorded

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\* Furnished by courtesy of Frederick S. Dellenbaugh.

as having been seen by two Spanish priests in 1776; Padre Garces crossing eastward from the lower Colorado to the Hopi towns, who halted, he says, "at the sight of the most profound cañones which ever onward continue, and within these flows the Colorado," and Padre Escalante, who, in searching for a place to cross from the north after his failure to proceed westward from Santa Fe to Monterey, finally found the old Ute ford, used by Indians for centuries, near the foot of Glen Canyon (in latitude 37°), and by means of it was able to reach Zuni. The ford then became known as *El Vado de los Padres*—the Crossing of the Fathers—for long the only known crossing of the Colorado in a distance of several hundred miles.

The first American to visit the region was James O. Pattie, accompanied by his father. They trapped beaver on the lower Colorado in 1825 and 1826. In 1826, returning eastward, they traveled for 13 days, following, apparently, the Grand Canyon as well as they could, but unable to reach the river at any point, till at last they arrived at a place where the river "emerges from these horrid mountains." This was the first extended trip on record of any human being along the brink of the Grand Canyon.

The same year that the Patties went to the lower Colorado, 1825, General Ashley, in pursuit of his fur-trading enterprise, attempted to descend Green River from near the present crossing of the Union Pacific Railway. They were forced after great hardship to give up the effort in the Uinta Valley.

The famous American trapper and pioneer, Jedediah Smith, crossed the river going west in the Mohave country in 1826 and again in 1827. In this latter year the Patties returned to the lower Colorado and trapped down the river from the mouth of the Gila in dugouts, the first navigators of this portion since Alarcon, of the Coronado expedition, came up in 1540. Quite unexpectedly they made the acquaintance of the great bore at the mouth of the river, where they were in waters that Lieutenant Hardy, of the British Navy, had entered the year before.

Other trappers after beaver then followed into the region, and the Government began sending out exploring parties. One of these under Sitgreaves crossed the Colorado in 1851 about 150 miles above Yuma, and three years later another under Whipple, surveying for a railway along the thirty-fifth parallel, crossed a few miles above the mouth of Bill Williams Fork.

When the California gold rush developed one trail of the Forty-niners led down the Gila and across the Colorado at its mouth, and now various activities on the lower river began. The first steamboat was brought to the mouth of the Colorado and up it in 1852. It was named the *Uncle Sam*.

Edward F. Beale, surveying a Government wagon road, crossed and recrossed in 1857 and 1858, near the mouth of Bill Williams Fork, and in 1858, January, the Government exploring expedition under Lieutenant Ives proceeded from the mouth up the river in a small, stern-wheel, iron steamer, the *Explorer*, as far as the foot of Black Canyon, whence the ascent was continued in a small boat to the mouth of the Vegas Wash. This was not the first steamer up, however, as Captain Johnson of a commercial navigation company had steamed up and passed with his steamboat clear through Black Canyon to its head, some days before mainly to "get ahead" of Ives who had earlier displeased Johnson. Ives then proceeded overland to the mouth of Diamond Creek and to the Hopi towns via Havasu Canyon.

"It seems intended by nature," says Lieutenant Ives, after vainly trying to reach the rim, "that the Colorado River, along the greater part of its lonely and majestic way, shall be forever unvisited and undisturbed."

This same year of 1858, saw the first crossing on record of the Colorado from the north, since Esclante, by white men. This was accomplished by Jacob Hamblin, a well-known Mormon, a missionary and Indian agent, from Utah to the Hopi towns. An Indian guided him to the Ute ford (Crossing of the Fathers) and he used it thereafter almost yearly. These Mormons for long were the only persons besides Navajos and Utes to cross the river anywhere. The ford known to few was difficult and dangerous at all times and impossible except at low water.

In 1862 Hamblin went around the Grand Canyon by the west end to the Hopi towns and returned by the Crossing of the Fathers at the east end, practically, as Marble Canyon begins a few miles below. The next year he went again around by the west end to the Hopis, visiting the "hermit" tribe, the Havasupais, in their deep canyon home, on the way, the first white man on record to do so after Lieutenant Ives. The party returned to St. George around the west end of the Grand Canyon. Nobody, as yet, went to the rim and there was no known crossing of the Grand Canyon itself anywhere by white men.

Another attempt to descend Green River from the California Trail (near the present Union Pacific Railway) was made in 1849, by William Manly and party. They expected to find a shorter and easier road to the California gold fields. After a hard time they emerged into Uinta Valley where they met the noted Ute chief Wakar ("Walker") who was good to them and urged them not to try to go further down the river.

In 1867 a man named James White was picked up from a raft near Callville, below the mouth of the Virgin, in an exhausted condition, and those who aided him immediately but erroneously assumed that he had come down through the Grand Canyon, the result of an ignor-



ance as great on their part as on that of White. He knew nothing about the interior of the great canyon and mentioned that he had run one big rapid, whereas he should have mentioned big rapids by the dozen.

So nothing became definitely known about the mysterious interior of the Grand Canyon or of the canyons of the Colorado River above as far as the Uinta Valley on Green River until Maj. John Wesley Powell, one-armed veteran of the Civil War, made his famous passage of all the canyons. He started with nine men and four boats from Green River City, Wyo. (on the Union Pacific Railway, then the only railway across the continent), on May 24, 1869. One of the men left the party (Goodman), disheartened, in the Uinta Valley.

The terrifying waterfalls and underground passages described by trappers and Indians were not found, but the declivity was often extremely great and continuous (as in Cataract Canyon, where it is continuous for about 20 miles), producing violent cataracts, with huge waves and a water velocity of over 20 miles an hour, frequently studded with giant rocks.

The trip was one of incredible hardship and danger, led by the Major with his one left arm, the other having been lost at the Battle of Shiloh. The plunging rapids in the whole length of the journey numbered several hundred to overcome the 6,000 feet difference in altitude between Green River City and the sea. The boats were often upset and the passage of many of the rapids was perilous to a degree. Frequently the party would be forced to embark on long foaming declivities without being able to discover what other, perhaps greater, falls might lie around the precipitously walled bends in front of them.

One of the boats, some of the scientific instruments, and a considerable amount of the food supply were lost in the Canyon of Lodore; and some that was rescued had to be left, as the remaining boats were overloaded. For weeks the clothing of the adventurers was never dry; and when they finally entered the mighty depths of the Grand Canyon itself, in August, there was little food remaining.

The sharpest rapids occur in the granite, and the first Granite Gorge, running past the Powell Monument, contains the worst portion of the whole river. When, therefore, another "Granite Gorge" developed below Diamond Creek, the men, stalwart and full of nerve though they were, having become somewhat demoralized by lack of food and the tremendous strain, were disheartened. Three of them, consequently, announced that they would go no farther.

This was desertion, but they preferred it to risking the difficulties they saw ahead. They believed they could climb out and reach the well-known Mormon settlements on the north, and they believed a river party would be lost or starve.

"At one time," says Powell in his report, "I almost concluded to leave the river. But for years I have been contemplating this trip.

To leave the exploration unfinished, to say that there is a part of the canyon which I can not explore, having already almost accomplished it, is more than I am willing to acknowledge, and I determine to go on. \* \* \* For the last time they entreat us not to go on, and tell us that it is madness to set out in this place." The same appeal that Dunn made to Hawkins, the cook of the party, as Hawkins himself tells it.

William R. Hawkins, writing of this in after years, says the three men had "made up their minds to go, and Dunn said he hated to leave Hall and myself, as we had been together a long time, and that we would perish in the river. [Note the fear of the river which had developed in the minds of at least three.] While we were talking, the major came up to me and laid his left arm [he had no right] across my neck, tears running down his cheeks. By that time the rest of the boys were present, and the major said to me: 'Bill, do you really mean what you say' [that he would stick to the major on the river]? I told him that I did, and he said that if he had one man that would stay with him that he would not abandon the river. I just simply said that he did not know his party."

He certainly had reason, with three men about to desert, to believe that others might. The other five were true, however, and it is only just to say that one of the deserters would have stood true, also, had it not been for his brother, who was determined to leave. They all then drank coffee together. The boat party went on, the deserters climbed out on the north, each party thinking the other party doomed. The deserters would have fared well enough and would have arrived at the Mormon settlements had it not been that the Shewits Indians on the plateau believed, or said later that they believed, that these were miners who had committed depredations on a tribe to the south. The men were therefore killed not far from Mount Dellenbaugh, and their clothing, rifles, etc., appropriated.

The place on the river where they left the major is now known as Separation Rapid. The day after they departed Powell and "the faithful five" reached the end of the great chasm without serious mishap. The names of the three deserters have justly been omitted from the roll of honor inscribed on the Powell Monument.

Powell's journal of this famous voyage is one of the most fascinating tales of adventure in literature. A large part of his meager notes having been lost, Powell repeated the trip on a more extensive basis in 1871 and 1872, obtaining then the data on which his report was based. There is no account of this second, vital expedition except in *A Canyon Voyage*, by Frederick S. Dellenbaugh, a member of that party. Afterwards Powell became director of the United States Geological Survey and of the Bureau of Ethnology, which he established.

## THE CANYON AS A RESORT.

The Grand Canyon is very much more than a wonder place or a scientific museum on a titanic scale. It is a pleasure resort of the first order. It may be visited any day in the year. The railroad is always running and the hotel always open. When most other resorts are closed the Grand Canyon is easily accessible.

During the winter snow falls in the pine forest along the rim; and though the upper portions are snow covered, the trails into the canyon are open and safe; the floor of the canyon is warm and comfortable the year around. When nipping frosts redden cheeks on the rim, the most fragile flowers are blooming in the canyon.

The weather in July and August is warm but not hot on the rim; the altitude takes care of that. There are cool mornings, evenings, and nights no matter how warm it may be at midday.

Arizona is a land of sunshine; the air is dry and the winds are light. While spring and fall are more attractive than midsummer or midwinter, all the seasons have each its special charm. From December to March snow is more or less abundant on the rim and a few hundred feet down the trail. Camping-out parties must then confine themselves to the canyon.

## THE NORTH RIM OF THE CANYON.

There is a remarkable difference between the north and south rims. The north rim, a thousand feet higher, is a colder country clothed with thick, lusty forests of spruce and pine with no suggestions of the desert. Springs are found here and deer are plentiful. It is a region soon to be used by hundreds of campers-out.

The views from the north rim are markedly different. One there views close at hand the vast temples which form the background of the south rim view. One looks down upon them, and beyond them at the distant canyon floor and its gaping gorge which hides the river; and beyond these the south rim rises like a great streaked flat wall, and beyond that again, miles away, the dim blue San Francisco Peaks. It is certainly a spectacle full of sublimity and charm. There are those who, having seen both, consider it the greater. One of these was Dutton, whose description of the view from Point Sublime has become a classic. But there are many strenuous advocates of the superiority of the south rim view, which displays close at hand the detail of the mighty chasm of the Colorado, and views the monster temples at parade, far enough away to see them in full perspective.

The trail trip to the north rim is now perfectly feasible by the completion of the Kaibab suspension bridge over the Colorado River and the extensive repairs on the Kaibab Trail up Bright Angel Canyon. It is about 32 miles from Grand Canyon to the Wylie

Way Camp on Bright Angel Point. About 12 miles are made the first day, stopping overnight at Phantom Ranch; the remaining 20 miles are covered the second day.

Auto transportation and rates for reaching this side of the park from the north are given on page 57.

# TABLES OF DISTANCES AND ALTITUDES.

## ROADS.

### HERMIT RIM ROAD, GRAND CANYON TO HEAD OF HERMIT TRAIL AND HERMIT REST—7.9 MILES.

Place.	Distance from—		Altitude.	Remarks.
	Grand Canyon.	Hermit Trail.		
	<i>Miles.</i>	<i>Miles.</i>	<i>Feet.</i>	
Grand Canyon.....	0.0	7.9	6,875	Administrative headquarters of Grand Canyon National Park.
Road to Havasupai.....	.5	7.4	6,820	To Havasupai Indian Reservation, 47 miles distant.
Trail to Hermit Rest.....	1.4	6.5	6,960	By foot or horseback to Hermit Rest or Hermit Trail, 5 miles.
Powell Memorial.....	2.0	5.9	7,050	Memorial to Maj. John Wesley Powell, Sentinel Point.
Hopi Point.....	2.2	5.7	7,071	Fine view. Sometimes called Sunset Point.
Mohave Point.....	3.0	4.9	7,000	View of canyon and river.
The Abyss.....	4.2	3.7	6,850	Looking down from the Great Mohave Wall.
Cut-off to Hermit Rest...	5.2	2.7	6,900	Old road to Hermit Rest.
Piñon Cove.....	6.0	1.9	6,750	Grove of piñon pines.
Pima Point.....	6.7	1.2	6,750	Fine view of canyon and river, with Hermit Creek Cabins visible beneath.
Cut-off to Grand Canyon.	7.4	.5	6,700	Old road to Grand Canyon, 5 miles.
Hermit Rest.....	7.6	.3	6,690	Interesting Harvey rest house. Light refreshments.
Trail to Natural Bridges..	7.6	.3	6,680	Natural Bridges in limestone, $\frac{1}{2}$ mile.
Head of Hermit Trail....	7.9	.0	6,665	7.5 miles to Hermit Creek Cabins.

### GRAND CANYON, GRAND VIEW, DESERT VIEW ROAD—GRAND CANYON TO DESERT VIEW—30 MILES.

Place.	Distance from—		Altitude.	Remarks.
	Grand Canyon.	Desert View.		
	<i>Miles.</i>	<i>Miles.</i>	<i>Feet.</i>	
Grand Canyon.....	0.00	30.00	6,875	Administrative headquarters of Grand Canyon National Park.
Road to Yavapai Point..	.60	29.40	6,940	View of Canyon and river. Kaibab Suspension Bridge visible beneath.
Motor crossing.....	.90	29.10	6,975	Cattle guard in drift fence that encircles headquarters district.
Trail to Yaki Point.....	1.50	28.50	6,925	Trail through forest. Sometimes called Cremation Point.
Moqui Trail.....	2.50	27.50	6,900	Saddle-horse trail to Grand View.
Rowe Well Road.....	3.50	26.50	6,925	Old road to Rowe Well Ranger Station.
Trail to Shoshone Point..	4.00	26.00	6,800	Locally called Inspiration Point, 4.5 miles.
Williams Road Junction	4.30	25.70	6,850	Checking station. Take right-hand road to Maine, Williams, and Flagstaff.
Long Jim Canyon.....	5.30	24.70	6,811	A typical surface canyon or wash.
Long Jim tool cache.....	6.10	23.90	6,860	A cache for tools used by rangers in fighting fire. Telephone.
Long Jim Canyon, east end.	8.60	21.40	7,175	
Thor's Hammer.....	10.10	19.90	.....	Notable columns of limestone.
To Grand View Point....	12.25	17.75	7,406	Magnificent view of canyon, Painted Desert, Navajo Mountain, river, etc.
Grand View Hotel.....	13.10	16.90	7,500	Old stage hotel. Not in operation for many years. Highest point on south rim.
Grand View Camp Grounds.	13.25	16.75	7,490	Public camp grounds and ranger station, season May to October.

## ROADS—Continued.

## GRAND CANYON, GRAND VIEW, DESERT VIEW ROAD—GRAND CANYON TO DESERT VIEW—30 MILES—Continued.

Place.	Distance from—		Altitude.	Remarks.
	Grand Canyon.	Desert View.		
	<i>Miles.</i>	<i>Miles.</i>	<i>Feet.</i>	
Hance ranch.....	14.20	15.90	.....	Old home of Capt. John Hance, first settler on rim of Grand Canyon.
Park boundary.....	14.80	15.20	.....	Grand View entrance to the park.
Flagstaff road.....	15.70	14.30	.....	Old stage road from Flagstaff. Abandoned.
Park boundary.....	25.75	4.25	7,060	Desert View entrance to the park.
Ligan Point.....	27.90	2.10	7,359	Locally called Lincoln Point.
Desert View.....	30.00	0.00	7,450	Navajo Point. Fine view of Marble Canyon, Painted Desert, Navajo Mountain, etc.

## TOPOCOBYA ROAD, GRAND CANYON TO HILL TOP—HEAD OF HAVASU TRAIL VIA ROWE WELL—33.2 MILES.

Place.	Distance from—		Altitude.	Remarks.
	Grand Canyon.	Hill Top.		
	<i>Miles.</i>	<i>Miles.</i>	<i>Feet.</i>	
Grand Canyon.....	0.00	33.20	6,875	Administrative headquarters of Grand Canyon National Park.
Topocobya Road.....	.55	32.65	6,820	Road to Hill Top and Topocobya Spring the head of Havasu Trail, 15 miles to Havasupai Indian Reservation.
Trail to Hermit Rest.....	.70	32.50	6,800	
Drift fence.....	1.95	31.25	.....	
Railroad crossing.....	2.35	30.85	6,650	
Old road to Grand View	2.65	30.55	6,625	
Railroad crossing.....	2.95	30.25	.....	
Rowe Well Road.....	3.10	30.10	6,600	Road to Rowe Well ranger station.
Rowe Well ranger station.	3.60	29.60	6,681	Ranger station, National Park Service. Telephone.
Waldron Trail.....	6.25	26.95	6,462	To Hermit Trail, Hermit Basin, and Hermit Rest.
Dripping Springs tool cache.	7.00	26.20	6,375	Trail to Dripping Springs. Fine spring and good trail, 3 miles. Fire tools.
Bench mark, United States Geological Survey.	9.90	23.30	6,340	
Road to Bass Camp.....	12.50	20.70	6,235	United States Geological Survey bench mark. Road to Havasupai Point.
Ranch.....	14.00	19.20	.....	
Section corner 10 and 11.	15.80	17.40	.....	
Road to Bass Camp.....	17.60	15.60	6,154	United States Geological Survey bench mark.
Bench mark, United States Geological Survey.	20.00	13.20	6,074	
Supai drift fence.....	21.40	11.80	6,061	United States Geological Survey bench mark. Indian pasture.
Top of mesa.....	27.80	5.40	.....	
Top of grade.....	28.20	5.00	.....	
Bench mark in Lee's Canyon.	29.70	3.50	5,771	
Bench mark.....	31.30	1.90	5,772	
Supai warehouse.....	33.20	.00	.....	Reservation storehouse at head of trail.
Topocobya Spring.....	33.70	.50	.....	Water.

## ROADS—Continued.

APPROACH ROAD, GRAND CANYON TO NATIONAL OLD TRAILS ROAD AND SANTA FE RAILROAD AT MAINE.

Place.	Distance from—		Altitude.	Remarks.
	Grand Canyon.	Maine, Ariz.		
	<i>Miles.</i>	<i>Miles.</i>	<i>Feet.</i>	
Grand Canyon.....	0.00	64.00	6,875	Administrative headquarters of Grand Canyon National Park. Hotels, information, etc.
Road to Yavapai Point..	.65	63.35	6,890	Fine view of canyon. Kaibab Suspension Bridge visible beneath.
Motor crossing.....	.90	63.10	.....	Cattle proof crossing through drift fence.
Williams Road checking station.	4.30	59.70	6,850	Ranger station. All cars stop and register.
Park entrance.....	5.50	58.50	5,718	South entrance to Grand Canyon National Park.
Rain tank.....	9.90	54.10	.....	Earth tank for cattle.
Fork of road.....	10.00	54.00	.....	Left-hand fork to Maine, Ariz
Red Butte.....	20.00	44.00	.....	
Mortz Lake.....	49.00	15.00	.....	
Maine.....	64.00	.00	.....	Junction with Old Trails road.
Williams.....	79.00	15.00	6,762	Nearest shopping point to Grand Canyon.
Flagstaff.....	84.00	20.00	6,896	County seat of Coconino County.

NORTH RIM GRAND CANYON NATIONAL PARK TO ZION NATIONAL PARK—170.9 MILES.

Place.	Distance from—		Altitude.	Remarks.
	North Rim.	Zion Park.		
	<i>Miles.</i>	<i>Miles.</i>	<i>Feet.</i>	
Wylie Way Camp.....	0.00	170.90	8,250	Accommodations for travelers on Bright Angel Point, North Rim of Grand Canyon.
North Rim ranger station	2.00	168.90	8,100	National Park Service ranger station. Headquarters for North Rim.
North entrance Grand Canyon National Park.	4.20	166.70	8,450	North entrance to Grand Canyon National Park.
De Motte Park.....	14.40	156.60	8,900	A typical park or meadow. Range of mule deer.
Pleasant Valley.....	22.40	148.50	8,500	
Crane Lake.....	24.40	146.50	.....	
East Lake.....	26.90	144.00	.....	
Jacob's Lake lookout station.	29.20	141.70	.....	Range of white-tailed squirrels.
Jacob's Lake ranger station, Forest Service.	42.40	128.50	.....	Forest Service ranger station.
Drift fence.....	45.40	125.50	.....	Boundary line of proposed President's Forest.
Fredonia.....	75.40	95.50	.....	Only post office in Arizona north of the Grand Canyon.
Kanab.....	82.40	102.50	4,920	Most southerly town in Utah. Good hotel.
Pipe Springs.....	89.90	81.00	.....	Old Mormon fort. Spring formerly came out of the solid rock in the stockade.
Cedar Mountain.....	99.90	71.00	.....	
House, Antelope Springs.	121.90	49.00	.....	
Red Creek.....	125.40	45.50	.....	
Short Creek.....	135.90	35.00	.....	Sheep corrals.
Top Hurricane fault.....	141.40	29.50	.....	Great Hurricane fault.
Hurricane.....	142.40	28.50	.....	Utah's Dixie. Population, 1,021.
Zion National Park.....	170.90	0.00	.....	Yosemite done in oils.

## TRAILS.

## GRAND CANYON TO NORTH RIM RANGER STATION VIA BRIGHT ANGEL, TONTO AND KAIBAB TRAILS—30 MILES.

Place.	Distance from—		Altitude.	Remarks.
	Grand Canyon.	North Rim.		
	<i>Miles.</i>	<i>Miles.</i>	<i>Feet.</i>	
Grand Canyon.....	0.00	30.00	6,875	Administrative headquarters of Grand Canyon National Park. Hotels, etc.
Head of Bright Angel Trail.....	4.00	26.00	6,866	Foot trail to ancient Indian pictographs and hole in the wall.
Jacob's Ladder.....	2.50	27.50	4,850	The part of trail built through blue limestone 550 feet thick.
Indian Gardens.....	3.70	26.30	3,876	Grove of cottonwood trees watered by Garden Creek. Former home of Indians.
Tonto Trail.....	4.30	25.70	3,730	Left-hand fork to Plateau Point, 1.5 miles. Hermit Creek Cabins, 17 miles.
Do.....	5.00	25.00	.....	Left-hand fork to Colorado River at foot of Bright Angel Trail.
Pipe Creek.....	7.00	23.00	3,650	Ranger camp. Not always occupied.
Burro Springs.....	7.30	22.70	.....	Good water.
Head of Kaibab Trail.....	9.00	21.00	4,000	Left-hand fork to Kaibab Suspension Bridge and North Rim.
Kaibab Suspension Bridge.....	11.00	19.00	2,500	Built by National Park Service in 1921. Only bridge across Colorado for several hundred miles.
Phantom Ranch.....	11.50	18.50	2,550	Interesting new Harvey Camp, stone cottages. Well located for hiking, climbing, etc.
Phantom Creek.....	13.00	17.00	2,960	A deep canyon coming in from the west.
Head of Box Canyon.....	15.00	15.00	3,350	Near end of granite in Bright Angel Creek.
Ribbon Falls.....	17.00	13.00	3,750	Very beautiful falls where creek drops over red wall.
Wall Creek.....	17.80	12.20	3,850	Creek coming from the right. Old name is Beaver Creek.
Transept Creek.....	19.00	11.00	4,150	The Transept on left.
Roaring Springs.....	21.00	9.00	4,750	Large springs gushing out on left.
Last Crossing.....	22.00	8.00	5,050	Last crossing of Bright Angel Creek. Fill your canteens.
Troughs Spring.....	24.00	6.00	6,325	Spring on top of red wall.
Topping-out point.....	26.00	4.00	8,259	End of climb. North Rim.
DeWolfe Cabin.....	28.00	1.00	8,200	Old ranger cabin. Headquarters of saddle-horse concessioners.
North Rim ranger station.....	30.00	.00	8,150	Ranger headquarters on North Rim. Register. Information service.

## GRAND CANYON TO HERMIT CREEK CABINS VIA BRIGHT ANGEL AND TONTO TRAILS—21 MILES.

Place.	Distance from—		Altitude.	Remarks.
	Grand Canyon.	Hermit Cabins.		
	<i>Miles.</i>	<i>Miles.</i>	<i>Feet.</i>	
Grand Canyon.....	0.00	21.00	6,875	Administrative headquarters of Grand Canyon National Park. Hotels, post office, etc.
Jacob's Ladder.....	2.50	18.50	4,850	Trail through blue limestone, 550 feet.
Indian Gardens.....	3.70	17.30	3,876	Grove of cottonwood trees watered by Garden Creek. Former home of Indians.
Tonto Trail.....	4.30	16.70	3,750	Right-hand fork to Colorado River and Camp Roosevelt.
Plateau Point.....	4.70	16.30	3,750	Plateau Point, 1 mile.
Battleship.....	5.50	15.50	3,700	Battleship on left.
Horn Creek.....	7.20	13.80	3,550	
Dana Butte.....	9.00	12.00	3,650	View of gorge, river, etc.
The Inferno.....	11.50	9.50	3,400	Locally called Hell's Half Acre.
Salt Creek.....	12.30	8.70	3,440	
The Alligator.....	14.00	7.00	3,450	Butte called Alligator on left.
Cedar Spring.....	15.00	6.00	3,400	Good water.
Monument Creek.....	17.50	3.50	3,200	Very scenic.
Hermit Cabins.....	21.00	.00	3,050	Fine Fred Harvey camp.
Colorado River, foot Hermit Trail.....	23.00	2.00	2,440	Hermit Rapids.

## TRAILS—Continued.

## GRAND CANYON TO HERMIT CREEK CABINS THROUGH WOODS AND HERMIT TRAIL—12 MILES.

Place.	Distance from—		Altitude.	Remarks.
	Grand Canyon.	Hermit Cabins.		
	<i>Miles.</i>	<i>Miles.</i>	<i>Feet.</i>	
Grand Canyon.....	0.00	12.00	6,875	Administrative headquarters of Grand Canyon National Park.
Hermit Trail.....	5.00	7.00	6,665	Harvey corral.
Marshal Foch Rock.....	5.30	6.70	6,575	Rock where Marshal Foch sat for half hour or more smoking his pipe December, 1921.
Waldron Trail.....	6.00	6.00	5,270	Trail to Rowe Well Road.
Dripping Springs Trail..	5.50	6.50	5,280	Trail to Dripping Springs and Boucher Trail.
Santa Maria Spring.....	7.00	5.00	5,250	Good water. Rest pavilion.
Four Mile Spring.....	9.00	3.00	4,550	Good water.
Cathedral Stairs.....	10.00	2.00	4,530	
Hermit Cabins.....	12.00	.00	3,050	Fine Harvey camp.

## SHORT WALKS NEAR GRAND CANYON.

	Distance and direction from El Tovar.	By—	Altitude.	Remarks.
	<i>Miles.</i>		<i>Feet.</i>	
The Lookout Telescope..	0.3 west.....	Grand Canyon Rim Trail	6,866	Observatory. Curios on sale. Pictures.
Kolb Bros. Studio.....	.4 west.....	.....do.....	6,850	Studio. Grand Canyon moving picture lecture daily of voyage through canyon.
Pictograph Rock, Hole-in-Wall.	.6 west.....	Grand Canyon Rim Trail and foot trail	.....	Interesting foot trail from Bright Angel Trail. Ancient Indian pictographs.
Picnic Rock.....	.8 west.....	Rim foot trail....	6,870	Walk through woods. Fine view of San Francisco peaks.
Maricopa Point.....	1.8 west.....	Grand Canyon Rim foot trail.	7,000	Fine view of canyon.
The Battleship.....	2.5 north.....	Bright Angel Trail.	5,867	Rough foot trail from Bright Angel Trail.
Indian Gardens.....	3.7 north.....	.....do.....	3,876	Fine creek of good water.
Independent Store.....	.3 east.....	Grand Canyon Rim foot trail.	6,880	Indian handiwork and curios.
Grandeur Point.....	1.3 east.....	.....do.....	7,050	Fine view. Kaibab Suspension Bridge visible.
Yavapai Point.....	1.5 east.....	.....do.....	.....	
Rowe Well.....	3.6 southwest....	Rowe Well Road..	6,681	Ranger station. Good water. Telephone.

## DERIVATION OF NAMES USED ON GRAND CANYON MAPS.

While some of them are purely descriptive, many commemorate scientists, explorers, Indian tribes, leaders of religion, mythologic and romantic personages. Aztec and Indian terms occur and the origin of a few names is unknown.

**Alarcon Terrace.**—Spanish navigator, first to ascend the Colorado River.

**Apache Point.**—Name of a large Indian tribe of Arizona and New Mexico region which was untiring in raiding and depredating both Pueblos and whites.

**Apollo Temple.**—The son of Jupiter and brother of Diana, god of the sun in Roman and Greek mythology.

**Awatubi Crest.**—Awatubi, village of the Hopi Indians on the Painted Desert, destroyed in 1770.

**Aztec Amphitheatre.**—General name for all Nahua tribes in Mexico at time of Cortez.

**Bass Camp.**—Owned by one of the pioneer settlers.

**Beale Point.**—Army officer who surveyed first road across the Arizona Plateau.

**Brahma Temple.**—In the Hindu triad Brahma was the evolver of the universe, Vishnu the redeemer, Siva or Shiva the destroyer.



**Buddha Temple.**—The title of Siddhartha, founder of Buddhism in fifth century B. C.

**Cardenas Butte.**—Member of Coronado's party and the first white man to see the Grand Canyon.

**Castor Temple.**—Castor and Pollux were inseparable brothers in Greek mythology.

**Centeotl Point.**—Probably an Aztec deity.

**Chemuhuevi Point.**—The southernmost of the Pinto Tribe in Lower California.

**Cheop's Pyramid.**—An Egyptian king of the fourth dynasty, builder of the famous pyramid at Gizeh.

**Chuar Butte and Creek.**—Name of Indian chief.

**Cocopa Point.**—A tribe of Yuma Indians living on the Colorado River.

**Cocconino Plateau.**—A name sometimes used for the Havasupai, who originally occupied much of the Arizona Plateau.

**Comanche Point.**—Plains Indians from farther east, whose raids were greatly feared by the Pueblos.

**Confucius Temple.**—The Chinese philosopher who taught practical morality. Lived in fourth century B. C.

**Conquistador Aisle.**—Spanish for "conqueror." The conquistadores were especially the members of Coronado's expedition.

**Cope Butte.**—E. D. Cope, 1840-1897. A great American naturalist, specializing in fossil animals.

**Coronado Butte.**—In 1540 Coronado led the great Spanish expedition that penetrated as far as Kansas.

**Dana Butte.**—James D. Dana, 1813-1895. Noted professor of geology at Yale for many years.

**Darwin Plateau.**—C. D. Darwin, famous English naturalist, founder of Darwinian theory of evolution.

**Deva Temple.**—Divine epithet, applied commonly to goddess Durga, wife of Shiva of the Hindu triad.

**De Vaca Terrace.**—Cabeza De Vaca was shipwrecked on the Gulf coast and wandered for eight years among Indians before reaching a Spanish settlement.

**Diana Temple.**—Roman goddess of the moon, sister to Apollo and daughter of Jupiter.

**Drummond Plateau.**—Henry Drummond, 1851-1897. A famous Scottish religious writer.

**Dutton Point.**—Maj. C. E. Dutton, United States Army, who wrote for the Government a monograph on the Grand Canyon.

**Elaine Castle.**—The lily maid of Astolat in Tennyson's poem, "The Idylls of the King."

**Escalante Butte.**—A Spanish missionary; the first white man to cross the Green and the Colorado, in 1775.

**Excalibur.**—The magical sword of King Arthur of the Round Table.

**Fiske Butte.**—John Fiske, 1842-1901. American philosopher.

**Freya Castle.**—In Scandinavian mythology Freya is the goddess of love and womanly goodness.

**Galahad Castle.**—The purest knight of the Round Table, featured in "The Idylls of the King."

**Garces Terrace.**—A Franciscan who journeyed to the Hopi country in 1776.

**Gawain Abyss.**—Gawain the courteous, one of the principal knights of the Round Table.

**Geikie Peak.**—Sir Archibald Geikie, many years director British Geological Survey.

**Guinevere Castle.**—The wife of King Arthur of the Round Table.

**Gunther Castle.**—The Burgundian king of the Nibelungen epic, husband of Brunnhilde.

**Hance Creek.**—John Hance, a local character and pioneer.

**Havasupai Point.**—This tribe, formerly occupying Arizona Plateau, now live in Tavas Canyon about 60 miles from El Tovar.

**Holy Grail Temple.**—The cup used at the Last Supper, which the order of the Round Table was instituted to protect.

**Horus, Temple of.**—In Egyptian mythology the son of Osiris and Isis, principal deities.

**Hopi Point.**—The Hopis, sometimes called the Moquis, have maintained villages overlooking the Painted Desert since long before the Spanish invasion of 1540.

**Mount Huethewall.**—Indian word for observation point.

**Huxley Terrace.**—Famous English biologist, 1823–1895.

**Isis Temple.**—Principal female deity of Egypt, wife of Osiris, mother of Horus, and sometimes called “the daughter of Ra.”

**Ives' Point.**—Lieut. Joseph C. Ives, United States Army, the leader of Colorado River exploration, 1857 and 1858.

**Jicarillo Point.**—An Apache Tribe of northeastern New Mexico, cruel raiders.

**Juno Temple.**—Wife and sister of Jupiter, queen of heaven in Roman mythology.

**Jupiter Temple.**—The supreme deity of the Romans.

**Kaibab Plateau.**—Piute word meaning mountain lying down.

**King Crest.**—Clarence King was the first director of the United States Geological Survey.

**King Arthur Castle.**—A British chieftain of the sixth century who with his knights of the Round Table has inspired romances galore.

**Krishna Shrine.**—In Hindu mythology Krishna is the name of the eighth of the ten incarnations of the supreme god Vishnu. The ninth was in the form of Buddha; the tenth is still to come.

**Kwagunt Butte and Creek.**—Pai Ute Indian with Major Powell on travels on the North Rim.

**Lancelot Point.**—A knight of the Round Table, featured in Tennyson's poem, “The Idylls of the King.”

**Leconte Plateau.**—Joseph LeConte was professor of geology in the University of California for over 30 years; died 1901.

**Lipan Point.**—An Apache Tribe.

**Lyell Butte.**—Sir Charles Lyell was a famous English geologist.

**Manu Temple.**—A Sanskrit word meaning “man,” one of 14 demiurgic beings each of whom presided over a period of race progression. Manu Vaivasvata, the sun-born, is the manu of the present race of beings.

**Marcos Terrace.**—Fray Marcos de Niza led the first expedition into our country from Mexico in 1539 as far as Zuni. His accounts inspired Coronado's exploration.

**Maricopa Point.**—A tribe of Yuma Indians who moved from Colorado River to join the Pimas.

**Marsh Butte.**—O. C. Marsh, the paleontologist, who made a specialty of extinct animals.

**Mencius Temple.**—The Latin name of the Chinese philosopher, Meng, an early Confucian.

**Merlin Abyss.**—A semilegendary character of the fifth century who figures in Tennyson's “Idylls of the King.”

**Mescalero Point.**—An Apache Tribe that roamed principally in New Mexico.

**Mimbreno Point.**—An Apache Tribe taking its name from the Mimbres Mountains in New Mexico.

**Modred Abyss.**—The treacherous nephew of King Arthur, King of the Round Table.

**Mohave Point.**—A Yuma Tribe living in vicinity of Needles, Calif.

**Montezuma Point.**—Montezuma, 1479–1520, ruled the Aztecs at the time of the Spanish conquest. He was regarded by later Indians as a deity.

**Moran Point.**—The artist who was with Major Powell, sketching the Colorado River country in 1873.

**Natchi Point.**—A noted Apache warrior.

**Navaho Point.**—Nomadic Indians of the plateau region who maintained a long warfare against Pueblos and whites.

**Newberry Point and Butte.**—J. S. Newberry, geologist with Ives' expedition to the canyon. Long-time professor Columbia College, New York City.

**Newton Butte.**—Sir Isaac Newton, 1642-1727, famous English physicist who discovered law of gravitation.

**O'Neill Butte.**—Arizona politician, once governor.

**Osiris.**—Chief Egyptian deity of good, the principle of good closely associated with Ra.

**Papago Point.**—A branch tribe of Pima Indians of southern Arizona region.

**Pima Point.**—Popular name of tribes living in the valleys of Gila and Salt Rivers, Ariz.

**Pinel Point.**—An Apache tribe.

**Piute Point.**—A name applied to many Shoshonean Tribes, but perhaps belongs properly only to those living in southwestern Utah.

**Pollux Temple.**—The devoted brother of Castor, in the Greek legends.

**Powell Plateau.**—Maj. J. W. Powell made the first expedition down the Colorado River in 1869. Subsequently director of the United States Geological Survey and the Bureau of Ethnology.

**Quetzal Point.**—An Aztec word signifying a bird of iridescence.

**Ra, Tower of.**—The Egyptian sun god, type of supreme deity, always victorious.

**Rana Shrine.**—Hindu word for prince.

**Sagittarius Ridge.**—A zodiac constellation visible in southern United States in summer. Latin word signifying "Archer."

**Scorpion Ridge.**—One of the constellations of the zodiac.

**Scylla Butte.**—The promontory at the entrance of the strait between Italy and Sicily, around which ancient mariners feared to go.

**Set, Tower of.**—The brother or son of Osiris and his deadly enemy in Hindu mythology.

**Shaler Plateau.**—An American geologist, long-time professor at Harvard University.

**Sheba Temple.**—The ancient capitol of the Sabaeans in Arabia, whose queen visited Solomon.

**Shinumo Creek.**—Name applied by Powell to the Hopi confederacy.

**Shiva Temple.**—The avenging associate of Brahma and Vishnu in ruling the universe, now the most popular Hindu god.

**Sinyella, Mount.**—Judge Sinyella, Indian chief, born 1853, has always resided on the Havasupai Indian Reservation. Living in 1923.

**Solomon Temple.**—Solomon, 1033-975 B. C., son of David and Bathsheba, king of the Jews.

**Spencer Terrace.**—Herbert Spencer, 1820-1903, a distinguished English philosopher.

**Supai Formation.**—The colloquial name of the Havasupai, a small tribe now occupying Havasu Canyon.

**Thompson Point.**—A. H. Thompson, brother-in-law of Major Powell, who accompanied him in his famous boat trip down the canyon.

**Thor Temple.**—Second principal Norse deity, god of thunder, son of Odin the supreme being, and Jordh, the earth.

**Tiyo Point.**—Indian name.

**Tovar Terrace.**—Pedro de Tovar was sent by Coronado in 1540 to inspect the Hopi villages where he learned of the existence of the Grand Canyon.

**Toltec Point.**—The Toltecs were either an early tribe of the Aztecs or a people that preceded them on the Mexican Plateau.

**Tonto Platform.**—Spanish word "fool" applied to Indians of Arizona plateau, especially to the Apache Mohave.

**Topocobya Trail.**—A Havasupai word, "To-po-co-bah," meaning "where the water comes down."

**Tyndall Dome.**—John Tyndall, 1820-1893, a famous British physicist.

**Unkar Creek.**—A Pai Ute word, meaning "red creek."

**Venus, Temple of.**—The Roman goddess of beauty and love.

**Vesta, Temple of**—The Roman goddess of the hearth in whose honor the Vestal Virgins kept the symbolic fire burning.

**Vishnu Temple and Creek**.—In Hindu mythology the associate of Brahma and Shiva who was the redeemer of the universe.

**Walhalla Plateau**.—The great hall of the Scandinavian gods, the warriors' heaven of the Vikings.

**Wallace Butte**.—An English explorer and naturalist and authority on natural selection.

**Wheeler Point**.—Gen. George M. Wheeler, United States Army, in charge of surveys west of one-hundredth meridian in 1872-1879.

**Yaki Point**.—Probably a version of the name of the Yaquis, the unconquerable tribe of northwestern Mexico.

**Yavapai Point**.—These Indians are commonly known as the Apache Mohave, formerly roaming central Arizona.

**Yuma Point**.—Great family of Indians of several tribes in lower Colorado region. Called themselves Kwichana.

**Zoroaster Temple**.—Founder of the ancient religion now represented by the Guebers and Parsees of Persia and India.

**Zuni Point**.—The Zuni pueblo south of Gallup, N. Mex., is the remnant of the historic Seven Cities of Cibola.

## LIST OF BIRDS.

The following incomplete list of birds has been seen in and on the rim of Grand Canyon:

Western bluebird.....	<i>Sialia mexicana occidentalis.</i>
Western robin.....	<i>Merula migratoria propinqua.</i>
Mountain chickadee.....	<i>Parus gambeli.</i>
Gray titmouse.....	<i>Baeolophus inornatus griseus.</i>
Pygmy nuthatch.....	<i>Sitta pygmaea pygmaea.</i>
Slender-billed titmouse.....	<i>Sitta carolinensis aculeata.</i>
Canyon wren.....	<i>Catherpes mexicanus conspersus.</i>
Water ouzel.....	<i>Cinclus mexicanus.</i>
Black-throated gray warbler.....	<i>Dendroica nigrescens.</i>
Audubon warbler.....	<i>Dendroica auduboni auduboni.</i>
Northern green swallow.....	<i>Tachycineta thalassina lepid.</i>
Black-headed grosbeak.....	<i>Zamelodia melanocephala.</i>
Spurred towhee.....	<i>Pipilo maculatus montanus.</i>
Desert sparrow.....	<i>Amphispiza bilineata deserticola.</i>
Red-backed junco.....	<i>Junco phaeonotus dorsalis.</i>
Western chipping sparrow.....	<i>Spizella socialis arizonae.</i>
English sparrow.....	<i>Passer domesticus.</i>
Green-backed goldfinch.....	<i>Astragalinus psaltria hesperophilus.</i>
House finch.....	<i>Carpodacus mexicanus frontalis.</i>
Piñon jay.....	<i>Cyanocephalus cyanocephalus.</i>
Woodhouse jay.....	<i>Aphelocoma woodhouseii.</i>
Long-crested jay.....	<i>Cyanocitta stelleri diademata.</i>
Western flycatcher.....	<i>Empidonax difficilis difficilis.</i>
Olive-sided flycatcher.....	<i>Nuttallornis borealis.</i>
Broad-tailed hummingbird.....	<i>Selasphorus platycercus.</i>
Red-shafted flicker.....	<i>Colaptes cafer collaris.</i>
White-breasted woodpecker.....	<i>Dryobates villosus leucothoractus.</i>
Turkey vulture.....	<i>Cathartes aura septentrionalis.</i>
Western mourning dove.....	<i>Zenaidura macroura marginella.</i>

### HOW LONG TO STAY.

*Time required.*—While one ought to remain a week or two, a stop-over of three or four days from the transcontinental trip will be quite satisfactory. The Hermit Loop overnight trip, down one trail and up another, requires two days and a night, or more time may be taken and include Phantom Ranch. One day should be devoted to an auto ride along the Hermit Rim Road, and by auto to Grand View and Desert View. Another day go down Bright Angel Trail and back. A fourth day spent in short walks to nearby points or on horseback, will enable visitors to get more intimate views.

The several trips mentioned above are all well worth while, and the high plateau above the rim affords many delightful horseback or hiking trips. Visitors to the North Rim may well spend as much time as can be spared.

The National Park Service of the Department of the Interior recommends to the traveling public that stopovers of as long duration as practicable be planned at points within the park; that Grand Canyon National Park be regarded not alone as a region which may be glimpsed on a hurried trip, but also as a vacation playground for rest and recreation.

### WHAT TO WEAR.

If much tramping is done, stout, thick, hobnailed shoes should be provided. Ladies will find that short walking skirts are a convenience; riding trousers are preferable, but not essential, for the horseback journey down the zigzag trails. Traveling caps and (in summer) broad-brimmed straw hats are useful adjuncts. Otherwise ordinary clothing will suffice. Riding trousers, divided skirts, and straw hats may be rented at El Tovar Hotel.

### ADMINISTRATION.

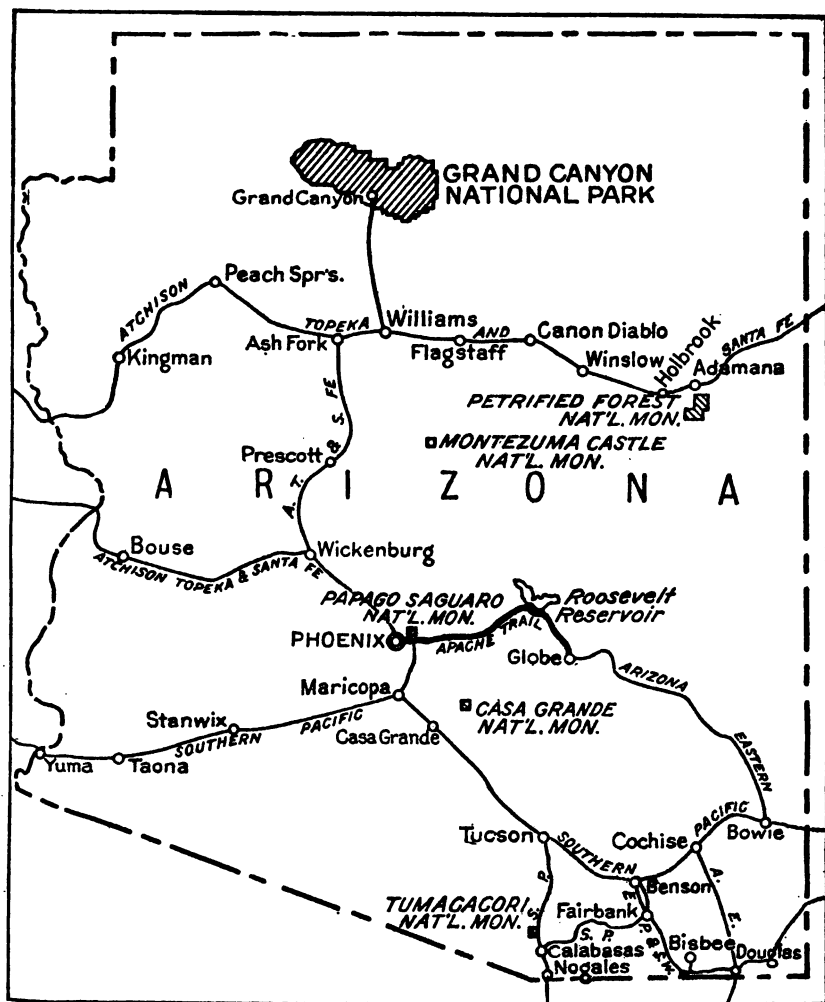
Grand Canyon National Park is under the jurisdiction of the Director, National Park Service, Department of the Interior, Washington, D. C. The park superintendent, Mr. W. W. Crosby, is located at Grand Canyon, Ariz., and information, maps, and pamphlets may be obtained at the office, where visitors are cordially welcomed. The office of the superintendent is 100 yards east of the Grand Canyon Railway.

The park, El Tovar Hotel, the Bright Angel cottages, and the cabins at Hermit Creek and Phantom Ranch at the mouth of Bright Angel Creek are always open.

## HOW TO REACH THE PARK.

## BY RAIL.

The Grand Canyon National Park is directly reached by a branch line of the Atchison, Topeka & Santa Fe Railway extending 64 miles northward from Williams, Ariz. On certain trains through standard



MAP OF ARIZONA SHOWING RAILROAD CONNECTIONS TO GRAND CANYON NATIONAL PARK.

sleeping cars are operated to and from Grand Canyon station. Passengers using other trains and stopping over at Williams will find adequate accommodations at the Fray Marcos, station hotel.

Stop-overs, not to exceed 10 days, are granted at Williams on all classes of railroad tickets for a visit to the canyon. Limits of through

railroad tickets will be extended if necessary by agent at Grand Canyon. Through tickets may include side-trip coupons, Williams to Grand Canyon and return, at an additional charge of \$9.12.

Round-trip excursion tickets at reduced fares are on sale daily at practically all stations in the United States and Canada to Grand Canyon as a destination.

Baggage may be checked through to Grand Canyon station, if required. Passengers making brief side trips to Grand Canyon may check baggage to Williams only or through to destination. Certain regulations for free storage of baggage for Grand Canyon passengers are in effect.

For further information regarding railroad fares, service, etc., apply to railroad ticket agents, or address:

W. J. Black, passenger traffic manager, Atchison, Topeka & Santa Fe Railway system, Chicago, Ill.

J. J. Byrne, assistant passenger traffic manager, Atchison, Topeka & Santa Fe Railway system, Los Angeles, Calif.

#### BY AUTOMOBILE.

Automobile tourists may leave the main east and west highway through Arizona at Maine.

*Flagstaff.*—It is about 84 miles from Grand Canyon to Flagstaff, via Williams Road ranger station, south entrance. Rain Tank, Red Butte Mortz Lake, and Maine, Ariz., over a main traveled road, on which a good run is possible most of the year. At times in late fall or early spring it is advisable to inquire at Williams or Flagstaff as to condition of the road. The round trip requires about two days.

This is a very enjoyable drive through pine forests and across green mesas partly along the old-time stage route to the canyon. The town of Flagstaff is located in the heart of the San Francisco uplift. There are good stores and garage facilities in Flagstaff. In this vicinity are prehistoric cliff dwellings, extinct craters, volcanic cones, lava beds, and ice caves. The summit of Humphreys Peak, one of the peaks forming the San Francisco Mountains, is 12,750 feet above sea level.

*Williams.*—Williams is 34 miles west of Flagstaff and 15 miles west of Maine, on the main east and west highway through Arizona. It is the nearest shopping center and its stores and garages carry a good stock of everything necessary to the automobile tourist.

The route from Williams passes Bill Williams Mountain, elevation 9,264 feet, which has seven distinct crests, Red Lake, Howard Lake, and Anita, running along the line of the Grand Canyon Railway. No supplies can be purchased between Williams or Maine and Grand Canyon.

112°

20°

AL FOREST

PLATEAU

TO ZION  
NATIONAL PARK  
171 MILES

KALBAR

PLATEAU

WALHALLA  
PLATEAU

Bright Angel Pl.

LARP

Creek

Buddha Temple

Edison Falls

Deva Temple

Brahma Temple

Zen Garden Temple

PHANTOM  
RIDGE

SUSPENSION  
BRIDGE

Indian  
Garden

Yankee Pl.

GRAND CANYON  
EL TOVAR HOTEL

Shoshone Pl.

Trail

Gravview Pl.

10°

36°

A U  
R E S T

TO MAINE  
GRAND FLAGSTAFF

112°

AL PARK





## AUTOMOBILE SUPPLIES.

At Grand Canyon village is an excellent garage under the management of Fred Harvey. Storage, or repair service, as well as gasoline and oil, may be procured here.



MAP SHOWING PRINCIPAL AUTOMOBILE ROUTES IN COLORADO, UTAH, ARIZONA, AND NEW MEXICO.

## GROCERIES.

The Babbitt-Polson Co.'s general store at Grand Canyon carries a full line of groceries and campers' supplies.

## WATER.

A supply of water for drinking purposes and for radiation, sufficient to last to Grand Canyon, should be brought from Williams or Flagstaff. Campers may obtain water from the railroad station agent at Grand Canyon.

**PUBLIC UTILITIES AND CONVENIENCES.****POST OFFICE.**

The post office (third class), which does all kinds of postal business, is situated near the Hermit Rim Road about 400 yards west of the railroad depot. It is open from 8 a. m. to 6 p. m. Mail trains arrive at 8.20 a. m. and 3.55 p. m. and leave at 8.20 a. m. and 7.25 p. m.

**TELEGRAPH.**

The Western Union offices at the railroad depot and El Tovar Hotel are open for all business from 7.30 a. m. to 8 p. m.

**TELEPHONE.**

There is telephone connection between El Tovar Hotel, National Park Service Office, ranger stations, Hermit Cabins, and Phantom Ranch. There is no telephone connection to points outside of the park at present, but it is expected that a long-distance service will be installed early in 1923.

**NATIONAL PARK SERVICE STATIONS.**

There are ranger stations or camps where assistance and shelter may in emergency be obtained at places here named. These may be unoccupied, and it is well to inquire at the office of the superintendent:

Hermit Basin, Cottonwood Camp, up Bright Angel Creek on north side of Colorado River; Pipe Creek, on Tonto Trail 2 miles east of Indian Garden; Salt Creek, on Tonto Trail 5 miles west of Indian Garden; Grand View Public Camp; Rowe Well; North Rim; and Grand Canyon.

**MEDICAL SERVICE.**

There is a doctor of long experience in the park and a trained nurse at El Tovar Hotel. The nearest hospital is at Williams, Ariz. There is a hospital at Flagstaff, Ariz.

**PETRIFIED FOREST NATIONAL MONUMENT.**

Tourists visiting Grand Canyon National Park either by rail or by automobile should plan a stopover at the Petrified Forest National Monument.

There are three groups of petrified trees in this reservation. The first forest lies 6 miles south of Adamana, Ariz., a station on the main line of the Atchison, Topeka & Santa Fe Railway, and the

second forest is  $2\frac{1}{2}$  miles south of it. The third or Rainbow forest lies 13 miles south of Adamana and 18 miles southeast of Holbrook, Ariz. It is best to approach the third forest from Holbrook; the other two are best reached from Adamana.

This area is of great interest because of the abundance of petrified coniferous trees which lie scattered about in great profusion. None are standing as in the Yellowstone National Park. These trees probably at one time grew beside an inland sea; after falling they became water-logged and during the decomposition the cell structure was entirely replaced by silica derived from sandstone in the surrounding land. Over a greater part of the entire area trees are scattered in all conceivable positions and in fragments of all sizes.

In the first forest may be seen the well-known natural bridge, consisting of a large petrified tree trunk 60 feet long spanning a canyon 45 feet wide, and forming a foot bridge over which anyone may easily pass. The trunks in the Rainbow forest are larger than elsewhere, more numerous and less broken. Several hundred entire trees are found here, some of which are more than 200 feet long. The color of the wood is deeper and more striking than in the other localities.

"There is no other petrified forest," says Prof. Lester F. Ward, "in which the wood assumes so many varied and interesting forms and colors, and it is these that present the chief attraction for the general public. The state of mineralization in which much of this wood exists almost places them among the gems or precious stones. Not only are chalcedony, opals, and agates found among them, but many approach the condition of jasper and onyx. The degree of hardness attained by them is such that they are said to make an excellent quality of emery."

#### ADMINISTRATION.

Petrified Forest National Monument is under the jurisdiction of the Director, National Park Service, Department of the Interior, Washington, D. C. The custodian is located in the monument.

#### COSTS OF TRIPS AND HOTEL ACCOMMODATIONS.

Adamana is a small place, consisting chiefly of hotel, post office, railway station, and a small store (does not handle films or other camera supplies). The Forest Hotel has electric lights, sanitary plumbing, with hot and cold water. Rates: \$5 to \$5.50 per day, American plan; meals \$1 each; 35 guests can be accommodated; in summer, tent houses also are provided for guests.

From Adamana the following auto trips are made: (1) To the First and Second Forests and the Natural Bridge; (2) to the Third

Forest; (3) to the Blue Forest; (4) to the Painted Desert and the North Sigillaria Forest.

#### AUTHORIZED RATES.

The round-trip fare on either of the above trips is: \$5 for one person, \$3 per capita for two persons, and \$2.50 per capita for three or more. About one-half day is allotted to each trip, although three trips can be made in a day. For a one-day stop-over the trips numbered 1 and 4 are perhaps best suited to give the widest variety in sight-seeing at this place.

Holbrook, the county seat of Navajo County, has satisfactory hotel accommodations, with prices about the same as at Adamana.

The Petrified Forest may be visited from Adamana any day in the year, except when high waters make the streams temporarily impassable.

#### STOP-OVER ARRANGEMENTS.

Stop-overs are allowed at Adamana, not to exceed 10 days, on all one-way railroad tickets, also on round-trip railroad tickets within their limits.

To obtain stop-overs on one-way railroad tickets, notify train conductor and deposit tickets with agent immediately after arrival; on round-trip tickets notify train conductors.

#### RULES AND REGULATIONS.

(Approved February 20 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 Grand Canyon National Park are hereby established and made public pursuant to authority conferred by the act of Congress approved August 25, 1916 (39 Stat. 536), as amended June 2, 1920 (41 Stat. 732), and the act of February 26, 1919 (40 Stat. 1175):

1. *Preservation of natural features and curiosities.*—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.*—No camp shall be made along roads except at designated localities. Blankets, clothing, hammocks, or any other article likely to frighten teams shall not be hung near the road.

Many successive parties camp on the same sites during the season; therefore camp grounds shall be thoroughly cleaned before they are abandoned. Tin cans, bottles, cast-off clothing, and all other débris shall be placed in garbage cans or pits provided for the purpose.

When camps are made in unfrequented localities where pits or cans may not be provided, all refuse shall be burned or hidden where it will not be offensive to the eye.

Campers may use dead or fallen timber only for fuel.

3. *Fires*.—Fires constitute one of the greatest perils to the park; they shall not be kindled near trees, deadwood, 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 deadwood, moss, dry leaves, etc., shall be scrapped 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 beds smothered with earth or water, so that there remains no possibility of reignition.

Special 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 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 the responsibility of custody of any property for the convenience of visitors.

5. *Fishing*.—Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line, or for merchandise or profit, is prohibited. Fishing in particular water may be suspended, or the number of fish that may be taken by one person in any one day from the various streams or lakes may be regu-

lated by the superintendent. All fish hooked less than 6 inches long shall be carefully handled with moist hands and returned at once to the water if not seriously injured. Fish retained shall be killed. Twenty fish shall constitute the limit for a day's catch, provided that no more than 20 pounds of trout, bass, crappie, or catfish may be taken in any one day.

6. *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.

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

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

9. *Mining.*—The location of mining claims on Government lands in the park is permitted only with the prior approval of the Secretary of the Interior.

10. *Patented lands.*—Owners of patented lands within the park limits are entitled to the full use and enjoyment thereof; the boundaries of such lands, however, shall be determined and marked and defined so that they may be readily distinguished from the park lands. While no limitations or conditions are imposed upon the use of private lands so long as such use does not interfere with or injure the park, private owners shall provide against trespass by their live stock upon the park lands, and all trespasses committed will be punished to the full extent of the law. Stock may be taken over the park lands to patented private lands with the written permission and under the supervision of the superintendent, but such permission and supervision are not required when access to such private lands is had wholly over roads or lands not owned or controlled by the United States.

11. *Grazing.*—The running at large, herding, or grazing of live stock of any kind on the Government lands 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 con-

dition 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 and cats.*—Cats are not permitted on the Government lands in the park and dogs only to those persons passing through the park to the territory beyond, in which instances they shall be kept tied while crossing 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 on trails.*—Pedestrians on trails, when saddle or pack animals are passing them, shall remain quiet until the animals have passed.

Persons traveling on the trails of the park either on foot or on saddle animals shall not make short cuts but shall confine themselves to the main trails.

16. *Travel—general.*—(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.

17. *Miscellaneous.*—(a) Campers and others shall not wash clothing or cooking utensils in the waters of the park, or in any way pollute them, or bathe in any of the streams near the regularly traveled thoroughfares in the park without suitable bathing clothes.



(b) 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.

(c) 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.

(d) 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.

18. *Fines and penalties.*—Persons who render themselves obnoxious by disorderly conduct or bad behavior shall be subjected to the punishment hereinafter prescribed for violation of the foregoing regulations and 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 the act of Congress approved August 25, 1916 (39 Stat. 535), as amended June 2, 1920 (41 Stat. 732), and the act of February 26, 1919 (40 Stat. 1175), the following regulations covering the admission of automobiles and motorcycles into the Grand Canyon National Park are hereby established and made public:

1. *Entrances and roads.*—Automobiles and motorcycles may enter and leave the park by, and travel over, any of the roads therein which are open to motor vehicles.

Careful driving is demanded of all persons using the roads. The Government is in no way responsible for any kind of accident.

2. *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. Automobiles and horse-drawn vehicles shall have the right of way over motorcycles.

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

4. *Hours.*—Automobiles shall not enter or leave the park or use the park roads before 5.30 a. m. or after 10.30 p. m. except in case of emergency.

5. *Intoxication.*—No person who is under the influence of intoxicating liquor, and no person who is addicted to the use of narcotic drugs, shall operate or drive a motor vehicle of any kind on the park roads.

6. *Distance apart; gears and brakes.*—Automobiles while in motion shall be not less than 50 yards apart, except for purpose of passing, which is permissible only on comparatively level stretches of roads or on slight grades. All automobiles, except while shifting gears, shall retain their gears constantly enmeshed. The driver of each automobile may be required to satisfy park officers 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. Motorcycles not equipped with brakes in good working order are not permitted to enter the park.

7. *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 20 miles per hour.

8. *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 automobiles, motorcycles, riding or driving animals, or pedestrians.

9. *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 road. Headlights shall be dimmed when meeting other automobiles, motorcycles, riding or driving animals, or pedestrians.

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

11. *Teams.*—When teams, saddle horses, or pack trains approach, automobiles shall take the outer edge of the roadway regardless of the direction in which it 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 an hour.

12. *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 road in question.

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.

13. *Accidents, stop-overs.*—If, because of accident or stop for any reason, automobiles are unable to keep going, they shall be immediately parked off the road or, where this is impossible, on the outer edge of the road.

14. *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, and such violation shall subject the offender to immediate ejection from the park. Persons ejected from the park will not be permitted to return without prior sanction in writing from the Director of the National Park Service or the superintendent of the park.

### MAPS.

The following maps<sup>4</sup> may be obtained from the Director of the United States Geological Survey, Washington, D. C. Remittances should be made by money order or in cash.

SHINUMO, 28½ by 25 inches, scale about 1 mile to 1½ inches, contour interval 50 feet.

BRIGHT ANGEL, 26 by 20½ inches, scale about 1 mile to 1½ inches, contour interval 50 feet. An account of the geologic history of the Grand Canyon and a description of the rocks, by L. F. Noble, is printed on the reverse side of the map.

VISHNU, 28 by 21 inches, scale about 1 mile to 1½ inches, contour interval 50 feet.

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

### LITERATURE.

#### GOVERNMENT PUBLICATIONS.

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

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<sup>4</sup> May be purchased also by personal application at the office of the superintendent of the park, but that office can not fill mail orders.

**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.

**Map of National Parks and National Monuments.**

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

**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 indicated. Postage prepaid. Remittances should be made by money order or in cash.

**Glimpses of our National Parks.** 72 pages, including 31 illustrations, 10 cents.<sup>5</sup>

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

**The National Parks Portfolio.** By Robert Sterling Yard. Third edition. 248 pages, including 306 illustrations. Bound securely in cloth. \$1.<sup>5</sup>

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

**Guidebook of the Western United States, Part C, the Santa Fe Route,** with a side trip to the Grand Canyon of the Colorado, by N. H. Darton and others. (Bulletin 613, U. S. Geological Survey.) 1915. 194 pages, 25 route maps, 42 plates, 40 text figures. 50 cents.<sup>5</sup>

This guide describes the country along the Atchison, Topeka & Santa Fe Railway from Kansas City to Los Angeles. Although the description of the rocks and their relations and the scenic features form a large proportion of the matter, nearly every page gives information as to notable historic events, industrial resources, plants, and animals. The story of the Indians, past and present, especially the characteristic Pueblo tribes, is told in some detail. Many of the facts regarding the rocks are here presented for the first time. The book contains numerous views of prominent scenic features and pictures of restoration of some of the very remarkable animals whose bones are found in the clays.

**Exploration of the Colorado River of the West and its Tributaries,** by John Wesley Powell. Explored in 1869, 1870, 1871, and 1872. Pp. 291. Under the direction of the Secretary of the Smithsonian Institution. Illustrated. Government Printing Office, Washington, 1875. (Out of print.)

**Pre-Cambrian Igneous Rocks of the Unkar Terrane, Grand Canyon of the Colorado, Ariz.,** by C. D. Walcott. U. S. Geol. Surv. 14th Ann. Rept., pt. 2, pp. 497-524, pls. 60-65. 1894. \$2.10.

**The Grand Canyon.** Senate Doc., No. 42, 65th Congress, 1st session, by Thomas Fulton Dawson, Government Printing Office, Washington, D. C., 1917. 67 pp. Price 10 cents.

An article giving credit of first traversing the Grand Canyon to James White, a Colorado gold prospector.

**Tertiary History of the Grand Canyon District,** by Clarence E. Dutton. U. S. Geol. Surv. Mon., 2,264 pp., ill. and atlas, 1882. \$10.

**The Shinumo quadrangle, Grand Canyon district, Ariz.,** by L. F. Noble. U. S. Geol. Surv. Bull. 549, 1914. 100 pages including 30 illustrations and a colored geologic map. Price 20 cents.

Describes the geology and scenic features of the Grand Canyon in the western part of the National Park. Contains a detailed account of the Algonkian strata exposed on Shinumo Creek.

<sup>5</sup> May be purchased also by personal application at office of the superintendent of the park, but that office can not fill mail orders.

A reconnaissance of the Archean complex of the Granite Gorge, Grand Canyon, Ariz., by L. F. Noble and J. Fred. Hunter. U. S. Geol. Surv. Prof. Paper 98-I, 1916. 20 pages, 3 illustrations.

Describes the rocks that form the walls of the Granite Gorge in the bottom of the Canyon.

A section of the Paleozoic formations of the Grand Canyon at the Bass trail, by L. F. Noble. U. S. Geol. Surv. Prof. Paper 131-B, 1922. 50 pages, 15 illustrations.

Describes the Paleozoic strata of the Grand Canyon in detail and contains diagrams showing the strata in profile as they appear in the walls.

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———"Breaking the Wilderness." Pp. 360. G. P. Putnam's Sons, New York, 1905. Fully illustrated. Grand Canyon chapter, pp. 318-327. Price, \$3.50.

———"The Romance of the Colorado River." Pp. 401. G. P. Putnam's Sons, New York. Fully illustrated. (A complete account of the discovery and of the explorations from 1540 to the present time, with particular reference to the two voyages of Powell through the line of the great canyons.) Price, \$3.50.

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## OTHER NATIONAL PARKS.

Rules and Regulations similar to this for 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.  
Hawaii 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.  
Yellowstone National Park.  
Yosemite National Park.

# AUTHORIZED RATES FOR PUBLIC UTILITIES, SEASON, 1923.

## HOTELS AND PUBLIC CAMPS.

The following hotels, etc., are operated by Fred Harvey:

### EL TOVAR.

El Tovar Hotel is located at the railroad terminus, near the head of Bright Angel Trail, at an elevation of 6,866 feet above sea level, and open all the year. It is a long, low structure, built of native boulders and pine logs. There are 93 sleeping rooms, accommodating 175 guests. Forty-six of these rooms are connected with private bath.

There is a music room and rendezvous. In the main dining room 165 persons can be seated at one time.

Hot and cold water, steam heat, and electric light are supplied. El Tovar also has a steam laundry.

#### *Authorized rates at El Tovar Hotel.*

#### American plan:

One person in room without bath, per day.....	\$6. 00
One person in room with bath, per day.....	8. 00
There are few exceptional rooms with bath carrying an additional charge.	

#### Meals only:

Breakfast.....	1. 25
Luncheon.....	1. 25
Dinner.....	1. 50

### BRIGHT ANGEL COTTAGES.

Cozy lodgings in cottages or tents are available at Bright Angel Cottages, adjacent to El Tovar. The accommodations are clean and comfortable. There are four cottages, open the year round and many large tents for summer only. All of the cottages have steam heat and electric light; one cottage also has baths. About 150 persons can be accommodated here. Meals are furnished a la carte at the café. Kitchen facilities are ample for quick a la carte service.

#### *Authorized rates at Bright Angel Cottages.*

Lodging only, per day, per person.....	\$1. 50-\$1. 75
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### HERMIT CABINS.

On Tonto Plateau at the foot of Hermit Trail; consists of a central dining room, lounge cottage, and 11 sleeping cottages; accommodations for 30 persons.

#### *Authorized rates at Hermit Cabins.*

American plan, per day, per person.....	\$5
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**PHANTOM RANCH.**

On the north side of the Colorado River near the mouth of Bright Angel Creek; consists of well-built stone cottages with mess hall and rendezvous with excellent accommodations.

*Authorized rates at Phantom Ranch.*

American plan, per day, per person..... \$6

**REST HOUSES.****THE LOOKOUT.**

The Lookout is a quaint observatory and rest house, built on the edge of the rim near the head of Bright Angel Trail. It is equipped with a large binocular telescope in the tower, for observing the most distant reaches of the canyon by day and for viewing the heavens by night. There is a small library for the layman and scientist. Canyon maps and photos are for sale. The reception room has spacious windows, a fireplace, Navajo rugs, and easy chairs; it is electric lighted and steam heated.

**HERMIT'S REST.**

Where Hermit Rim Road ends and Hermit Trail begins is a unique rest house, built into the hill, with a roofed-in porch and a parapet wall. As the name implies, it is intended to provide rest and shelter for parties who take the Rim Road drive, or the Hermit Trail trip. Guests may sit at the tables outside or sheltered by the glass front inside, according to weather, and enjoy a light lunch in unusual surroundings. Admission is by ticket. Tickets may be obtained at El Tovar or Bright Angel Cottages, at 50 cents.

**SHOPS AND STORES.****HOPÍ HOUSE.**

Opposite El Tovar is a reproduction of the dwellings of the Hopi Indians and several Navajo hogans.

In Hopi House are installed collections of Indian handiwork. Here also live a small band of Hopis, who are among the more primitive of our Indians. The men weave blankets and the women make pottery.

The homes of the Hopis are on the edge of the Painted Desert, perched on the crests of lofty mesas where they live as did their forbears and cling to their high dwelling place. They are industrious, thrifty, orderly, and mirthful. A round of ceremonies, each terminating in the pageants called "dances," marks the different seasons of the year. Subsisting almost wholly by agriculture in an arid region of uncertain crops, they find time between their labors for light-hearted dance and song, and for elaborate ceremonials, which are grotesque in the Katchina, or masked dances, ideally poetic in the flute dance, and intensely dramatic in the Snake Dance. In the three and a half centuries of contact with the white race their manner

of life has not materially changed. The Indian tribes that roamed over mountain and plain have become wards of the Government, but the Pueblo Indian has absolutely maintained his individuality.

The Navajo women weave fine blankets and many of the men are expert silversmiths, who fashion bracelets, rings, and other articles from Mexican coin silver. The Navajo Indian Reservation—one of the largest in the United States—borders Marble Canyon on the east. They are a pastoral people, intelligent, and, like the Hopis, self-supporting. They own large numbers of sheep, cattle, and horses. The Navajos are tall, rather slender, and agile. They have been rightly called the Bedouins of the Desert. Nowhere are they gathered into permanent villages. Although "civilized," they still cling to old customs and old religious forms. The medicine man, or Shaman, has a large following, if not a large per cent of cures. Their dance ceremonies are weird in the extreme. The Fire Dance is a spectacular 10-day ceremony, seldom witnessed by white men, and occurring only once in seven years.

Supai Indians from Havasu Canyon frequently visit El Tovar.

#### VERKAMP'S.

Verkamp's, on the Rim, just east of the Hopi House, carries a complete line of Canyon Souvenirs and Indian Handicraft. It makes a specialty of Navajo rugs and silverware, Chimayo blankets, and Indian baskets, and carries postcards, folders, and photographs of the Canyon.

In this shop may also be seen one of the largest and best paintings of Grand Canyon as well as other work of the late Louis Aikin.

#### KOLB BROS.' STUDIO.

Kolb Bros.' studio is at the head of Bright Angel Trail. The Kolb Bros. give, each day, an interesting lecture, illustrated with motion pictures and slides, describing their boat trip through the canyons of the Green and Colorado Rivers. Admission, 50 cents.

The exhibition above referred to illustrates Major Powell's original exploration of the entire series of Canyons on these rivers and should not be confused with other excellent travel talks on the Grand Canyon, which latter describe and illustrate what can be seen by the visitor in a stay of a week or so at the canyon.

Here, too, visitors may view the canyon through a telescope and obtain reliable information. Photographic views and other pictures representing their many years' exploration of the Grand Canyon are for sale.

#### SIGHT-SEEING TRIPS BY ROAD.

##### REGULAR TRIPS BY AUTOMOBILE.

The following trips are available every day in the year by automobile:

*Hermit's Rest.*—Stopping en route at Maricopa, Hopi, Mohave, and Pima Points. First trip starts at 9.30 a. m., returning to El Tovar and Bright Angel about 12 noon. Second trip starts at 1.30

p. m., returning to El Tovar and Bright Angel about 4 p. m. **Rate, \$3.** This rate includes use of facilities and light refreshments at Hermit's Rest. This drive is 15 miles round trip along the Rim Road. There is also a sunset trip to Hopi or Mohave Points, leaving El Tovar and Bright Angel Camp at 6.30 and returning about 7.45.

*Hopi Point.*—El Tovar to Hopi Point, 2 miles west; rate, \$1.50.

*Mohave Point.*—Three miles west; rate, \$2.

#### REGULAR SUMMER TRIPS BY AUTOMOBILE.

The following trips are available through the summer season (approximately from April 15 to November 15).

*Grand View.*—Through forest of tall pines via Long Jim Canyon and Thor's Hammer, 13 miles each way; time about 3½ hours. Leave El Tovar 9.30 a. m. and 1.30 p. m. daily. Rates, \$4. From Grand View may be seen that section of the canyon from Bright Angel Creek to Marble Canyon, including the great bend of the Colorado. On the eastern wall are Moran, Zuni, Papago, Pinal, Lipan, Navajo, (Desert View), and Comanche Points; and the mouth of the Little Colorado River. Still farther beyond is the Painted Desert and Navajo Mountain—the latter plainly seen, though 120 miles away. The rim trail to Moran Point is interesting. Grand View Trail enters the canyon near Grand View Point.

*Desert View.*—Thirty-two miles each way via Long Jim Canyon, Thor's Hammer, Grandview, Hull Tank, Trash Dam, Tanner Tank, Old Aztec Ruin, Lipan Point, and head of Tanner Trail. Two round trips a day, leaving El Tovar 9 a. m., and 1.30 p. m. Rate for one person, \$20; for two persons, \$10 each; for three or more persons up to capacity of car, \$8 each. Special auto for parties of six persons or less, \$48; lunch extra, except for El Tovar guests.

At this point there is a far outlook not only into the canyon above the Granite Gorge, where the river valley widens, but also across the Painted Desert, toward Hopi Land, and along the Desert Palisades to the mouth of the Little Colorado. At sunset and sunrise it is a glorious sight. For that reason one preferably should arrange to stay overnight—a camping trip elsewhere referred to. One and one-half miles west of Desert View is Lipan Point, affording an excellent view of this whole region.

#### SPECIAL SUMMER TRIPS BY AUTOMOBILE.

These trips depend upon condition of roads and may be at times discontinued.

*Bass's Camp,* 24 miles, and Havasupai Point, 1 mile beyond. Rate same as Desert View trip.

*Yavapai and Grandeur Points.*—This drive extends 2 miles east of El Tovar. Rate, \$1.

**PRIVATE CONVEYANCE RATES.**

Where special cars are desired, an extra charge of \$2 is made for entire party, besides the individual rate for regular service.

As an example: The rate for regular trip to end of Rim Road is \$3 each person. If one person desires to make this trip in a special conveyance, that person would pay \$5; if two persons go, the entire expense would be \$8; for three persons, \$11; and so on up to six. The \$2 extra is collected for the party as a whole, and not individually.

Other rates for special autos vary with service performed.

NOTE.—If the demand for regular-trip drives is so heavy as to require use of all conveyances available, private trips will be discontinued temporarily.

**GARAGE SERVICE.**

There is at Grand Canyon a large stone garage with ample facilities for repairing and supplying automobiles. The rate for storage of automobiles is \$1 per day.

**TRAIL TRIPS.**

*Hermit Trail, stopping at Hermit Cabins overnight.*—Time, two days and one night. Hermit Road by auto. Down Hermit Trail, stay overnight at Hermit Cabins; go to river at mouth of Hermit Creek; return up Hermit Trail to Rim; thence to El Tovar over Hermit Rim Road. Trips leave El Tovar and Bright Angel Cottages at 9.30 a.m. and return next afternoon. Rates \$18.25 each person, including guide, overnight accommodations, and meals en route and at Hermit Cabins. Private guide, \$5 per day extra.

*Bright Angel Trail.*—The trail here is generally open the year round. In midwinter it is liable to be closed for a day or two at the top by snow, but such blockade is not frequent. The trail reaches from the hotel 7 miles to the Colorado River, with a branch terminating at the top of the granite wall immediately overlooking the river. At this latter point the stream is 1,272 feet below, while El Tovar Hotel on the Rim is 3,158 feet above. The trip is made on muleback, accompanied by a guide.

Those wishing to reach the river leave the main trail at Indian Garden and follow the downward course of Indian Garden and Pipe Creeks.

Leave at 8.30 a. m. for the river trip, 7 miles; return to Rim 5 p. m. Rate, \$6 each person. Leave 10.30 a. m. for trip to plateau, 5 miles; rate, \$5 each. Rates quoted above are for each person in parties of three or more. For special trips with less than three persons there is a party charge of \$5 extra for guide. Lunch extra, except for El Tovar room guests.

It is necessary that visitors who walk down Bright Angel Trail and desire that guide and mules be sent to meet them, be charged full price and special guide fee of \$5. This is unavoidable, as the mules and guides are not available for any other trip.

*Hermit-Tonto-Bright Angel Loop.*—This trip takes two days and one night. Hermit Rim Road to head Hermit Trail; down Hermit Trail; stay overnight at Hermit Cabins; go to river foot of Hermit Creek; return along Tonto Trail to Indian Garden; thence up Bright Angel Trail.

Start from El Tovar or Bright Angel Cottages at 9.30 a. m., and return next afternoon. Round trip charge is \$23.25 for each person; private guide is \$5 a day extra; rate quoted includes regular guide, overnight accommodations, and meals en route.

NOTE.—This trip can be ~~lengthened~~ to three days and two nights by spending an extra night in the canyon, also going to river at foot of Bright Angel Trail—a 34-mile journey. Rate, \$14 a day, one person; \$8 a day extra each additional person; provisions extra; includes guide.

*Three-Day Ribbon Falls trip.*—Leave about 9 a. m. Down Bright Angel Trail, crossing the Colorado River by new steel suspension bridge and reaching Phantom Ranch early afternoon. Overnight at Phantom Ranch, following morning by way of Kaibab Trail in Bright Angel Canyon, 5 miles to Ribbon Falls, beautiful clear waterfall in the form of a crystal ribbon shedding its waters on a natural rock altar in the midst of a verdant amphitheater. Box lunch at falls, and return to Phantom Ranch for overnight. On third day the return to El Tovar completes a never-to-be-forgotten experience. The all-expense rate for this trip, for parties of three or more, is \$30 per person. For parties of less than three, a party charge of \$5 per day for guide, extra.

*Across Grand Canyon to Kaibab National Forest on North Rim.*—This combines an instructive and interesting excursion across the whole width of the Grand Canyon, from rim to rim, with a visit to the Kaibab National Forest. This beautiful virgin forest is the home of thousands of deer and the haunt of the mountain lion and the bobcat. Starting from the South Rim, the round trip is made in five days, including one day spent in the forested section. The route is by the Bright Angel and Tonto Trails across the Kaibab Suspension Bridge to Phantom Ranch; thence along Kaibab Trail and up Bright Angel Canyon to Wylie Way Camp at Bright Angel Point on the North Rim. On the return Ribbon Falls visited en route. For those who may wish to spend some time in the Kaibab National Forest, saddle stock and camping outfits are available at Wylie Way Camp. Approximate expense, except personal accommodation in Wylie Way Camp, \$70 per person for the five-day trip.

**Wylie Way Camp, \$6 per day extra.** For full particulars and advance reservations address **Manager, Transportation Department, The Fred Harvey Co., Grand Canyon, Ariz.**

*Dripping Spring.*—This trip is made on horseback all the way, or auto to Rim, and saddle horses down trail; 10 miles west, starts at 8.30 a. m. Rate, \$5 each for three or more persons; for less than three persons, \$5 extra for guide. Private parties of three or more persons, \$5 extra for guide.

### SADDLE HORSES.

Recently many new bridle paths along the Rim and through the pines of Tusayan have been opened up, so that horseback riding now is possible for all. The animals are well trained and dependable. Saddle horses cost \$5 a day, or \$3 a half day. English, McClellan, Whitman, or western stock saddles furnished as requested. Side-saddles not provided. Rates quoted include, for parties of three or more, the services of a guide. For a guide for parties of less than three or for a private guide the rate is \$5 a day, or \$2.50 a half day. Horseback trips over any of the trails into the canyon are only permitted when accompanied by guide. This is necessary to avoid risk in meeting trail parties and pack trains.

There are several interesting foot trails near Grand Canyon village. Information as to these may be obtained at the superintendent's office.

### CAMPING TRIPS.

Camping trips with pack and saddle animals, or with wagons and saddle animals, are organized, completely equipped, and placed in charge of experienced guides.

For climatic reasons it is well to arrange so that camping trips during the season from October to April are mainly confined to the inner canyon. For the remainder of the year, i. e., April to October, they may be planned to include both the canyon itself and the rim country.

The rates vary from \$10 to \$15 a day for one person; \$6 to \$8 a day each additional person. Such rates specially include services of guide and camp equipment; provisions extra; figures quoted are approximate only, varying with different outings.

*Havasü Canyon and Havasupai village.*—The best time to visit this place is from May to October. A journey of about 50 miles, first by wagon or auto, 35 miles across a timbered plateau, then on horseback down Topocobya Trail along Topocobya and Havasü Canyons, to the home of the Havasupai Indians.

The home of this little band of 200 Indians is in Havasü Canyon, a tributary of the Grand Canyon, deep down in the earth two-fifths of a mile. The situation is romantic and the surroundings are beautified

by falls of water over precipices several hundred feet high, backed by grottoes of stalactites and stalagmites. This water all comes from springs that gush forth in surprising volume near the Havasupai village.

The baskets made by the Havasupai women consist of the burden basket, a shallow tray, and a water bottle of willow. Those made by the older weavers are of fine mesh, with attractive designs, and bring good prices. Havasupai means people of the blue water. Padre Garces was the first white man to visit their canyon home. In early days the Havasupais undoubtedly were cliff dwellers. They built nearly all the Grand Canyon trails, or rather their rude pathways were the advance guard of the present trails. Their summer homes resemble those of the Apaches. The winter homes afford more protection against the weather.

The round trip from El Tovar is made in three days, at an expense of \$15 a day for one person, \$20 a day for two persons, and \$25 a day for three persons. Each additional member after party of three, \$5 a day; provisions extra. These rates include service for party of one or two persons, also cost of horse feed, but do not include board and lodging at Supai village.

For parties of three to six persons an extra guide is required, whose services are charged for at \$5 a day.

NOTE.—At the western end of the Granite Gorge is a trail down to the Colorado River and up the other side to Point Sublime and Powell's Plateau, the river being crossed by ferry. Reached by team from El Tovar, a distance of 24 miles, or it can be seen as a detour on the Havasu Canyon trip; rates on application.

*Desert View.*—Elsewhere reference is made to Desert View auto trip. When taken by wagon it occupies three days, leaving El Tovar morning of first day and returning afternoon of third day, with all night camp at destination. Rate, \$10 for one person and \$5 each additional person; provisions extra; rate named includes one guide; an extra guide costs \$5 a day.

*Little Colorado River.*—The trip to the mouth of the Little Colorado is a most interesting one. Leaving El Tovar in the morning by wagon, camp is made the first day at Deer Tank. The next day the cliff dwellings are visited and the plateau overlooking the Canyon of the Little Colorado is reached by midday. From the edge of the plateau to the bottom of the canyon is a straight drop of 2,500 feet. Rates on application.

*Painted Desert and Hopi Land.*—The trip is made with saddle and pack animals. The first night the camp is at Saddle Horse Tanks. Hopi Crossing of the Little Colorado is reached the next afternoon and Tuba City the third day. The Hopi village of Moenkopie is seen en route.

The Painted Desert country affords a most interesting study of a phase of Indian entertainment, little known to white people. Rates on application.

Other camping trips are being arranged for by the National Park Service. Information may be obtained at the superintendent's office.

### THE NORTH RIM.

#### AUTO STAGE TRANSPORTATION FROM UTAH POINTS.

The North Rim of the Grand Canyon National Park is reached from Lund, Utah, on the Union Pacific System, and from Marysville, Utah, on the Denver & Rio Grande Western Railroad by automobiles operated by C. G. Parry, Cedar City, Utah.

Special all-expense tours are offered combining visits to Zion National Park, Cedar Breaks, and Bryce Canyon. These tours leave Lund daily from June 15 to October 10, and from Marysville daily from June 15 to October 10.

#### *Authorized rates.*

##### From Lund, Utah:<sup>6</sup>

Four-day tour of Grand Canyon National Park (North Rim), Kaibab Forest via Cedar Breaks, and Navajo Lake, fare for automobile transportation and 11 meals and 3 nights' lodgings.....	\$85
Seven-day tour of Zion National Park, Grand Canyon National Park (North Rim), Kaibab Forest, Bryce Canyon, and Cedar Breaks, fare for automobile transportation and 20 meals and 6 nights' lodgings.....	120

##### From Marysville, Utah:<sup>6</sup>

Five-day tour of Grand Canyon National Park (North Rim), Kaibab Forest and Bryce Canyon, fare for automobile transportation and 13 meals and 4 nights' lodgings.....	110
Seven-day tour of Grand Canyon National Park (North Rim), Kaibab Forest, Zion National Park, Cedar Breaks, and Bryce Canyon, fare for automobile transportation and 19 meals and 6 nights' lodgings.....	135

Above rates include automobile transportation and meals and lodgings en route. Children under 12 years of age, one-half fare. Twenty five pounds of baggage on full-fare tickets and 12½ pounds on half-fare tickets will be transported free; excess baggage will be charged for at rate of 10 cents per pound.

#### SPECIAL AUTO SERVICE.

Arrangements also can be made with H. I. Bowman, of Kanab, Utah, for special automobiles from Marysville, Utah, to Bryce Canyon, North Rim of the Grand Canyon National Park, Zion National Park, and Cedar Breaks and return to starting point. Special cars carrying four persons for 50 cents per mile and cars carrying six persons for 60 cents per mile, these cars to be operated at the pleasure of the occu-

<sup>6</sup> Reservations for these trips must be made in advance with C. G. Parry, Transportation Manager, Cedar City, Utah.



pants as to distance traveled each day and as to places visited, with the proviso that a minimum charge will be made for 20 miles in any one day whether traveled or not. Twenty-five pounds of free baggage will be allowed each person; excess baggage will be charged for at the rate of 10 cents per pound. Two children under 6 years of age will be carried in lieu of one adult.

### WYLIE WAY CAMP.

On the North Rim at Bright Angel Point, situated in a shady grove of pines, is a Wylie Way Camp, consisting of a central dining tent and comfortable sleeping tents; everything is spotlessly clean. Camp opens about June 20 and closes about October 1. There are accommodations for about 25 people.

Authorized rate at Wylie Way Camp, American plan, per person, per day, \$6.

### SADDLE-HORSE TRIPS.

Arrangements may be made at the Wylie Way Camp or by writing to Jensen & Vaughn, Fredonia, Ariz., for saddle-horse trips to various points of interest on the North Rim and in the Canyon. Time required and rates are as follows:

Side trips and rates therefor from Wylie Way Camp, Bright Angel Point:

To Point Imperial, one-day trip.

To Point Sublime, two-day trip.

To Cape Royal, two-day trip.

Saddle horses for these trips or for special trips on the plateau, \$3 each per day. Mounted guide for North Rim trips, \$5 per day.

Down Bright Angel Trail to Colorado River, and cross-canyon trips, the rate is \$6 per day for each horse.

Guide for river and cross-canyon trips, \$6 per day.

For all overnight trips from Wylie Way Camp on the North Rim one or more pack horses must accompany the party, the rates for these being the same as for saddle horses.

Bedding and provisions for North Rim trips, \$2.50 per day for each person.









**A PORTION OF THE FIRST FOREST.**  
 The profusion of petrified wood is clearly shown.



**Photograph by Wm. Nelson.**

**ROOT OF PETRIFIED TREE, 7 FEET IN DIAMETER.**  
 The profile resembles a dog's or lion's head.

**PETRIFIED FOREST NATIONAL MONUMENT, ARIZONA.**



Copyright by Fred Harvey.

COMING DOWN A STEEP STRETCH ON THE HERMIT TRAIL.

GRAND CANYON NATIONAL PARK.

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DEPARTMENT OF THE INTERIOR

HUBERT WORK, SECRETARY

NATIONAL PARK SERVICE

STEPHEN T. MATHER, DIRECTOR



RULES AND REGULATIONS

# GRAND CANYON NATIONAL PARK ARIZONA



Photograph by El Tovar Studio

THE CANYON GRANDE LOOKING WEST FROM HOPI POINT

1924  
OPEN ALL THE YEAR

GOVERNMENT PRINTING OFFICE



Photograph by El Tovar Studio

EL TOVAR HOTEL FROM ROOF OF HOPI HOUSE



Photograph by El Tovar Studio

VILLAGE OF MOENKOPI

Reached over the new Navahopi Road from Grand Canyon Park

N. S. Cort  
 Jr  
 8-7-1924

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# THE NATIONAL PARKS AT A GLANCE

[Number, 19; total area, 11,372 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—20 bath-houses under public control.
Yellowstone 1872	Northwestern Wyo- ming.	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 Cali- fornia.	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 Cali- fornia.	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 Cali- fornia.	4	Created to preserve the celebrated General Grant Tree, 35 feet in diameter—6 miles from Sequoia National Park.
Mount Rainier 1899	West Central Wash- ington.	324	Largest accessible single peak glacier system—28 glaciers, some of large size—48 square miles of glacier, 50 to 500 feet thick—Wonderful sub-alpine wild flower fields.
Crater Lake 1902	Southwestern Oregon	249	Lake of extraordinary blue in crater of extinct volcano—Slides 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 Colo- rado.	77	Most notable and best preserved prehistoric cliff dwellings in United States, if not in the world.
Glacier 1910	Northwestern Mon- tana.	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 Colo- rado.	397½	Heart of the Rockies—Snowy range, peaks 11,000 to 14,255 feet altitude—Remarkable records of glacial period.
Hawaii 1916	Hawaii.....	186	Three separate areas—Kilauea and Manna 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 6,870 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	A 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.



# GRAND CANYON NATIONAL PARK

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## GENERAL DESCRIPTION

The Grand Canyon National Park was created by an act of Congress, February 26, 1919. It is under the supervision of the National Park Service of the Department of the Interior. Its final creation came 33 years after Benjamin Harrison, then Senator from Indiana, introduced the first of several bills to give it park status. Politics, local apathy, and private interests, which sought to utilize its water power and to find minerals in its depths, were the principal causes of delay. All efforts failing to make it a national park, in 1908 President Roosevelt made it a national monument. Once a railroad was surveyed through it. A scenic railroad was projected along its south rim. Less than a year before it became a park efforts were making in New York to raise money to dam its waters for power and irrigation.

The Grand Canyon National Park is in northern Arizona. Its 958 square miles inclose 56 miles of the Grand Canyon stretching west of its beginning at the mouth of the Marble Canyon. Through it winds the Colorado River for a distance of 103 miles. From rim to rim the canyon varies from 8 to 20 miles in width; it is more than a mile deep measured from the north rim, which averages nearly a thousand feet higher than the south rim. The eastern boundary includes the lofty painted walls east of which lies the Painted Desert. Its western boundary includes the broad Havasu Canyon, tributary from the south, in whose depths we find the Havasupai Indian Reservation and a group of fine waterfalls markedly different from any in our other national parks.

The park boundaries hug the rim closely. Very little of the country back of the rim is included in the reservation, scarcely enough in places to take care of the great increase of travel which national parkhood will bring to the Grand Canyon during the next several years. These border lands are wonderfully attractive. The northern rim is heavily forested with pine and spruce, interspersed with beautiful glades of quaking aspen. The southern rim carries a slender semiarid flowering vegetation of rich beauty and wide variety and south of the railroad station lie a few square miles of fine yellow pine forest.

## A MIGHTY SPECTACLE

There is no doubt that the Grand Canyon is one of the world's very greatest spectacles. It is impossible to compare it with the tremendous white spectacle of the Himalayas, or with the House of Everlasting Fire of the Hawaii National Park, or with the 17,000 feet of snow and glacier which rise abruptly between the observer's eyes and the summit of Mount McKinley, because it has nothing in common with any of these. But of its own kind there is nothing in the world which approaches it in form, size, and glowing color; it is much the greatest example of stream erosion. And in its power to rouse the emotion of the looker-on, to stupefy or to exhilarate, it has no equal of any kind anywhere, unless it be the starry firmament itself.

Approaching by rail or road, the visitor comes upon it suddenly. Pushing through the woods from the motor camping ground, or climbing the stairs from the railroad station, it is there at one's feet, disclosed in the sublimity of its templed depths, in the bewildering glory of its gorgeous coloring. There is no preparation of mind and spirit. To some the revelation is a shock, no matter what the expectation. The rim of the Grand Canyon is one of the stillest places on earth, even when it is crowded with people.

To describe the Grand Canyon is as impossible as it is unnecessary. Few natural spectacles have been so fully pictured, few are so familiar even to the untraveled. Its motionless unreality is one of the first and most powerful impressions it makes. And yet the Grand Canyon is really a motion picture. There is no moment that it does not change. Always its shadows are insensibly altering, disappearing here, appearing there; lengthening here, shortening there. There is continual movement. With every quarter hour its difference may be measured.

There is the Grand Canyon of the early morning, when the light slants lengthwise from the Painted Desert. The great capes of the northern rim shoot into the picture, outlined in golden light against which their shapes gloom in hazy blues. Certain temples seem to rise slowly from the depths, or to step forward from hiding places in the opposite walls. Down on the green floor the twisting inner gorge discloses here and there lengths of gleaming water, sunlit and yellow.

An hour later all is wholly changed. The dark capes have retired somewhat and now are brilliant-hued and thoroughly defined. The temples of the dawn have become remodeled, and scores of others have emerged from the purple gloom. The Granite Gorge, now detailed fully, displays waters which are plainly muddy even at this great distance. And now the opposite wall is seen to be convoluted, possessing many headlands and intervening gulfs.

And so, from hour to hour, the spectacle develops. Midday, with sun high behind the south rim, is the time of least charm, for the opposite walls have flattened and the temples of the depths have lost their defining shadows. But as afternoon progresses the spectacles of the morning creep back, now reversed and strangely altered in outline. It is a new Grand Canyon, the same but wonderfully different.

And just after sunset the reds deepen to dim purples and the grays and yellows and greens change to magical blues. In the dark of a moonless night the canyon suggests unimaginable mysteries.

#### THE FIRST VIEW

From the railroad station the visitor ascends to El Tovar Hotel and the view of the canyon at a very interesting point. Here is where the temples loom up in contrast to the plateau at their feet; the plateau still being 1,500 feet above the river. The view at El Tovar is restricted by the extension of Grandeur Point and Maricopa Point on either side. These cut off the view of the great reaches of the canyon east and west. El Tovar view is a framed picture of limited size. It is better so; better for the newcomer to enter gradually into the realization of the whole which will come when he walks or rides out to the many points which push northward from the south rim; better also to return to after days spent on the rim or in the canyon's depths.

Having studied this view for general outlines and the canyon's conformation, stratification, and coloring, the visitor will find for himself, on foot or by motor stage or horseback, many points which will afford him varied outlooks upon the broad reaches of the canyon. It is advisable to see the canyon from end to end from the rim before exploring the trails to the floor and the river.

The traveler who is unlucky enough to have no more time at his disposal may, even in one day, see much of the Grand Canyon either from the rim or by mule-back descent to the depths as preference dictates. Probably the one-day visitor can see more by taking the 16-mile Hermit Rim Road drive west in the forenoon and the 60-mile drive east to Grand View and Desert View in the afternoon than in any other way. Both the rim drives and the descent into the canyon may be had in two days. Every day added to the schedule will give the visitor further novel experiences and glorious views, such as the Hermit Loop trip, the Phantom Ranch trip, or to the north rim of the canyon, visiting Ribbon Falls en route, or the long motor trip over the Navahopi Road to Tuba City and Moenkopi.

When you go to the Grand Canyon leave the duration of your stay open for decision when there. You will probably then remain from five days to two weeks. Two weeks of fairly steady going will enable

you to see the Grand Canyon thoroughly without undertaking trips which are a hardship to persons unaccustomed to trail riding.

#### PARK SERVICE INFORMATION BUREAU

A free information bureau is maintained by the National Park Service in the Administration Building, 100 yards east of El Tovar and at the foot of the hill, where the superintendent's offices are. Park visitors are welcomed and are advised to apply to the attendant in charge of this bureau for official information of any kind.

A collection of various geological specimens of the Grand Canyon is on exhibition, as well as charts of flowers and birds.

A suitable reference library is being accumulated for the use of visitors, and the Government maps and other publications may be consulted or secured here.

Automobile arrivals are requested to register at this bureau, unless previously registered at a checking station.

#### LIVING AT THE GRAND CANYON

Living is pleasant and comfortable. El Tovar Hotel offers delightful conditions at rates reasonable in these times for its high-class accommodations. Its porches are broad, its garden a collection of rich semiarid vegetation, its rim walks inspiring. There is horse-back riding through many miles of yellow-pine forest and out to viewpoints on the rim, but there are no sports. There is neither golf nor tennis. The canyon absorbs the whole attention of its visitors.

Adjoining the hotel there is a most comfortable annex of cottages and tents and café; rates are lower than those charged at the main hotel. There are comfortable cottages at Hermit Creek Cabins on the Hermit Trail, and at Phantom Ranch across the Colorado River. The latter cottages are built of the native rock, with mess hall, etc. Both these resorts are first class in every respect.

Wylie Way Camp at Bright Angel Point on the north rim provides comfortable accommodations for visitors. There are tent cottages at Desert View, where one may spend the night. Camping trips along the rim and down to the Havasupai Indian Reservation and the waterfalls of Havasu Canyon can be arranged. It is possible to take your pack train across the river on the Kaibab Suspension Bridge, stay overnight at Phantom Ranch, and ascend the most interesting Kaibab Trail up Bright Angel Canyon to the north rim. This trip is a matter of several days and is correctly classed as a summer jaunt.

#### FREE PUBLIC CAMP GROUND

From April to November the south rim is free from snow and the free public camp ground near Grand Canyon Village is available to campers. Motorists are urged to bring their own camp equipment

and make use of this camp. Sites will be allotted free of charge on application to the office of the superintendent of the park. There is a garage in the village where gasoline and oil can be procured. There is also a general store where groceries can be purchased. It is necessary to purchase water in the village, as there is none at the Grand Canyon and it must be hauled from a distance by rail. The charge for water is 25 cents per day.

#### SEEING IT FROM THE RIM

East of the hotel are several points reached by motor roads which afford fine views of the upper half of the Grand Canyon. The most famous of these is Grand View, where still stands the first regular hotel of the canyon, now private property, and not affording hotel accommodations. The eastern terminus of the road is Desert View, which offers a view up the Marble Canyon, and eastward over the famous Painted Desert. West of the hotel the auto stages stop at a succession of fine points, each with its own individual view of the mighty spectacle.

There is much to see also in the neighborhood of El Tovar.

The Yavapai Trail extends along the Canyon rim east to Grandeur, Yavapai, and Yaki Points, and the Hopi Trail west to Maricopa, Sentinel, and Hopi Points. These paths are inviting to the hiker, or, if one desires to combine horseback riding with viewing the spectacle thus reached, he may do so over these paths, where the footing invites a canter, the surroundings furnish shade and beauty, and automobiles do not intrude.

#### DESCENDING THE CANYON

There are two practicable trails from the south rim to the river. The one commonly used starts from El Tovar Hotel and descends the deep alcove between Grandeur and Maricopa Points. This is the celebrated Bright Angel Trail.

The descent of this trail is made on muleback in parties led by guides. It is a sad mistake for persons not in the soundest physical training to attempt it on foot, for the apparent distance as seen from the rim is misleading, and the climb back is most arduous at that elevation. The south rim of the canyon at El Tovar is 6,866 feet above sea level. Nearly every day one or more trampers, overconfident of their endurance, find the way up too arduous and have to be assisted by guides and mules sent down for them from the rim.

The descent is an experience of great charm. The trail is well built and kept in good condition. The traveler passes in review all the strata which form the canyon walls; their close examination will be a source of pleasure. Just under the rim the trail passes through a fine forest of spruce, and from this down to the sage desert of the



green floor the traveler will also pass in review a series of vegetation which represents scores or hundreds of miles of surface growths. There are two steep cliffs which the trail descends in series of short hitches of zigzags, one of which, known as Jacob's Ladder, carries the traveler down the famous Redwall limestone, which is so distinct a scenic feature of the canyon from every rim view. But there need be no alarm about these descents, for the zigzags, short and numerous though they are, maintain always a uniform safe grade. It may affect the unaccustomed nervously to see his mule hang his head over short abysses at the turns, but the traveler himself does not hang over them, and the mule is sure-footed, stolid, and indifferent. There is only one creature with less imagination than a mule, and that is his cousin, the burro.

Indian Garden, which lies on the floor of the canyon, is so named because Havasupai Indians once cultivated the soil through which passes the stream which originates in springs below the Redwall. It is called Garden Creek. The Indian Garden now is a tangle of high brush, principally willow, through which the trail passes out upon the Tonto Platform, and presently plunges down the rocky gorge which leads to the edge of the muddy Colorado.

#### THE HERMIT TRAIL

A much finer trail from every point of view than the Bright Angel starts from Hermit Rest, south of Pima Point, and descends the Hermit Canyon. It begins 8 miles west of El Tovar. This is a two days' journey, including a night spent in Hermit Cabins well down in the canyon. It involves an experience worth many times the additional day which it requires.

The Hermit Canyon is one of extreme beauty; there is probably no other which equals it in gorgeous coloring and the variety of its rock forms. The trail, whose grade is less than that of the Bright Angel, is one of the finest in the world. It is longer than the Bright Angel Trail and leads out upon impressive points overlooking fascinating views. The descent of the Redwall limestone is a masterpiece of trail building, and the only part of the Hermit Trail which gives an impression of steepness; but this may readily be walked down by the unaccustomed rider; its descent is not nerve racking. The night at Hermit Cabins, under a towering crimson gable, with colorful Hermit Canyon on the south and Grand Canyon opening northward over the green shale of the Tonto Platform, or "lower plateau," is as comfortable as it is fascinating. The trip to the river and back to the camp is usually made the first day.

## THE TONTO TRAIL

Too few visitors to Hermit Cabins combine the two trail trips with a journey between them over the Tonto Platform. The descent is by the Hermit Trail with a night at its foot. The next morning the journey is made on mule back along the Tonto Plateau to the Indian Gardens. This journey is extremely interesting. The side walls of the canyon and the numerous temples give one the sense of being in the mountains instead of half way down the depths of a canyon. From the Indian Gardens, after lunch by the stream side, parties ascend Bright Angel Trail to El Tovar.

## THE HAVASU CANYON

The Havasu Canyon in the far western end of the national park is rarely visited. The trail begins at the end of a long desert road by descending precipitously to a gorge through which the Havasupai Indian Reservation is reached. There are less than 200 Indians on the reservation. These live by farming the land irrigated from Havasu Creek; corn is their principal product, but melons, figs, and peaches are also produced. The reservation fills a broad amphitheater in the gorge surrounded by lofty red sandstone cliffs of the Supai formation. There are no hotels or camps and the heat is intense in summer. The Havasu Creek water is strongly impregnated with lime and unpalatable, though entirely wholesome. Nevertheless, the visit to the reservation is one of unusual character and charm for those who do not object to a little hardship.

Below the reservation the canyon breaks into a series of waterfalls, two of which are unusual in kind and beauty. These are the Havasu Fall and the Hualapai Fall. Both drop over lofty shelves, which are plastered on back and sides by richly carved festoons of lime travertine. Both the falls occur in deep gorges in the Redwall limestone. Bright green cottonwoods, cactus, and other desert vegetation enliven the scene, which is as different as imagination can well paint from anything else in the Grand Canyon National Park.

In the spring, following the melting of the rim snows, there are various waterfalls in the Grand Canyon itself, several of which last for some months. These occur on the north side of the river, where there is a greater supply of water, the south side being arid except for brief periods following meltings and cloudbursts. One of these temporary north-side waterfalls in Clear Creek, which has been seen by very few persons, is about 800 feet in height. With the crossing of the river, which is now possible over the Kaibab Suspension Bridge these and many other fascinating spectacles, now little known, will become familiar sights to many. The destiny of the Grand Canyon is to become one of the most used national parks.

ORIGIN AND GEOLOGIC HISTORY OF THE GRAND CANYON<sup>1</sup>

The Grand Canyon is the deepest and widest of a long series of canyons through which the Colorado River flows for 500 miles across a region of high table-lands known as the plateau province or the Colorado Plateaus. These canyons are unusually steep sided and unusually deep, but they are merely parts of the valley of the river, and, like most other river valleys, they have been formed by the stream that occupies them; they are not, as some who are unfamiliar with geologic processes have supposed, due to any violent or catastrophic breaking of the earth's crust. The Grand Canyon is perhaps the world's most spectacular illustration of the accumulated results of erosion—of the combined action of running water, rain, wind, and the various atmospheric agencies that attack the rocks and sculpture them into the forms that give character to a landscape.

## A PECULIAR TYPE OF LAND SCULPTURE

The scenery of the Grand Canyon is the supreme expression of a type of land sculpture that is peculiar to the plateau country, a type whose elements are cliffs and tabular forms—butes, mesas, terraces, and plateaus. The high plateau into which the river has cut its way is built up of layer upon layer of rock beds that lie nearly level and that extend continuously over great distances. These beds, as one may see in the walls of the canyon, consist of sandstone, shale, and limestone, which have been grouped by geologists into the formations shown in the generalized columnar section forming Figure 1. This figure presents a summary of the facts relating to the character of the rocks exposed in the Grand Canyon National Park and the thickness, attitude, order of accumulation, and structural relations of the formations.<sup>2</sup>

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<sup>1</sup> By L. F. Noble, geologist, U. S. Geological Survey.

<sup>2</sup> The term "formation" is generally applied to a group of rock beds that are of about the same age, as shown by the fossils they contain, or that are considered together for convenience in mapping or description. A formation is named from the place where it was first studied or from some place or region where it is well exposed. The Kaibab limestone, for example, is so named because it is well exposed on the Kaibab Plateau.

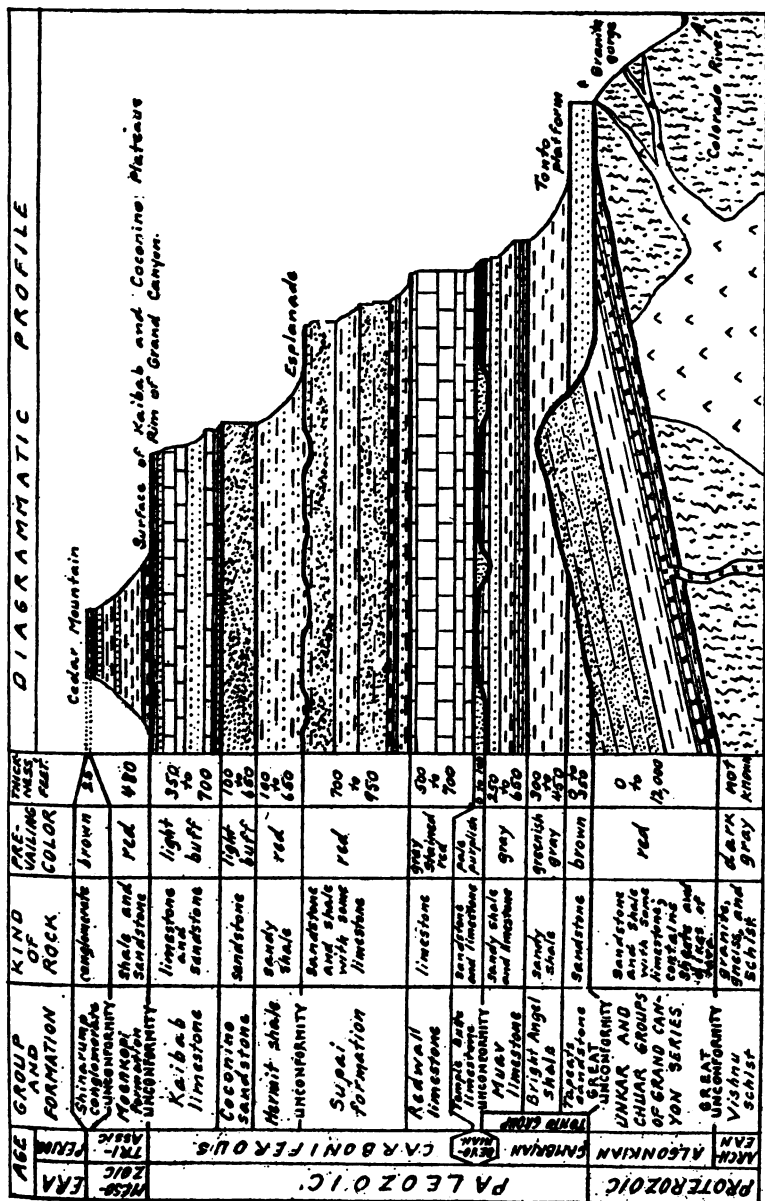


FIGURE 1.—Generalized columnar section, showing position and structural relations of the rocks of the Grand Canyon National Park, and the age, character, and thickness of the groups and formations into which they are divided.

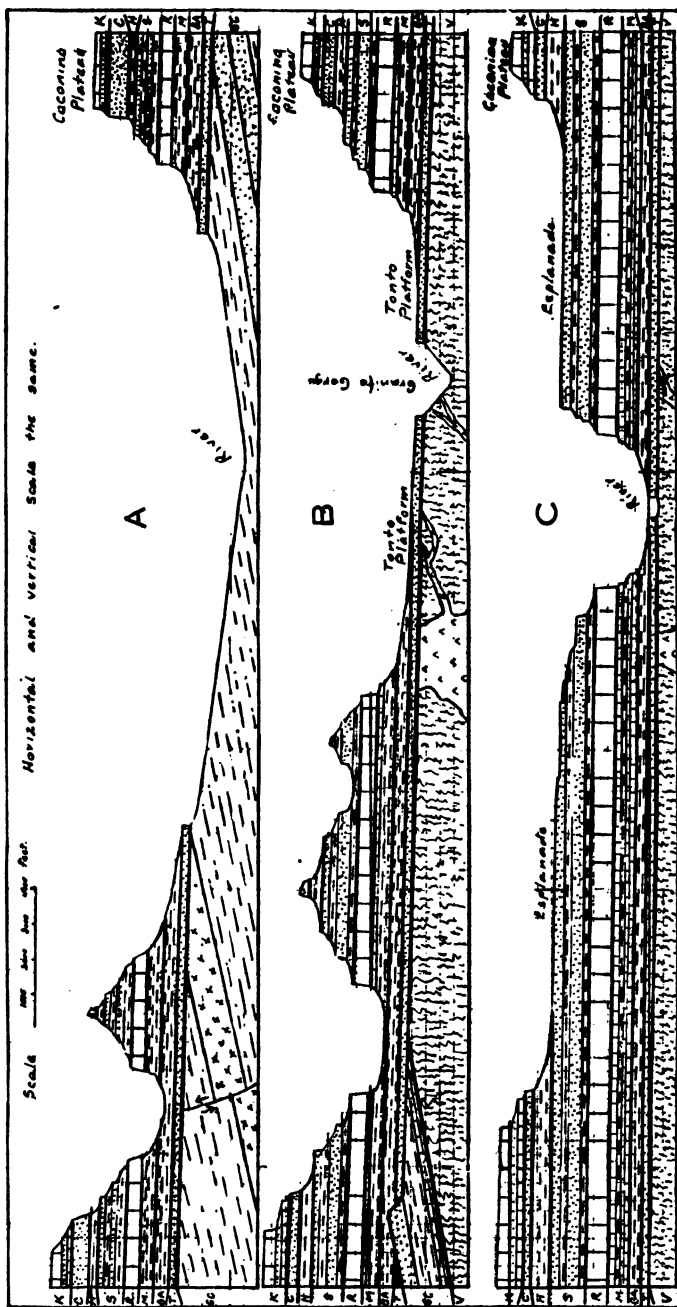


FIGURE 2.—Generalized sections across Grand Canyon, looking up Colorado River. A, in Eastern Kaibab division, east of Desert View Camp; B, in Central Kaibab division, near Hermit trail; C, in western Kaibab division, west of Bass Camp. K, Kaibab limestone; C, Coconino sandstone; H, Hermit shale; S, Supai formation; R, Redwall limestone; M, Temple Butte and Muay limestones; BA, Bright Angel shale; T, Tapeats sandstone; GC, Grand Canyon series; V, Vishnu schist. The different profiles exhibited by the canyon in these sections are due to changes in the character and thickness of the rocks, as explained in the text.

## ARCHITECTURAL FORMS DOMINATE THE CANYON

As the formations lie in orderly horizontal layers, like beds of masonry, they have been carved into definite architectural forms, which are everywhere nearly identical in profile though varied and irregular in plan, and as they vary in their resistance to erosion, some being hard, some soft, every part of the canyon wall, every pinnacle and butte, is characterized by its own steplike alternation of cliff, slope, and shelf. Each resistant bed stands forth as a cliff, and each weak bed is marked by a slope. Each shelf or platform is made by the wasting back of a weak stratum that lies upon a resistant, cliff-making stratum, and the greater the thickness of the weak stratum the broader the shelf. The plateaus that border the canyon are themselves simply great terraces developed on a resistant formation, the Kaibab limestone, from which overlying softer beds have been washed away. As erosion goes on parts of the canyon wall or plateau become separated by the widening of branch canyons or ravines and stand as solitary outliers capped by remnants of a hard bed of rock. These remnants are the buttes and temples. The great height of the plateau gives rapid fall to the streams that enter the canyon and enables them to cut powerfully and deeply and thus to carve the rocks into forms that are fashioned on a gigantic scale. The erosion accomplished by these streams, though spasmodic, because the streams are mainly fed by spasmodic rainstorms in an arid climate, is none the less effective. The slopes here are partly bare of vegetation because the desert plants grow far apart, and the concentrated energy of a single torrential shower may therefore wreak more havoc than would be caused by a season's rainfall on plant-covered slopes in a humid region. It is this prevailing aridity that, by retarding the growth of vegetation and the formation of soil, keeps sharp and fresh profiles that in a moister region would soon be dulled or obscured.

## SECTIONS ACROSS THE CANYON

The three sections across the Grand Canyon shown in Figure 2 (*A*, *B*, *C*) illustrate the intimate relation between the profile of the wall and the character of the rocks. In *A*, where the rocks along the river are the weak shales of the Algonkian Grand Canyon series, the bottom of the canyon is a broad valley having gently sloping sides. In *B* these weak stratified rocks are replaced by the hard Archean crystalline rocks, and the river occupies a narrow gorge—the Granite Gorge. As these hard crystalline rocks are not arranged in beds and are all about equally resistant to erosion the walls of the Granite Gorge have a steep, continuous slope, which presents a striking contrast to the steplike profile of the wall in the overlying

bedded Paleozoic rocks. In *C* the river occupies a narrow box-shaped vertical-walled canyon in the hard Tapeats sandstone, the basal formation of the horizontal Paleozoic beds.

In *C* the weak Hermit shale, in the upper wall of the canyon, is thick and consequently wastes far back from the summit of the underlying hard Supai sandstone, leaving a wide platform known as the Esplanade. This platform, because of its great width and its conspicuous red color, is the dominant feature of the canyon landscape in all the western part of the national park. But the Hermit shale steadily gets thinner eastward in the canyon, as may be seen in sections *B* and *A*, whereas the overlying cliff-making Coconino sandstone, which defends the retreat of the wall above the Esplanade, gets steadily thicker in the same direction. The Esplanade thus becomes a narrow bench in *B* and fades to an inconspicuous ledge in *A*.

In *B* the weak Bright Angel shale has determined a similar platform in the bottom of the canyon. This platform, known as the Tonto platform, or the "lower plateau," is widest in the region about and east of Bright Angel and Hermit Trails, where it is a familiar feature to tourists. It gets narrower westward as the overlying Muav and Redwall formations grow thicker and become firmer in texture.

This marvelous adjustment of external form to the inequalities of rock structure and character affords to the geologist the strongest evidence that the canyon is the work of erosion.

#### A UNIQUE REVELATION OF GEOLOGIC HISTORY

A large part of ancient geologic history is revealed more clearly in the walls of the Grand Canyon than in any other place in the world. The beds of rock seen in the canyon were all laid down in water as layers of sand, mud, and limy ooze and in time were hardened into rock by the great weight of the layers above them, the lime and silica that they contained cementing their particles together. As rocks of this kind are composed of sediment deposited in water the geologist calls them sedimentary rocks, and as they are piled in beds or strata one above another they are said to be stratified, and the beds are called strata.

The horizontal strata seen in the walls of the canyon were formed during the Paleozoic era (the era of "old life"); they represent the oldest series of rocks that have yielded clearly identifiable traces of life. Many of the strata contain the remains of marine animals and were therefore evidently laid down on the bottom of the sea, although the region now stands high above the present sea level. Others, notably certain beds of red shale and sandstone in the Supai and Hermit formations (see fig. 1), appear to have been spread out as mud and sand on low-lying land or on delta plains by shifting streams;

and one formation, the Coconino sandstone, is regarded by some geologists as a sand-dune deposit. Nearly all the Paleozoic formations contain some traces of life—in the Kaibab and the Redwall limestones there are corals and many kinds of marine shells; in the formations of the Tonto group, the remains of primitive shellfish, worm trails, and impressions of seaweeds; in the Temple Butte limestone, the remains of an ancient type of fish; and in the Hermit shale, impressions of long-extinct plants. Fossil tracks of small animals, probably older forms of amphibia, occur in the Coconino sandstone along the Hermit Trail. The aggregate thickness of the Paleozoic rocks varies from place to place, but in the part of the Grand Canyon that is included within the national park it averages 4,000 feet.

#### ROCKS OLDER THAN THE PALEOZOIC

Ancient as are the formations of the Paleozoic era, two great systems of rocks—the Algonkian and the Archean—are buried beneath their base and appear only in the depths of the canyon. The rocks of the older system, the Archean, form the walls of the Granite Gorge. They are the foundation rocks of the region, and they are totally unlike the Paleozoic rocks, for they are entirely crystalline, are not stratified, and show a crumpled banding, due to the arrangement of their constituent minerals in parallel layers, an arrangement produced by heat, pressure, and recrystallization. The Archean rocks are mainly of the type known as gneiss and schist, but they include granite in large masses and dikes that have been intruded while molten into the gneiss and schist. The Archean rocks have been named the Vishnu schist. They contain no traces of life.

The rocks of the younger of these two systems, the Algonkian, are intermediate in age between the Archean and the Paleozoic rocks and occur here and there in the depths of the canyon in wedge-shaped masses that lie between the Archean and the Paleozoic. They can be easily distinguished by the casual observer in the region between Grand View and the mouth of the Little Colorado, where at least 12,000 feet of them remain. Small masses are exposed near the mouth of Bright Angel Creek opposite El Tovar, on Crystal Creek, on Shinumo Creek, and along Colorado River west of Powell Plateau. These rocks, like the Paleozoic, are stratified and do not differ greatly in character and appearance from some of the Paleozoic strata, notably the red Supai and Hermit formations, but, unlike the Paleozoic strata, they have been tilted from the horizontal position in which they were originally deposited, so that they are inclined at various angles. These Algonkian rocks have been named the Grand Canyon series. The few obscure fossils found in them are so poorly preserved that they tell very little concerning the primitive life of the period.



## GREAT UNCONFORMITIES

Each of these two great rock systems—the Archean and the Algonkian—is separated from the one that overlies it by a nearly even surface that cuts across or truncates all underlying beds or masses. This truncation marks what is known to geologists as an unconformity. Each unconformity means that the rocks below it were worn down by streams or waves to a nearly level surface before the material that formed the overlying rocks was deposited.

The top of the Paleozoic series is also marked as an unconformity, for although the Paleozoic beds are the highest that appear in the wall of the Grand Canyon they actually once lay beneath a later thick series of horizontal deposits. The traveler who comes to the Grand Canyon from the north descends step by step in southern Utah a great series of cliffs and terraces carved in horizontal beds, much like the Paleozoic. The most noted scenic features of southern Utah—Zion Canyon, Bryce Canyon, and the Vermilion, White, and Pink cliffs—are carved in these beds, which overlie the Paleozoic and represent deposits of later systems, the Triassic, Jurassic, and Cretaceous, which are of Mesozoic age, and part of a still later system, the Tertiary. These later beds once extended across the entire region in which the Grand Canyon lies, covering it to a thickness at least twice as great as the canyon is deep, but nearly all of them have been worn away by erosion. A few small masses of them still remain as buttes on the Coconino Plateau south of the Grand Canyon. One of these, Red Butte, lies 15 miles south of El Tovar. Another, Cedar Mountain, lies 2 miles east of the rim of the Grand Canyon near Desert View. Cedar Mountain is interesting because the formation that caps it, the Shinarump conglomerate, contains logs of petrified wood. The petrified forests of Arizona (Petrified Forest National Monument), which lie southeast of the Grand Canyon region, occur in a formation that immediately overlies the Shinarump conglomerate and that is exposed over wide areas but has been removed from Cedar Mountain and Red Butte by erosion.

The rock record just described is laid bare in the Grand Canyon and in the cliffs of southern Utah with the clearness of a diagram, so that the sequence of geologic events in the region can be read from it with ease and certainty. The unconformity that truncates the Archean rocks means that an enormous thickness of overlying rock had been removed from them before the Algonkian beds that now lie upon them were deposited, and consequently that a vast region, once high and mountainous, was reduced by erosion through long ages to the level plain represented by the unconformity.

When the land had been worn down to a plain it sank and was buried under at least 12,000 feet of mud and sand that now form the Grand Canyon series of Algonkian age. After these beds had thus accumulated they were uplifted, tilted, and broken into huge blocks that must have formed high ranges of mountains. Then followed a long period of erosion, during which the mountains were worn down nearly to a plain. This plain is represented by the unconformity that separates the eroded Archean and Algonkian rocks from the overlying horizontal Paleozoic strata. Exposed as it is for the entire length of the Granite Gorge and for many miles upstream from the Granite Gorge, and visible everywhere from the rim of the canyon, this unconformity is the most spectacular known illustration of such a feature. It was not so even a surface as the older unconformity, for some of the hard sandstones of the tilted Algonkian blocks long resisted erosion and stood as low hills on the plain. A section of one of these hills is visible in the canyon wall from El Tovar. It lies under Cheops Pyramid, just west of the mouth of Bright Angel Creek, and it rises well above the base of the Paleozoic beds, which were deposited around it.

#### SUBMERGENCE, DEPOSITION, UPLIFT, AND EROSION

At the end of Algonkian time the land was again submerged, and the horizontal Paleozoic, Mesozoic, and early Tertiary strata were slowly deposited. The time consumed by the deposition of these strata, whose aggregate thickness exceeds 15,000 feet, was long, even in the geologic sense of the word "long," for it must be estimated in millions rather than in thousands of years, spanning as it does the countless ages during which life was evolved from the primitive marine shellfish to the apelike predecessor of man. Yet it was short in comparison with the time consumed by the succession of events recorded before the Paleozoic strata were laid down, for that earlier period was inconceivably long, certainly far longer than all the time that has elapsed from the beginning of the Paleozoic era to the present day.

In Tertiary time the region was again uplifted and a period of erosion began. Streams cut channels into the surface of the land and in time formed broad valleys, which thus continued to expand until at last most of the land stood but little above the level of the sea. At the end of this period of erosion, which is sometimes called the great denudation, most of the strata above the Paleozoic had been removed from the Grand Canyon region; their edges had been worn back northward 50 miles to the border of Utah, and the surface of the region had been reduced to a nearly even plain. The present course of the Colorado River must have been determined by a topography different from that of to-day, for in most of the region that

lies within the national park, as one may see at El Tovar, the land south of the canyon slopes directly away from its rim, so that the canyon runs across instead of down a slope.

#### FOLDING AND FAULTING

The uplifts of the region that raised the Paleozoic and Mesozoic strata in Tertiary time were very different from those recorded beneath the unconformities in the canyon walls. The rocks were not compressed and folded, like the Archean, nor were they broken into tilted masses, like the Algonkian; instead, the whole region was lifted bodily, the strata still preserving essentially the horizontal attitude in which they were laid down. Yet the uplift was not equal over all parts of the region. If, for example, we should cross the Kaibab Plateau from east to west, say from House Rock Valley to Ryan, we should find the limestone strata at its western margin ending suddenly in a cliff and appearing again 1,500 feet below, on the surface of the plateau on the west—the Kanab Plateau. Such a break, along which the strata on one side have slipped past those on the other, is known as a fault. At the eastern margin of the plateau we should find the strata bending suddenly downward in a great curve returning again as sharply to a horizontal attitude, and continuing eastward as the surface of the Marble Platform. This type of dislocation is known as a flexure, or fold.

The uplifted Grand Canyon region is divided into great horizontal plateau blocks like the Kaibab Plateau by dislocations of the type just described, either folds or faults, that trend north and south; and the Grand Canyon crosses these plateaus from east to west. The name of each plateau has been given to the section of the canyon that crosses it. Thus the section of the canyon that transects the Kaibab Plateau is known as the Kaibab division. The Grand Canyon National Park includes all the Kaibab and part of the next western division—the Kanab.

In addition to the great dislocations that separate the plateaus there are numerous small faults and folds in the region, some of them in the Grand Canyon. Many visitors who have noticed the faults ask whether the canyon does not owe its origin or at least its course to a fault, but although geologists have studied the canyon at many places they have found no evidence of the existence of such a fracture. If it existed it could not have escaped notice, so perfect are the exposures of the beds in the rocky walls along the numerous turns of the river. Nor do any considerable parts of the canyon coincide with faults. On the other hand, it may be said that faults have guided the course of many tributary gorges in the Grand Canyon, and even some parts of the course of the river, though not in the way popularly supposed. Erosion, not dislocation, has been the

chief agent that determined the course of each gorge. Movement along some of the faults, by crushing the adjacent rock, has formed zones of weakness, which, under the searching action of erosion, have become ravines or gorges. An example is the gorge of Garden Creek, which is followed by the Bright Angel Trail in front of El Tovar. The course of this gorge has been determined by a small fault, which has shattered the great cliffs of the Coconino sandstone and Redwall limestone and has made possible the construction of the trail. The strata have been displaced about 100 feet by the faults, those on the west side having been relatively elevated.

#### THE WORK OF MAKING THE CANYON

During the last great uplift of the region, which may still be in progress and which has raised the plateau to its present height, the land rose so gradually that the river remained in its original channel and kept cutting deeper and deeper. The canyon is thus deep because the land is high and because in this arid region the river, fed by the rains and snows of the Rocky Mountains and armed with great quantities of mud and sand and gravel, washed into it by its tributaries, has lowered its bed faster than its tributaries could lower the adjacent plateau. But, although the Colorado River has thus dug the canyon, the various forms of rock sculpture seen in the walls of the canyon have been determined by variations in the behavior of the beds under the attack of the agents of erosion. And this erosion is still going on. The observer of to-day who stands in awe on the brink of the canyon or who finds his way precariously down the trails that lead to its depths should realize that the work of making this mighty chasm is not yet finished. The various agents that have modeled the canyon—the rushing torrent below and the small streams that descend to join it, the intermittent rain and snow and frost, and those subtle yet effective chemical activities that aid in the decay of the rocks, and, above all, the ever dominant pull of gravity on all loose particles—all are still at work on this wonderful piece of earth sculpture. In the Grand Canyon of to-day we see the accumulated results of the action of powers that apparently leave from year to year but slight traces of their action but that, persisting in their work through uncomputed ages, have produced results of marvelous immensity.

#### HISTORY OF THE CANYON\*

Don Lopez de Cardenas, of Coronado's expedition, discovered the Grand Canyon in 1540, as a result of stories told by the Hopi (Moquis) Indians to Don Pedro de Tovar. The old records describe a chasm which seemed to be more than 3 or 4 leagues across in an air line—*"que avia mas de tres o quatro leguas por el ayre."*

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\* Furnished by courtesy of Frederick S. Dellenbaugh.

For a long period thereafter the Grand Canyon region and the Colorado River remained practically unknown. It is next recorded as having been seen by two Spanish priests in 1776; Padre Garces crossing eastward from the lower Colorado to the Hopi towns, who halted, he says, "at the sight of the most profound cañones which ever onward continue, and within these flows the Colorado," and Padre Escalante, who, in searching for a place to cross from the north after his failure to proceed westward from Santa Fe to Monterey, finally found the old Ute ford, used by Indians for centuries, near the foot of Glen Canyon (in latitude 37°), and by means of it was able to reach Zuni. The ford then became known as *El Vado de los Padres*—the Crossing of the Fathers—for long the only known crossing of the Colorado in a distance of several hundred miles.

The first American to visit the region was James O. Pattie, accompanied by his father. They trapped beaver on the lower Colorado in 1825 and 1826. In 1826, returning eastward, they traveled for 13 days, following, apparently, the Grand Canyon as well as they could, but unable to reach the river at any point, till at last they arrived at a place where the river "emerges from these horrid mountains." This was the first extended trip on record of any human being along the brink of the Grand Canyon.

The same year that the Patties went to the lower Colorado, 1825, General Ashley, in pursuit of his fur-trading enterprise, attempted to descend Green River from near the present crossing of the Union Pacific Railway. They were forced after great hardship to give up the effort in the Uinta Valley.

The famous American trapper and pioneer, Jedediah Smith, crossed the river going west in the Mohave country in 1826 and again in 1827. In this latter year the Patties returned to the lower Colorado and trapped down the river from the mouth of the Gila in dugouts, the first navigators of this portion since Alarcon, of the Coronado expedition, came up in 1540. Quite unexpectedly they made the acquaintance of the great bore at the mouth of the river, where they were in waters that Lieutenant Hardy, of the British Navy, had entered the year before.

Other trappers after beaver then followed into the region, and the Government began sending out exploring parties. One of these under Sitgreaves crossed the Colorado in 1851 about 150 miles above Yuma, and three years later another under Whipple, surveying for a railway along the thirty-fifth parallel, crossed a few miles above the mouth of Bill Williams Fork.

When the California gold rush developed one trail of the Forty-niners led down the Gila and across the Colorado at its mouth, and now various activities on the lower river began. The first steamboat was brought to the mouth of the Colorado and up it in 1852. It was named the *Uncle Sam*.

Edward F. Beale, surveying a Government wagon road, crossed and recrossed in 1857 and 1858, near the mouth of Bill Williams Fork, and in 1858, January, the Government exploring expedition under Lieutenant Ives proceeded from the mouth up the river in a small stern-wheel iron steamer, the *Explorer*, as far as the foot of Black Canyon, whence the ascent was continued in a small boat to the mouth of the Vegas Wash. This was not the first steamer up, however, as Captain Johnson, of a commercial navigation company, had steamed up and passed with his steamboat clear through Black Canyon to its head some days before, mainly to "get ahead" of Ives, who had earlier displeased Johnson. Ives then proceeded overland to the mouth of Diamond Creek and to the Hopi towns via Havasu Canyon.

"It seems intended by nature," says Lieutenant Ives, after vainly trying to reach the rim, "that the Colorado River, along the greater part of its lonely and majestic way, shall be forever unvisited and undisturbed."

This same year of 1858 saw the first crossing on record of the Colorado from the north, since Esclante, by white men. This was accomplished by Jacob Hamblin, a well-known Mormon, a missionary and Indian agent, from Utah to the Hopi towns. An Indian guided him to the Ute ford (Crossing of the Fathers) and he used it thereafter almost yearly. These Mormons for long years were the only persons besides Navajos and Utes to cross the river anywhere. The ford, known to few, was difficult and dangerous at all times and impossible except at low water.

In 1862 Hamblin went around the Grand Canyon by the west end to the Hopi towns and returned by the Crossing of the Fathers at the east end, practically, as Marble Canyon begins a few miles below. The next year he went again around by the west end to the Hopis, visiting the "hermit" tribe, the Havasupais, in their deep canyon home, on the way, the first white man on record to do so after Lieutenant Ives. The party returned to St. George around the west end of the Grand Canyon. Nobody, as yet, went to the rim and there was no known crossing of the Grand Canyon itself anywhere by white men.

Another attempt to descend Green River from the California Trail (near the present Union Pacific Railway) was made in 1849, by William Manly and party. They expected to find a shorter and easier road to the California gold fields. After a hard time they emerged into Uinta Valley, where they met the noted Ute chief Wakar ("Walker"), who was good to them and urged them not to try to go farther down the river.

In 1867 a man named James White was picked up from a raft near Callville, below the mouth of the Virgin, in an exhausted condition, and those who aided him immediately but erroneously assumed that

he had come down through the Grand Canyon, the result of an ignorance as great on their part as on that of White. He knew nothing about the interior of the great canyon and mentioned that he had run one big rapid, whereas he should have mentioned big rapids by the dozen.

So nothing became definitely known about the mysterious interior of the Grand Canyon or of the canyons of the Colodaro River above, as far as the Uinta Valley on Green River until Maj. John Wesley Powell, one-armed veteran of the Civil War, made his famous passage of all the canyons. He started with nine men and four boats from Green River City, Wyo. (on the Union Pacific Railway, then the only railway across the continent), on May 24, 1869. One of the men left the party (Goodman), disheartened, in the Uinta Valley.

The terrifying waterfalls and underground passages described by trappers and Indians were not found, but the declivity was often extremely great and continuous (as in Cataract Canyon, where it is continuous for about 20 miles), producing violent cataracts, with huge waves and a water velocity of over 20 miles an hour, frequently studded with giant rocks.

The trip was one of incredible hardship and danger, led by the Major with his one left arm, the other having been lost at the Battle of Shiloh. The plunging rapids in the whole length of the journey numbered several hundred to overcome the 6,000 feet difference in altitude between Green River City and the sea. The boats were often upset and the passage of many of the rapids was perilous to a degree. Frequently the party would be forced to embark on long foaming declivities without being able to discover what other, perhaps greater, falls might lie around the precipitously walled bends in front of them.

One of the boats, some of the scientific instruments, and a considerable amount of the food supply were lost in the Canyon of Lodore; and some that was rescued had to be left, as the remaining boats were overloaded. For weeks the clothing of the adventurers was never dry; and when they finally entered the mighty depths of the Grand Canyon itself, in August, there was little food remaining.

The sharpest rapids occur in the granite, and the first Granite Gorge, running past the Powell Monument, contains the worst portion of the whole river. When, therefore, another "Granite Gorge" developed below Diamond Creek, the men, stalwart and full of nerve though they were, having become somewhat demoralized by lack of food and the tremendous strain, were disheartened. Three of them consequently announced that they would go no farther.

This was desertion, but they preferred it to risking the difficulties they saw ahead. They believed they could climb out and reach the well-known Mormon settlements on the north, and they believed a river party would be lost or starve.

"At one time," says Powell in his report, "I almost concluded to leave the river. But for years I have been contemplating this trip. To leave the exploration unfinished, to say that there is a part of the canyon which I can not explore, having already almost accomplished it, is more than I am willing to acknowledge, and I determine to go on. \* \* \* For the last time they entreat us not to go on, and tell us that it is madness to set out in this place." The same appeal that Dunn made to Hawkins, the cook of the party, as Hawkins himself tells it.

William R. Hawkins, writing of this in after years, says the three men had "made up their minds to go, and Dunn said he hated to leave Hall and myself, as we had been together a long time, and that we would perish in the river. [Note the fear of the river which had developed in the minds of at least three.] While we were talking, the major came up to me and laid his left arm [he had no right] across my neck, tears running down his cheeks. By that time the rest of the boys were present, and the major said to me: 'Bill, do you really mean what you say' [that he would stick to the major on the river]? I told him that I did, and he said that if he had one man that would stay with him that he would not abandon the river. I just simply said that he did not know his party."

He certainly had reason, with three men about to desert, to believe that others might. The other five were true, however, and it is only just to say that one of the deserters would have stood true, also, had it not been for his brother, who was determined to leave. They all then drank coffee together. The boat party went on, the deserters climbed out on the north, each party thinking the other party doomed. The deserters would have fared well enough and would have arrived at the Mormon settlements had it not been that the Shewits Indians on the plateau believed, or said later that they believed, that these were miners who had committed depredations on a tribe to the south. The men were therefore killed not far from Mount Dellenbaugh, and their clothing, rifles, etc., appropriated.

The place on the river where they left the major is now known as Separation Rapid. The day after they departed Powell and "the faithful five" reached the end of the great chasm without serious mishap. The names of the three deserters have justly been omitted from the roll of honor inscribed on the Powell Monument.

Powell's journal of this famous voyage is one of the most fascinating tales of adventure in literature. A large part of his meager notes having been lost, Powell repeated the trip on a more extensive basis in 1871 and 1872, obtaining then the data on which his report was based. There is no account of this second, vital expedition except in *A Canyon Voyage*, by Frederick S. Dellenbaugh, a member of that party. Afterwards Powell became director of the United States Geological Survey and of the Bureau of Ethnology, which he established.



## THE CANYON AS A RESORT

The Grand Canyon is very much more than a wonder place or a scientific museum on a titanic scale. It is a pleasure resort of the first order. It may be visited any day in the year. The railroad to the South Rim is always running and the hotel always open. When most other resorts are closed the Grand Canyon is easily accessible.

During the winter snow falls in the pine forest along the rim; and though the upper portions are snow covered, the trails into the canyon are open and safe; the floor of the canyon is warm and comfortable the year round. When nipping frosts redden cheeks on the rim, the most fragile flowers are blooming in the canyon.

The weather in July and August is warm but not hot on the rim; the altitude takes care of that. There are cool mornings, evenings, and nights no matter how warm it may be at midday.

Arizona is a land of sunshine; the air is dry and the winds are light. While spring and fall are more attractive than midsummer or midwinter, all the seasons have each its special charm. From December to March snow is more or less abundant on the rim and a few hundred feet down the trail. Camping-out parties must then confine themselves to the inner canyon, which is more comfortable than the rim areas.

## THE NORTH RIM OF THE CANYON

There is a remarkable difference between the north and south rims. The north rim, a thousand feet higher, is a colder country clothed with thick, lusty forests of spruce and pine with no suggestions of the desert. Springs are found here and deer are plentiful. It is a region soon to be used by hundreds of campers-out.

The views from the north rim are markedly different. One there sees close at hand the vast temples which form the background of the south rim view. One looks down upon them, and beyond them at the distant canyon floor and its gaping gorge which hides the river; and beyond these the south rim rises like a great streaked flat wall, and beyond that again, miles away, the dim blue San Francisco Peaks. It is certainly a spectacle full of sublimity and charm. There are those who, having seen both, consider it the greater. One of these was Dutton, whose description of the view from Point Sublime has become a classic. But there are many strenuous advocates of the superiority of the south rim view, which displays close at hand the detail of the mighty chasm of the Colorado, and views the monster temples at parade, far enough away to see them in full perspective.

The trail trip to the north rim is now perfectly feasible by the completion of the Kaibab suspension bridge over the Colorado River and the repairs on the Kaibab Trail up Bright Angel Canyon. It is about 32 miles from Grand Canyon to the Wylie Way Camp on Bright Angel Point. About 12 miles are made the first day, stopping overnight at Phantom Ranch; the remaining 20 miles are covered the second day.

Auto transportation and rates for reaching this side of the park from the north are given on page 55.

## TABLES OF DISTANCES AND ALTITUDES

## ROADS

HERMIT RIM ROAD, GRAND CANYON TO HEAD OF HERMIT TRAIL AND HERMIT REST—7.9 MILES

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Hermit Trail		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	7.9	6,875	Administrative headquarters of Grand Canyon National Park.
Road to Havasupai.....	.5	7.4	6,820	To Havasupai Indian Reservation, 47 miles distant.
Trail to Hermit Rest.....	1.4	6.5	6,960	By foot or horseback to Hermit Rest or Hermit Trail, 5 miles.
Powell Memorial.....	2.0	5.9	7,060	Memorial to Maj. John Wesley Powell, Sentinel Point.
Hopi Point.....	2.2	5.7	7,071	Fine view. Sometimes called Sunset Point.
Mohave Point.....	3.0	4.9	7,000	View of canyon and river.
The Abyss.....	4.2	3.7	6,850	Looking down from the Great Mohave Wall.
Cut-off to Hermit Rest.....	5.2	2.7	6,800	Old road to Hermit Rest.
Pifion Cove.....	6.0	1.9	6,750	Grove of pifion pines.
Pima Point.....	6.7	1.2	6,750	Fine view of canyon and river, with Hermit Creek Cabins visible beneath.
Cut-off to Grand Canyon.....	7.4	.5	6,700	Old road to Grand Canyon, 5 ml es.
Hermit Rest.....	7.6	.3	6,690	Interesting Harvey rest house. Light refreshments.
Trail to Natural Bridges.....	7.6	.3	6,680	Natural Bridges in limestone, $\frac{1}{4}$ mile.
Head of Hermit Trail.....	7.9	0	6,665	7.5 miles to Hermit Creek Cabins.

GRAND CANYON, GRAND VIEW, DESERT VIEW ROAD—GRAND CANYON TO DESERT VIEW—30 MILES

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Desert View		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	30.00	6,875	Administrative headquarters of Grand Canyon National Park.
Road to Yavapai Point.....	.60	29.40	6,940	View of canyon and river. Kaibab Suspension Bridge visible beneath.
Motor crossing.....	.90	29.10	6,975	Cattle guard in drift fence that encircles headquarters district.
Trail to Yaki Point.....	1.50	28.50	6,925	Trail through forest. Sometimes called Cremation Point.
Moqui Trail.....	2.50	27.50	6,900	Saddle-horse trail to Grand View.
Rowe Well Road.....	3.50	26.50	6,925	Old road to Rowe Well Ranger Station.
Trail to Shoshone Point.....	4.00	26.00	6,800	Locally called Inspiration Point, 4.5 miles.
Williams Road Junction.....	4.30	25.70	6,850	Checking station. Take right-hand road to Maine, Williams, and Flagstaff.
Long Jim Canyon.....	5.30	24.70	6,811	A typical surface canyon or wash.
Long Jim tool cache.....	6.10	23.90	6,860	A cache for tools used by rangers in fighting fire. Telephone.
Long Jim Canyon, east end.....	8.60	21.40	7,175	
Thor's Hammer.....	10.10	19.90	-----	Notable columns of limestone.
To Grand View Point.....	12.25	17.75	7,406	Magnificent view of canyon, Painted Desert, Navajo Mountain, river, etc.
Grand View Hotel.....	13.10	16.90	7,500	Old stage hotel. Not in operation for many years. Highest point on south rim.
Grand View Camp Grounds.....	13.25	16.75	7,490	Public camp grounds and ranger station, season May to October.
Hance ranch.....	14.20	15.80	-----	Old home of Capt. John Hance, first settler on rim of Grand Canyon.
Park boundary.....	14.80	15.20	-----	Grand View entrance to the park.
Flagstaff road.....	15.70	14.30	-----	Old stage road from Flagstaff. Abandoned.
Park boundary.....	25.75	4.25	7,060	Desert View entrance to the park.
Lipan Point.....	27.90	2.10	7,359	Locally called Lincoln Point.
Desert View.....	30.00	0	7,450	Navajo Point. Fine view of Marble Canyon, Painted Desert, Navajo Mountain, etc.

## ROADS—Continued

## GRAND CANYON, ROWES RANCH, TUBA CITY, MOENKOPI, FLAGSTAFF

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Tuba City		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	77.4	-----	One of the first settlers in Grand Canyon. The first view of the Painted Desert. Steel suspension bridge over Little Colorado. Headquarters, Navajo Indian agent. Hopi Village.
Rowes Ranch.....	27.7	49.7	-----	
Waterloo Hill.....	32.9	44.5	-----	
Cameron Bridge.....	54.6	22.8	-----	
Tuba City.....	77.4	0	-----	
Moenkopi via Tuba City.....	80.9	-----	-----	
Cameron Bridge to Flagstaff.....	88	-----	-----	
Flagstaff to Grand Canyon via Maine.....	83	-----	-----	

## TOPOCOBYA ROAD, GRAND CANYON TO HILL TOP—HEAD OF HAVASU TRAIL VIA ROWE WELL—33.2 MILES

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Hill Top		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	33.20	6,875	Administrative headquarters of Grand Canyon National Park. Road to Hill Top and Topocobya Spring the head of Havasu Trail, 15 miles to Havasupai Indian Reservation.
Topocobya Road.....	.55	32.65	6,820	
Trail to Hermit Rest.....	.70	32.50	6,800	Road to Rowe Well ranger station. Ranger station, National Park Service. Telephone. To Hermit Trail, Hermit Basin, and Hermit Rest. Trail to Dripping Springs. Fine spring and good trail, 3 miles. Fire tools.
Drift fence.....	1.95	31.25	-----	
Railroad crossing.....	2.35	30.85	6,650	United States Geological Survey bench mark. Road to Havasupai Point.
Old road to Grand View.....	2.65	30.55	6,625	
Railroad crossing.....	2.95	30.25	-----	United States Geological Survey bench mark. Indian pasture.
Rowe Well Road.....	3.10	30.10	6,600	
Rowe Well ranger station.....	3.60	29.60	6,681	United States Geological Survey bench mark. Reservation storehouse at head of trail. Water.
Waldron Trail.....	6.25	26.95	6,462	
Dripping Springs tool cache.....	7.00	26.20	6,375	United States Geological Survey bench mark.
Bench mark, United States Geological Survey.....	9.90	23.30	6,340	
Road to Bass Camp.....	12.50	20.70	6,235	United States Geological Survey bench mark.
Ranch.....	14.00	19.20	-----	
Section corner 10 and 11.....	15.80	17.40	-----	United States Geological Survey bench mark.
Road to Bass Camp.....	17.60	15.60	6,154	
Bench mark, United States Geological Survey.....	20.00	13.20	6,074	United States Geological Survey bench mark.
Supai drift fence.....	21.40	11.80	6,061	
Top of mesa.....	27.80	5.40	-----	United States Geological Survey bench mark.
Top of grade.....	28.20	5.00	-----	
Bench mark in Lee's Canyon.....	29.70	3.50	5,771	United States Geological Survey bench mark.
Bench mark.....	31.30	1.90	5,772	
Supai warehouse.....	33.20	0	-----	United States Geological Survey bench mark.
Topocobya Spring.....	33.70	.50	-----	

## ROADS—Continued

## APPROACH ROAD, GRAND CANYON TO NATIONAL OLD TRAILS ROAD AND SANTA FE RAILROAD AT MAINE

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Maine, Ariz.		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	64.00	6,875	Administrative headquarters of Grand Canyon National Park. Hotels, information, etc.
Road to Yavapai Point..	.65	63.35	6,890	Fine view of canyon. Kaibab Suspension Bridge visible beneath.
Motor crossing.....	.90	63.10	-----	Cattle-proof crossing through drift fence.
Williams Road checking station.	4.30	59.70	6,850	Ranger station. All cars stop and register.
Park entrance.....	5.50	58.50	5,718	South entrance to Grand Canyon National Park.
Rain tank.....	9.90	54.10	-----	Earth tank for cattle.
Fork of road.....	10.00	54.00	-----	Left-hand fork to Maine, Ariz.
Red Butte.....	20.00	44.00	-----	
Mortz Lake.....	49.00	15.00	-----	
Maine.....	64.00	0	-----	Junction with Old Trails road.
Williams.....	79.00	15.00	6,762	Nearest shopping point to Grand Canyon.
Flagstaff.....	84.00	20.00	6,896	County seat of Coconino County.

## NORTH RIM GRAND CANYON NATIONAL PARK TO ZION NATIONAL PARK—170.9 MILES

Place	Distance from—		Altitude	Remarks
	North rim	Zion Park		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Wylie Way Camp.....	0	170.90	8,250	Accommodations for travelers on Bright Angel Point, north rim of Grand Canyon.
North rim ranger station.	2.00	168.90	8,100	National Park Service ranger station. Headquarters for north rim.
North entrance Grand Canyon National Park.	4.20	166.70	8,450	North entrance to Grand Canyon National Park.
De Motte Park.....	14.40	156.60	8,900	A typical park or meadow. Range of mule, deer.
Pleasant Valley.....	22.40	148.50	8,500	
Crane Lake.....	24.40	146.50	-----	
East Lake.....	26.90	144.00	-----	
Jacob's Lake lookout station.	29.20	141.70	-----	Range of white-tailed squirrels.
Jacob's Lake ranger station, Forest Service.	42.40	128.50	-----	Forest Service ranger station.
Drift fence.....	45.40	125.50	-----	Boundary line of proposed President's Forest.
Fredonia.....	75.40	95.50	-----	Only post office in Arizona north of the Grand Canyon.
Kanab.....	82.40	102.50	4,920	Most southerly town in Utah. Good hotel.
Pipe Springs.....	89.90	81.00	-----	Old Mormon fort. Spring formerly came out of the solid rock in the stockade.
Cedar Mountain.....	99.90	71.00	-----	
House, Antelope Springs.	121.90	49.00	-----	
Red Creek.....	125.40	45.50	-----	
Short Creek.....	135.90	35.00	-----	Sheep corrals.
Top Hurricane fault.....	141.40	29.50	-----	Great Hurricane fault.
Hurricane.....	142.40	28.50	-----	Utah's Dixie. Population, 1,021.
Zion National Park.....	170.90	0	-----	Yosemite done in oils.

## ROADS—Continued

## APPROACH ROAD, GRAND CANYON TO NATIONAL OLD TRAILS HIGHWAY AND SANTA FE RAILROAD AT WILLIAMS

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Williams		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	64.00	-----	Administrative headquarters of Grand Canyon National Park. Hotels, information, etc.
Road to Yavapai Point..	.65	63.35	-----	Fine view of canyon, Kaibab Suspension Bridge and Phantom Ranch visible beneath.
Motor crossing.....	.90	63.10	-----	Cattle-proof crossing through drift fence.
Williams Road checking station.....	4.30	59.70	-----	Ranger station. All cars stop and register.
Park entrance.....	5.50	58.50	-----	South entrance to Grand Canyon National Park.
Rain tank.....	9.90	54.10	-----	Earth tank for cattle.
Fork of road.....	10.00	54.00	-----	Right-hand fork for Williams.
Anita.....	22.00	42.00	-----	Stock tanks and sheep corral.
Red Lake.....	56.00	8.00	-----	Small lake and junction with Spring Valley road—connection of Maine with Williams road.
Williams.....	64.00	0	-----	Nearest shopping point to Grand Canyon.

## TRAILS

## GRAND CANYON TO NORTH RIM RANGER STATION VIA BRIGHT ANGEL, TONTO AND KAIBAB TRAILS—30 MILES

Place	Distance from—		Altitude	Remarks
	Grand Canyon	North rim		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	30.00	6,875	Administrative headquarters of Grand Canyon National Park. Hotels, etc.
Head of Bright Angel Trail.....	.40	29.60	6,866	Foot trail to ancient Indian pictographs and hole in the wall.
Jacob's Ladder.....	2.50	27.50	4,850	The part of trail built through blue limestone 550 feet thick.
Indian Gardens.....	3.70	26.30	3,876	Grove of cottonwood trees watered by Garden Creek. Former home of Indians.
Tonto Trail.....	4.30	25.70	3,750	Left-hand fork to Plateau Point, 1.5 miles.
Do.....	5.00	25.00	-----	Hermit Creek Cabins, 17 miles.
Pipe Creek.....	7.00	23.00	3,650	Left-hand fork to Colorado River at foot of Bright Angel Trail.
Burro Springs.....	7.30	22.70	-----	Ranger camp. Not always occupied.
Head of Kaibab Trail.....	9.00	21.00	4,000	Good water.
Kaibab Suspension bridge.....	11.00	19.00	2,500	Left-hand fork to Kaibab Suspension Bridge and north rim.
Phantom Ranch.....	11.50	18.50	2,550	Built by National Park Service in 1921. Only bridge across Colorado for several hundred miles.
Phantom Creek.....	13.00	17.00	2,950	Interesting new Harvey Camp, stone cottages. Well located for hiking, climbing, etc.
Head of Box Canyon.....	15.00	15.00	3,350	A deep canyon coming in from the west.
Ribbon Falls.....	17.00	13.00	3,750	Near end of granite in Bright Angel Creek.
Wall Creek.....	17.80	12.20	3,850	Very beautiful falls where creek drops over red wall.
Transept Creek.....	19.00	11.00	4,150	Creek coming from the right. Old name is Beaver Creek.
Roaring Springs.....	21.00	9.00	4,750	The Transept on left.
Last Crossing.....	22.00	8.00	5,050	Large springs gushing out on left.
Troughs Spring.....	24.00	6.00	6,325	Last crossing of Bright Angel Creek. Fill your canteens.
Topping-out point.....	26.00	4.00	8,250	Spring on top of red wall.
DeWolley Cabin.....	29.00	1.00	8,200	End of climb. North rim.
North rim ranger station.....	30.00	0	8,150	Old ranger cabin. Headquarters of saddle-horse concessioners.
Wylie Way Camp.....	32.00	0	8,250	Ranger headquarters on north rim. Register. Information service.
				Accommodations for north rim visitors.

## ROADS—Continued.

## GRAND CANYON TO HERMIT CREEK CABINS VIA BRIGHT ANGEL AND TONTO TRAILS—21 MILES

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Hermit Cabins		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	21.00	6,875	Administrative headquarters of Grand Canyon National Park. Hotels, post office, etc.
Jacob's Ladder.....	2.50	18.50	4,850	Trail through blue limestone, 550 feet.
Indian Gardens.....	3.70	17.30	3,876	Grove of cottonwood trees watered by Garden Creek. Former home of Indians.
Tonto Trail.....	4.30	16.70	3,750	Right-hand fork to Colorado River and Camp Roosevelt.
Plateau Point.....	4.70	16.30	3,750	Plateau Point, 1 mile.
Battleship.....	5.50	15.50	3,700	Battleship on left.
Horn Creek.....	7.20	13.80	3,550	
Dana Butte.....	9.00	12.00	3,650	
The Inferno.....	11.50	9.50	3,400	View of gorge, river, etc.
Salt Creek.....	12.20	8.70	3,440	Locally called Hell's Half Acre.
The Alligator.....	14.00	7.00	3,450	Butte called Alligator on left.
Cedar Spring.....	15.00	6.00	3,400	Good water.
Monument Creek.....	17.50	3.50	3,200	Very scenic.
Hermit Cabins.....	21.00	0	3,050	Fine Fred Harvey camp.
Colorado River, foot Hermit Trail.....	23.00	2.00	2,440	Hermit Rapids.

## GRAND CANYON TO HERMIT CREEK CABINS THROUGH WOODS AND HERMIT TRAIL—12 MILES

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Hermit Cabins		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	12.00	6,875	Administrative headquarters of Grand Canyon National Park.
Hermit Trail.....	5.00	7.00	6,665	Harvey corral.
Marshal Foch Rock.....	5.30	6.70	6,575	Rock where Marshal Foch sat for half hour or more smoking his pipe December, 1921.
Waldron Trail.....	6.00	6.00	5,270	Trail to Rowe Well Road.
Dripping Springs Trail.....	5.50	6.50	5,260	Trail to Dripping Springs and Boucher Trail.
Santa Maria Spring.....	7.00	5.00	5,250	Good water. Rest pavilion.
Four Mile Spring.....	9.00	3.00	4,550	Good water.
Cathedral Stairs.....	10.00	2.00	4,530	
Hermit Cabins.....	12.00	0	3,050	Fine Harvey camp.

## SHORT WALKS NEAR GRAND CANYON

Place	Distance and direction from El Tovar	By—	Altitude	Remarks
	<i>Miles</i>		<i>Feet</i>	
The Lookout Telescope.....	0.3 west.....	Grand Canyon Rim Trail.	6,866	Observatory. Curios on sale. Pictures.
Kolb Bros. Studio.....	0.4 west.....	do.....	6,850	Studio. Grand Canyon moving picture lecture daily of voyage through canyon.
Pictograph Rock, Hole in Wall.....	0.6 west.....	Grand Canyon Rim Trail and foot trail.		Interesting foot trail from Bright Angel Trail. Ancient Indian pictographs.
Picnic Rock.....	0.8 west.....	Rim foot trail.....	6,870	Walk through woods. Fine view of San Francisco peaks.
Maricopa Point.....	1.8 west.....	Grand Canyon Rim foot trail.	7,000	Fine view of canyon.
The Battleship.....	2.5 north.....	Bright Angel Trail.	5,867	Rough foot trail from Bright Angel Trail.
Indian Gardens.....	3.7 north.....	do.....	3,876	Fine creek of good water.
Independent Store.....	0.3 east.....	Grand Canyon Rim foot trail.	6,880	Indian handiwork and curios.
Grandeur Point.....	1.3 east.....	do.....	7,050	Fine view. Kaibab Suspension Bridge visible.
Yavapai Point.....	1.5 east.....	do.....		
Rowe Well.....	3.6 southwest.....	Rowe Well Road..	6,681	Ranger station. Good water. Telephone.

### HOW LONG TO STAY

*Time required.*—While one ought to remain a week or two, a stop-over of three or four days from the transcontinental trip will be quite satisfactory. The Hermit Loop overnight trip, down one trail and up another, requires two days and a night, or more time may be taken and include Phantom Ranch. One day should be devoted to an auto ride along the Hermit Rim Road, and by auto to Grand View and Desert View. Another day go down Bright Angel Trail and back. A fourth day spent in short walks to nearby points or on horseback will enable visitors to get more intimate views.

The several trips mentioned above are all well worth while, and the high plateau above the rim affords many delightful horseback or hiking trips.

The north rim offers the best opportunity for camping out during the summer months. The high altitude makes the weather uniformly cool, while the magnificent forest through which roam thousands of deer creates a delightful setting. There are a number of springs, and the water supply is not a serious problem.

The National Park Service of the Department of the Interior recommends to the traveling public that stopovers of as long duration as practicable be planned at points within the park; that Grand Canyon National Park be regarded not alone as a region which may be glimpsed on a hurried trip, but also as a vacation playground for rest and recreation.

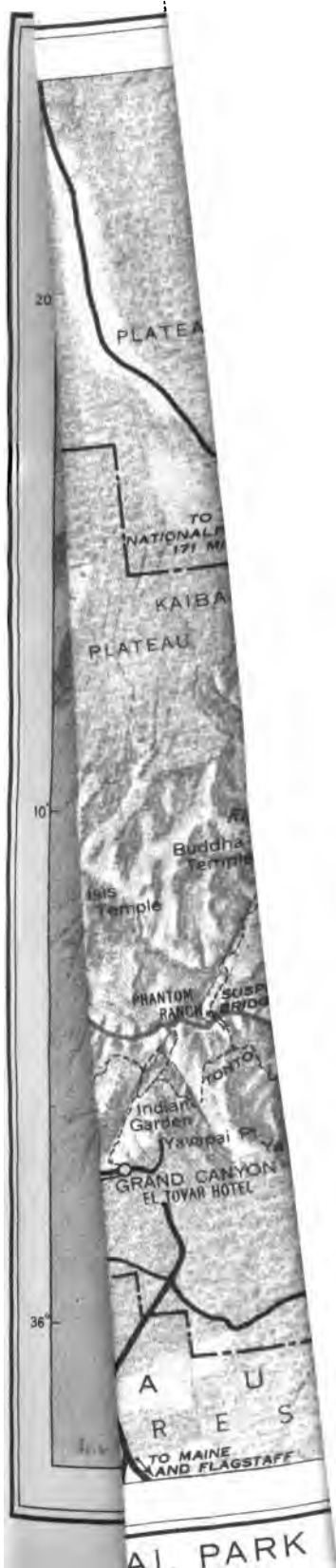
### WHAT TO WEAR

If much tramping is done, stout, thick, hobnailed shoes should be provided. Ladies will find that short walking skirts are a convenience; riding trousers are preferable, but not essential, for the horseback journey down the zigzag trails. Traveling caps and (in summer) broad-brimmed straw hats are useful adjuncts. Otherwise ordinary clothing will suffice. Riding trousers, divided skirts, and straw hats may be rented at El Tovar Hotel.

### ADMINISTRATION

Grand Canyon National Park is under the jurisdiction of the Director, National Park Service, Department of the Interior, Washington, D. C. The park superintendent, Mr. J. R. Eakin is located at Grand Canyon, Ariz., and information, maps, and pamphlets may be obtained at the office, where visitors are cordially welcomed. The office of the superintendent is 100 yards east of the Grand Canyon Railway.

The park, El Tovar Hotel, the Bright Angel cottages, and the cabins at Hermit Creek and Phantom Ranch at the mouth of Bright Angel Creek are always open. Accommodations may be had at Wylie Way Camp on the north rim during the summer months only.

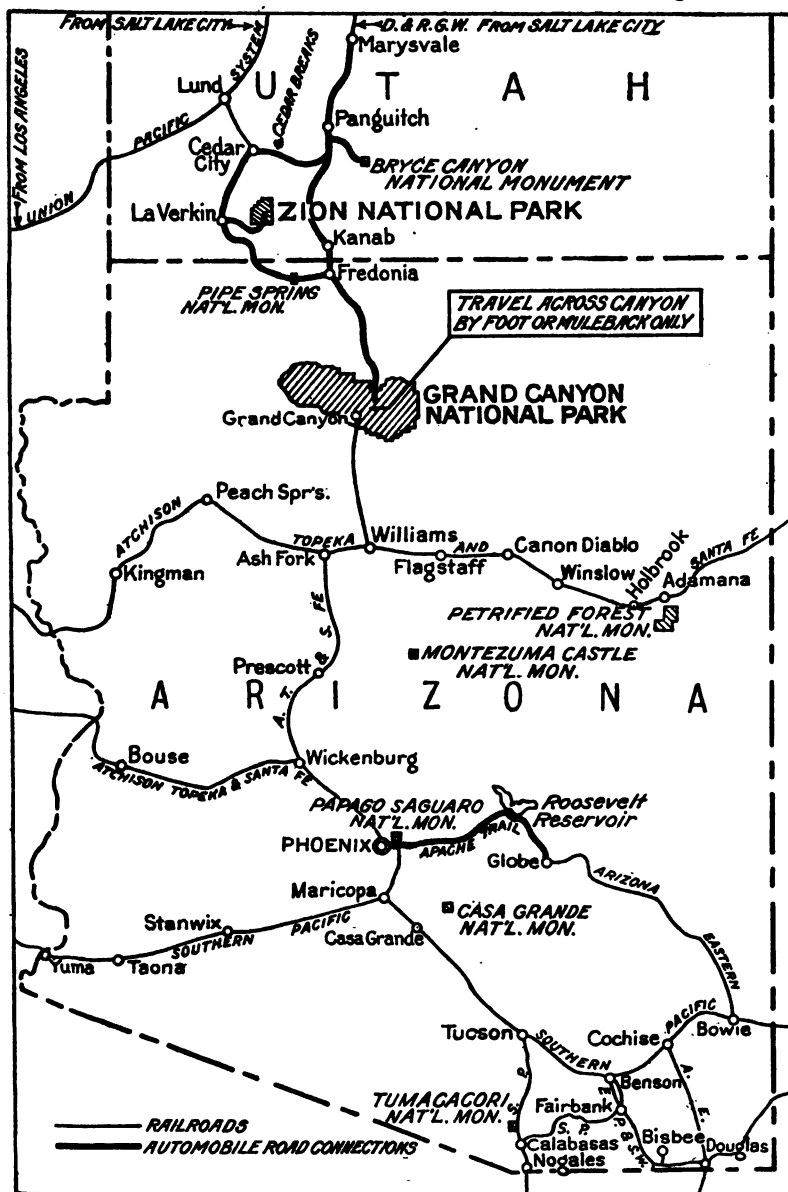






### HOW TO REACH THE PARK BY RAIL

The Grand Canyon National Park is directly reached by a branch line of the Atchison, Topeka & Santa Fe Railway extending 64 miles northward from Williams, Ariz. On certain trains through standard



MAP SHOWING RAILROAD CONNECTIONS TO GRAND CANYON NATIONAL PARK

Pullman cars are operated to and from Grand Canyon station. Passengers using other trains and stopping over at Williams will find excellent accommodations at the Fray Marcos, station hotel.

Stop-overs, not to exceed 10 days, are granted at Williams on all classes of railroad tickets for a visit to the canyon. Limits of through railroad tickets will be extended if necessary by agent at Grand Canyon. Through tickets may include side-trip coupons, Williams to Grand Canyon and return, at an additional charge of \$9.12.

Round-trip excursion tickets at reduced fares are on sale daily at practically all stations in the United States and Canada to Grand Canyon as a destination.

Baggage may be checked through to Grand Canyon station, if required. Passengers making brief side trips to Grand Canyon may check baggage to Williams only or through to destination. Certain regulations for free storage of baggage for Grand Canyon passengers are in effect.

For further information regarding railroad fares, service, etc., apply to railroad ticket agents, or address:

W. J. Black, passenger traffic manager, Atchison, Topeka & Santa Fe Railway system, Chicago, Ill.

J. B. Duffy, general passenger agent, Atchison, Topeka & Santa Fe Railway system, Coast Lines, Los Angeles, Calif.

The Union Pacific delivers tourists for the north rim at Cedar City, Utah, and the Denver, and Rio Grande Western, at Marysville. The former is approximately 175 miles from the Grand Canyon, and the latter approximately 217 miles. Regular stage service is maintained from both these points to the Grand Canyon National Park.

Complete information concerning these trips can be had from W. S. Basinger, passenger traffic manager, Union Pacific Railroad, Omaha, Nebr.

F. A. Wadleigh, passenger traffic manager, Denver & Rio Grande Western, Denver, Colo.

Parties making the trip from either of these places to the Canyon can make an interesting trip covering Bryce Canyon, Cedar Breaks, and Zion National Park.

If parties desire, they can make the trip from the north, taking in all these features, cross the canyon and continue their trip on the Santa Fe Railroad. This can also be reversed, entering the park via the Santa Fe, crossing the canyon to the north rim, thence by motor bus to either of the two railways mentioned above, where the trip may be continued. Arrangements for such a trip should be made at the time tickets are purchased.

#### BY AUTOMOBILE

Automobile tourists may leave the National Old Trails Highway, which is the main east and west highway through Arizona at Maine or Williams. In wet weather, the latter road is better.

*Flagstaff.*—It is 98 miles from Flagstaff to Grand Canyon via Williams and it is 83 miles via Maine. At times in early spring, during summer rains or late fall, it is advisable to inquire at Flagstaff or Williams as to road conditions. The Maine Road traverses more beautiful forests and is more scenic than the Williams Road, but is apt to be in worse condition depending upon the amount of



MAP SHOWING PRINCIPAL AUTOMOBILE ROUTES IN COLORADO, UTAH, ARIZONA, AND NEW MEXICO.

moisture that has fallen. The town of Flagstaff is located in the heart of the San Francisco uplift and has good stores and garage facilities. In this vicinity are prehistoric cliff dwellings, extinct craters, volcanic cones, lava beds, and ice caves. The summit of Humphreys Peak, one of the peaks forming the San Francisco Mountains, is 12,750 feet above sea level.

*Williams.*—Williams, 64 miles from Grand Canyon, is 34 miles west of Flagstaff and 15 miles west of Maine, on the main east and west highway through Arizona. It is the nearest shopping center and its stores and garages carry a good stock of everything necessary to the automobile tourist. Williams is a center for a number of interesting side trips.

The route from Williams passes Bill Williams Mountain, elevation 9,264 feet, which has seven distinct crests, Red Lake, Howard Lake, and Anita, running along the line of the Grand Canyon Railway. No supplies can be purchased between Williams or Maine and Grand Canyon.

#### AUTOMOBILE SUPPLIES

At Grand Canyon village is an excellent garage under the management of Fred Harvey. Storage, or repair service, as well as gasoline and oil, may be procured here.

#### GROCERIES

The Babbitt Bros. Trading Co.'s general store at Grand Canyon carries a full line of groceries and campers' supplies.

#### WATER

A supply of water for drinking purposes and for radiation, sufficient to last to Grand Canyon, should be brought from Williams or Flagstaff. Campers may obtain water from the railroad station agent at Grand Canyon.

#### PUBLIC UTILITIES AND CONVENIENCES

##### POST OFFICE

The post office (third class), which does all kinds of postal business, is situated near the Hermit Rim Road about 400 yards west of the railroad depot. It is open from 8 a. m. to 6 p. m. Mail trains arrive at 8.20 a. m. and 3.55 p. m. and leave at 8.20 a. m. and 7.25 p. m.

##### TELEGRAPH

The Western Union offices at the railroad depot and El Tovar Hotel are open for all business from 7.30 a. m. to 8 p. m.

##### TELEPHONE

There is telephone connection between El Tovar Hotel, National Park Service Office, ranger stations, Hermit Cabins, Phantom Ranch, and the north rim. There is also telephone connection to points outside of the park.

##### LECTURE

Every evening at 8 o'clock a member of the National Park Service force in this park delivers a lecture, illustrated with moving pictures

and slides, on Grand Canyon National Park, the surrounding country, and other of the larger national parks. Admission to this lecture, which is given in the music room at El Tovar Hotel, is free, and all visitors to the park are invited to attend.

#### NATIONAL PARK SERVICE STATIONS

There are ranger stations or camps where assistance and shelter may in emergency be obtained at places here named. These may be unoccupied, and it is well to inquire at the office of the superintendent:

Hermit Basin, Pipe Creek on Tonto Trail 2 miles east of Indian Garden, Grand View Public Camp, Rowe Well ranger station, the ranger station on the north rim and Grand Canyon.

#### MEDICAL SERVICE

There is a doctor of long experience in the park and a trained nurse at El Tovar Hotel. The nearest hospital is at Williams, Ariz. There is a hospital at Flagstaff, Ariz.

#### PETRIFIED FOREST NATIONAL MONUMENT

Tourists visiting Grand Canyon National Park either by rail or by automobile should plan a stop-over at the Petrified Forest National Monument.

There are three groups of petrified trees in this reservation. The first forest lies 6 miles south of Adamana, Ariz., a station on the main line of the Atchison, Topeka & Santa Fe Railway, and the second forest is 2½ miles south of it. The third or Rainbow Forest lies 13 miles south of Adamana and 18 miles southeast of Holbrook, Ariz. It is best to approach the third forest from Holbrook; the other two are best reached from Adamana.

This area is of great interest because of the abundance of petrified coniferous trees which lie scattered about in great profusion. None are standing as in the Yellowstone National Park. These trees probably at one time grew beside an inland sea; after falling they became water-logged and during the decomposition the cell structure was entirely replaced by silica derived from sandstone in the surrounding land. Over a greater part of the entire area trees are scattered in all conceivable positions and in fragments of all sizes.

In the first forest may be seen the well-known natural bridge, consisting of a large petrified tree trunk 60 feet long spanning a canyon 45 feet wide, and forming a foot bridge over which anyone may easily pass. The trunks in the Rainbow Forest are larger than elsewhere, more numerous, and less broken. Several hundred entire trees are found here, some of which are more than 200 feet long. The color of the wood is deeper and more striking than in the other localities.

"There is no other petrified forest," says Prof. Lester F. Ward, "in which the wood assumes so many varied and interesting forms and colors, and it is these that present the chief attraction for the general public. The state of mineralization in which much of this wood exists almost places them among the gems or precious stones. Not only are chalcedony, opals, and agates found among them, but many approach the condition of jasper and onyx. The degree of hardness attained by them is such that they are said to make an excellent quality of emery."

#### ADMINISTRATION

Petrified Forest National Monument is under the jurisdiction of the Director, National Park Service, Department of the Interior, Washington, D. C. The custodian is located in the monument.

#### COSTS OF TRIPS AND HOTEL ACCOMMODATIONS

Adamana is a small place, consisting chiefly of hotel, post office, railway station, and a small store (does not handle films or other camera supplies). The Forest Hotel has electric lights, sanitary plumbing, with hot and cold water: Rates: \$5.50 per day, American plan; meals only \$1 each; 35 guests can be accommodated; in summer, tent houses also are provided for guests.

From Adamana the following auto trips are made: (1) To the first and second forests and the natural bridge; (2) to the third or Rainbow Forest; (3) to the Blue Forest; (4) to the Painted Desert and the North Sigillaria Forest.

#### RATES

The round-trip fare from Adamana for trips 1, 3, and 4 is \$5 for one person, \$3 per capita for two persons, and \$2.50 per capita for three or more; round-trip fare for trip 2 is \$10, \$6, and \$5, respectively. About one-half day is allotted to each trip, although three trips can be made in a day. For a one-day stop-over the trips numbered 1 and 4 are perhaps best suited to give the widest variety in sight-seeing at this place.

Holbrook, the county seat of Navajo County, has satisfactory hotel accommodations, with prices about the same as at Adamana. Round-trip fare from Holbrook to third or Rainbow Forest is \$10 for party of two, three, or four persons occupying one car.

The Petrified Forest may be visited from Adamana any day in the year, except when high waters make the streams temporarily impassable.

#### STOP-OVER ARRANGEMENTS

Stop-overs are allowed at Adamana, not to exceed 10 days, on all one-way railroad tickets, also on round-trip railroad tickets within their limits.

To obtain stop-overs on one-way railroad tickets, notify train conductor and deposit tickets with agent immediately after arrival; on round-trip tickets notify train conductors.

## RULES AND REGULATIONS

(Approved February 20, 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 Grand Canyon National Park are hereby established and made public pursuant to authority conferred by the act of Congress approved August 25, 1916 (39 Stat. 536), as amended June 2, 1920 (41 Stat. 732), and the act of February 26, 1919 (40 Stat. 1175):

1. *Preservation of natural features and curiosities.*—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.*—No camp shall be made along roads except at designated localities. Blankets, clothing, hammocks, or any other article likely to frighten teams shall not be hung near the road.

Many successive parties camp on the same sites during the season; therefore camp grounds shall be thoroughly cleaned before they are abandoned. Tin cans, bottles, cast-off clothing, and all other débris shall be placed in garbage cans or pits provided for the purpose. When camps are made in unfrequented localities where pits or cans may not be provided, all refuse shall be burned or hidden where it will not be offensive to the eye.

Campers may use dead or fallen timber only for fuel.

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 beds smothered with earth or water, so that there remains no possibility of reignition.

Special 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 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, en-



snaring, 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 the responsibility of custody of any property for the convenience of visitors.

5. *Fishing*.—Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line, or for merchandise or profit, is prohibited. Fishing in particular water may be suspended, or the number of fish that may be taken by one person in any one day from the various streams or lakes may be regulated by the superintendent. All fish hooked less than 6 inches long shall be carefully handled with moist hands and returned at once to the water if not seriously injured. Fish retained shall be killed. Twenty fish shall constitute the limit for a day's catch, provided that no more than 20 pounds of trout, bass, crappie, or catfish may be taken in any one day.

6. *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.

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

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

9. *Mining*.—The location of mining claims on Government lands in the park is permitted only with the prior approval of the Secretary of the Interior.

10. *Patented lands*.—Owners of patented lands within the park limits are entitled to the full use and enjoyment thereof; the boundaries of such lands, however, shall be determined and marked and defined so that they may be readily distinguished from the park lands. While no limitations or conditions are imposed upon the use of private lands so long as such use does not interfere with or injure the park, private owners shall provide against trespass by their live stock upon the park lands, and all trespasses committed will be punished to the full extent of the law. Stock may be taken over the park lands to patented private lands with the written permission and under the supervision of the superintendent, but such permission and supervision are not required when access to such private lands is had wholly over roads or lands not owned or controlled by the United States.

11. *Grazing*.—The running at large, herding, or grazing of live stock of any kind on the Government lands 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 and cats*.—Cats are not permitted on the Government lands in the park and dogs only to those persons passing through the park to the territory beyond, in which instances they shall be kept tied while crossing 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 on trails*.—Pedestrians on trails, when saddle or pack animals are passing them, shall remain quiet until the animals have passed.

Persons traveling on the trails of the park either on foot or on saddle animals shall not make short cuts but shall confine themselves to the main trails.

16. *Travel—general.*—(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.

17. *Miscellaneous.*—(a) Campers and others shall not wash clothing or cooking utensils in the waters of the park, or in any way pollute them, or bathe in any of the streams near the regularly traveled thoroughfares in the park without suitable bathing clothes.

(b) 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.

(c) 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.

(d) 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.

18. *Fines and penalties.*—Persons who render themselves obnoxious by disorderly conduct or bad behavior shall be subjected to the punishment hereinafter prescribed for violation of the foregoing regulations and 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 the act of Congress approved August 25, 1916 (39 Stat., 535), as amended June 2, 1920 (41 Stat., 732), and the act of February 26, 1919 (40 Stat., 1175), the following regulations covering the admission of automobiles and motorcycles into the Grand Canyon National Park are hereby established and made public:

1. *Entrances and roads.*—Automobiles and motorcycles may enter and leave the park by, and travel over, any of the roads therein which are open to motor vehicles.

Careful driving is demanded of all persons using the roads. The Government is in no way responsible for any kind of accident.

2. *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. Automobiles and horse-drawn vehicles shall have the right of way over motorcycles.

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

4. *Hours.*—Automobiles shall not enter or leave the park or use the park roads before 5.30 a. m. or after 10.30 p. m. except in case of emergency.

5. *Intoxication.*—No person who is under the influence of intoxicating liquor, and no person who is addicted to the use of narcotic drugs, shall operate or drive a motor vehicle of any kind on the park roads.

6. *Distance apart; gears and brakes.*—Automobiles while in motion shall be not less than 50 yards apart, except for purpose of passing, which is permissible only on comparatively level stretches of roads or on slight grades. All automobiles, except while shifting gears, shall retain their gears constantly enmeshed. The driver of each automobile may be required to satisfy park officers 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. Motorcycles not equipped with brakes in good working order are not permitted to enter the park.

7. *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 20 miles per hour.

8. *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 automobiles, motorcycles, riding or driving animals, or pedestrians.

9. *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 road. Headlights shall be dimmed when meeting other automobiles, motorcycles, riding or driving animals, or pedestrians.

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

11. *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 an hour.

12. *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 road in question.

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.

13. *Accidents, stop-overs*.—If, because of accident or stop for any reason, automobiles are unable to keep going, they shall be immediately parked off the road or, where this is impossible, on the outer edge of the road.

14. *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, and such violation shall subject the offender to immediate ejection from the park. Persons ejected from the park will not be permitted to return without prior sanction in writing from the Director of the National Park Service or the superintendent of the park.

## MAPS

The following maps <sup>4</sup> may be obtained from the Director of the United States Geological Survey, Washington, D. C. Remittances should be made by money order or in cash.

**SHINUMO**, 28½ by 25 inches, scale about 1 mile to 1½ inches, contour interval 50 feet.  
**BRIGHT ANGEL**, 26 by 20½ inches, scale about 1 mile to 1½ inches, contour interval 50 feet. An account of the geologic history of the Grand Canyon and a description of the rocks, by L. F. Noble, is printed on the reverse side of the map.  
**VISHNU**, 28 by 21 inches, scale about 1 mile to 1½ inches, contour interval 50 feet.

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

## LITERATURE

## GOVERNMENT PUBLICATIONS

Government publications on Grand Canyon 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.

**Map of National Parks and National Monuments.**

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

**Map of the western United States.**

Shows the National Park-to-Park Highway and other roads.

## 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 indicated. Postage prepaid. Remittances should be made by money order or in cash.

**Glimpses of our National Parks.** 72 pages, including 31 illustrations, 10 cents.<sup>4</sup>

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

**The National Parks Portfolio.** By Robert Sterling Yard. Third Edition. 248 pages, including 306 illustrations. Bound securely in cloth. \$1.<sup>4</sup>

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

**Guidebook of the Western United States, Part C, the Santa Fe Route, with a side trip to the Grand Canyon of the Colorado,** by N. H. Darton and others. (Bulletin 613, U. S. Geological Survey.) 1915. 194 pages, 25 route maps, 42 plates, 40 text figures. 50 cents.<sup>4</sup>

This guide describes the country along the Atchison, Topeka & Santa Fe Railway from Kansas City to Los Angeles. Although the description of the rocks and their relations and the scenic features form a large proportion of the matter, nearly every page gives information as to notable historic events, industrial resources, plants, and animals. The story of the Indians, past and present, especially the charac-

<sup>4</sup> May be purchased also by personal application at the office of the superintendent of the park, but that office can not fill mail orders.

teristic Pueblo tribes, is told in some detail. Many of the facts regarding the rocks are here presented for the first time. The book contains numerous views of prominent scenic features and pictures of restoration of some of the very remarkable animals whose bones are found in the clays.

Exploration of the Colorado River of the West and its Tributaries, by John Wesley Powell. Explored in 1869, 1870, 1871, and 1872. Pp. 291. Under the direction of the Secretary of the Smithsonian Institution. Illustrated. Government Printing Office, Washington, 1875. (Out of print.)

Pre-Cambrian Igneous Rocks of the Unkar Terrane, Grand Canyon of the Colorado, Ariz., by C. D. Walcott. U. S. Geol. Surv. 14th Ann. Rept., pt. 2, pp. 497-524, pls. 60-65. 1894. \$2.10.

The Grand Canyon. Senate Doc. No. 42, 65th Congress, 1st session, by Thomas Fulton Dawson, Government Printing Office, Washington, D. C., 1917. 67 pp. Price 10 cents.

An article giving credit of first traversing the Grand Canyon to James White, a Colorado gold prospector.

Tertiary History of the Grand Canyon District, by Clarence E. Dutton. U. S. Geol. Surv. Mon., 2, 264 pp. ill. and atlas, 1882. \$10.

The Shinumo quadrangle, Grand Canyon district, Ariz., by L. F. Noble. U. S. Geol. Surv. Bull. 549, 1914. 100 pages including 30 illustrations and a colored geologic map. Price 20 cents.

Describes the geology and scenic features of the Grand Canyon in the western part of the National Park. Contains a detailed account of the Algonkian strata exposed on Shinumo Creek.

A reconnaissance of the Archean complex of the Granite Gorge, Grand Canyon, Ariz., by L. F. Noble and J. Fred Hunter. U. S. Geol. Surv. Prof. Paper 98-I, 1916. 20 pages, 3 illustrations.

Describes the rocks that form the walls of the Granite Gorge in the bottom of the Canyon.

A section of the Paleozoic formations of the Grand Canyon at the Bass trail, by L. F. Noble. U. S. Geol. Surv. Prof. Paper 131-B, 1922. 50 pages, 15 illustrations.

Describes the Paleozoic strata of the Grand Canyon in detail and contains diagrams showing the strata in profile as they appear in the walls.

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- Davis, W. M. "An Excursion to the Grand Canyon of the Colorado." Pp. 107-196. Harvard Univ. Mus. Comp. Zool. Bull. 38, geol. ser., vol. 5, No. 4, 1901.
- "The Lessons of the Colorado Canyon." Pp. 345-354. American Geographical Soc. Bull. 6, vol. 41, 1909.

The first paper is a technical, the second a popular account of the erosional history of the Grand Canyon region.

- Dellenbaugh, Frederick S. "A Canyon Voyage." Pp. 277. G. P. Putnam's Sons, New York. Fully illustrated. (The narrative of the second Powell expedition down the Green-Colorado River from Wyoming and the explorations on land in the years 1871 and 1872.) Price, \$3.50.
- "Breaking the Wilderness." Pp. 360. G. P. Putnam's Sons, New York, 1905. Fully illustrated. Grand Canyon chapter, pp. 318-327. Price, \$3.50.
- "The Romance of the Colorado River." Pp. 401. G. P. Putnam's Sons, New York. Fully illustrated. (A complete account of the discovery and of the explorations from 1540 to the present time, with particular reference to the two voyages of Powell through the line of the great canyons.) Price, \$3.50.
- Holmes, Burton. Travelogues. Vol. 6, The Yellowstone National Park, The Grand Canyon of the Arizona, Moki Land. 336 pages, ill., 1908.
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### OTHER NATIONAL PARKS

Rules and Regulations similar to this for 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.  
 Hawaii 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.  
 Yellowstone National Park.  
 Yosemite National Park.

## AUTHORIZED RATES FOR PUBLIC UTILITIES

### HOTELS AND PUBLIC CAMPS

The following hotels, etc., are operated by Fred Harvey:

#### El Tovar

El Tovar Hotel is located at the railroad terminus, near the head of Bright Angel Trail, at an elevation of 6,866 feet above sea level, and open all the year. It is a long, low structure, built of native bowlders and pine logs. There are 93 sleeping rooms, accommodating 175 guests. Forty-six of these rooms are connected with private bath.

There is a music room and rendezvous. In the main dining room 165 persons can be seated at one time.

Hot and cold water, steam heat, and electric light are supplied. El Tovar also has a steam laundry.

#### *Authorized rates at El Tovar Hotel*

##### American plan:

One person in room without bath, per day.....	\$6. 00-\$7. 00
One person in room with bath, per day.....	8. 00- 9. 00

There are few exceptional rooms with bath carrying an additional charge.

##### Meals only:

Breakfast.....	1. 25
Luncheon.....	1. 25
Dinner.....	1. 50

#### Bright Angel Cottages

Cozy lodgings in cottages or tents are available at Bright Angel Cottages, adjacent to El Tovar. The accommodations are clean and comfortable. There are four cottages, open the year round, and many large tents for summer only. All of the cottages have steam heat and electric light; one cottage also has baths. All tents have electric light, but no heat or baths. About 260 people can be accommodated here. Meals are furnished a la carte at the café. Kitchen facilities are ample for quick a la carte service.

#### *Authorized rates at Bright Angel Cottages*

Lodging only, per day, per person.....	\$1. 50-\$2. 00
" " " " 2 persons.....	2. 50- 3. 50

#### Hermit Cabins

On Tonto Plateau at the foot of Hermit Trail; consists of a central dining room, lounge cottage, and 11 sleeping cottages; accommodations for 30 persons.

*Authorized rates at Hermit Cabins*

American plan, per day, per person..... \$5

**Phantom Ranch**

On the north side of the Colorado River near the mouth of Bright Angel Creek; consists of well-built stone cottages with mess hall and rendezvous with excellent accommodations.

*Authorized rates at Phantom Ranch*

American plan, per day, per person..... \$6

**REST HOUSES****The Lookout**

The Lookout is a quaint observatory and rest house, built on the edge of the rim near the head of Bright Angel Trail. It is equipped with a large binocular telescope in the tower, for observing the most distant reaches of the canyon by day. Canyon photos are for sale. The reception room has spacious windows, a fireplace, Navajo rugs, and easy chairs; it is electric lighted and steam heated.

**Hermit's Rest**

Where Hermit Rim Road ends and Hermit Trail begins is a unique rest house, built into the hill, with a roofed-in porch and a parapet wall. As the name implies, it is intended to provide rest and shelter for parties who take the Rim Road drive, or the Hermit Trail trip. Guests may sit at the tables outside or sheltered by the glass front inside according to weather, and enjoy refreshments in unusual surroundings. Admission is free to those who arrive in Harvey transportation busses. The charge to others is 25 cents each. Open 9 a. m. to 12 noon; 1 p. m. to 6 p. m.

**Hopi House**

Opposite El Tovar is a reproduction of the dwellings of the Hopi Indians and several Navajo hogans.

In Hopi House are installed collections of Indian handiwork. Here also live a small band of Hopis, who are among the more primitive of our Indians.

The homes of the Hopis are on the edge of the Painted Desert, perched on the crests of lofty mesas where they live as did their forbears and cling to their high dwelling place. They are industrious, thrifty, orderly, and mirthful. A round of ceremonies, each terminating in the pageants called "dances," marks the different seasons of the year. Subsisting almost wholly by agriculture in an arid region of uncertain crops, they find time between their labors for light-hearted dance and song, and for elaborate ceremonials, which are grotesque in the Katchina or masked dances, ideally poetic

in the flute dance, and intensely dramatic in the snake dance. In the three and a half centuries of contact with the white race their manner of life has not materially changed. The Indian tribes that roamed over mountain and plain have become wards of the Government, but the Pueblo Indian has absolutely maintained his individuality.

The Navajo women weave fine blankets and many of the men are expert silversmiths, who fashion bracelets, rings, and other articles from Mexican coin silver. The Navajo Indian Reservation—one of the largest in the United States—borders Marble Canyon on the east. They are a pastoral people, intelligent, and, like the Hopis, self-supporting. They own large numbers of sheep, cattle, and horses. The Navajos are tall, rather slender, and agile. They have been rightly called the Bedouins of the Desert. Nowhere are they gathered into permanent villages. Although "civilized," they still cling to old customs and old religious forms. The medicine man, or Shaman, has a large following, if not a large per cent of cures. Their dance ceremonies are weird in the extreme. The fire dance is a spectacular 10-day ceremony, seldom witnessed by white men, and occurring only once in seven years.

Supai Indians from Havasu Canyon frequently visit Grand Canyon village.

#### PUBLIC CAMP GROUNDS

No charge is made for use of camp grounds, firewood, etc. A charge of 25 cents per day is made for water, as it must be hauled to the canyon by rail. Water permits may be purchased at Santa Fe Station. Fires may be built in fireplaces only.

#### VERKAMP'S

Verkamp's, on the rim, just east of the Hopi House, carries a complete line of canyon souvenirs and Indian handicraft. It makes a specialty of Navajo rugs and silverware, Chimayo blankets, and Indian baskets, and carries post cards, folders, and photographs of the canyon.

In this shop may also be seen one of the largest and best paintings of Grand Canyon as well as other work of the late Louis Aikin.

#### KOLB BROS.' STUDIO

Kolb Bros.' studio is at the head of Bright Angel Trail. The Kolb Bros. give, each day, an interesting lecture, illustrated with motion pictures and slides, describing their boat trip through the canyons, of the Green and Colorado Rivers. Admission, 50 cents.

The exhibition above referred to illustrates Major Powell's original exploration of the entire series of canyons on these rivers and should not be confused with other excellent travel talks on the Grand Canyon, which latter describe and illustrate what can be seen by the visitor in a stay of a week or so at the canyon.

Here, too, visitors may view the canyon through a telescope and obtain reliable information. Photographic views and other pictures representing their many years' exploration of the Grand Canyon are for sale.

### SIGHT-SEEING TRIPS BY ROAD

#### Regular Trips by Automobile

The following trips are available every day in the year by automobile:

*Hermit's Rest.*—Stopping en route at Maricopa, Hopi, Mohave, and Pima Points. First trip starts at 9.30 a. m., returning to El Tovar and Bright Angel about 12 noon. Second trip starts at 1.30 p. m., returning to El Tovar and Bright Angel about 4 p. m. Rate, \$3; children, 6 to 11, half rate; children under 6, no charge. This rate includes use of facilities and light refreshments at Hermit's Rest. This drive is 16 miles round trip along the rim road. There is also a sunset trip to Hopi or Mohave Points, leaving El Tovar and Bright Angel Cottages at 6.30 and returning about 7.45.

Hopi Point: El Tovar to Hopi Point, 2 miles west; rate, \$1.50.

Mohave Point: 3 miles west; rate, \$2.

#### Regular Summer Trips by Automobile

The following trips are available through the summer season (approximately from April 15 to November 15):

*Grand View.*—Through forest of tall pines via Long Jim Canyon and Thor's Hammer, 13 miles each way; time, about 3½ hours. Leave El Tovar and Bright Angel Cottages 1.30 p. m. daily. Rates, \$4. From Grand View may be seen that section of the canyon from Bright Angel Creek to Marble Canyon, including the great bend of the Colorado. On the east wall are Moran, Zuni, Papago, Pinal, Lipan, Navajo (Desert View), and Comanche Points; and the mouth of the Little Colorado River. Still farther beyond is the Painted Desert and Navajo Mountain—the latter plainly seen, though 120 miles away. The rim trail to Moran Point is interesting. Grand View Trail enters the canyon near Grand View Point.

*Desert View.*—Thirty miles each way via Long Jim Canyon, Thor's Hammer, Grand View, Hull Tank, Trash Dam, Tanner Tank, Old Aztec Ruin, Lipan Point, and head of Tanner Trail. One round trip a day leaving El Tovar and Bright Angel Cottages at 1.30 p. m., returning about 6 p. m. Rate, \$8. Special auto for parties of six persons or less, \$48; lunch extra, except for El Tovar guests.

At this point there is a far outlook not only into the canyon above the Granite Gorge, where the river valley widens, but also across the Painted Desert, toward Hopi Land, and along the Desert Palisades to the mouth of the Little Colorado. At sunset and sunrise it is a

glorious sight. For that reason one preferably should arrange to stay overnight—a camping trip elsewhere referred to. One and one-half miles west of Desert View is Lipan Point, affording an excellent view of this whole region. .

**New Summer Trips by Automobile to the Navajo and Hopi Indian Reservations via the Navahopi Road**

*May 1 to October 31*

**TRIP No. 1—One day.**

Automobiles leave El Tovar and Bright Angel Cottages at 7.30 a. m. daily. Route is via Desert View Road to Trash Dam, thence through the Coconino Basin to a point overlooking the canyon of the Little Colorado. The road then follows the Little Colorado due east and the first stop is made at a newly discovered petrified forest, where some 30 or 40 trees, some larger than any living tree in Arizona, may be seen. Next stop is at the Navajo Indian trading post at Cameron. This is the western outpost of the Navajo Reservation and is 75 miles from the nearest railroad. The Little Colorado River is crossed at this point by way of the steel suspension bridge 660 feet long, and the route follows the main road across the Painted Desert to Tuba City, where the headquarters of the Navajo Indian agent are located. Some 400 Indian children are seen at well-equipped Government schools here. The Hopi village of Moenkopi is next visited, where the visitor has a glimpse of Indian life almost untouched by white civilization. Return to Grand Canyon is over same route, arriving at hotels between 7 and 8 p. m. same day. This trip provides a unique opportunity to visit the well-known, but little seen Navajo and Hopi Indian Reservations at a minimum of expense. Round trip, 159 miles. Rates, \$15 per passenger; lunch, \$1.25 extra, except for hotel guests. Minimum of four passengers required.

**TRIP No. 2—Two days.**

First day to Tuba City and Moenkopi as for trip No. 1, but return to Flagstaff, Ariz., via San Francisco Peaks and Sunset Mountain. Overnight at Flagstaff, visiting cliff dwellings in Walnut Canyon next morning, thereafter returning to Grand Canyon via National Old Trails Highway and Maine Road through Tusayan National Forest. Round trip, 250 miles, gives comprehensive idea of northern Arizona mountain scenery. Rates \$25 per passenger; meals and overnight accommodations at Flagstaff extra. Minimum of four passengers required.

**Special Summer Trips by Automobile**

These trips depend upon condition of roads and may be at times discontinued.

*Bass's Camp*, 24 miles, and *Havasupai Point*, 1 mile beyond. Rate same as *Desert View* trip.

*Yavapai and Grandeur Points*.—This drive extends 2 miles east of *El Tovar*. Rate, \$1.

*Authorized rates for special car service*

	1, 2, or 3 persons	4 persons	5 persons
<i>Hermit Rim drive</i> .....	\$12	\$15	\$18
Regular rate, \$3.			
<i>Grand View drive</i> .....	16	20	24
Regular rate, \$4.			
<i>Desert View drive</i> .....	32	40	48
Regular rate, \$8.			

*Tuba City and Moenkopi*—1 day..... Special car requires purchase of a minimum of 5 seats, irrespective of number of passengers.  
Regular rate, \$15.

*Tuba City, Moenkopi, and Flagstaff*—  
2 days..... Do.  
Regular rate, \$25.

Regular car service on *Tuba City*, one day, and the *Flagstaff*, two-day trips, requires the purchase of four seats. A minimum of four people is required in order to make the trip; in other words, less than four passengers will have to pay for four seats.

Six passengers will be handled in special cars for any of the above trips at the same rate for five passengers.

Should the demand for regular-trip drives be so heavy as to require use of all autos available, special autos may be discontinued.

#### Chartered Automobile Service

Six-passenger touring cars may be chartered for service within the park or elsewhere on routes not covered by scheduled transportation service at \$75 per day of 200 miles or \$40 per half-day of 100 miles, irrespective of number of passengers. Additional mileage will be charged for at the rate of 50 cents per mile.

#### Rates for Children

On all motor trips there is no charge for children under 6 years of age.

From the ages of 6 to 11 the charge is one-half fare.

All children over 11 years of age are charged full fare.

#### GARAGE SERVICE

There is at Grand Canyon a large stone garage with ample facilities for repairing and supplying automobiles. The rate for storage of automobiles is \$1 per day.



*Charges*

Garage storage.....	\$1. 00
Washing car.....	5. 00
Regular mechanical labor, per hour.....	1. 50
Welding, mechanic's time (material extra), per hour.....	2. 00
Electrical labor, per hour.....	2. 00
Lathe work, mechanic's time, per hour.....	2. 00
Charging battery.....	1. 50
Charging battery over night.....	1. 00
Filling and testing battery.....	. 25

## ROADSIDE WORK

Truck and driving mechanic going to car on road when no towing is done, per mile.....	. 40
Round trip plus mechanical labor for time worked on car, per hour....	1. 50

## TOWING CARS

For truck and driver, per mile towed, going included, per mile.....	1. 00
When extra mechanic is required, his time starts from the time he leaves the garage until his return.....	1. 50
A tow-car order stands until canceled by party ordering same.	

## OVERTIME

Time and a half to be charged for mechanical labor after 5 p. m. Rate, per hour.....	\$2. 25
Overtime for driver of truck on tow job after 5 p. m., per hour.....	. 75

## SUNDAY WORK

Time and a half will be charged for mechanical labor on Sundays. Rate, per hour.....	2. 25
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## GAS AND OIL

Current prices.

## TRAIL TRIPS

*Hermit Trail, stopping at Hermit Cabins overnight.*—Time, two days and one night. Hermit Road by auto. Down Hermit Trail, stay overnight at Hermit Cabins; go to river at mouth of Hermit Creek; return up Hermit Trail to rim; thence to El Tovar over Hermit Rim Road. Trips leave El Tovar and Bright Angel Cottages at 9.30 a. m. and return next afternoon. Rates, \$18.25 each person, including guide, overnight accommodations, and meals en route and at Hermit Cabins. Private guide, \$5 per day extra.

*Bright Angel Trail.*—The trail here is generally open the year round. In midwinter it is liable to be closed for a day or two at the top by snow, but such blockade is not frequent. The trail reaches from the hotel 7 miles to the Colorado River, with a branch terminating at the top of the granite wall immediately overlooking the river. At this latter point the stream is 1,272 feet below, while El Tovar Hotel on the rim is 3,158 feet above. The trip is made on muleback, accompanied by a guide.

Those wishing to reach the river leave the main trail at Indian Garden and follow the downward course of Indian Garden and Pipe Creeks.

Leave at 8.30 a. m. for the river trip, 7 miles; return to rim 5 p. m. Rate, \$6 each person. Leave 10.30 a. m. for trip to plateau, 5 miles; rate, \$5 each. For special trips with less than three persons there is a party charge of \$5 extra for guide. Lunch extra, except for El Tovar room guests.

It is necessary that visitors who walk down Bright Angel Trail and desire that guide and mules be sent to meet them, be charged full price and special guide fee of \$5. This is unavoidable, as the mules and guides are not available for any other trip.

*Hermit-Tonto-Bright Angel Loop.*—This trip takes two days and one night. Hermit Rim Road to head Hermit Trail; down Hermit Trail; stay overnight at Hermit Cabins; go to river foot of Hermit Creek; return along Tonto Trail to Indian Garden; thence up Bright Angel Trail.

Start from El Tovar or Bright Angel Cottages at 9.30 a. m. and return next afternoon. Round trip charge is \$23.25 for each person; private guide is \$5 a day extra; rate quoted includes regular guide, overnight accommodations, and meals en route.

*Three-Day Ribbon Falls trip.*—Leave about 9 a. m. Down Bright Angel Trail, crossing the Colorado River by new steel suspension bridge and reaching Phantom Ranch early afternoon. Overnight at Phantom Ranch, following morning by way of Kaibab Trail in Bright Angel Canyon, 5 miles to Ribbon Falls, beautiful clear waterfall in the form of a crystal ribbon shedding its waters on a natural rock altar in the midst of a verdant amphitheater. Box lunch at falls, and return to Phantom Ranch for overnight. On third day the return to El Tovar completes a never-to-be-forgotten experience. The all-expense rate for this trip is \$30 per person.

*Across Grand Canyon to Kaibab National Forest on North Rim.*—This combines an instructive and interesting excursion across the whole width of the Grand Canyon, from rim to rim, with a visit to the Kaibab National Forest. This beautiful virgin forest is the home of thousands of deer and the haunt of the mountain lion and the bobcat. Starting from the South Rim, the round trip is made in five days, including one day spent in the forested section. The route is by the Bright Angel and Tonto Trails across the Kaibab Suspension Bridge to Phantom Ranch; thence along Kaibab Trail and up Bright Angel Canyon to Wylie Way Camp at Bright Angel Point on the North Rim. On the return Ribbon Falls visited en route. For those who may visit to spend some time in the Kaibab National Forest, saddle stock and camping outfits are available at Wylie Way Camp. Approximate expense, except personal accom-

modation in Wylie Way Camp, \$70 per person for the five-day trip. Wylie Way Camp, \$6 per day extra. For full particulars and advance reservations address Manager, Transportation Department, The Fred Harvey Co., Grand Canyon, Ariz.

*Dripping Spring.*—This trip is made on horseback all the way, via Hermit Rim Road to the head of Hermit Trail, down Hermit Trail to Dripping Springs, returning to El Tovar and Bright Angel through the forest; starts at 8.30 a. m. Rate, \$5 each for three or more persons; for less than three persons, \$5 extra for guide. Private parties of one or more persons, \$5 extra for guide.

#### Saddle Horses

Recently many new bridle paths along the rim and through the pines of Tusayan have been opened up, so that horseback riding now is possible for all. The animals are well trained and dependable. Saddle horses cost \$5 a day, or \$3 a half day. English, McClellan, Whitman, or western stock saddles furnished as requested. Side-saddles not provided. Rates quoted include, for parties of three or more, the services of a guide. For a guide for parties of less than three or for a private guide the rate is \$5 a day, or \$3 a half day. Horseback trips over any of the trails into the canyon are only permitted when accompanied by guide. This is necessary to avoid risk in meeting trail parties and pack trains.

There are several interesting foot trails near Grand Canyon village. Information as to these may be obtained at the superintendent's office.

#### CAMPING TRIPS

Camping trips with pack and saddle animals are organized, completely equipped, and placed in charge of experienced guides.

For climatic reasons it is well to arrange so that camping trips during the season from October to April are mainly confined to the inner canyon. For the remainder of the year, i. e., April to October, they may be planned to include both the canyon itself and the rim country.

The rates vary from \$10 to \$15 a day for one person; \$6 to \$8 a day each additional person. Such rates specially include services of guide and camp equipment; provisions extra; figures quoted are approximate only, varying with different outings.

*Havasü Canyon and Havasupai village.*—The best time to visit this place is from May to October. A journey of about 50 miles; first by auto, 35 miles across a timbered plateau, then on horseback down Topocobya Trail along Topocobya and Havasü Canyons, to the home of the Havasupai Indians.

The home of this little band of 200 Indians is in Havasü Canyon, a tributary of the Grand Canyon, deep down in the earth two-fifths of a

mile. The situation is romantic and the surroundings are beautified by falls of water over precipices several hundred feet high, backed by grottos of stalactites and stalagmites. This water all comes from springs that gush forth in surprising volume near the Havasupai village.

The baskets made by the Havasupai women consist of the burden basket, a shallow tray, and a water bottle of willow. Those made by the older weavers are of fine mesh, with attractive designs, and bring good prices. Havasupai means people of the blue water. Padre Garces was the first white man to visit their canyon home. In early days the Havasupais undoubtedly were cliff dwellers. They built nearly all the Grand Canyon trails, or rather their rude pathways were the advance guard of the present trails. Their summer homes resemble those of the Apaches. The winter homes afford more protection against the weather.

The round trip from El Tovar is made in five days, at an expense of \$15 a day for one person, \$20 a day for two persons, and \$25 a day for three persons. Each additional member after party of three, \$5 a day; provisions extra. These rates include service for party of one or two persons, also cost of horse feed.

For parties of three to six persons an extra guide is required, whose services are charged for at \$5 a day.

### THE NORTH RIM

#### Auto Stage Transportation from Utah Points

The north rim of the Grand Canyon National Park is reached from Cedar City, Utah, on the Union Pacific system, and from Marysvale, Utah, on the Denver & Rio Grande Western Railroad by automobiles operated by the Utah-Arizona Parks Transportation Co., Cedar City, Utah.

Special all-expense tours are offered combining visits to Zion National Park, Pipe Spring National Monument, Cedar Breaks, and Bryce Canyon National Monument. These tours leave Cedar City daily from June 10 to October 10 and from Marysvale daily from June 10 to October 10. Operated for minimum of three full fares.

#### Authorized rates

##### From Cedar City, Utah: <sup>5</sup>

Seven-day tour of Zion National Park, Pipe Spring National Monument, Grand Canyon National Park (north rim), Kaibab Forest, Bryce Canyon National Monument, and Cedar Breaks; fare for automobile transportation and 18 meals and 6 nights' lodgings.....	\$110.00
(Lunch on going and dinner on return tour at Union Pacific Hotel at Cedar City not included in cost of tour.)	

##### From Marysvale, Utah: <sup>5</sup>

Five-day tour of Grand Canyon National Park (north rim), Kaibab Forest, and Bryce Canyon National Monument; fare for automobile transportation and 13 meals and 4 nights' lodgings.....	92.00
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<sup>5</sup> Reservations for these trips must be made in advance with Utah-Arizona Parks Transportation Co., Cedar City, Utah.

**From Marysvale, Utah—Continued.**

Seven-day tour of Grand Canyon National Park (north rim), Kaibab Forest, Zion National Park, Cedar Breaks, and Bryce Canyon National Monument; fare for automobile transportation and 17 meals and 5 nights' lodgings..... \$117. 50  
 (Two meals and one night's lodging at Union Pacific Hotel, Cedar City, not included in cost of tour.)

Parties arriving at the south rim of the Grand Canyon National Park via the Santa Fe lines and desiring to cross from the south rim to the north rim and then visit Kaibab Forest, Zion National Park and leave Cedar City via the Union Pacific system or desiring to make the trip in the opposite direction may arrange to do so. The cross-canyon trip requires two days and is made by horseback. The first night is spent at Phantom Ranch in the bottom of the canyon and the Wylie Way Camp on Bright Angel Point on the north rim or El Tovar Hotel on the south rim is reached the following afternoon. The all-expense cost of the two days' cross-canyon trip is approximately \$30 per person, guide extra. The Utah-Arizona Parks Transportation Co. must be notified in advance to meet parties of a minimum of three at the north rim. Arrangements for the cross-canyon trip should be made in advance.

From Cedar City, Utah, to Grand Canyon National Park (north rim, (approximately 175 miles):

Four-day tour of Zion National Park, Pipe Spring National Monument, Kaibab Forest, and Grand Canyon National Park (north rim); fare for automobile transportation, 8 meals and 3 nights' lodgings..... \$63. 25

From Grand Canyon National Park (north rim) to Cedar City, Utah:

Three-day tour of Grand Canyon National Park (north rim), Kaibab Forest, Pipe Spring National Monument, Zion National Park; fare for automobile transportation, 6 meals, and 2 nights' lodgings..... \$59. 50

Above tours operated for minimum of three full fares.

Children under 12 years of age, one-half fare. Twenty-five pounds of baggage on full-fare tickets and 12½ pounds on half-fare tickets will be transported free; excess baggage will be charged for at rate of 10 cents per pound.

**Special Auto Service**

Arrangements also can be made with Harold Bowman, of Kanab, Utah, during the calendar year 1924 for special automobiles from Marysvale, Utah, to Bryce Canyon, north rim of the Grand Canyon National Park and other scenic points and return to starting point at following rates:

Special cars carrying four persons for 50 cents per mile and cars carrying six persons for 60 cents per mile, these cars to be operated at the pleasure of the occupants as to distance traveled each day and as to places visited, with the proviso that a minimum charge

will be made for 20 miles in any one day whether traveled or not. Twenty-five pounds of free baggage will be allowed each person; excess baggage will be charged for at the rate of 10 cents per pound.

#### Wylie Way Camp

On the north rim at Bright Angel Point, situated in a shady grove of pines, is a Wylie Way Camp, consisting of a central dining tent and comfortable sleeping tents; everything is spotlessly clean. Camp is open from June 15 to September 30, inclusive. There are accommodations for about 25 people.

Authorized rate at Wylie Way Camp, American plan, per person, per day, \$6.

#### SADDLE-HORSE TRIPS

Arrangements may be made at the Wylie Way Camp for saddle-horse trips to various points of interest on the north rim and in the canyon. Time required and rates are as follows:

Side trips and rates therefor from Wylie Way Camp, Bright Angel Point:

To Point Imperial, one-day trip.

To Point Sublime, two-day trip.

To Cape Royal, two-day trip.

Saddle horses for these trips or for special trips on the plateau, \$3 each per day; mounted guide for north-rim trips, \$5 per day.

Down Bright Angel Trail to Colorado River and cross-canyon trips the rate is \$6 per day for each horse.

Guide for river and cross-canyon trips, \$6 per day.

For all overnight trips from Wylie Way Camp on the north rim one or more pack horses must accompany the party, the rates for these being the same as for saddle horses.

Bedding and provisions for north-rim trips, \$2.50 per day for each person.





**A PORTION OF THE FIRST FOREST**  
The profusion of petrified wood is clearly shown



Photograph by Wm. Nelson

**ROOT OF PETRIFIED TREE, 7 FEET IN DIAMETER**

The profile resembles a dog's or lion's head

**PETRIFIED FOREST NATIONAL MONUMENT, ARIZONA**





ACROSS THE CANYON FROM NEAR EL TOVAR ON SOUTH RIM



ACROSS THE CANYON FROM BRIGHT ANGEL POINT ON NORTH RIM  
Photographs By El Tovar Studio

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SEP 21 1925

DEPARTMENT OF THE INTERIOR  
HUBERT WORK, SECRETARY  
NATIONAL PARK SERVICE  
STEPHEN T. MATHER, DIRECTOR



RULES AND REGULATIONS

# GRAND CANYON NATIONAL PARK ARIZONA



Photograph by El Tovar Studio

VIEW ALONG THE TONTO TRAIL

OPEN ALL THE YEAR



Photograph by El Tovar Studio

EL TOVAR HOTEL FROM ROOF OF HOPI HOUSE



Photograph by El Tovar Studio

VILLAGE OF MOENKOPI

Reached over the new Navahopi Road from Grand Canyon Park

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# THE NATIONAL PARKS AT A GLANCE

[Number, 19; total area, 11,372 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—20 bath-houses under public control.
Yellowstone 1872	Northwestern Wyo- ming.	3,348	More geysers than in all rest of world together—Boiling springs—Mud volcanoes—Petrified for-ests—Grand Canyon of the Yellowstone, re-markable for gorgeous coloring—Large lakes—Many large streams and waterfalls—Vast wil-derness, greatest wild bird and animal preserve in world—Exceptional trout fishing.
Sequoia 1890	Middle eastern Cali- fornia.	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 Cali- fornia.	1,125	Valley of world-famed beauty—Lofty cliffs—Ro-mantic vistas—Many waterfalls of extraor-dinary height—3 groves of big trees—High Sierra—Waterwheel falls—Good trout fishing.
General Grant 1890	Middle eastern Cali- fornia.	4	Created to preserve the celebrated General Grant Tree, 35 feet in diameter—6 miles from Sequoia National Park.
Mount Rainier 1899	West Central Wash- ington.	324	Largest accessible single peak glacier system—28 glaciers, some of large size—43 square miles of glacier, 50 to 500 feet thick—Wonderful sub-alpine 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 nu-merous chambers containing peculiar forma-tions.
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 Colo- rado.	77	Most notable and best preserved prehistoric cliff dwellings in United States, if not in the world.
Glacier 1910	Northwestern Mon- tana.	1,534	Rugged mountain region of unsurpassed Alpine character—250 glacier-fed lakes of romantic beauty—40 small glaciers—Precipices thou-sands of feet deep—Almost sensational scenery of marked individuality—Fine trout fishing.
Rocky Mountain 1915	North middle Colo- rado.	397	Heart of the Rockies—Snowy range, peaks 11,000 to 14,255 feet altitude—Remarkable records of glacial period.
Hawaii 1916	Hawaii.....	186	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 6,370 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	A 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.

# GRAND CANYON NATIONAL PARK

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## GENERAL DESCRIPTION

The Grand Canyon National Park was created by an act of Congress, February 26, 1919. It is under the supervision of the National Park Service of the Department of the Interior. Its final creation came 33 years after Benjamin Harrison, then Senator from Indiana, introduced the first of several bills to give it park status. Politics, local apathy, and private interests, which sought to utilize its water power and to find minerals in its depths, were the principal causes of delay. All efforts failing to make it a national park, in 1908 President Roosevelt made it a national monument. Once a railroad was surveyed through it. A scenic railroad was projected along its south rim. Less than a year before it became a park efforts were making in New York to raise money to dam its waters for power and irrigation.

The Grand Canyon National Park is in northern Arizona. Its 958 square miles inclose 56 miles of the Grand Canyon stretching west of its beginning at the mouth of the Marble Canyon. Through it winds the Colorado River for a distance of 103 miles. From rim to rim the canyon varies from 10 to 12 miles in width; it is more than a mile deep measured from the north rim, which averages nearly a thousand feet higher than the south rim. The eastern boundary includes the lofty painted walls east of which lies the Painted Desert. Its western boundary includes the broad Havasu Canyon, tributary from the south, in whose depths we find the Havasupai Indian Reservation and a group of fine waterfalls markedly different from any in our other national parks.

The park boundaries hug the rim closely. Very little of the country back of the rim is included in the reservation, scarcely enough in places to take care of the great increase of travel which national parkhood will bring to the Grand Canyon during the next several years. These border lands are wonderfully attractive. The northern rim is heavily forested with pine and spruce, interspersed with beautiful glades of quaking aspen. The southern rim carries a slender semiarid flowering vegetation of rich beauty and wide variety and south of the railroad station lie a few square miles of fine yellow pine forest.

## A MIGHTY SPECTACLE

There is ~~no~~ doubt that the Grand Canyon is one of the world's very greatest spectacles. It is impossible to compare it with the tremendous white spectacle of the Himalayas, or with the House of Everlasting Fire of the Hawaii National Park, or with the 17,000 feet of snow and glacier which rise abruptly between the observer's eyes and the summit of Mount McKinley, because it has nothing in common with any of these. But of its own kind there is nothing in the world which approaches it in form, size, and glowing color; it is much the greatest example of stream erosion. And in its power to rouse the emotion of the looker-on, to stupefy or to exhilarate, it has no equal of any kind anywhere, unless it be the starry firmament itself.

Approaching by rail or road, the visitor comes upon it suddenly. Pushing through the woods from the motor camping ground, or climbing the stairs from the railroad station, it is there at one's feet, disclosed in the sublimity of its templed depths, in the bewildering glory of its gorgeous coloring. There is no preparation of mind and spirit. To some the revelation is a shock, no matter what the expectation. The rim of the Grand Canyon is one of the stillest places on earth, even when it is crowded with people.

To describe the Grand Canyon is as impossible as it is unnecessary. Few natural spectacles have been so fully pictured, few are so familiar even to the untraveled. Its motionless unreality is one of the first and most powerful impressions it makes. And yet the Grand Canyon is really a motion picture. There is no moment that it does not change. Always its shadows are insensibly altering, disappearing here, appearing there; lengthening here, shortening there. There is continual movement. With every quarter hour its difference may be measured.

There is the Grand Canyon of the early morning, when the light slants lengthwise from the Painted Desert. The great capes of the northern rim shoot into the picture, outlined in golden light against which their shapes gloom in hazy blues. Certain temples seem to rise slowly from the depths, or to step forward from hiding places in the opposite walls. Down on the green floor the twisting inner gorge discloses here and there lengths of gleaming water, sunlit and yellow.

An hour later all is wholly changed. The dark capes have retired somewhat and now are brilliant-hued and thoroughly defined. The temples of the dawn have become remodeled, and scores of others have emerged from the purple gloom. The Granite Gorge, now detailed fully, displays waters which are plainly muddy even at this great distance. And now the opposite wall is seen to be convoluted, possessing many headlands and intervening gulfs.

And so, from hour to hour, the spectacle develops. Midday, with sun high behind the south rim, is the time of least charm, for the opposite walls have flattened and the temples of the depths have lost their defining shadows. But as afternoon progresses the spectacles of the morning creep back, now reversed and strangely altered in outline. It is a new Grand Canyon, the same but wonderfully different.

And just after sunset the reds deepen to dim purples and the grays and yellows and greens change to magical blues. In the dark of a moonless night the canyon suggests unimaginable mysteries.

#### THE FIRST VIEW

From the railroad station the visitor ascends to El Tovar Hotel and the view of the canyon at a very interesting point. Here is where the temples loom up in contrast to the plateau at their feet; the plateau still being 1,500 feet above the river. The view at El Tovar is restricted by the extension of Grandeur Point and Maricopa Point on either side. These cut off the view of the great reaches of the canyon east and west. El Tovar view is a framed picture of limited size. It is better so; better for the newcomer to enter gradually into the realization of the whole which will come when he walks or rides out to the many points which push northward from the south rim; better also to return to after days spent on the rim or in the canyon's depths.

Having studied this view for general outlines and the canyon's conformation, stratification, and coloring, the visitor will find for himself, on foot or by motor stage or horseback, many points which will afford him varied outlooks upon the broad reaches of the canyon. It is advisable to see the canyon from end to end from the rim before exploring the trails to the floor and the river.

The traveler who is unlucky enough to have no more time at his disposal may, even in one day, see much of the Grand Canyon either from the rim or by mule-back descent to the depths as preference dictates. Probably the one-day visitor can see more by taking the 16-mile Hermit Rim Road drive west in the forenoon and the 60-mile drive east to Grand View and Desert View in the afternoon than in any other way. Both the rim drives and the descent into the canyon may be had in two days. Every day added to the schedule will give the visitor further novel experiences and glorious views, such as the Hermit Loop trip, the Phantom Ranch trip, or to the north rim of the canyon, visiting Ribbon Falls en route, or the long motor trip over the Navahopi Road to Tuba City and Moenkopi.

When you go to the Grand Canyon leave the duration of your stay open for decision when there. You will probably then remain from five days to two weeks. Two weeks of fairly steady going will enable



you to see the Grand Canyon thoroughly without undertaking trips which are a hardship to persons unaccustomed to trail riding.

#### PARK SERVICE INFORMATION BUREAU

A free information bureau is maintained by the National Park Service in the Administration Building, 100 yards east of El Tovar and at the foot of the hill, where the superintendent's offices are. Park visitors are welcomed and are advised to apply to the attendant in charge of this bureau for official information of any kind.

A collection of various geological and paleontological specimens of the Grand Canyon is on exhibition, as well as charts of flowers and birds.

A suitable reference library is being accumulated for the use of visitors, and the Government maps and other publications may be consulted or secured here.

Automobile arrivals are requested to register at this bureau, unless previously registered at a checking station.

#### LIVING AT THE GRAND CANYON

Living is pleasant and comfortable. El Tovar Hotel offers delightful conditions at rates reasonable in these times for its high-class accommodations. Its porches are broad, its garden a collection of interesting semiarid vegetation, its rim walks inspiring. There is horseback riding through many miles of yellow-pine forest and out to viewpoints on the rim, but there are no sports. There is neither golf nor tennis. The canyon absorbs the whole attention of its visitors.

Adjoining the hotel there is a most comfortable annex of cottages and tents and café; rates are lower than those charged at the main hotel. There are comfortable cottages at Hermit Creek Cabins on the Hermit Trail, and at Phantom Ranch, across the Colorado River. The latter cottages are built of the native rock, with mess hall, etc. Both these resorts are first class in every respect.

Wylie Way Camp at Bright Angel Point on the north rim provides comfortable accommodations for visitors. Camping trips along the rim and down to the Havasupai Indian Reservation and the waterfalls of Havasu Canyon can be arranged. It is possible to take your pack train across the river on the Kaibab Suspension Bridge, stay overnight at Phantom Ranch, and ascend the most interesting Kaibab Trail up Bright Angel Canyon to the north rim. This trip is a matter of several days and is correctly classed as a summer jaunt.

#### FREE PUBLIC CAMP GROUND

From April to November the south rim is free from snow and the free public camp ground near Grand Canyon Village is available to campers. Motorists are urged to bring their own camp equipment

and make use of this camp. Sites will be allotted free of charge on application to the office of the superintendent of the park. There is a garage in the village where gasoline and oil can be procured. There is also a general store where groceries can be purchased. It is necessary to purchase water in the village, as there is none at the Grand Canyon and it must be hauled from a distance by rail. The charge for water is 25 cents per day.

#### SEEING IT FROM THE RIM

East of the hotel are several points reached by motor roads which afford fine views of the upper half of the Grand Canyon. The most famous of these is Grand View, where still stands the first regular hotel of the canyon, now private property, and not affording hotel accommodations. The eastern terminus of the road is Desert View, which offers a view up the Marble Canyon, and eastward over the famous Painted Desert. West of the hotel the auto stages stop at a succession of fine points, each with its own individual view of the mighty spectacle.

There is much to see also in the neighborhood of El Tovar.

The Yavapai Trail extends along the Canyon rim east to Grandeur, Yavapai, and Yaki Points, and the Hopi Trail west to Maricopa, Sentinel, and Hopi Points. These paths are inviting to the hiker, or, if one desires to combine horseback riding with viewing the spectacle thus reached, he may do so over these paths, where the footing invites a canter, the surroundings furnish shade and beauty, and automobiles do not intrude.

#### DESCENDING THE CANYON

There are three practicable trails from the south rim to the river. The one commonly used starts from El Tovar Hotel and descends the deep alcove between Grandeur and Maricopa Points. This is the celebrated Bright Angel Trail.

The descent of this trail is made on muleback in parties led by guides. It is a sad mistake for persons not in the soundest physical training to attempt it on foot, for the apparent distance as seen from the rim is misleading, and the climb back is most arduous at that elevation. The south rim of the canyon at El Tovar is 6,866 feet above sea level. Nearly every day one or more trampers, overconfident of their endurance, find the way up too arduous and have to be assisted by guides and mules sent down for them from the rim.

The descent is an experience of great charm. The trail is well built and kept in good condition. The traveler passes in review all the strata which form the canyon walls; their close examination will be a source of pleasure. Just under the rim the trail passes through a fine forest of spruce, and from this down to the sage desert of the

green floor the traveler will also pass in review a series of vegetation which represents scores or hundreds of miles of surface growths. There are two steep cliffs which the trail descends in series of short hitches of zigzags, one of which, known as Jacob's Ladder, carries the traveler down the famous Redwall limestone, which is so distinct a scenic feature of the canyon from every rim view. But there need be no alarm about these descents, for the zigzags, short and numerous though they are, maintain always a uniform safe grade. It may affect the unaccustomed nervously to see his mule hang his head over short abysses at the turns, but the traveler himself does not hang over them, and the mule is sure-footed, stolid, and indifferent. There is only one creature with less imagination than a mule, and that is his cousin, the burro.

Indian Garden, which lies on the floor of the canyon on the Tonto Plateau, is so named because Havasupai Indians once cultivated the soil through which passes the stream which originates in springs below the Redwall. It is called Garden Creek. The Indian Garden now is a tangle of high brush, principally willow, through which the trail passes out upon the Tonto Plateau, and presently plunges down the rocky gorge which leads to the edge of the muddy Colorado.

#### THE HERMIT TRAIL

A much finer trail from every point of view than the Bright Angel starts from Hermit's Rest, south of Pima Point, and descends the Hermit Canyon. It begins 8 miles west of El Tovar. This is a two days' journey, including a night spent in Hermit Cabins well down in the canyon. It involves an experience worth many times the additional day which it requires.

The Hermit Canyon is one of extreme beauty; there is probably no other which equals it in gorgeous coloring and the variety of its rock forms. The trail, whose grade is less than that of the Bright Angel, is one of the finest in the world. It is longer than the Bright Angel Trail and leads out upon impressive points overlooking fascinating views. About 1,000 feet under the rim, at a place known locally as the White Zig Zags, may be seen an interesting series of prehistoric animal tracks in the sandstone.

The descent of the Redwall limestone is a masterpiece of trail building, and the only part of the Hermit Trail which gives an impression of steepness; but this may readily be walked down by the unaccustomed rider; its descent is not nerve racking. The night at Hermit Cabins, under a towering crimson gable, with colorful Hermit Canyon on the south and Grand Canyon opening northward over the green shale of the Tonto Platform, or "lower plateau," is as comfortable as it is fascinating. The trip to the river and back to the camp is usually made the first day.

Visitors to Hermit Cabins will find a band of antelope always in evidence.

## THE KAIBAB TRAIL

A new trail connecting Yaki Point on the south rim with the Tonto Trail at the Tip-Off was completed last spring and is the last word in trail construction. As it is built along a spur jutting out into the canyon, it is the most scenic trail leading into the gorge. That part of the Kaibab Trail between the Tip-Off and Kaibab Bridge was also rebuilt, as was part of the Granite Gorge on Bright Angel Creek above Phantom Ranch.

The new trail shortens distance from El Tovar Hotel to Phantom Ranch by  $4\frac{1}{2}$  miles. However, operations over this trail will be seasonal only until the modern road to Yaki Point, now under construction, is completed, as autos can not negotiate the present road in wet weather.

## THE TONTO TRAIL

Too few visitors to Hermit Cabins combine the two trail trips with a journey between them over the Tonto Plateau. The descent is by the Hermit Trail with a night at its foot. The next morning the journey is made on mule back along the Tonto Plateau to the Indian Gardens. This journey is extremely interesting. The side walls of the canyon and the numerous temples give one the sense of being in the mountains instead of halfway down the depths of a canyon. From the Indian Gardens, after lunch by the stream side, parties ascend Bright Angel Trail to El Tovar.

## THE HAVASU CANYON

The Havasu Canyon, in the far western end of the national park, is rarely visited. The trail begins at the end of a long desert road by descending precipitously to a gorge through which the Havasupai Indian Reservation is reached. There are less than 200 Indians on the reservation. These live by farming the land irrigated from Havasu Creek; corn is their principal product, but melons, figs, and peaches are also produced. The reservation fills a broad amphitheater in the gorge, surrounded by lofty red sandstone cliffs of the Supai formation. There are no hotels or camps, and the heat is intense in summer. The Havasu Creek water is strongly impregnated with lime and unpalatable, though entirely wholesome. Nevertheless, the visit to the reservation is one of unusual character and charm for those who do not object to a little hardship.

Below the reservation the canyon breaks into a series of waterfalls, two of which are unusual in kind and beauty. These are the Havasu Fall and the Hualapai Fall. Both drop over lofty shelves, which are plastered on back and sides by richly carved festoons of lime travertine. Both the falls occur in deep gorges in the Redwall limestone. Bright green cottonwoods, cactus, and other desert vegetation enliven the scene, which is as different as imagination can well paint from anything else in the Grand Canyon National Park.

In the spring, following the melting of the rim snows, there are various waterfalls in the Grand Canyon itself, several of which last for some months. These occur on the north side of the river, where there is a greater supply of water, the south side being arid except for brief periods following meltings and cloudbursts. • One of these temporary north-side waterfalls in Clear Creek, which has been seen by very few persons, is about 800 feet in height. With the crossing of the river, which is now possible over the Kaibab Suspension Bridge, these and many other fascinating spectacles, now little known, will become familiar sights to many. The destiny of the Grand Canyon is to become one of the most used national parks.

#### ORIGIN AND GEOLOGIC HISTORY OF THE GRAND CANYON<sup>1</sup>

The Grand Canyon is the deepest and widest of a long series of canyons through which the Colorado River flows for 500 miles across a region of high table-lands known as the plateau province or the Colorado Plateaus. These canyons are unusually steep sided and unusually deep, but they are merely parts of the valley of the river, and, like most other river valleys, they have been formed by the stream that occupies them; they are not, as some who are unfamiliar with geologic processes have supposed, due to any violent or catastrophic breaking of the earth's crust. The Grand Canyon is perhaps the world's most spectacular illustration of the accumulated results of erosion—of the combined action of running water, rain, wind, and the various atmospheric agencies that attack the rocks and sculpture them into the forms that give character to a landscape.

#### A PECULIAR TYPE OF LAND SCULPTURE

The scenery of the Grand Canyon is the supreme expression of a type of land sculpture that is peculiar to the plateau country, a type whose elements are cliffs and tabular forms—buttes, mesas, terraces, and plateaus. The high plateau into which the river has cut its way is built up of layer upon layer of rock beds that lie nearly level and that extend continuously over great distances. These beds, as one may see in the walls of the canyon, consist of sandstone, shale, and limestone, which have been grouped by geologists into the formations shown in the generalized columnar section forming Figure 1. This figure presents a summary of the facts relating to the character of the rocks exposed in the Grand Canyon National Park and the thickness, attitude, order of accumulation, and structural relations of the formations.<sup>2</sup>

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<sup>1</sup> By L. F. Noble, geologist, U. S. Geological Survey.

<sup>2</sup> The term "formation" is generally applied to a group of rock beds that are of about the same age, as shown by the fossils they contain, or that are considered together for convenience in mapping or description. A formation is named from the place where it was first studied or from some place or region where it is well exposed. The Kaibab limestone, for example, is so named because it is well exposed on the Kaibab Plateau.

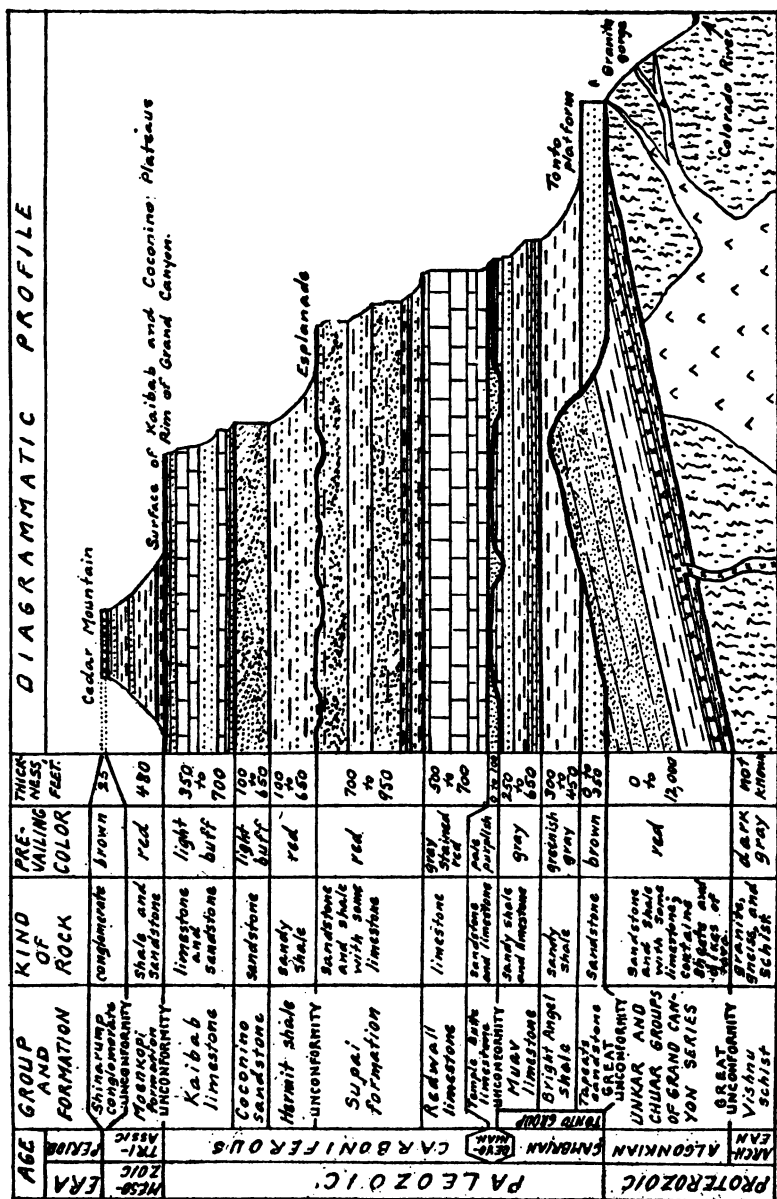


FIGURE 1.—Generalized columnar section, showing position and structural relations of the rocks of the Grand Canyon National Park, and the age, character, and thickness of the groups and formations into which they are divided.

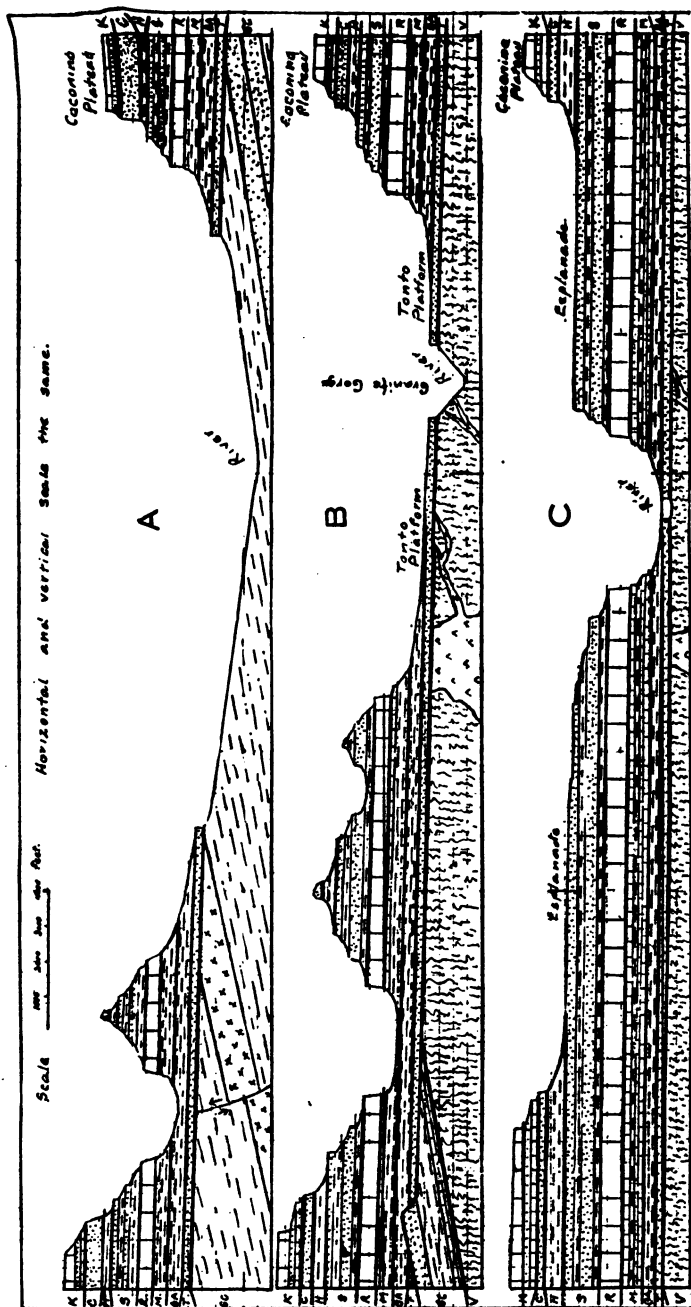


FIGURE 2.—Generalized sections across Grand Canyon, looking up Colorado River. A, in Eastern Kaibab division, east of Desert View Camp; B, in Central Kaibab division, near Hermit trail; C, in western Kaibab division, west of Bass Camp. K, Kaibab limestone; C, Coconino sandstone; H, Hermit shale; S, Supai formation; R, Redwall limestone; M, Temple Butte and Muav limestones; BA, Bright Angel shale; T, Tapeats sandstone; GO, Grand Canyon series; V, Vishnu schist. The different profiles exhibited by the canyon in these sections are due to changes in the character and thickness of the rocks, as explained in the text.

## ARCHITECTURAL FORMS DOMINATE THE CANYON

As the formations lie in orderly horizontal layers, like beds of masonry, they have been carved into definite architectural forms, which are everywhere nearly identical in profile though varied and irregular in plan, and as they vary in their resistance to erosion, some being hard, some soft, every part of the canyon wall, every pinnacle and butte, is characterized by its own steplike alternation of cliff, slope, and shelf. Each resistant bed stands forth as a cliff, and each weak bed is marked by a slope. Each shelf or platform is made by the wasting back of a weak stratum that lies upon a resistant, cliff-making stratum, and the greater the thickness of the weak stratum the broader the shelf. The plateaus that border the canyon are themselves simply great terraces developed on a resistant formation, the Kaibab limestone, from which overlying softer beds have been washed away. As erosion goes on parts of the canyon wall or plateau become separated by the widening of branch canyons or ravines and stand as solitary outliers capped by remnants of a hard bed of rock. These remnants are the buttes and temples. The great height of the plateau gives rapid fall to the streams that enter the canyon and enables them to cut powerfully and deeply and thus to carve the rocks into forms that are fashioned on a gigantic scale. The erosion accomplished by these streams, though spasmodic, because the streams are mainly fed by spasmodic rainstorms in an arid climate, is none the less effective. The slopes here are partly bare of vegetation because the desert plants grow far apart, and the concentrated energy of a single torrential shower may therefore wreak more havoc than would be caused by a season's rainfall on plant-covered slopes in a humid region. It is this prevailing aridity that, by retarding the growth of vegetation and the formation of soil, keeps sharp and fresh profiles that in a moister region would soon be dulled or obscured.

## SECTIONS ACROSS THE CANYON

The three sections across the Grand Canyon shown in Figure 2 (*A*, *B*, *C*) illustrate the intimate relation between the profile of the wall and the character of the rocks. In *A*, where the rocks along the river are the weak shales of the Algonkian Grand Canyon series, the bottom of the canyon is a broad valley having gently sloping sides. In *B* these weak stratified rocks are replaced by the hard Archean crystalline rocks, and the river occupies a narrow gorge—the Granite Gorge. As these hard crystalline rocks are not arranged in beds and are all about equally resistant to erosion the walls of the Granite Gorge have a steep, continuous slope, which presents a striking contrast to the steplike profile of the wall in the overlying



bedded Paleozoic rocks. In *C* the river occupies a narrow box-shaped vertical-walled canyon in the hard Tapeats sandstone, the basal formation of the horizontal Paleozoic beds.

In *C* the weak Hermit shale, in the upper wall of the canyon, is thick and consequently wastes far back from the summit of the underlying hard Supai sandstone, leaving a wide platform known as the Esplanade. This platform, because of its great width and its conspicuous red color, is the dominant feature of the canyon landscape in all the western part of the national park. But the Hermit shale steadily gets thinner eastward in the canyon, as may be seen in sections *B* and *A*, whereas the overlying cliff-making Coconino sandstone, which defends the retreat of the wall above the Esplanade, gets steadily thicker in the same direction. The Esplanade thus becomes a narrow bench in *B* and fades to an inconspicuous ledge in *A*.

In *B* the weak Bright Angel shale has determined a similar platform in the bottom of the canyon. This platform, known as the Tonto platform, or the "lower plateau," is widest in the region about and east of Bright Angel and Hermit Trails, where it is a familiar feature to tourists. It gets narrower westward as the overlying Muav and Redwall formations grow thicker and become firmer in texture.

This marvelous adjustment of external form to the inequalities of rock structure and character affords to the geologist the strongest evidence that the canyon is the work of erosion.

#### A UNIQUE REVELATION OF GEOLOGIC HISTORY

A large part of ancient geologic history is revealed more clearly in the walls of the Grand Canyon than in any other place in the world. The beds of rock seen in the canyon were all laid down in water as layers of sand, mud, and limy ooze and in time were hardened into rock by the great weight of the layers above them, the lime and silica that they contained cementing their particles together. As rocks of this kind are composed of sediment deposited in water the geologist calls them sedimentary rocks, and as they are piled in beds or strata one above another they are said to be stratified, and the beds are called strata.

The horizontal strata seen in the walls of the canyon were formed during the Paleozoic era (the era of "old life"); they represent the oldest series of rocks that have yielded clearly identifiable traces of life. Many of the strata contain the remains of marine animals and were therefore evidently laid down on the bottom of the sea, although the region now stands high above the present sea level. Others, notably certain beds of red shale and sandstone in the Supai and Hermit formations (see fig. 1), appear to have been spread out as mud and sand on low-lying land or on delta plains by shifting streams;

and one formation, the Coconino sandstone, is regarded by some geologists as a sand-dune deposit. Nearly all the Paleozoic formations contain some traces of life—in the Kaibab and the Redwall limestones there are corals and many kinds of marine shells; in the formations of the Tonto group, the remains of primitive shellfish, worm trails, and impressions of seaweeds; in the Temple Butte limestone, the remains of an ancient type of fish; and in the Hermit shale, impressions of long-extinct plants. Fossil tracks of small animals, probably older forms of amphibia, occur in the Coconino sandstone along the Hermit Trail. The aggregate thickness of the Paleozoic rocks varies from place to place, but in the part of the Grand Canyon that is included within the national park it averages 4,000 feet.

#### ROCKS OLDER THAN THE PALEOZOIC

Ancient as are the formations of the Paleozoic era, two great systems of rocks—the Algonkian and the Archean—are buried beneath their base and appear only in the depths of the canyon. The rocks of the older system, the Archean, form the walls of the Granite Gorge. They are the foundation rocks of the region, and they are totally unlike the Paleozoic rocks, for they are entirely crystalline, are not stratified, and show a crumpled banding, due to the arrangement of their constituent minerals in parallel layers, an arrangement produced by heat, pressure, and recrystallization. The Archean rocks are mainly of the type known as gneiss and schist, but they include granite in large masses and dikes that have been intruded while molten into the gneiss and schist. The Archean rocks have been named the Vishnu schist. They contain no traces of life.

The rocks of the younger of these two systems, the Algonkian, are intermediate in age between the Archean and the Paleozoic rocks and occur here and there in the depths of the canyon in wedge-shaped masses that lie between the Archean and the Paleozoic. They can be easily distinguished by the casual observer in the region between Grand View and the mouth of the Little Colorado, where at least 12,000 feet of them remain. Small masses are exposed near the mouth of Bright Angel Creek opposite El Tovar, on Crystal Creek, on Shinumo Creek, and along Colorado River west of Powell Plateau. These rocks, like the Paleozoic, are stratified and do not differ greatly in character and appearance from some of the Paleozoic strata, notably the red Supai and Hermit formations, but, unlike the Paleozoic strata, they have been tilted from the horizontal position in which they were originally deposited, so that they are inclined at various angles. These Algonkian rocks have been named the Grand Canyon series. The few obscure fossils found in them are so poorly preserved that they tell very little concerning the primitive life of the period.

## GREAT UNCONFORMITIES

Each of these two great rock systems—the Archean and the Algonkian—is separated from the one that overlies it by a nearly even surface that cuts across or truncates all underlying beds or masses. This truncation marks what is known to geologists as an unconformity. Each unconformity means that the rocks below it were worn down by streams or waves to a nearly level surface before the material that formed the overlying rocks was deposited.

The top of the Paleozoic series is also marked as an unconformity, for although the Paleozoic beds are the highest that appear in the wall of the Grand Canyon they actually once lay beneath a later thick series of horizontal deposits. The traveler who comes to the Grand Canyon from the north descends step by step in southern Utah a great series of cliffs and terraces carved in horizontal beds, much like the Paleozoic. The most noted scenic features of southern Utah—Zion Canyon, Bryce Canyon, and the Vermilion, White, and Pink cliffs—are carved in these beds, which overlie the Paleozoic and represent deposits of later systems, the Triassic, Jurassic, and Cretaceous, which are of Mesozoic age, and part of a still later system, the Tertiary. These later beds once extended across the entire region in which the Grand Canyon lies, covering it to a thickness at least twice as great as the canyon is deep, but nearly all of them have been worn away by erosion. A few small masses of them still remain as buttes on the Coconino Plateau south of the Grand Canyon. One of these, Red Butte, lies 15 miles south of El Tovar. Another, Cedar Mountain, lies 2 miles east of the rim of the Grand Canyon near Desert View. Cedar Mountain is interesting because the formation that caps it, the Shinarump conglomerate, contains logs of petrified wood. The petrified forests of Arizona (Petrified Forest National Monument), which lie southeast of the Grand Canyon region, occur in a formation that immediately overlies the Shinarump conglomerate and that is exposed over wide areas but has been removed from Cedar Mountain and Red Butte by erosion.

The rock record just described is laid bare in the Grand Canyon and in the cliffs of southern Utah with the clearness of a diagram, so that the sequence of geologic events in the region can be read from it with ease and certainty. The unconformity that truncates the Archean rocks means that an enormous thickness of overlying rock had been removed from them before the Algonkian beds that now lie upon them were deposited, and consequently that a vast region, once high and mountainous, was reduced by erosion through long ages to the level plain represented by the unconformity.

When the land had been worn down to a plain it sank and was buried under at least 12,000 feet of mud and sand that now form the Grand Canyon series of Algonkian age. After these beds had thus accumulated they were uplifted, tilted, and broken into huge blocks that must have formed high ranges of mountains. Then followed a long period of erosion, during which the mountains were worn down nearly to a plain. This plain is represented by the unconformity that separates the eroded Archean and Algonkian rocks from the overlying horizontal Paleozoic strata. Exposed as it is for the entire length of the Granite Gorge and for many miles upstream from the Granite Gorge, and visible everywhere from the rim of the canyon, this unconformity is the most spectacular known illustration of such a feature. It was not so even a surface as the older unconformity, for some of the hard sandstones of the tilted Algonkian blocks long resisted erosion and stood as low hills on the plain. A section of one of these hills is visible in the canyon wall from El Tovar. It lies under Cheops Pyramid, just west of the mouth of Bright Angel Creek, and it rises well above the base of the Paleozoic beds, which were deposited around it.

#### SUBMERGENCE, DEPOSITION, UPLIFT, AND EROSION

At the end of Algonkian time the land was again submerged, and the horizontal Paleozoic, Mesozoic, and early Tertiary strata were slowly deposited. The time consumed by the deposition of these strata, whose aggregate thickness exceeds 15,000 feet, was long, even in the geologic sense of the word "long," for it must be estimated in millions rather than in thousands of years, spanning as it does the countless ages during which life was evolved from the primitive marine shellfish to the apelike predecessor of man. Yet it was short in comparison with the time consumed by the succession of events recorded before the Paleozoic strata were laid down, for that earlier period was inconceivably long, certainly far longer than all the time that has elapsed from the beginning of the Paleozoic era to the present day.

In Tertiary time the region was again uplifted and a period of erosion began. Streams cut channels into the surface of the land and in time formed broad valleys, which thus continued to expand until at last most of the land stood but little above the level of the sea. At the end of this period of erosion, which is sometimes called the great denudation, most of the strata above the Paleozoic had been removed from the Grand Canyon region; their edges had been worn back northward 50 miles to the border of Utah, and the surface of the region had been reduced to a nearly even plain. The present course of the Colorado River must have been determined by a topography different from that of to-day, for in most of the region that

lies within the national park, as one may see at El Tovar, the land south of the canyon slopes directly away from its rim, so that the canyon runs across instead of down a slope.

#### FOLDING AND FAULTING

The uplifts of the region that raised the Paleozoic and Mesozoic strata in Tertiary time were very different from those recorded beneath the unconformities in the canyon walls. The rocks were not compressed and folded, like the Archean, nor were they broken into tilted masses, like the Algonkian; instead, the whole region was lifted bodily, the strata still preserving essentially the horizontal attitude in which they were laid down. Yet the uplift was not equal over all parts of the region. If, for example, we should cross the Kaibab Plateau from east to west, say from House Rock Valley to Ryan, we should find the limestone strata at its western margin ending suddenly in a cliff and appearing again 1,500 feet below, on the surface of the plateau on the west—the Kanab Plateau. Such a break, along which the strata on one side have slipped past those on the other, is known as a fault. At the eastern margin of the plateau we should find the strata bending suddenly downward in a great curve returning again as sharply to a horizontal attitude, and continuing eastward as the surface of the Marble Platform. This type of dislocation is known as a flexure, or fold.

The uplifted Grand Canyon region is divided into great horizontal plateau blocks like the Kaibab Plateau by dislocations of the type just described, either folds or faults, that trend north and south; and the Grand Canyon crosses these plateaus from east to west. The name of each plateau has been given to the section of the canyon that crosses it. Thus the section of the canyon that transects the Kaibab Plateau is known as the Kaibab division. The Grand Canyon National Park includes all the Kaibab and part of the next western division—the Kanab.

In addition to the great dislocations that separate the plateaus there are numerous small faults and folds in the region, some of them in the Grand Canyon. Many visitors who have noticed the faults ask whether the canyon does not owe its origin or at least its course to a fault, but although geologists have studied the canyon at many places they have found no evidence of the existence of such a fracture. If it existed it could not have escaped notice, so perfect are the exposures of the beds in the rocky walls along the numerous turns of the river. Nor do any considerable parts of the canyon coincide with faults. On the other hand, it may be said that faults have guided the course of many tributary gorges in the Grand Canyon, and even some parts of the course of the river, though not in the way popularly supposed. Erosion, not dislocation, has been the

chief agent that determined the course of each gorge. Movement along some of the faults, by crushing the adjacent rock, has formed zones of weakness, which, under the searching action of erosion, have become ravines or gorges. An example is the gorge of Garden Creek, which is followed by the Bright Angel Trail in front of El Tovar. The course of this gorge has been determined by a small fault, which has shattered the great cliffs of the Coconino sandstone and Redwall limestone and has made possible the construction of the trail. The strata have been displaced about 100 feet by the faults, those on the west side having been relatively elevated.

#### THE WORK OF MAKING THE CANYON

During the last great uplift of the region, which may still be in progress and which has raised the plateau to its present height, the land rose so gradually that the river remained in its original channel and kept cutting deeper and deeper. The canyon is thus deep because the land is high and because in this arid region the river, fed by the rains and snows of the Rocky Mountains and armed with great quantities of mud and sand and gravel, washed into it by its tributaries, has lowered its bed faster than its tributaries could lower the adjacent plateau. But, although the Colorado River has thus dug the canyon, the various forms of rock sculpture seen in the walls of the canyon have been determined by variations in the behavior of the beds under the attack of the agents of erosion. And this erosion is still going on. The observer of to-day who stands in awe on the brink of the canyon or who finds his way precariously down the trails that lead to its depths should realize that the work of making this mighty chasm is not yet finished. The various agents that have modeled the canyon—the rushing torrent below and the small streams that descend to join it, the intermittent rain and snow and frost, and those subtle yet effective chemical activities that aid in the decay of the rocks, and, above all, the ever dominant pull of gravity on all loose particles—all are still at work on this wonderful piece of earth sculpture. In the Grand Canyon of to-day we see the accumulated results of the action of powers that apparently leave from year to year but slight traces of their action but that, persisting in their work through uncomputed ages, have produced results of marvelous immensity.

#### HISTORY OF THE CANYON\*

Don Lopez de Cardenas, of Coronado's expedition, discovered the Grand Canyon in 1540, as a result of stories told by the Hopi (Moquis) Indians to Don Pedro de Tovar. The old records describe a chasm which seemed to be more than 3 or 4 leagues across in an air line—*"que avia mas de tres o quatro leguas por el ayre."*

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\*Furnished by courtesy of Frederick S. Dellenbaugh.

For a long period thereafter the Grand Canyon region and the Colorado River remained practically unknown. It is next recorded as having been seen by two Spanish priests in 1776; Padre Garces crossing eastward from the lower Colorado to the Hopi towns, who halted, he says, "at the sight of the most profound cañones which ever onward continue, and within these flows the Colorado," and Padre Escalante, who, in searching for a place to cross from the north after his failure to proceed westward from Santa Fe to Monterey, finally found the old Ute ford, used by Indians for centuries, near the foot of Glen Canyon (in latitude 37°), and by means of it was able to reach Zuni. The ford then became known as *El Vado de los Padres*—the Crossing of the Fathers—for long the only known crossing of the Colorado in a distance of several hundred miles.

The first American to visit the region was James O. Pattie, accompanied by his father. They trapped beaver on the lower Colorado in 1825 and 1826. In 1826, returning eastward, they traveled for 13 days, following, apparently, the Grand Canyon as well as they could, but unable to reach the river at any point, till at last they arrived at a place where the river "emerges from these horrid mountains." This was the first extended trip on record of any human being along the brink of the Grand Canyon.

The same year that the Patties went to the lower Colorado, 1825, General Ashley, in pursuit of his fur-trading enterprise, attempted to descend Green River from near the present crossing of the Union Pacific Railway. They were forced after great hardship to give up the effort in the Uinta Valley.

The famous American trapper and pioneer, Jedediah Smith, crossed the river going west in the Mohave country in 1826 and again in 1827. In this latter year the Patties returned to the lower Colorado and trapped down the river from the mouth of the Gila in dugouts, the first navigators of this portion since Alarcon, of the Coronado expedition, came up in 1540. Quite unexpectedly they made the acquaintance of the great bore at the mouth of the river, where they were in waters that Lieutenant Hardy, of the British Navy, had entered the year before.

Other trappers after beaver then followed into the region, and the Government began sending out exploring parties. One of these under Sitgreaves crossed the Colorado in 1851 about 150 miles above Yuma, and three years later another under Whipple, surveying for a railway along the thirty-fifth parallel, crossed a few miles above the mouth of Bill Williams Fork.

When the California gold rush developed one trail of the Forty-niners led down the Gila and across the Colorado at its mouth, and now various activities on the lower river began. The first steamboat was brought to the mouth of the Colorado and up it in 1852. It was named the *Uncle Sam*.

Edward F. Beale, surveying a Government wagon road, crossed and recrossed in 1857 and 1858, near the mouth of Bill Williams Fork, and in 1858, January, the Government exploring expedition under Lieutenant Ives proceeded from the mouth up the river in a small stern-wheel iron steamer, the *Explorer*, as far as the foot of Black Canyon, whence the ascent was continued in a small boat to the mouth of the Vegas Wash. This was not the first steamer up, however, as Captain Johnson, of a commercial navigation company, had steamed up and passed with his steamboat clear through Black Canyon to its head some days before, mainly to "get ahead" of Ives, who had earlier displeased Johnson. Ives then proceeded overland to the mouth of Diamond Creek and to the Hopi towns via Havasu Canyon.

"It seems intended by nature," says Lieutenant Ives, after vainly trying to reach the rim, "that the Colorado River, along the greater part of its lonely and majestic way, shall be forever unvisited and undisturbed."

This same year of 1858 saw the first crossing on record of the Colorado from the north, since Escalante, by white men. This was accomplished by Jacob Hamblin, a well-known Mormon, a missionary and Indian agent, from Utah to the Hopi towns. An Indian guided him to the Ute ford (Crossing of the Fathers) and he used it thereafter almost yearly. These Mormons for long years were the only persons besides Navajos and Utes to cross the river anywhere. The ford, known to few, was difficult and dangerous at all times and impossible except at low water.

In 1862 Hamblin went around the Grand Canyon by the west end to the Hopi towns and returned by the Crossing of the Fathers at the east end, practically, as Marble Canyon begins a few miles below. The next year he went again around by the west end to the Hopis, visiting the "hermit" tribe, the Havasupais, in their deep canyon home, on the way, the first white man on record to do so after Lieutenant Ives. The party returned to St. George around the west end of the Grand Canyon. Nobody, as yet, went to the rim and there was no known crossing of the Grand Canyon itself anywhere by white men.

Another attempt to descend Green River from the California Trail (near the present Union Pacific Railway) was made in 1849, by William Manly and party. They expected to find a shorter and easier road to the California gold fields. After a hard time they emerged into Uinta Valley, where they met the noted Ute chief Wakar ("Walker"), who was good to them and urged them not to try to go farther down the river.

In 1867 a man named James White was picked up from a raft near Callville, below the mouth of the Virgin, in an exhausted condition, and those who aided him immediately but erroneously assumed that



he had come down through the Grand Canyon, the result of an ignorance as great on their part as on that of White. He knew nothing about the interior of the great canyon and mentioned that he had run one big rapid, whereas he should have mentioned big rapids by the dozen.

So nothing became definitely known about the mysterious interior of the Grand Canyon or of the canyons of the Colorado River above as far as the Uinta Valley on Green River until Maj. John Wesley Powell, one-armed veteran of the Civil War, made his famous passage of all the canyons. He started with nine men and four boats from Green River City, Wyo. (on the Union Pacific Railway, then the only railway across the continent), on May 24, 1869. One of the men left the party (Goodman), disheartened, in the Uinta Valley.

The terrifying waterfalls and underground passages described by trappers and Indians were not found, but the declivity was often extremely great and continuous (as in Cataract Canyon, where it is continuous for about 20 miles), producing violent cataracts, with huge waves and a water velocity of over 20 miles an hour, frequently studded with giant rocks.

The trip was one of incredible hardship and danger, led by the Major with his one left arm, the other having been lost at the Battle of Shiloh. The plunging rapids in the whole length of the journey numbered several hundred to overcome the 6,000 feet difference in altitude between Green River City and the sea. The boats were often upset and the passage of many of the rapids was perilous to a degree. Frequently the party would be forced to embark on long foaming declivities without being able to discover what other, perhaps greater, falls might lie around the precipitously walled bends in front of them.

One of the boats, some of the scientific instruments, and a considerable amount of the food supply were lost in the Canyon of Lodore; and some that was rescued had to be left, as the remaining boats were overloaded. For weeks the clothing of the adventurers was never dry; and when they finally entered the mighty depths of the Grand Canyon itself, in August, there was little food remaining.

The sharpest rapids occur in the granite, and the first Granite Gorge, running past the Powell Monument, contains the worst portion of the whole river. When, therefore, another "Granite Gorge" developed below Diamond Creek, the men, stalwart and full of nerve though they were, having become somewhat demoralized by lack of food and the tremendous strain, were disheartened. Three of them consequently announced that they would go no farther.

This was desertion, but they preferred it to risking the difficulties they saw ahead. They believed they could climb out and reach the well-known Mormon settlements on the north, and they believed a river party would be lost or starve.

"At one time," says Powell in his report, "I almost concluded to leave the river. But for years I have been contemplating this trip. To leave the exploration unfinished, to say that there is a part of the canyon which I can not explore, having already almost accomplished it, is more than I am willing to acknowledge, and I determine to go on. \* \* \* For the last time they entreat us not to go on, and tell us that it is madness to set out in this place." The same appeal that Dunn made to Hawkins, the cook of the party, as Hawkins himself tells it.

William R. Hawkins, writing of this in after years, says the three men had "made up their minds to go, and Dunn said he hated to leave Hall and myself, as we had been together a long time, and that we would perish in the river. [Note the fear of the river which had developed in the minds of at least three.] While we were talking, the major came up to me and laid his left arm [he had no right] across my neck, tears running down his cheeks. By that time the rest of the boys were present, and the major said to me: 'Bill, do you really mean what you say' [that he would stick to the major on the river]? I told him that I did, and he said that if he had one man that would stay with him that he would not abandon the river. I just simply said that he did not know his party."

He certainly had reason, with three men about to desert, to believe that others might. The other five were true, however, and it is only just to say that one of the deserters would have stood true, also, had it not been for his brother, who was determined to leave. They all then drank coffee together. The boat party went on, the deserters climbed out on the north, each party thinking the other party doomed. The deserters would have fared well enough and would have arrived at the Mormon settlements had it not been that the Shewits Indians on the plateau believed, or said later that they believed, that these were miners who had committed depredations on a tribe to the south. The men were therefore killed not far from Mount Dellenbaugh, and their clothing, rifles, etc., appropriated.

The place on the river where they left the major is now known as Separation Rapid. The day after they departed Powell and "the faithful five" reached the end of the great chasm without serious mishap. The names of the three deserters have justly been omitted from the roll of honor inscribed on the Powell Monument.

Powell's journal of this famous voyage is one of the most fascinating tales of adventure in literature. A large part of his meager notes having been lost, Powell repeated the trip on a more extensive basis in 1871 and 1872, obtaining then the data on which his report was based. There is no account of this second, vital expedition except in *A Canyon Voyage*, by Frederick S. Dellenbaugh, a member of that party. Afterwards Powell became director of the United States Geological Survey and of the Bureau of Ethnology, which he established.

## THE CANYON AS A RESORT

The Grand Canyon is very much more than a wonder place or a scientific museum on a titanic scale. It is a pleasure resort of the first order. It may be visited any day in the year. The railroad to the South Rim is always running and the hotel always open. When most other resorts are closed the Grand Canyon is easily accessible.

During the winter snow falls in the pine forest along the rim; and though the upper portions are snow covered, the trails into the canyon are open and safe; the floor of the canyon is warm and comfortable the year round. When nipping frosts redden cheeks on the rim, the most fragile flowers are blooming in the canyon.

The weather in July and August is warm but not hot on the rim; the altitude takes care of that. There are cool mornings, evenings, and nights no matter how warm it may be at midday.

Arizona is a land of sunshine; the air is dry and the winds are light. While spring and fall are more attractive than midsummer or mid-winter, all the seasons have each its special charm. From December to March snow is more or less abundant on the rim and a few hundred feet down the trail. Camping-out parties must then confine themselves to the inner canyon, which is more comfortable than the rim areas.

## THE NORTH RIM OF THE CANYON

There is a remarkable difference between the north and south rims. The north rim, a thousand feet higher, is a colder country, clothed with thick, lusty forests of spruce, pine, fir, and quaking aspen, with no suggestions of the desert. Springs are found here; and deer are more plentiful than in any other area in the United States, as many as 1,000 having been counted along the auto road in one evening. It is a region soon to be used by hundreds of campers-out.

The views from the north rim are markedly different. One there sees close at hand the vast temples which form the background of the south rim view. One looks down upon them, and beyond them at the distant canyon floor and its gaping gorge which hides the river; and beyond these the south rim rises like a great streaked flat wall, and beyond that again, miles away, the dim blue San Francisco Peaks. It is certainly a spectacle full of sublimity and charm. There are those who, having seen both, consider it the greater. One of these was Dutton, whose description of the view from Point Sublime has become a classic. But there are many strenuous advocates of the superiority of the south rim view, which displays close at hand the detail of the mighty chasm of the Colorado, and views the monster temples at parade, far enough away to see them in full perspective.

The trail trip to the north rim is now perfectly feasible by the completion of the Kaibab Suspension Bridge over the Colorado River and the repairs on the Kaibab Trail up Bright Angel Canyon. It is about 32 miles from Grand Canyon to the Wylie Way Camp on Bright Angel Point. About 12 miles are made the first day, stopping overnight at Phantom Ranch; the remaining 20 miles are covered the second day.

Auto transportation and rates for reaching this side of the park from the north are given on page 57.

## TABLES OF DISTANCES AND ALTITUDES

## ROADS

## HERMIT RIM ROAD, GRAND CANYON TO HEAD OF HERMIT TRAIL AND HERMIT REST—7.9 MILES

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Hermit Trail		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	7.9	6,875	Administrative headquarters of Grand Canyon National Park.
Road to Havasupai.....	.5	7.4	6,820	To Havasupai Indian Reservation, 47 miles distant.
Trail to Hermit Rest.....	1.4	6.5	6,900	By foot or horseback to Hermit Rest or Hermit Trail, 5 miles.
Powell Memorial.....	2.0	5.9	7,050	Memorial to Maj. John Wesley Powell, Sentinel Point.
Hopi Point.....	2.2	5.7	7,071	Fine view. Sometimes called Sunset Point.
Mohave Point.....	3.0	4.9	7,000	View of canyon and river.
The Abyss.....	4.2	3.7	6,850	Looking down from the Great Mohave Wall.
Cut-off to Hermit Rest.....	5.2	2.7	6,800	Old road to Hermit Rest.
Piñon Cove.....	6.0	1.9	6,750	Grove of piñon pines.
Pima Point.....	6.7	1.2	6,750	Fine view of canyon and river, with Hermit Creek Cabins visible beneath.
Cut-off to Grand Canyon.....	7.4	.5	6,700	Old road to Grand Canyon, 5 miles.
Hermit Rest.....	7.6	.3	6,690	Interesting Harvey rest house. Light refreshments.
Trail to Natural Bridges.....	7.6	.3	6,690	Natural Bridges in limestone, $\frac{1}{4}$ mile.
Head of Hermit Trail.....	7.9	0	6,665	7.5 miles to Hermit Creek Cabins.

## GRAND CANYON, GRAND VIEW, DESERT VIEW ROAD—GRAND CANYON TO DESERT VIEW—30 MILES

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Desert View		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	30.00	6,875	Administrative headquarters of Grand Canyon National Park.
Road to Yavapai Point..	.60	29.40	6,940	View of canyon and river. Kaibab Suspension Bridge visible beneath.
Motor crossing.....	.90	29.10	6,975	Cattle guard in drift fence that encircles headquarters district.
Trail to Yaki Point.....	1.50	28.50	6,925	Trail through forest. Sometimes called Cremation Point.
Moqui Trail.....	2.50	27.50	6,900	Saddle-horse trail to Grand View.
Rowe Well Road.....	3.50	26.50	6,925	Old road to Rowe Well Ranger Station.
Trail to Shoshone Point..	4.00	26.00	6,800	Locally called Inspiration Point, 4.5 miles.
Williams Road Junction..	4.30	25.70	6,850	Checking station. Take right-hand road to Maine, Williams, and Flagstaff.
Long Jim Canyon.....	5.30	24.70	6,811	A typical surface canyon or wash.
Long Jim tool cache.....	6.10	23.90	6,860	A cache for tools used by rangers in fighting fire. Telephone.
Long Jim Canyon, east end.....	8.60	21.40	7,175	
Thor's Hammer.....	10.10	19.90	-----	Notable columns of limestone.
To Grand View Point.....	12.25	17.75	7,406	Magnificent view of canyon, Painted Desert, Navajo Mountain, river, etc.
Grand View Hotel.....	13.10	16.90	7,500	Old stage hotel. Not in operation for many years. Highest point on south rim.
Grand View Camp Grounds.....	13.25	16.75	7,490	Public camp grounds and ranger station, season May to October.
Hance ranch.....	14.20	15.80	-----	Old home of Capt. John Hance, first settler on rim of Grand Canyon.
Park boundary.....	14.80	15.20	-----	Grand View entrance to the park.
Flagstaff road.....	15.70	14.30	-----	Old stage road from Flagstaff. Abandoned.
Park boundary.....	25.75	4.25	7,060	Desert View entrance to the park.
Lipan Point.....	27.90	2.10	7,359	Locally called Lincoln Point.
Desert View.....	30.00	0	7,450	Navajo Point. Fine view of Marble Canyon, Painted Desert, Navajo Mountain, etc.

## ROADS—Continued

## GRAND CANYON, ROWES RANCH, TUBA CITY, MOENKOPI, FLAGSTAFF

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Tuba City		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon .....	0	77.4	-----	One of the first settlers in Grand Canyon. The first view of the Painted Desert. Steel suspension bridge over Little Colorado. Headquarters, Navajo Indian agent. Hopi Village.
Rowes Ranch .....	27.7	49.7	-----	
Waterloo Hill .....	32.9	44.5	-----	
Cameron Bridge .....	54.6	22.8	-----	
Tuba City .....	77.4	0	-----	
Moenkopi via Tuba City .....	80.9	-----	-----	
Cameron Bridge to Flagstaff .....	58	-----	-----	
Flagstaff to Grand Canyon via Malne .....	83	-----	-----	

## TOPOCOBYA ROAD, GRAND CANYON TO HILL TOP—HEAD OF HAVASU TRAIL VIA ROWE WELL—33.2 MILES

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Hill Top		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon .....	0	33.20	6,875	Administrative headquarters of Grand Canyon National Park.
Topocoby Road .....	.55	32.65	6,820	Road to Hill Top and Topocoby Spring the head of Havasu Trail, 15 miles to Havasupai Indian Reservation.
Trail to Hermit Rest .....	.70	32.50	6,800	
Drift fence .....	1.95	31.25	-----	
Railroad crossing .....	2.35	30.85	6,650	
Old road to Grand View .....	2.65	30.55	6,625	
Railroad crossing .....	2.95	30.25	-----	
Rowe Well Road .....	3.10	30.10	6,600	Road to Rowe Well ranger station.
Rowe Well ranger station .....	3.60	29.60	6,681	Ranger station, National Park Service. Telephone.
Waldron Trail .....	6.25	26.95	6,462	To Hermit Trail, Hermit Basin, and Hermit Rest.
Dripping Springs tool cache .....	7.00	26.20	6,375	Trail to Dripping Springs. Fine spring and good trail, 3 miles. Fire tools.
Bench mark, United States Geological Survey .....	9.90	23.30	6,340	
Road to Bass Camp .....	12.50	20.70	6,235	United States Geological Survey bench mark. Road to Havasupai Point.
Ranch .....	14.00	19.20	-----	
Section corner 10 and 11 .....	15.80	17.40	-----	
Road to Bass Camp .....	17.60	15.60	6,154	United States Geological Survey bench mark.
Bench mark, United States Geological Survey .....	20.00	13.20	6,074	
Supai drift fence .....	21.40	11.80	6,061	United States Geological Survey bench mark. Indian pasture.
Top of mesa .....	27.80	5.40	-----	
Top of grade .....	28.20	5.00	-----	
Bench mark in Lee's Canyon .....	29.70	3.50	5,771	
Bench mark .....	31.30	1.90	5,772	
Supai warehouse .....	33.20	0	-----	Reservation storehouse at head of trail. Water.
Topocoby Spring .....	33.70	.50	-----	

## ROADS—Continued

## APPROACH ROAD, GRAND CANYON TO NATIONAL OLD TRAILS ROAD AND SANTA FE RAILROAD AT MAINE

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Maine, Ariz.		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	64.00	6,875	Administrative headquarters of Grand Canyon National Park. Hotels, information, etc.
Road to Yavapai Point..	.65	63.35	6,890	Fine view of canyon. Kaibab Suspension Bridge visible beneath.
Motor crossing.....	.90	63.10		Cattle-proof crossing through drift fence.
Williams Road checking station.	4.30	59.70	6,850	Ranger station. All cars stop and register.
Park entrance.....	5.50	58.50	5,718	South entrance to Grand Canyon National Park.
Rain tank.....	9.90	54.10		Earth tank for cattle.
Fork of road.....	10.00	54.00		Left-hand fork to Maine, Ariz.
Red Butte.....	20.00	44.00		
Mortz Lake.....	49.00	15.00		
Maine.....	64.00	0		Junction with Old Trails road.
Williams.....	79.00	15.00	6,762	Nearest shopping point to Grand Canyon.
Flagstaff.....	84.00	20.00	6,896	County seat of Coconino County.

## NORTH RIM GRAND CANYON NATIONAL PARK TO ZION NATIONAL PARK—170.9 MILES

Place	Distance from—		Altitude	Remarks
	North rim	Zion Park		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Wylie Way Camp.....	0	170.90	8,250	Accommodations for travelers on Bright Angel Point, north rim of Grand Canyon.
North rim ranger station.	2.00	168.90	8,100	National Park Service ranger station. Headquarters for north rim.
North entrance Grand Canyon National Park.	4.20	166.70	8,450	North entrance to Grand Canyon National Park.
De Motte Park.....	14.40	156.60	8,900	A typical park or meadow. Range of mule, deer.
Pleasant Valley.....	22.40	148.50	8,500	
Crane Lake.....	24.40	146.50		
East Lake.....	26.90	144.00		
Jacob's Lake lookout station.	29.20	141.70		Range of white-tailed squirrels.
Jacob's Lake ranger station, Forest Service.	42.40	128.50		Forest Service ranger station.
Drift fence.....	45.40	125.50		Boundary line of proposed President's Forest.
Fredonia.....	75.40	95.50		Only post office in Arizona north of the Grand Canyon.
Kanab.....	82.40	102.50	4,920	Most southerly town in Utah. Good hotel.
Pipe Spring.....	89.90	81.00		Old Mormon fort. Spring formerly came out of the solid rock in the stockade.
Cedar Mountain.....	99.90	71.00		
House, Antelope Springs.	121.90	49.00		
Red Creek.....	125.40	45.50		
Short Creek.....	135.90	35.00		Sheep corrals.
Top Hurricane fault.....	141.40	29.50		Great Hurricane fault.
Hurricane.....	142.40	28.50		Utah's Dixie. Population, 1,021.
Zion National Park.....	170.90	0		Yosemite done in oils.

## ROADS—Continued

## APPROACH ROAD, GRAND CANYON TO NATIONAL OLD TRAILS HIGHWAY AND SANTA FE RAILROAD AT WILLIAMS

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Williams		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	64.00	-----	Administrative headquarters of Grand Canyon National Park. Hotels, information, etc.
Road to Yavapai Point..	.65	63.35	-----	Fine view of canyon, Kaibab Suspension Bridge and Phantom Ranch visible beneath.
Motor crossing.....	.90	63.10	-----	Cattle-proof crossing through drift fence.
Williams Road checking station.	4.30	59.70	-----	Ranger station. All cars stop and register.
Park entrance.....	5.50	58.50	-----	South entrance to Grand Canyon National Park.
Rain tank.....	9.90	54.10	-----	Earth tank for cattle.
Fork of road.....	10.00	54.00	-----	Right-hand fork for Williams.
Anita.....	22.00	42.00	-----	Stock tanks and sheep corral.
Red Lake.....	56.00	8.00	-----	Small lake and junction with Spring Valley road—connection of Maine with Williams road.
Williams.....	64.00	0	-----	Nearest shopping point to Grand Canyon.

## TRAILS

## GRAND CANYON TO NORTH RIM RANGER STATION VIA BRIGHT ANGEL, TONTO AND KAIBAB TRAILS—30 MILES

Place	Distance from—		Altitude	Remarks
	Grand Canyon	North rim		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	30.00	6,875	Administrative headquarters of Grand Canyon National Park. Hotels, etc.
Head of Bright Angel Trail.	.40	29.60	6,866	Foot trail to ancient Indian pictographs and hole in the wall.
Jacob's Ladder.....	2.50	27.50	4,850	The part of trail built through blue limestone 550 feet thick.
Indian Gardens.....	3.70	26.30	3,876	Grove of cottonwood trees watered by Garden Creek. Former home of Indians.
Tonto Trail.....	4.30	25.70	3,750	Left-hand fork to Plateau Point, 1.5 miles. Hermit Creek Cabins, 17 miles.
Do.....	5.00	25.00	-----	Left-hand fork to Colorado River at foot of Bright Angel Trail.
Pipe Creek.....	7.00	23.00	3,650	Ranger camp. Not always occupied.
Burro Springs.....	7.30	22.70	-----	Good water.
Head of Kaibab Trail....	9.00	21.00	4,000	Left-hand fork to Kaibab Suspension Bridge and north rim.
Kaibab Suspension bridge	11.00	19.00	2,500	Built by National Park Service in 1921. Only bridge across Colorado for several hundred miles.
Phantom Ranch.....	11.50	18.50	2,550	Interesting new Harvey Camp, stone cottages. Well located for hiking, climbing, etc.
Phantom Creek.....	13.00	17.00	2,950	A deep canyon coming in from the west.
Head of Box Canyon.....	15.00	15.00	3,350	Near end of granite in Bright Angel Creek.
Ribbon Falls.....	17.00	13.00	3,750	Very beautiful falls where creek drops over red wall.
Wall Creek.....	17.80	12.20	3,850	Creek coming from the right. Old name is Beaver Creek.
Transept Creek.....	19.00	11.00	4,150	The Transept on left.
Roaring Springs.....	21.00	9.00	4,750	Large springs gushing out on left.
Last Crossing.....	22.00	8.00	5,050	Last crossing of Bright Angel Creek. Fill your canteens.
Troughs Spring.....	24.00	6.00	6,325	Spring on top of red wall.
Topping-out point.....	26.00	4.00	8,250	End of climb. North rim.
DeWolley Cabin.....	29.00	1.00	8,200	Old ranger cabin. Headquarters of saddle-horse concessioners.
North rim ranger station..	30.00	0	8,150	Ranger headquarters on north rim. Register. Information service.
Wylie Way Camp.....	32.00	0	8,250	Accommodations for north rim visitors.

## TRAILS—Continued

## GRAND CANYON TO HERMIT CREEK CABINS VIA BRIGHT ANGEL AND TONTO TRAILS—21 MILES

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Hermit Cabins		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	21.00	6,875	Administrative headquarters of Grand Canyon National Park. Hotels, post office, etc.
Jacob's Ladder.....	2.50	18.50	4,850	Trail through blue limestone, 550 feet.
Indian Gardens.....	3.70	17.30	3,876	Grove of cottonwood trees watered by Garden Creek. Former home of Indians.
Tonto Trail.....	4.30	16.70	3,750	Right-hand fork to Colorado River and Camp Roosevelt.
Plateau Point.....	4.70	16.30	3,750	Plateau Point, 1 mile.
Battleship.....	5.50	15.50	3,700	Battleship on left.
Horn Creek.....	7.20	13.80	3,550	
Dana Butte.....	9.00	12.00	3,650	View of gorge, river, etc.
The Inferno.....	11.50	9.50	3,400	Locally called Hell's Half Acre.
Salt Creek.....	12.30	8.70	3,440	
The Alligator.....	14.00	7.00	3,450	Butte called Alligator on left.
Cedar Spring.....	15.00	6.00	3,400	Good water.
Monument Creek.....	17.50	3.50	3,200	Very scenic.
Hermit Cabins.....	21.00	0	3,050	Fine Fred Harvey camp.
Colorado River, foot Hermit Trail.	23.00	2.00	2,440	Hermit Rapids.

## GRAND CANYON TO HERMIT CREEK CABINS THROUGH WOODS AND HERMIT TRAIL—12 MILES

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Hermit Cabins		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	12.00	6,875	Administrative headquarters of Grand Canyon National Park.
Hermit Trail.....	5.00	7.00	6,665	Harvey corral.
Marshal Foch Rock.....	5.30	6.70	6,575	Rock where Marshal Foch sat for half hour or more smoking his pipe December, 1921.
Waldron Trail.....	6.00	6.00	5,270	Trail to Rowe Well Road.
Dripping Springs Trail.....	5.50	6.50	5,260	Trail to Dripping Springs and Boucher Trail.
Santa Maria Spring.....	7.00	5.00	5,250	Good water. Rest pavilion.
Four Mile Spring.....	9.00	3.00	4,550	Good water.
Cathedral Stairs.....	10.00	2.00	4,530	
Hermit Cabins.....	12.00	0	3,050	Fine Harvey camp.

## SHORT WALKS NEAR GRAND CANYON

Place	Distance and direction from El Tovar	By—	Altitude	Remarks
	<i>Miles</i>		<i>Feet</i>	
The Lookout Telescope.....	0.3 west.....	Grand Canyon Rim Trail.	6,866	Observatory. Curios on sale. Pictures.
Kohb Bros. Studio.....	0.4 west.....	do.....	6,850	Studio. Grand Canyon moving picture lecture daily of voyage through canyon.
Pictograph Rock, Hole in Wall.....	0.6 west.....	Grand Canyon Rim Trail and foot trail.		Interesting foot trail from Bright Angel Trail. Ancient Indian pictographs.
Pinnacle Rock.....	0.8 west.....	Rim foot trail.....	6,870	Walk through woods. Fine view of San Francisco peaks.
Maricopa Point.....	1.8 west.....	Grand Canyon Rim foot trail.	7,000	Fine view of canyon.
The Battleship.....	2.5 north.....	Bright Angel Trail.	5,867	Rough foot trail from Bright Angel Trail.
Indian Gardens.....	3.7 north.....	do.....	3,876	Fine creek of good water.
Independent Store.....	0.3 east.....	Grand Canyon Rim foot trail.	6,880	Indian handiwork and curios.
Grandeur Point.....	1.3 east.....	do.....	7,050	Fine view. Kaibab Suspension Bridge visible.
Yavapai Point.....	1.5 east.....	do.....		
Rowe Well.....	3.6 southwest.....	Rowe Well Road.....	6,681	Ranger station. Good water. Telephone.



## HOW LONG TO STAY

*Time required.*—While one ought to remain a week or two, a stop-over of three or four days from the transcontinental trip will be quite satisfactory. The Hermit Loop overnight trip, down one trail and up another, requires two days and a night, or more time may be taken and include Phantom Ranch. One day should be devoted to an auto ride along the Hermit Rim Road, and by auto to Grand View and Desert View. Another day go down Bright Angel Trail and back. A fourth day spent in short walks to nearby points or on horseback will enable visitors to get more intimate views.

The several trips mentioned above are all well worth while, and the high plateau above the rim affords many delightful horseback or hiking trips.

The north rim offers the best opportunity for camping out during the summer months. The high altitude makes the weather uniformly cool, while the magnificent forest through which roam thousands of deer creates a delightful setting. There are a number of springs, and the water supply is not a serious problem.

The National Park Service of the Department of the Interior recommends to the traveling public that stopovers of as long duration as practicable be planned at points within the park; that Grand Canyon National Park be regarded not alone as a region which may be glimpsed on a hurried trip, but also as a vacation playground for rest and recreation.

## WHAT TO WEAR

If much tramping is done, stout, thick, hobnailed shoes should be provided. Ladies will find that short walking skirts are a convenience; riding trousers are preferable, but not essential, for the horseback journey down the zigzag trails. Traveling caps and (in summer) broad-brimmed straw hats are useful adjuncts. Otherwise ordinary clothing will suffice. Riding trousers, divided skirts, and straw hats may be rented at El Tovar Hotel.

## ADMINISTRATION

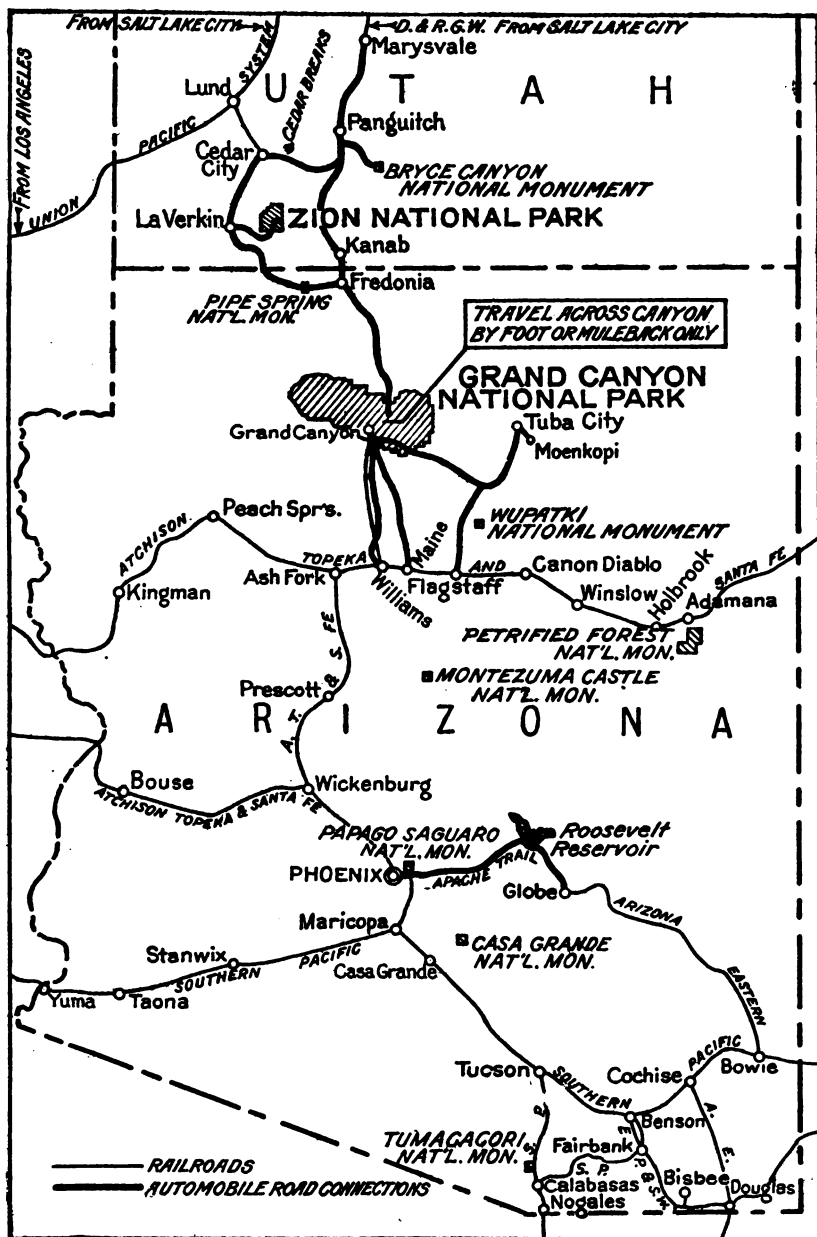
Grand Canyon National Park is under the jurisdiction of the Director, National Park Service, Department of the Interior, Washington, D. C. The park superintendent, Mr. J. R. Eakin is located at Grand Canyon, Ariz., and information, maps, and pamphlets may be obtained at the office, where visitors are cordially welcomed. The office of the superintendent is 100 yards east of the Grand Canyon Railway station.

The park, El Tovar Hotel, the Bright Angel cottages, and the cabins at Hermit Creek and Phantom Ranch at the mouth of Bright Angel Creek are always open. Accommodations may be had at Wylie Way Camp on the north rim during the summer months only.

## HOW TO REACH THE PARK

## BY RAIL

The Grand Canyon National Park is directly reached by a branch line of the Atchison, Topeka & Santa Fe Railway extending 64 miles



MAP SHOWING RAILROAD CONNECTIONS TO GRAND CANYON NATIONAL PARK

northward from Williams, Ariz. On certain trains through standard Pullman cars are operated to and from Grand Canyon station. Pas-

sengers using other trains and stopping over at Williams will excellent accommodations at the Fray Marcos, station hotel.

Stop-overs, not to exceed 10 days, are granted at Williams classes of railroad tickets for a visit to the canyon. Limits of the railroad tickets will be extended if necessary by agent at the Canyon. Through tickets may include side-trip coupons, Williams to Grand Canyon and return, at an additional charge of \$9.12.

Round-trip excursion tickets at reduced fares are on sale from practically all stations in the United States and Canada to the Grand Canyon as a destination.

Baggage may be checked through to Grand Canyon station if required. Passengers making brief side trips to Grand Canyon may check baggage to Williams only or through to destination. Other regulations for free storage of baggage for Grand Canyon passengers are in effect.

For further information regarding railroad fares, service, apply to railroad ticket agents, or address:

W. J. Black, passenger traffic manager, Atchison, Topeka & Santa Fe Railway system, Chicago, Ill.

J. B. Duffy, general passenger agent, Atchison, Topeka & Santa Fe Railway system, Coast Lines, Los Angeles, Cal.

The Union Pacific delivers tourists for the north rim at Moenab City, Utah, and the Denver & Rio Grande Western, at Moenab vale. The former is approximately 175 miles from the Grand Canyon, and the latter approximately 217 miles. Regular stage service is maintained from both these points to the Grand Canyon National Park.

Complete information concerning these trips can be had from

W. S. Basinger, passenger traffic manager, Union Pacific system, Omaha, Nebr.

F. A. Wadleigh, passenger traffic manager, Denver & Rio Grande Western, Denver, Colo.

Parties making the trip from either of these places to the Canyon can make an interesting trip covering Bryce Canyon, Cedar Breaks and Zion National Park.

If parties desire, they can make the trip from the north, taking all these features, cross the canyon and continue their trip on the Santa Fe Railroad. This can also be reversed, entering the canyon via the Santa Fe, crossing the canyon to the north rim, then on motor bus to either of the two railways mentioned above, where the trip may be continued. Arrangements for such a trip should be made at the time tickets are purchased.

#### BY AUTOMOBILE

Automobile tourists may leave the National Old Trails Highway which is the main east and west highway through Arizona at Moenab or Williams. In wet weather, the latter road is better.





*Flagstaff.*—It is 98 miles from Flagstaff to Grand Canyon via Williams and 83 miles via Maine. At times in early spring, during summer rains, or late fall it is advisable to inquire at Flagstaff or Williams as to road conditions. The Maine Road traverses more beautiful forests and is more scenic than the Williams Road, but is apt to be in worse condition, depending upon the amount of moisture



MAP SHOWING PRINCIPAL AUTOMOBILE ROUTES IN COLORADO, UTAH, ARIZONA, AND NEW MEXICO.

that has fallen. The town of Flagstaff is located in the heart of the San Francisco uplift and has good stores and garage facilities. In this vicinity are prehistoric cliff dwellings, extinct craters, volcanic cones, lava beds, and ice caves. The summit of Humphreys Peak, one of the peaks forming the San Francisco Mountains, is 12,750 feet above sea level.

*Williams.*—Williams, 64 miles from Grand Canyon, is 34 miles west of Flagstaff and 15 miles west of Maine, on the main east and west highway through Arizona. It is the nearest shopping center, and its stores and garages carry a good stock of everything necessary to the automobile tourist. Williams is a center for a number of interesting side trips.

The route from Williams passes Bill Williams Mountain (elevation 9,264 feet, which has seven distinct crests), Red Lake, Howard Lake, and Anita, running along the line of the Grand Canyon Railway. No supplies can be purchased between Williams or Maine and Grand Canyon.

#### NORTH RIM—GRAND CANYON NATIONAL PARK

Autoists who desire to travel good roads only in driving from the south rim to the north rim must take a long detour through California, Nevada, Utah, and Arizona, or if the trip is made in the other direction must detour through New Mexico, Colorado, Utah, and back into Arizona. There is a poor road via Lee's Ferry which reduces the distance to 238 miles. None but experienced drivers over bad roads should attempt this trip. Those who undertake it must carry a reserve supply of gasoline and oil.

#### ROAD SIGN INFORMATION

As fast as funds are available for that purpose the National Park Service is having standard signs placed along the roads and trails of this park for the information and guidance of the motorists and other visitors that use the park roads and trails.

These signs, in general, consist of information signs, direction signs, elevation signs, and name signs, all of which are of rectangular shape and mounted horizontally; and milepost signs, rectangular in shape but mounted diagonally, all of which usually have dark, green background and white letters or vice versa; and danger or cautionary signs, most of which are circular in shape and usually have red background and white letters; and comfort station, lavatory, and similar signs, triangular in shape, having dark-green background and white letters. These last signs are so mounted that when pointing down they designate ladies' accommodations and when pointing upward they designate men's accommodations.

The text on the standard road signs is in sufficiently large type to ordinarily permit their being read by a motorist when traveling at a suitable speed; however, as an additional safeguard, the motorist must always immediately slow down or stop or otherwise fully comply with the injunctions shown on the circular red cautionary signs.

Because of lack of funds it has not been possible to place cautionary signs at all hazardous places in the roads; therefore the motorist must always have his car under full control, keep to the right, and sound horn when on curves that are blind, and not exceed the speed limit, which is 20 miles per hour on straight, fairly level road and 12 miles per hour on curves, narrow or steep descending sections of road.

#### AUTOMOBILE SUPPLIES

At Grand Canyon village is an excellent garage under the management of Fred Harvey. Storage or repair service, as well as gasoline and oil, may be procured here.

#### GROCERIES

The Babbitt Bros. Trading Co.'s general store at Grand Canyon carries a full line of groceries and campers' supplies.

#### WATER

A supply of water for drinking purposes and for radiation, sufficient to last to Grand Canyon, should be brought from Williams or Flagstaff. Campers may obtain water from the railroad station agent at Grand Canyon.

#### PUBLIC UTILITIES AND CONVENIENCES

##### POST OFFICE

The post office (third class), which does all kinds of postal business, is situated near the Hermit Rim Road, about 400 yards west of the railroad depot. It is open from 8 a. m. to 6 p. m. Mail trains arrive at 8.20 a. m. and 3.55 p. m. and leave at 8.20 a. m. and 7.25 p. m.

##### TELEGRAPH

The Western Union offices at the railroad depot are open from 7.30 a. m. to 8 p. m. and at El Tovar Hotel from 8 a. m. to 12 m. and from 4 p. m. to 8 p. m.

##### TELEPHONE

There is telephone connection between El Tovar Hotel, National Park Service Office, ranger stations, Hermit Cabins, Phantom Ranch, and the north rim. There is also telephone connection to points outside of the park.

##### LECTURE

Every evening at 8 o'clock a lecture, illustrated with moving pictures and slides, is given on Grand Canyon National Park and the surrounding country. Admission to this lecture, which is given



in the music room at El Tovar Hotel, is free, and all visitors to the park are invited to attend.

#### NATIONAL PARK SERVICE STATIONS

There are ranger stations or camps where assistance and shelter may in emergency be obtained at places here named. These may be unoccupied, and it is well to inquire at the office of the superintendent:

Hermit Basin, Pipe Creek on Tonto Trail 2 miles east of Indian Garden, Grand View Public Camp, Rowe Well ranger station, the ranger station on the north rim and Grand Canyon.

#### MEDICAL SERVICE

There is a doctor of long experience in the park and a trained nurse at El Tovar Hotel. The nearest hospital is at Williams, Ariz. There is a hospital at Flagstaff, Ariz.

#### PETRIFIED FOREST NATIONAL MONUMENT

Tourists visiting Grand Canyon National Park either by rail or by automobile should plan a stop-over at the Petrified Forest National Monument.

There are three groups of petrified trees in this reservation. The first forest lies 6 miles south of Adamana, Ariz., a station on the main line of the Atchison, Topeka & Santa Fe Railway, and the second forest is 2½ miles south of it. The third or Rainbow Forest lies 13 miles south of Adamana and 18 miles southeast of Holbrook, Ariz. It is best to approach the third forest from Holbrook; the other two are best reached from Adamana.

This area is of great interest because of the abundance of petrified coniferous trees which lie scattered about in great profusion. None are standing as in the Yellowstone National Park. These trees probably at one time grew beside an inland sea; after falling they became water-logged and during the decomposition the cell structure was entirely replaced by silica derived from sandstone in the surrounding land. Over a greater part of the entire area trees are scattered in all conceivable positions and in fragments of all sizes.

In the first forest may be seen the well-known natural bridge, consisting of a large petrified tree trunk 60 feet long spanning a canyon 45 feet wide, and forming a foot bridge over which anyone may easily pass. The trunks in the Rainbow Forest are larger than elsewhere, more numerous, and less broken. Several hundred entire trees are found here, some of which are more than 200 feet long. The color of the wood is deeper and more striking than in the other localities.

"There is no other petrified forest," says Prof. Lester F. Ward, "in which the wood assumes so many varied and interesting forms and colors, and it is these that present the chief attraction for the general public. The state of mineralization in which much of this

wood exists almost places them among the gems or precious stones. Not only are chalcedony, opals, and agates found among them, but many approach the condition of jasper and onyx. The degree of hardness attained by them is such that they are said to make an excellent quality of emery."

#### ADMINISTRATION

Petrified Forest National Monument is under the jurisdiction of the Director, National Park Service, Department of the Interior, Washington, D. C., and is in charge of a custodian residing in the third forest. At this place has been built a small museum housing a wonderful display of polished petrified wood, also a fine collection of the more rare specimens.

*Notice:* It is unlawful to take specimens of petrified wood, of *any size whatsoever*, from the reserved area. Samples for souvenirs may be obtained from various points outside of the boundaries of the monument.

#### COSTS OF TRIPS AND HOTEL ACCOMMODATIONS

Adamana is a small place, consisting chiefly of hotel, post office, railway station, and a small store. The Forest Hotel has electric lights, sanitary plumbing, with hot and cold water. Rates: \$5.50 per day, American plan; meals only \$1 each; 35 guests can be accommodated in summer.

From Adamana the following auto trips are made: (1) To the first and second forests and the natural bridge; (2) to the third or Rainbow Forest; (3) to the Blue Forest; (4) to the Painted Desert and the North Sigillaria Forest.

#### RATES

The round-trip fare from Adamana for trips 1, 3, and 4 is \$5 for one person, \$3 per capita for two persons, and \$2.50 per capita for three or more; round-trip fare for trip 2 is \$10, \$6, and \$5, respectively. About one-half day is allotted to each trip, although three trips can be made in a day.

Holbrook, the county seat of Navajo County, has satisfactory hotel accommodations, with prices about the same as at Adamana. Round-trip fare from Holbrook to third or Rainbow Forest is \$7.50 for one passenger, \$3.75 each for two passengers, \$2.50 each for three or more passengers.

The Petrified Forest may be visited from Adamana any day in the year, except when high waters make the streams temporarily impassable.

#### STOP-OVER ARRANGEMENTS

Stop-overs are allowed at Adamana, not to exceed 10 days, on all one-way railroad tickets, also on round-trip railroad tickets within their limits.

To obtain stop-overs on one-way railroad tickets, notify train conductor and deposit tickets with agent immediately after arrival; on round-trip tickets notify train conductors.

## RULES AND REGULATIONS

(Approved March 5, 1925, 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 Grand Canyon National Park are hereby established and made public pursuant to authority conferred by the act of Congress approved August 25, 1916 (39 Stat. 536), as amended June 2, 1920 (41 Stat. 732), and the act of February 26, 1919 (40 Stat. 1175):

1. *Preservation of natural features and curiosities.*—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.*—No camp shall be made along roads except at designated localities. Blankets, clothing, hammocks, or any other article likely to frighten teams shall not be hung near the road.

Many successive parties camp on the same sites during the season; therefore camp grounds shall be thoroughly cleaned before they are abandoned. Tin cans, bottles, cast-off clothing, and all other débris shall be placed in garbage cans or pits provided for the purpose. When camps are made in unfrequented localities where pits or cans may not be provided, all refuse shall be burned or hidden where it will not be offensive to the eye.

Campers may use dead or fallen timber only for fuel.

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 beds smothered with earth or water, so that there remains no possibility of reignition.

Special 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 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, en-

snaring, 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 the responsibility of custody of any property for the convenience of visitors.

5. *Fishing*.—Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line, or for merchandise or profit, is prohibited. Fishing in particular water may be suspended, or the number of fish that may be taken by one person in any one day from the various streams or lakes may be regulated by the superintendent. All fish hooked less than 6 inches long shall be carefully handled with moist hands and returned at once to the water if not seriously injured. Fish retained shall be killed. Twenty fish shall constitute the limit for a day's catch, provided that no more than 20 pounds of trout, bass, crappie, or catfish may be taken in any one day.

6. *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 standard-size moving-picture camera, such as is used for commercial purposes, must be secured from the superintendent of the park.

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

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

9. *Mining*.—The location of mining claims on Government lands in the park is permitted only with the prior approval of the Secretary of the Interior.

10. *Patented lands*.—Owners of patented lands within the park limits are entitled to the full use and enjoyment thereof; the boundaries of such lands, however, shall be determined and marked and defined so that they may be readily distinguished from the park lands. While no limitations or conditions are imposed upon the use of private lands so long as such use does not interfere with or injure the park, private owners shall provide against trespass by their live stock upon the park lands, and all trespasses committed will be punished to the full extent of the law. Stock may be taken over the park lands to patented private lands with the written permission and under the supervision of the superintendent, but such permission and supervision are not required when access to such private lands is had wholly over roads or lands not owned or controlled by the United States.

11. *Grazing*.—The running at large, herding, or grazing of live stock of any kind on the Government lands 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 and cats*.—Cats are not permitted on the Government lands in the park and dogs only to those persons passing through the park to the territory beyond, in which instances they shall be kept tied while crossing 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 on trails*.—Pedestrians on trails, when saddle or pack animals are passing them, shall remain quiet until the animals have passed.

Persons traveling on the trails of the park either on foot or on saddle animals shall not make short cuts but shall confine themselves to the main trails.

16. *Travel—general.*—(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.

17. *Miscellaneous.*—(a) Campers and others shall not wash clothing or cooking utensils in the waters of the park, or in any way pollute them, or bathe in any of the streams near the regularly traveled thoroughfares in the park without suitable bathing clothes.

(b) 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.

(c) 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.

(d) 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.

18. *Fines and penalties.*—Persons who render themselves obnoxious by disorderly conduct or bad behavior shall be subjected to the punishment hereinafter prescribed for violation of the foregoing regulations and 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.

19. *Lost and found articles.*—Persons finding lost articles should deposit them at the nearest ranger station, leaving their own names

and addresses, so that if not claimed by owners within 60 days, articles may be turned over to those who found them.

#### AUTOMOBILE AND MOTORCYCLE REGULATIONS

Pursuant to authority conferred by the act of Congress approved August 25, 1916 (39 Stat., 535), as amended June 2, 1920 (41 Stat., 732), and the act of February 26, 1919 (40 Stat., 1175), the following regulations covering the admission of automobiles and motorcycles into the Grand Canyon National Park are hereby established and made public:

1. *Entrances and roads.*—Automobiles and motorcycles may enter and leave the park by, and travel over, any of the roads therein which are open to motor vehicles.

Careful driving is demanded of all persons using the roads. The Government is in no way responsible for any kind of accident.

2. *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. Automobiles and horse-drawn vehicles shall have the right of way over motorcycles.

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

4. *Hours.*—Automobiles shall not enter or leave the park or use the park roads before 5.30 a. m. or after 10.30 p. m. except in case of emergency.

5. *Intoxication.*—No person who is under the influence of intoxicating liquor, and no person who is addicted to the use of narcotic drugs, shall operate or drive a motor vehicle of any kind on the park roads.

6. *Distance apart; gears and brakes.*—Automobiles while in motion shall be not less than 50 yards apart, except for purpose of passing, which is permissible only on comparatively level stretches of roads or on slight grades. All automobiles, except while shifting gears, shall retain their gears constantly enmeshed. The driver of each automobile may be required to satisfy park officers 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. Motorcycles not equipped with brakes in good working order are not permitted to enter the park.

7. *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 20 miles per hour.

8. *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 automobiles, motorcycles, riding or driving animals, or pedestrians.

9. *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 road. Headlights shall be dimmed when meeting other automobiles, motorcycles, riding or driving animals, or pedestrians.

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

11. *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 an hour.

12. *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 road in question.

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.

13. *Accidents, stop-overs*.—If, because of accident or stop for any reason, automobiles are unable to keep going, they shall be immediately parked off the road or, where this is impossible, on the outer edge of the road.

14. *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, and such violation shall subject the offender to immediate ejection from the park. Persons ejected from the park will not be permitted to return without prior sanction in writing from the Director of the National Park Service or the superintendent of the park.



## MAPS

The following maps<sup>4</sup> may be obtained from the Director of the United States Geological Survey, Washington, D. C. Remittances should be made by money order or in cash.

SHINUMO, 28½ by 25 inches, scale about 1 mile to 1½ inches, contour interval 50 feet.

BRIGHT ANGEL, 26 by 20½ inches, scale about 1 mile to 1½ inches, contour interval 50 feet. An account of the geologic history of the Grand Canyon and a description of the rocks, by L. F. Noble, is printed on the reverse side of the map.

VISHNU, 28 by 21 inches, scale about 1 mile to 1½ inches, contour interval 50 feet.

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

## LITERATURE

## GOVERNMENT PUBLICATIONS

Government publications on Grand Canyon 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.

Map of National Parks and National Monuments.

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

Map of the western United States.

Shows the National Park-to-Park Highway and other roads.

Glimpses of Our National Parks. 59 pages, including 23 illustrations.

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

## 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 indicated. Postage prepaid. Remittances should be made by money order or in cash.

**The National Parks Portfolio.** By Robert Sterling Yard. Third Edition. 248 pages, including 306 illustrations. Bound securely in cloth. \$1.<sup>4</sup>

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

**Guidebook of the Western United States, Part C, the Santa Fe Route, with a side trip to the Grand Canyon of the Colorado,** by N. H. Darton and others. (Bulletin 613, U. S. Geological Survey.) 1915. 194 pages, 25 route maps, 42 plates, 40 text figures. 50 cents.<sup>4</sup>

This guide describes the country along the Atchison, Topeka & Santa Fe Railway from Kansas City to Los Angeles. Although the description of the rocks and their relations and the scenic features form a large proportion of the matter, nearly every page gives information as to notable historic events, industrial resources, plants, and animals. The story of the Indians, past and present, especially the chase-

<sup>4</sup> May be purchased also by personal application at the office of the superintendent of the park, but that office can not fill mail orders.

teristic Pueblo tribes, is told in some detail. Many of the facts regarding the rocks are here presented for the first time. The book contains numerous views of prominent scenic features and pictures of restoration of some of the very remarkable animals whose bones are found in the clays.

Exploration of the Colorado River of the West and Its Tributaries, by John Wesley Powell. Explored in 1869, 1870, 1871, and 1872. Pp. 291. Under the direction of the Secretary of the Smithsonian Institution. Illustrated. Government Printing Office, Washington, 1875. (Out of print.)

Pre-Cambrian Igneous Rocks of the Unkar Terrane, Grand Canyon of the Colorado, Ariz., by C. D. Walcott. U. S. Geol. Surv. 14th Ann. Rept., pt. 2, pp. 497-524, pls. 60-65. 1894. \$2.10.

The Grand Canyon. Senate Doc. No. 42, 65th Congress, 1st session, by Thomas Fulton Dawson, Government Printing Office, Washington, D. C., 1917. 67 pp. Price, 10 cents.

An article giving credit of first traversing the Grand Canyon to James White, a Colorado gold prospector.

Tertiary History of the Grand Canyon District, by Clarence E. Dutton. U. S. Geol. Surv. Mon. 2,264 pages, illustrations, and atlas. 1882. \$10.

The Shinumo Quadrangle, Grand Canyon District, Ariz., by L. F. Noble. U. S. Geol. Surv. Bull. 549, 1914. 100 pages, including 30 illustrations and a colored geologic map. Price, 20 cents.

Describes the geology and scenic features of the Grand Canyon in the western part of the National Park. Contains a detailed account of the Algonkian strata exposed on Shinumo Creek.

A Reconnaissance of the Archean Complex of the Granite Gorge, Grand Canyon, Ariz., by L. F. Noble and J. Fred Hunter. U. S. Geol. Surv. Prof. Paper 98-I, 1916. 20 pages, 3 illustrations.

Describes the rocks that form the walls of the Granite Gorge in the bottom of the Canyon.

A Section of the Paleozoic Formations of the Grand Canyon at the Bass Trail, by L. F. Noble. U. S. Geol. Surv. Prof. Paper 131-B, 1922. 50 pages, 15 illustrations.

Describes the Paleozoic strata of the Grand Canyon in detail and contains diagrams showing the strata in profile as they appear in the walls.

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- "Breaking the Wilderness." Pp. 360. G. P. Putnam's Sons, New York, 1905. Fully illustrated. Grand Canyon chapter, pp. 318-327. Price, \$3.50.
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### OTHER NATIONAL PARKS

Rules and Regulations similar to this for 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.  
 Hawaii 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.  
 Yellowstone National Park.  
 Yosemite National Park.

## AUTHORIZED RATES FOR PUBLIC UTILITIES

All rates of the authorized public utilities are approved by the Government. Therefore complaints regarding overcharges should be made to the superintendent. Employees of the hotels, camps, and transportation lines are not Government employees, but discourteous treatment by public-utility employees should be reported to the park administration.

### HOTELS AND PUBLIC CAMPS

The following hotels, etc., are operated by Fred Harvey:

#### El Tovar

El Tovar Hotel is located at the railroad terminus, near the head of Bright Angel Trail, at an elevation of 6,866 feet above sea level, and open all the year. It is a long, low structure, built of native bowlders and pine logs. There are 93 sleeping rooms, accommodating 175 guests. Forty-six of these rooms are connected with private bath.

There is a music room and rendezvous. In the main dining room 165 persons can be seated at one time.

Hot and cold water, steam heat, and electric light are supplied. El Tovar also has a steam laundry.

#### *Authorized rates at El Tovar Hotel*

##### American plan:

One person in room without bath, per day.....	\$7. 00
One person in room with bath, per day.....	\$8. 00-9. 00-10. 00
Reduction of 50 cents per person for 2 in a room with double bed.	

##### Meals only:

Breakfast.....	1. 25
Luncheon.....	1. 25
Dinner.....	1. 50

#### Bright Angel Cottages

Cozy lodgings in cottages or tents are available at Bright Angel Cottages, adjacent to El Tovar. The accommodations are clean and comfortable. There are four cottages, open the year round, and many tent-cabins for summer only. All of the cottages have steam heat and electric light; one cottage also has baths. All tent-cabins have electric light, but no heat or baths. About 350 people can be accommodated here. Meals are furnished à la carte at the café. Kitchen facilities are ample for quick à la carte service.

#### *Authorized rates at Bright Angel Cottages*

Lodging only, per day, per person.....	\$1. 50-\$2. 00
Lodging only, per day, 2 persons.....	2. 50- 3. 50

#### Hermit Cabins

On Tonto Plateau at the foot of Hermit Trail; consists of a central dining room, lounge cottage, and 11 sleeping cottages; accommodations for 30 persons.

*Authorized rates at Hermit Cabins*

American plan, per day, per person..... \$5

**Phantom Ranch**

On the north side of the Colorado River near the mouth of Bright Angel Creek; consists of well-built stone and tent-cottages with mess hall and rendezvous with excellent accommodations for 30 persons.

*Authorized rates at Phantom Ranch*

American plan, per day, per person..... \$6

**REST HOUSES****The Lookout**

The Lookout is a quaint observatory and rest house, built on the edge of the rim near the head of Bright Angel Trail. It is equipped with a large binocular telescope in the tower, for observing the most distant reaches of the canyon. Canyon photos are for sale. The reception room has spacious windows, a fireplace, Navajo rugs, and easy chairs; it is electric-lighted and steam heated.

**Hermit's Rest**

Where Hermit Rim Road ends and Hermit Trail begins is a unique rest house, built into the hill, with a roofed-in porch and a parapet wall. As the name implies, it is intended to provide rest and shelter for parties who take the Rim Road drive, or the Hermit Trail trip. Guests may sit at the tables outside or sheltered by the glass front inside according to weather, and enjoy refreshments in unusual surroundings. Admission is free to those who arrive in Harvey transportation busses. The charge to others is 25 cents each. Open 9 a. m. to 12 noon; 1 p. m. to 6 p. m.

**Hopi House**

Opposite El Tovar is a reproduction of the dwellings of the Hopi Indians and several Navajo hogans.

In Hopi House are installed collections of Indian handiwork. Here also live a small band of Hopis, who are among the more primitive of our Indians.

The homes of the Hopis are on the edge of the Painted Desert, perched on the crests of lofty mesas where they live as did their forbears and cling to their high dwelling place. They are industrious, thrifty, orderly, and mirthful. A round of ceremonies, each terminating in the pageants called "dances," marks the different seasons of the year. Subsisting almost wholly by agriculture in an arid region of uncertain crops, they find time between their labors for light-hearted dance and song, and for elaborate ceremonials, which are grotesque in the Katchina or masked dances, ideally poetic



in the flute dance, and intensely dramatic in the snake dance. In the three and a half centuries of contact with the white race their manner of life has not materially changed. The Indian tribes that roamed over mountain and plain have become wards of the Government, but the Pueblo Indian has absolutely maintained his individuality.

The Navajo women weave fine blankets and many of the men are expert silversmiths, who fashion bracelets, rings, and other articles from Mexican coin silver. The Navajo Indian Reservation—one of the largest in the United States—borders Marble Canyon on the east. They are a pastoral people, intelligent, and, like the Hopis, self-supporting. They own large numbers of sheep, cattle, and horses. The Navajos are tall, rather slender, and agile. They have been rightly called the Bedouins of the Desert. Nowhere are they gathered into permanent villages. Although "civilized," they still cling to old customs and old religious forms. The medicine man, or Shaman, has a large following, if not a large per cent of cures. Their dance ceremonies are weird in the extreme. The fire dance is a spectacular 10-day ceremony, seldom witnessed by white men, and occurring only once in seven years.

Supai Indians from Havasu Canyon frequently visit Grand Canyon village.

#### PUBLIC CAMP GROUNDS

No charge is made for use of camp grounds, firewood, etc. A charge of 25 cents per day is made for water, as it must be hauled to the canyon by rail. Water permits may be purchased at Santa Fe Station. Fires may be built in fireplaces only.

#### VERKAMP'S

Verkamp's, on the rim, just east of the Hopi House, carries a complete line of canyon souvenirs and Indian handicraft. It makes a specialty of Navajo rugs and silverware, Chimayo blankets, and Indian baskets, and carries post cards, folders, and photographs of the canyon.

In this shop may also be seen one of the largest and best paintings of Grand Canyon as well as other work of the late Louis Aikin.

#### KOLB BROS.' STUDIO

Kolb Bros.' studio is at the head of Bright Angel Trail. The Kolb Bros. give, each day, an interesting lecture, illustrated with motion pictures and slides, describing their boat trip through the canyons of the Green and Colorado Rivers. Admission, 50 cents.

The exhibition above referred to illustrates Major Powell's original exploration of the entire series of canyons on these rivers and should not be confused with other excellent travel talks on the Grand Canyon, which latter describe and illustrate what can be seen by the visitor in a stay of a week or so at the canyon.

Here, too, visitors may view the canyon through a telescope and obtain reliable information. Photographic views and other pictures representing their many years' exploration of the Grand Canyon are for sale.

### SIGHT-SEEING TRIPS BY ROAD

#### Regular Trips by Automobile

The following trips are available every day in the year by automobile:

*Hermit's Rest.*—Stopping en route at Sentinel, Hopi, Mohave, and Pima Points. First trip starts at 9.30 a. m., returning to El Tovar and Bright Angel about 12 noon. Second trip starts at 1.30 p. m., returning to El Tovar and Bright Angel about 4 p. m. Rate, \$3; children, 6 to 11, half rate; children under 6, no charge. This rate includes use of facilities and light refreshments at Hermit's Rest. This drive is 16 miles round trip along the rim road. There is also a sunset trip to Hopi or Mohave Points, leaving El Tovar and Bright Angel Cottages about 6.30 and returning about 7.45.

Hopi Point: El Tovar to Hopi Point, 2 miles west; rate, \$1.50.

Mohave Point: 3 miles west; rate, \$2.

#### Regular Summer Trips by Automobile

The following trips are available through the summer season (approximately from April 15 to November 15):

*Grand View.*—Through forest of tall pines via Long Jim Canyon and Thor's Hammer, 13 miles each way; time, about 3½ hours. Leave El Tovar and Bright Angel Cottages 1.30 p. m. daily. Rates, \$4. From Grand View may be seen that section of the canyon from Bright Angel Creek to Marble Canyon, including the great bend of the Colorado. On the east wall are Moran, Zuni, Papago, Pinal, Lipan, Navajo (Desert View), and Comanche Points; and the mouth of the Little Colorado River. Still farther beyond is the Painted Desert and Navajo Mountain—the latter plainly seen, though 120 miles away. The rim trail to Moran Point is interesting. Grand View Trail enters the canyon near Grand View Point.

*Desert View.*—Thirty miles each way via Long Jim Canyon, Thor's Hammer, Grand View, Hull Tank, Trash Dam, Tanner Tank, Old Aztec Ruin, Lipan Point, and head of Tanner Trail. One round trip a day leaving El Tovar and Bright Angel Cottages at 1.15 p. m., returning about 6 p. m. Rate, \$8.

At this point there is a far outlook not only into the canyon above the Granite Gorge, where the river valley widens, but also across the Painted Desert, toward Hopi Land, and along the Desert Palisades to the mouth of the Little Colorado. At sunset and sunrise it is a

glorious sight. For that reason one preferably should arrange to stay overnight—a camping trip elsewhere referred to. One and one-half miles west of Desert View is Lipan Point, affording an excellent view of this whole region.

**New Summer Trips by Automobile to the Navajo and Hopi Indian Reservations via the Navahopi Road**

*May 1 to October 31*

**TRIP No. 1—One day.**

Automobiles leave El Tovar and Bright Angel Cottages at 7.30 a. m. daily. Route is via Desert View Road to Trash Dam, thence through the Coconino Basin to a point overlooking the canyon of the Little Colorado. The road then follows the Little Colorado due east and the first stop is made at a newly discovered petrified forest, where some 30 or 40 trees, some larger than any living tree in Arizona, may be seen. Next stop is at the Navajo Indian trading post at Cameron. This is the western outpost of the Navajo Reservation and is 75 miles from the nearest railroad. The Little Colorado River is crossed at this point by way of the steel suspension bridge 660 feet long, and the route follows the main road across the Painted Desert to Tuba City, where the headquarters of the Navajo Indian agent are located. Some 400 Indian children are seen at well-equipped Government schools here. The Hopi village of Moenkopi is next visited, where the visitor has a glimpse of Indian life almost untouched by white civilization. Return to Grand Canyon is over same route, arriving at hotels between 7 and 8 p. m. same day. This trip provides a unique opportunity to visit the well-known, but little seen Navajo and Hopi Indian Reservations at a minimum of expense. Round trip, 159 miles. Rates, \$15 per passenger; lunch, \$1.25 extra, except for hotel guests. Minimum of four passengers required.

**TRIP No. 2—Two days.**

First day to Tuba City and Moenkopi as for trip No. 1, but return to Flagstaff, Ariz., via San Francisco Peaks and Sunset Mountain. Overnight at Flagstaff, visiting cliff dwellings in Walnut Canyon next morning, thereafter returning to Grand Canyon via National Old Trails Highway and Maine Road through Tusayan National Forest. Round trip, 250 miles, gives comprehensive idea of northern Arizona mountain scenery. Rates \$25 per passenger; meals and overnight accommodations at Flagstaff extra. Minimum of four passengers required.

**Special Summer Trips by Automobile**

These trips depend upon condition of roads and may be at times discontinued.

*Bass's Camp*, 24 miles, and *Havasupai Point*, 1 mile beyond. Rate same as *Desert View* trip.

*Yavapai and Grandeur Points*.—This drive extends 2 miles east of *El Tovar*. Rate, \$1.

*Authorized rates for special car service*

	1, 2, or 3 persons	4 persons	5 persons
<i>Hermit Rim drive</i> .....	\$12	\$15	\$18
Regular rate, \$3.			
<i>Grand View drive</i> .....	16	20	24
Regular rate, \$4.			
<i>Desert View drive</i> .....	32	40	48
Regular rate, \$8.			

*Tuba City and Moenkopi*—1 day..... Special car requires purchase of a minimum of 5 seats, irrespective of number of passengers.  
Regular rate, \$15.

*Tuba City, Moenkopi, and Flagstaff*—  
2 days..... Do.  
Regular rate, \$25.

Regular car service on *Tuba City*, one day, and the *Flagstaff*, two-day trips, requires the purchase of four seats. A minimum of four people is required in order to make the trip; in other words, less than four passengers will have to pay for four seats.

Six passengers will be handled in special cars for any of the above trips at the same rate for five passengers.

Should the demand for regular-trip drives be so heavy as to require use of all autos available, special autos may be discontinued.

**Chartered Automobile Service**

Six-passenger touring cars may be chartered for service within the park or elsewhere on routes not covered by scheduled transportation service at \$75 per day of 200 miles or \$40 per half-day of 100 miles, irrespective of number of passengers. Additional mileage will be charged for at the rate of 50 cents per mile.

**Rates for Children**

On all motor trips there is no charge for children under 6 years of age.

From the ages of 6 to 11 the charge is one-half fare.

All children over 11 years of age are charged full fare.

**GARAGE SERVICE**

There is at *Grand Canyon* a large stone garage with ample facilities for repairing and supplying automobiles. The rate for storage of automobiles is \$1 per day.

*Charges*

Garage storage.....	\$1. 00
Washing car.....	5. 00
Regular mechanical labor, per hour.....	1. 50
Welding, mechanic's time (material extra), per hour.....	2. 00
Electrical labor, per hour.....	2. 00
Lathe work, mechanic's time, per hour.....	2. 00
Charging battery.....	1. 50
Charging battery over night.....	1. 00
Filling and testing battery.....	. 25

## ROADSIDE WORK

Truck and driving mechanic going to car on road when no towing is done, per mile.....	. 40
Round trip plus mechanical labor for time worked on car, per hour....	1. 50

## TOWING CARS

For truck and driver, per mile towed, going included, per mile.....	1. 00
When extra mechanic is required, his time starts from the time he leaves the garage until his return.....	1. 50
A tow-car order stands until canceled by party ordering same.	

## OVERTIME

Time and a half to be charged for mechanical labor after 5 p. m. Rate, per hour.....	2. 25
Overtime for driver of truck on tow job after 5 p. m., per hour.....	. 75

## SUNDAY WORK

Time and a half will be charged for mechanical labor on Sundays. Rate, per hour.....	2. 25
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## GAS AND OIL

Current prices.

## TRAIL TRIPS

*Hermit Trail, stopping at Hermit Cabins overnight.*—Time, two days and one night. Hermit Road by auto. Down Hermit Trail, stay overnight at Hermit Cabins; go to river at mouth of Hermit Creek; return up Hermit Trail to rim; thence to El Tovar over Hermit Rim Road. Trips leave El Tovar and Bright Angel Cottages at 9.30 a. m. and return next afternoon. Rates, \$18.25 each person, including guide, overnight accommodations, and meals en route and at Hermit Cabins. Private guide, \$5 per day extra.

*Bright Angel Trail.*—The trail here is generally open the year round. In midwinter it is liable to be closed for a day or two at the top by snow, but such blockade is not frequent. The trail reaches from the hotel 7 miles to the Colorado River, with a branch terminating at the top of the granite wall immediately overlooking the river. At this latter point the stream is 1,272 feet below, while El Tovar Hotel on the rim is 3,158 feet above. The trip is made on muleback, accompanied by a guide.

Those wishing to reach the river leave the main trail at Indian Garden and follow the downward course of Indian Garden and Pipe Creeks.

Leave from 8.30 a. m. to 9.15 a. m. for the river trip, 7 miles; return to rim 5 p. m. Rate, \$6 each person. Leave 10.30 a. m. for trip to plateau, 5 miles; rate, \$5 each. For special trips with less than three persons there is a party charge of \$5 extra for guide. Lunch extra, except for El Tovar room guests.

It is necessary that visitors who walk down Bright Angel Trail and desire that guide and mules be sent to meet them, be charged full price and special guide fee of \$5. This is unavoidable, as the mules and guides are not available for any other trip.

*Hermit-Tonto-Bright Angel Loop.*—This trip takes two days and one night. Hermit Rim Road to head Hermit Trail; down Hermit Trail; stay overnight at Hermit Cabins; go to river foot of Hermit Creek; return along Tonto Trail to Indian Garden; thence up Bright Angel Trail.

Start from El Tovar or Bright Angel Cottages at 9.30 a. m. and return next afternoon. Round trip charge is \$23.25 for each person; private guide is \$5 a day extra; rate quoted includes regular guide, overnight accommodations, and meals en route.

*Three-Day Ribbon Falls trip.*—Leave about 9 a. m. Down Bright Angel Trail, crossing the Colorado River by new steel suspension bridge and reaching Phantom Ranch early afternoon. Overnight at Phantom Ranch, following morning by way of Kaibab Trail in Bright Angel Canyon, 5 miles to Ribbon Falls, beautiful clear waterfall in the form of a crystal ribbon shedding its waters on a natural rock altar in the midst of a verdant amphitheater. Box lunch at falls, and return to Phantom Ranch for overnight. On third day the return to El Tovar completes a never-to-be-forgotten experience. The all-expense rate for this trip is \$30 per person.

*Across Grand Canyon to Kaibab National Forest on North Rim.*—This combines an instructive and interesting excursion across the whole width of the Grand Canyon, from rim to rim, with a visit to the Kaibab National Forest. This beautiful virgin forest is the home of thousands of deer and the haunt of the mountain lion and the bobcat. Starting from the South Rim, the round trip is made in five days, including one day spent in the forested section. The route is by the Bright Angel and Tonto Trails across the Kaibab Suspension Bridge to Phantom Ranch; thence along Kaibab Trail and up Bright Angel Canyon to Wylie Way Camp at Bright Angel Point on the North Rim. On the return Ribbon Falls visited en route. For those who may wish to spend some time in the Kaibab National Forest, saddle stock and camping outfits are available at Wylie Way Camp. Approximate expense, except personal accom-

modation in Wylie Way Camp, \$70 per person for the five-day trip. Wylie Way Camp, \$6 per day extra. For full particulars and advance reservations address Manager, Transportation Department, The Fred Harvey Co., Grand Canyon, Ariz.

*Dripping Spring.*—This trip is made on horseback all the way, via Hermit Rim Road to the head of Hermit Trail, down Hermit Trail to Dripping Spring, returning to El Tovar and Bright Angel through the forest; starts at 8.30 a. m. Rate, \$5 each for three or more persons; for less than three persons, \$5 extra for guide. Private parties of one or more persons, \$5 extra for guide.

#### Saddle Horses

Recently many new bridle paths along the rim and through the pines of Tusayan have been opened up, so that horseback riding now is possible for all. The animals are well trained and dependable. Saddle horses cost \$5 a day, or \$3 a half day. English, McClellan, Whitman, or western stock saddles furnished as requested. Side-saddles not provided. Rates quoted include, for parties of three or more, the services of a guide. For a guide for parties of less than three or for a private guide the rate is \$5 a day, or \$3 a half day. Horseback trips over any of the trails into the canyon are only permitted when accompanied by guide. This is necessary to avoid risk in meeting trail parties and pack trains.

There are several interesting foot trails near Grand Canyon village. Information as to these may be obtained at the superintendent's office.

#### CAMPING TRIPS

Camping trips with pack and saddle animals are organized, completely equipped, and placed in charge of experienced guides.

For climatic reasons it is well to arrange so that camping trips during the season from October to April are mainly confined to the inner canyon. For the remainder of the year, i. e., April to October, they may be planned to include both the canyon itself and the rim country.

The rates vary from \$10 to \$15 a day for one person; \$6 to \$8 a day each additional person. Such rates specially include services of guide and camp equipment; provisions extra; figures quoted are approximate only, varying with different outings.

*Havasü Canyon and Havasupai village.*—The best time to visit this place is from May to October. A journey of about 50 miles; first by auto, 35 miles across a timbered plateau, then on horseback down Topocobya Trail along Topocobya and Havasü Canyons, to the home of the Havasupai Indians.

The home of this little band of 200 Indians is in Havasü Canyon, a tributary of the Grand Canyon, deep down in the earth two-fifths of a

mile. The situation is romantic and the surroundings are beautified by falls of water over precipices several hundred feet high, backed by grottos of stalactites and stalagmites. This water all comes from springs that gush forth in surprising volume near the Havasupai village.

The baskets made by the Havasupai women consist of the burden basket, a shallow tray, and a water bottle of willow. Those made by the older weavers are of fine mesh, with attractive designs, and bring good prices. Havasupai means people of the blue water. Padre Garces was the first white man to visit their canyon home. In early days the Havasupais undoubtedly were cliff dwellers. They built nearly all the Grand Canyon trails, or rather their rude pathways were the advance guard of the present trails. Their summer homes resemble those of the Apaches. The winter homes afford more protection against the weather.

The round trip from El Tovar is made in five days, at an expense of \$15 a day for one person, \$20 a day for two persons, and \$25 a day for three persons, if entire distance is made on horseback. Auto to head of trail, extra. Each additional member after party of three, \$5 a day; provisions extra. These rates include service for party of one or two persons, also cost of horse feed.

For parties of three to six persons an extra guide is required, whose services are charged for at \$5 a day.

### THE NORTH RIM

#### Auto Stage Transportation from Utah Points

The north rim of the Grand Canyon National Park is reached from Cedar City, Utah, on the Union Pacific system, and from Marysville, Utah, on the Denver & Rio Grande Western Railroad, by automobiles operated by the Utah and Grand Canyon Transportation Co., Cedar City, Utah.

Special all-expense tours are offered combining visits to Zion National Park, Pipe Spring National Monument, Cedar Breaks, and Bryce Canyon National Monument. These tours leave Cedar City daily from June 1 to October 15. Operated for minimum of three full fares.

#### AUTHORIZED RATES

From Cedar City, Utah:<sup>5</sup>

Five-day tour of Zion National Park, Pipe Springs National Monument, Grand Canyon National Park (north rim), Kaibab Forest, Kanab, Bryce Canyon National Monument, and Cedar Breaks; fare for automobile transportation and 13 meals and 4 nights' lodgings.....	\$86. 75
Five-day tour of Cedar Breaks, Bryce Canyon National Monument, Kanab, Grand Canyon National Park (north rim), Kaibab Forest, Pipe Springs National Park, and Zion National Park; fare for automobile transportation and 13 meals and 4 nights' lodgings.....	86. 50

<sup>5</sup>Reservations for these trips must be made in advance with the Utah & Grand Canyon Transportation Co., Cedar City, Utah.



**From Marysvale, Utah:**

Two-day tour to Bryce Canyon operated for one or more full fares; automobile fare only..... \$20. 00

For going trip automobile may have to be sent from Bryce Canyon, and reasonable notice must be given to the Utah Parks Co. lodge at Bryce Canyon. Parties availing themselves of this tour may join other tours which are operated from Bryce Canyon. The fare from Bryce Canyon to Grand Canyon and return (minimum of three full fares) will be \$55; from Bryce Canyon to Zion National Park and return via Cedar City will be \$35.

Parties arriving at the south rim of the Grand Canyon National Park via the Santa Fe lines and desiring to cross from the south rim to the north rim and then visit Kaibab Forest, Zion National Park, and leave Cedar City via the Union Pacific system or desiring to make the trip in the opposite direction may arrange to do so. The cross-canyon trip requires two days and is made by horseback. The first night is spent at Phantom Ranch, in the bottom of the canyon, and the Wylie Way Camp on Bright Angel Point on the north rim or El Tovar Hotel on the south rim is reached the following afternoon. The all-expense cost of the two days' cross-canyon trip is approximately \$30 per person, guide extra. The Utah & Grand Canyon Transportation Co. must be notified in advance to meet parties of a minimum of three at the north rim. Arrangements for the cross-canyon trip should be made in advance.

**From Cedar City, Utah:**

Three-day tour to Grand Canyon National Park (north rim) via Zion National Park, one-way tour; fare for automobile transportation and 6 meals and 2 nights' lodgings..... \$49. 75

Three-day tour to Grand Canyon National Park (north rim) via Bryce Canyon, one-way tour; fare for automobile transportation and 6 meals and 2 nights' lodgings..... 54.50

Above tours operated for minimum of three full fares.

Children under 12 years of age, one-half fare. Forty pounds of baggage on full-fare tickets; excess baggage will be charged for at rate of 5 cents per pound.

**Special Auto Service**

Arrangements also can be made with Harold Bowman, of Kanab, Utah, during the calendar year 1925 for special automobiles from Marysvale, Utah, to Bryce Canyon, north rim of the Grand Canyon National Park, and other scenic points and return to starting point at following rates:

Special cars carrying four persons for 50 cents per mile and cars carrying six persons for 60 cents per mile, these cars to be operated at the pleasure of the occupants as to distance traveled each day and as to places visited, with the proviso that a minimum charge will be made for 20 miles in any one day whether traveled or not. Twenty-five pounds of free baggage will be allowed each person; excess baggage will be charged for at the rate of 10 cents per pound.

### Wylie Way Camp

On the north rim at Bright Angel Point, situated in a shady grove of pines, is a Wylie Way Camp, consisting of a central dining tent and comfortable sleeping tents; everything is spotlessly clean. Camp is open from June 15 to September 30, inclusive. There are accommodations for about 25 people.

Authorized rate at Wylie Way Camp, American plan, per person, per day, \$6.

### SADDLE-HORSE TRIPS

Arrangements may be made at the Wylie Way Camp for saddle-horse trips to various points of interest on the north rim and in the canyon. Time required and rates are as follows:

Side trips and rates therefor from Wylie Way Camp, Bright Angel Point:

To Point Imperial, one-day trip.

To Point Sublime, two-day trip.

To Cape Royal, two-day trip.

Saddle horses for these trips or for special trips on the plateau, \$3 each per day; mounted guide for north-rim trips, \$5 per day.

Down Bright Angel Trail to Colorado River and cross-canyon trips the rate is \$6 per day for each horse.

Guide for river and cross-canyon trips, \$6 per day.

For all overnight trips from Wylie Way Camp on the north rim one or more pack horses must accompany the party, the rates for these being the same as for saddle horses.

Bedding and provisions for north rim trips, \$2.50 per day for each person.







**A PORTION OF THE FIRST FOREST**  
 The profusion of petrified wood is clearly shown



Photograph by Wm. Nelson

**ROOT OF PETRIFIED TREE, 7 FEET IN DIAMETER**  
 The profile resembles a dog's or lion's head  
**PETRIFIED FOREST NATIONAL MONUMENT, ARIZONA**



ACROSS THE CANYON FROM NEAR EL TOVAR ON SOUTH RIM



ACROSS THE CANYON FROM BRIGHT ANGEL POINT ON NORTH RIM  
Photographs By El Tovar Studio

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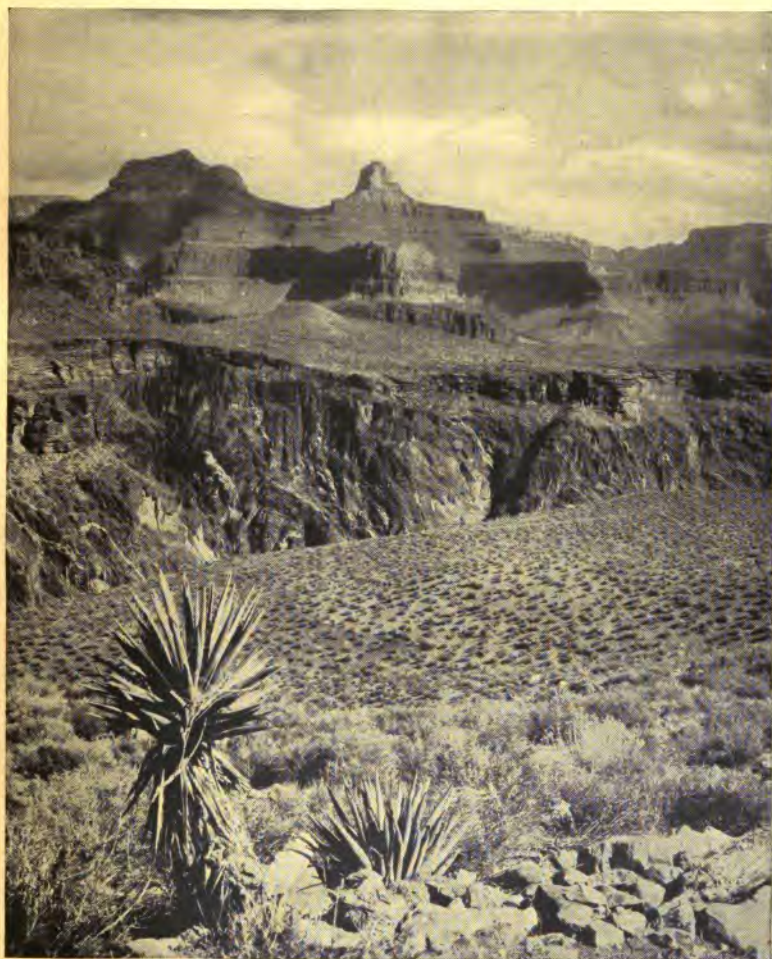
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UNITED STATES  
DEPARTMENT OF THE INTERIOR  
HUBERT WORK, SECRETARY  
NATIONAL PARK SERVICE  
STEPHEN T. MATHER, DIRECTOR



RULES AND REGULATIONS

# GRAND CANYON NATIONAL PARK ARIZONA



Photograph by El Tovar Studio

VIEW ALONG THE TONTO TRAIL

OPEN ALL THE YEAR





Photograph by El Tovar Studio

EL TOVAR HOTEL FROM ROOF OF HOPI HOUSE



Photograph by El Tovar Studio

VILLAGE OF MOENKOPI

Reached over the new Navahopi Road from Grand Canyon Park

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# THE NATIONAL PARKS AT A GLANCE

[Number, 19; total area, 11,376 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—19 bath-houses under Government supervision.
Yellowstone 1872	Northwestern Wyo- ming.	3,348	More geysers than in all rest of world together—Boiling springs—Mud volcanoes—Petrified for-ests—Grand Canyon of the Yellowstone, re-markable for gorgeous coloring—Large lakes—Many large streams and waterfalls—Vast wil-derness, greatest wild bird and animal pre-serve in world—Exceptional trout fishing.
Sequoia 1890	Middle eastern Cali- fornia.	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 Cali- fornia.	1,125	Valley of world-famed beauty—Lofty cliffs—Ro-mantic vistas—Many waterfalls of extraor-dinary height—3 groves of big trees—High Sierra—Waterwheel falls—Good trout fishing.
General Grant 1890	Middle eastern Cali- fornia.	4	Created to preserve the celebrated General Grant Tree, 35 feet in diameter—6 miles from Sequoia National Park.
Mount Rainier 1899	West central Wash- ington.	324	Largest accessible single peak glacier system—28 glaciers, some of large size—48 square miles of glacier, 50 to 500 feet thick—Wonderful sub-alpine wild flower fields.
Crater Lake 1902	Southwestern Oregon.	249	Lake of extraordinary blue in crater of extinct volcano—Slides 1,000 feet high—Interesting lava formations—Fine fishing.
Platt 1902	Southern Oklahoma...	1½	Many sulphur and other springs possessing medicinal value.
Wind Cave 1903	South Dakota.....	17	Cavern having many miles of galleries and numerous chambers containing peculiar forma-tions.
Sullys Hill 1904	North Dakota.....	1½	Small park with woods, streams, and a lake—Is an important wild-animal preserve.
Mesa Verde 1906	Southwestern Colo- rado.	77	Most notable and best preserved prehistoric cliff dwellings in United States, if not in the world.
Glacier 1910	Northwestern Mon- tana.	1,534	Rugged mountain region of unsurpassed Alpine character—250 glacier-fed lakes of romantic beauty—60 small glaciers—Precipices thou-sands of feet deep—Almost sensational scenery of marked individuality—Fine trout fishing.
Rocky Mountain 1915	North middle Colo- rado.	397	Heart of the Rockies—Snowy range, peaks 11,000 to 14,255 feet altitude—Remarkable records of glacial period.
Hawaii 1916	Hawaii.....	186	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 10,460 feet—Cinder Cone 6,907 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.....	12	A 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.

# GRAND CANYON NATIONAL PARK

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## GENERAL DESCRIPTION

The Grand Canyon National Park was created by an act of Congress, February 26, 1919. It is under the supervision of the National Park Service of the Department of the Interior. Its final creation came 33 years after Benjamin Harrison, then Senator from Indiana, introduced the first of several bills to give it park status. Politics, local apathy, and private interests, which sought to utilize its water power and to find minerals in its depths, were the principal causes of delay. All efforts failing to make it a national park, in 1908 President Roosevelt made it a national monument. Once a railroad was surveyed through it. A scenic railroad was projected along its south rim. Less than a year before it became a park efforts were making in New York to raise money to dam its waters for power and irrigation.

The Grand Canyon National Park is in northern Arizona. Its 958 square miles inclose 56 miles of the Grand Canyon stretching west of its beginning at the mouth of the Marble Canyon. Through it winds the Colorado River for a distance of 103 miles. From rim to rim that portion of the canyon within the park varies from 4 to 14 miles in width; it is more than a mile deep measured from the north rim, which averages nearly a thousand feet higher than the south rim. The eastern boundary includes the lofty painted walls east of which lies the Painted Desert. Its western boundary includes the broad Havasu Canyon, tributary from the south, in whose depths we find the Havasupai Indian Reservation and a group of fine waterfalls markedly different from any in our other national parks.

The park boundaries hug the rim closely. Very little of the country back of the rim is included in the reservation, scarcely enough in places to take care of the great increase of travel which national parkhood will bring to the Grand Canyon during the next several years. These border lands are wonderfully attractive. The northern rim is heavily forested with pine, fir, and spruce, interspersed with beautiful glades of quaking aspen. The southern rim carries a slender semiarid flowering vegetation of rich beauty and wide variety, and south and east of the railroad station lie about 50 square miles of fine yellow pine forest.

## A MIGHTY SPECTACLE

There is no doubt that the Grand Canyon is one of the world's very greatest spectacles. It is impossible to compare it with the tremendous white spectacle of the Himalayas, or with the House of Everlasting Fire of the Hawaii National Park, or with the 17,000 feet of snow and glacier which rise abruptly between the observer's eyes and the summit of Mount McKinley, because it has nothing in common with any of these. But of its own kind there is nothing in the world which approaches it in form, size, and glowing color; it is much the greatest example of stream erosion. And in its power to rouse the emotion of the looker-on, to stupefy or to exhilarate, it has no equal of any kind anywhere, unless it be the starry firmament itself.

Approaching by rail or road, the visitor comes upon it suddenly. Pushing through the woods from the motor camping ground, or climbing the stairs from the railroad station, it is there at one's feet, disclosed in the sublimity of its templed depths, in the bewildering glory of its gorgeous coloring. There is no preparation of mind and spirit. To some the revelation is a shock, no matter what the expectation. The rim of the Grand Canyon is one of the stillest places on earth, even when it is crowded with people.

To describe the Grand Canyon is as impossible as it is unnecessary. Few natural spectacles have been so fully pictured, few are so familiar even to the untraveled. Its motionless unreality is one of the first and most powerful impressions it makes. And yet the Grand Canyon is really a motion picture. There is no moment that it does not change. Always its shadows are insensibly altering, disappearing here, appearing there; lengthening here, shortening there. There is continual movement. With every quarter hour its difference may be measured.

There is the Grand Canyon of the early morning, when the light slants lengthwise from the Painted Desert. The great capes of the northern rim shoot into the picture, outlined in golden light against which their shapes gloom in hazy blues. Certain temples seem to rise slowly from the depths, or to step forward from hiding places in the opposite walls. Down on the green floor the twisting inner gorge discloses here and there lengths of gleaming water, sunlit and yellow.

An hour later all is wholly changed. The dark capes have retired somewhat and now are brilliant-hued and thoroughly defined. The temples of the dawn have become remodeled, and scores of others have emerged from the purple gloom. The Granite Gorge, now detailed fully, displays waters which are plainly muddy even at this great distance. And now the opposite wall is seen to be convoluted, possessing many headlands and intervening gulfs.

And so, from hour to hour, the spectacle develops. Midday, with sun high behind the south rim, is the time of least charm, for the opposite walls have flattened and the temples of the depths have lost their defining shadows. But as afternoon progresses the spectacles of the morning creep back, now reversed and strangely altered in outline. It is a new Grand Canyon, the same but wonderfully different.

And just after sunset the reds deepen to dim purples and the grays and yellows and greens change to magical blues. In the dark of a moonless night the canyon suggests unimaginable mysteries.

#### THE FIRST VIEW

From the railroad station the visitor ascends to El Tovar Hotel and the view of the canyon at a very interesting point. Here is where the temples loom up in contrast to the plateau at their feet; the plateau still being 1,500 feet above the river. The view at El Tovar is restricted by the extension of Grandeur Point and Maricopa Point on either side. These cut off the view of the great reaches of the canyon east and west. El Tovar view is a framed picture of limited size. It is better so; better for the newcomer to enter gradually into the realization of the whole which will come when he walks or rides out to the many points which push northward from the south rim; better also to return to after days spent on the rim or in the canyon's depths.

Having studied this view for general outlines and the canyon's conformation, stratification, and coloring, the visitor will find for himself, on foot or by motor stage or horseback, many points which will afford him varied outlooks upon the broad reaches of the canyon. It is advisable to see the canyon from end to end from the rim before exploring the trails to the floor and the river.

The traveler who is unlucky enough to have no more time at his disposal may, even in one day, see much of the Grand Canyon either from the rim or by mule-back descent to the depths as preference dictates. Probably the one-day visitor can see more by taking the 16-mile Hermit Rim Road drive west in the forenoon and the 60-mile drive east to Grand View and Desert View in the afternoon than in any other way. Both the rim drives and the descent into the canyon may be had in two days. Every day added to the schedule will give the visitor further novel experiences and glorious views, such as the Hermit Loop trip, the Phantom Ranch trip, or to the north rim of the canyon, visiting Ribbon Falls en route, or the long motor trip over the Navahopi Road to Tuba City and Moenkopi.

When you go to the Grand Canyon leave the duration of your stay open for decision when there. You will probably then remain from five days to two weeks. Two weeks of fairly steady going will enable

you to see the Grand Canyon thoroughly without undertaking trips which are a hardship to persons unaccustomed to trail riding.

#### PARK SERVICE INFORMATION BUREAU

A free information bureau is maintained by the National Park Service in the Administration Building, 100 yards east of El Tovar and at the foot of the hill, where the superintendent's offices are. Park visitors are welcomed and are advised to apply to the attendant in charge of this bureau for official information of any kind.

A collection of various geological and paleontological specimens of the Grand Canyon is on exhibition, as well as charts of flowers and birds.

A suitable reference library is being accumulated for the use of visitors, and the Government maps and other publications may be consulted or secured here.

Automobile arrivals are requested to register at this bureau, unless previously registered at a checking station.

During the summer a ranger-naturalist will conduct short trail trips along the canyon rim. He will explain all features relating to the natural history of the canyon. Full information regarding these trips may be had at the Park Information Office.

#### LIVING AT THE GRAND CANYON

Living is pleasant and comfortable. El Tovar Hotel offers delightful conditions at rates reasonable in these times for its high-class accommodations. Its porches are broad, its garden a collection of interesting semiarid vegetation, its rim walks inspiring. There is horseback riding through many miles of yellow-pine forest and out to viewpoints on the rim, but there are no sports. There is neither golf nor tennis. The canyon absorbs the whole attention of its visitors.

Adjoining the hotel there is a most comfortable annex of cottages and tents and café; rates are lower than those charged at the main hotel. There are comfortable cottages at Hermit Creek Cabins on the Hermit Trail, and at Phantom Ranch across the Colorado River. The latter cottages are built of the native rock, with mess hall, etc. Both these resorts are first class in every respect.

Wylie Way Camp at Bright Angel Point on the north rim provides comfortable accommodations for visitors. Camping trips along the rim and down to the Havasupai Indian Reservation and the waterfalls of Havasu Canyon can be arranged. It is possible to take your pack train across the river on the Kaibab Suspension Bridge, stay overnight at Phantom Ranch, and ascend the most interesting Kaibab Trail up Bright Angel Canyon to the north rim. This trip is a matter of several days and is correctly classed as a summer jaunt.

#### FREE PUBLIC CAMP GROUND

From April to November the south rim is free from snow and the public camp ground near Grand Canyon Village is available to

campers. Motorists are urged to bring their own camp equipment and make use of this camp. Sites will be allotted free of charge on application to the office of the superintendent of the park. There is a garage in the village where gasoline and oil can be procured. There is also a general store where groceries can be purchased.

During the summer months a camp-fire lecture will be given by a ranger on the history and formation of the canyon.

#### SEEING IT FROM THE RIM

East of the hotel are several points reached by motor roads which afford fine views of the upper half of the Grand Canyon. The most famous of these is Grand View, where still stands the first regular hotel of the canyon, now private property, and not affording hotel accommodations. The eastern terminus of the road is Desert View, which offers a view up the Marble Canyon, and eastward over the famous Painted Desert. West of the hotel the auto stages stop at a succession of fine points, each with its own individual view of the mighty spectacle.

There is much to see also in the neighborhood of El Tovar.

The recently completed Yavapai footpath extends eastward along the rim to Grandeur and Yavapai Points. This footpath is constructed of asphaltum macadam and is so located as to give the best views of the canyon.

An unimproved footpath extends along the rim westward to Maricopa, Sentinel, and Hopi Points, and its use is only recommended in dry weather. It is planned to improve this footpath within a year.

#### DESCENDING THE CANYON

There are three practicable trails from the south rim to the river. The one commonly used starts from El Tovar Hotel and descends the deep alcove between Grandeur and Maricopa Points. This is the celebrated Bright Angel Trail.

The descent of this trail is made on muleback in parties led by guides. It is a sad mistake for persons not in the soundest physical training to attempt it on foot, for the apparent distance as seen from the rim is misleading, and the climb back is most arduous at that elevation. The south rim of the canyon at El Tovar is 6,866 feet above sea level. Nearly every day one or more trampers, overconfident of their endurance, find the way up too arduous and have to be assisted by guides and mules sent down for them from the rim.

The descent is an experience of great charm. The trail is well built and kept in good condition. The traveler passes in review all the strata which form the canyon walls; their close examination will be a source of pleasure. Just under the rim the trail passes through a fine forest of Douglas fir, and from this down to the sage desert of the

green floor the traveler will also pass in review a series of vegetation which represents scores or hundreds of miles of surface growths. There are two steep cliffs which the trail descends in series of short hitches of zigzags, one of which, known as Jacob's Ladder, carries the traveler down the famous Redwall limestone, which is so distinct a scenic feature of the canyon from every rim view. But there need be no alarm about these descents, for the zigzags, short and numerous though they are, maintain always a uniformly safe grade. It may affect the unaccustomed nervously to see his mule hang his head over short abysses at the turns, but the traveler himself does not hang over them, and the mule is sure-footed, stolid, and indifferent. There is only one creature with less imagination than a mule, and that is his cousin, the burro.

Indian Garden, which lies on the floor of the canyon on the Tonto Plateau, is so named because Havasupai Indians once cultivated the soil through which passes the stream which originates in springs below the Redwall. It is called Garden Creek. The Indian Garden now is a tangle of high brush, principally willow, through which the trail passes out upon the Tonto Plateau, and presently plunges down the rocky gorge which leads to the edge of the muddy Colorado.

#### THE HERMIT TRAIL

A much finer trail from every point of view than the Bright Angel starts from Hermit's Rest, south of Pima Point, and descends the Hermit Canyon. It begins 8 miles west of El Tovar. This is a two days' journey, including a night spent in Hermit Cabins well down in the canyon. It involves an experience worth many times the additional day which it requires.

The Hermit Canyon is one of extreme beauty; there is probably no other which equals it in gorgeous coloring and the variety of its rock forms. The grades on this trail are less than those on Bright Angel Trail, and it is also more scenic. It is longer than the Bright Angel Trail and leads out upon impressive points overlooking fascinating views. About 1,000 feet under the rim, at a place known locally as the White Zig Zags, may be seen an interesting series of prehistoric animal tracks in the sandstone.

The descent of the Redwall limestone is a masterpiece of trail building, and the only part of the Hermit Trail which gives an impression of steepness; but this may readily be walked down by the unaccustomed rider; its descent is not nerve racking. The night at Hermit Cabins, under a towering crimson gable, with colorful Hermit Canyon on the south and Grand Canyon opening northward over the green shale of the Tonto Platform, or "lower plateau," is as comfortable as it is fascinating. The trip to the river and back to the camp is usually made the first day.

Visitors to Hermit Cabins will find a band of antelope always in evidence.

### THE KAIBAB TRAIL

A new trail connecting Yaki Point on the south rim with the Tonto Trail at the Tip-Off is the last word in trail construction. As it is built along a spur jutting out into the canyon, it is the most scenic trail leading into the gorge. That part of the Kaibab Trail between the Tip-Off and Kaibab Bridge was also rebuilt, as was the Granite Gorge section on Bright Angel Creek above Phantom Ranch. The new trail reduces time of travel to Phantom Ranch by two hours and makes it an easy half-day trip.

### THE TONTO TRAIL

Too few visitors to Hermit Cabins combine the two trail trips with a journey between them over the Tonto Plateau. The descent is by the Hermit Trail with a night at its foot. The next morning the journey is made on mule back along the Tonto Plateau to the Indian Gardens. This journey is extremely interesting. The side walls of the canyon and the numerous temples give one the sense of being in the mountains instead of halfway down the depths of a canyon. From the Indian Gardens, after lunch by the stream side, parties ascend Bright Angel Trail to El Tovar.

### THE HAVASU CANYON

The Havasu Canyon, in the far western end of the national park, is rarely visited. The trail begins at the end of a long desert road by descending precipitously to a gorge through which the Havasupai Indian Reservation is reached. There are less than 200 Indians on the reservation. These live by farming the land irrigated from Havasu Creek; corn is their principal product, but melons, figs, and peaches are also produced. The reservation fills a broad amphitheater in the gorge, surrounded by lofty red sandstone cliffs of the Supai formation. There are no hotels or camps, and the heat is intense in summer. The Havasu Creek water is strongly impregnated with lime and unpalatable, though entirely wholesome. Nevertheless, the visit to the reservation is one of unusual character and charm for those who do not object to a little hardship.

Below the reservation the canyon breaks into a series of waterfalls, two of which are unusual in kind and beauty. These are the Havasu Fall and the Mooney Fall. Both drop over lofty shelves, which are plastered on back and sides by richly carved festoons of lime travertine. Both the falls occur in deep gorges in the Redwall limestone. Bright green cottonwoods, cactus, and other desert vegetation enliven the scene, which is as different as imagination can well paint from anything else in the Grand Canyon National Park.



In the spring, following the melting of the rim snows, there are various waterfalls in the Grand Canyon itself, several of which last for some months. These occur on the north side of the river, where there is a greater supply of water, the south side being arid except for brief periods following meltings and cloudbursts. One of these temporary north-side waterfalls in Clear Creek, which has been visited by very few persons, is about 800 feet in height. With the crossing of the river, which is now possible over the Kaibab Suspension Bridge, these and many other fascinating spectacles, now little known, will become familiar sights to many. The destiny of the Grand Canyon is to become one of the most used national parks.

#### ORIGIN AND GEOLOGIC HISTORY OF THE GRAND CANYON<sup>1</sup>

The Grand Canyon is the deepest and widest of a long series of canyons through which the Colorado River flows for 500 miles across a region of high table-lands known as the plateau province or the Colorado Plateaus. These canyons are unusually steep sided and unusually deep, but they are merely parts of the valley of the river, and, like most other river valleys, they have been formed by the stream that occupies them; they are not, as some who are unfamiliar with geologic processes have supposed, due to any violent or catastrophic breaking of the earth's crust. The Grand Canyon is perhaps the world's most spectacular illustration of the accumulated results of erosion—of the combined action of running water, rain, wind, and the various atmospheric agencies that attack the rocks and sculpture them into the forms that give character to a landscape.

#### A PECULIAR TYPE OF LAND SCULPTURE

The scenery of the Grand Canyon is the supreme expression of a type of land sculpture that is peculiar to the plateau country, a type whose elements are cliffs and tabular forms—buttes, mesas, terraces, and plateaus. The high plateau into which the river has cut its way is built up of layer upon layer of rock beds that lie nearly level and that extend continuously over great distances. These beds, as one may see in the walls of the canyon, consist of sandstone, shale, and limestone, which have been grouped by geologists into the formations shown in the generalized columnar section forming Figure 1. This figure presents a summary of the facts relating to the character of the rocks exposed in the Grand Canyon National Park and the thickness, attitude, order of accumulation, and structural relations of the formations.<sup>2</sup>

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<sup>1</sup> By L. F. Noble, geologist, U. S. Geological Survey.

<sup>2</sup> The term "formation" is generally applied to a group of rock beds that are of about the same age, as shown by the fossils they contain, or that are considered together for convenience in mapping or description. A formation is named from the place where it was first studied or from some place or region where it is well exposed. The Kaibab limestone, for example, is so named because it is well exposed on the Kaibab Plateau.

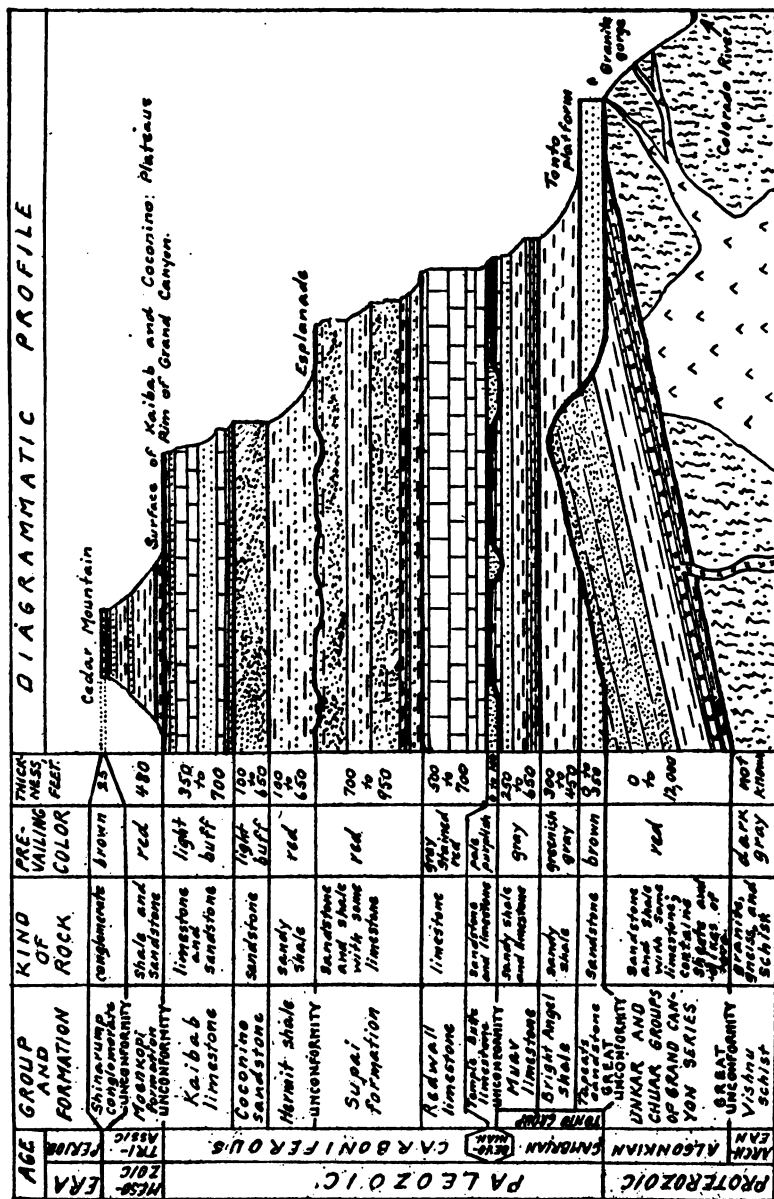


FIGURE 1.—Generalized columnar section, showing position and structural relations of the rocks of the Grand Canyon National Park, and the age, character, and thickness of the groups and formations into which they are divided.

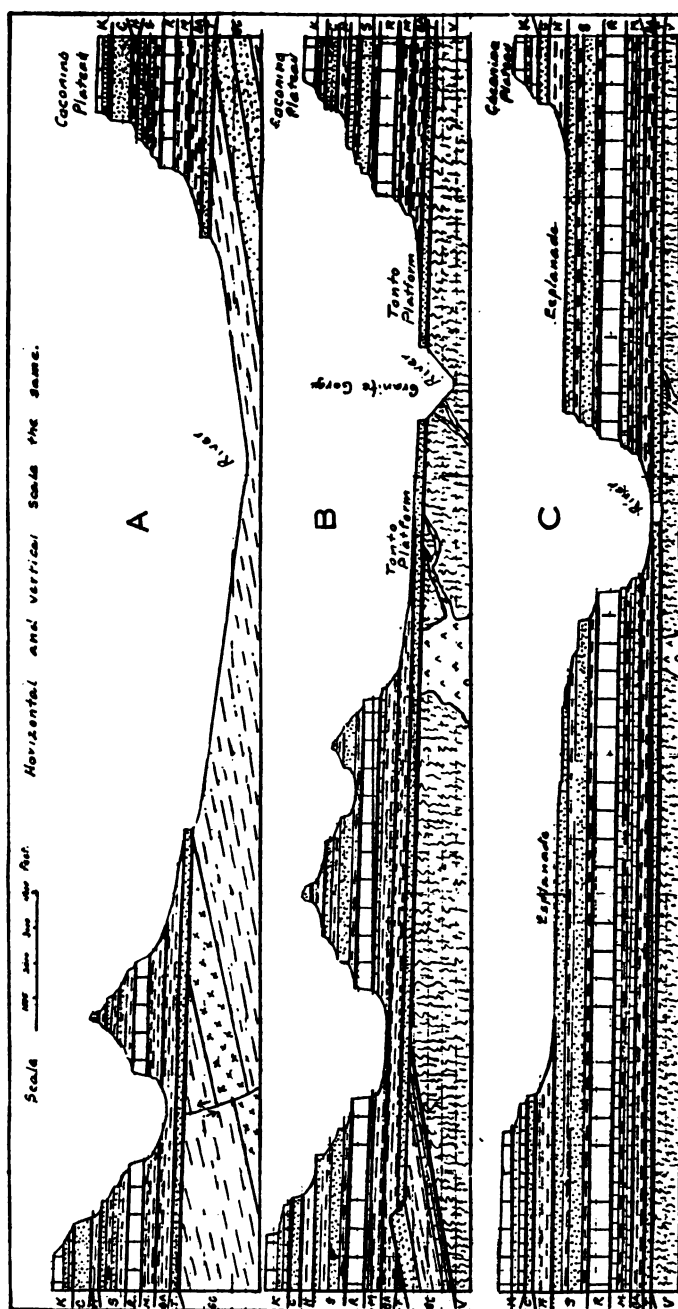


FIGURE 2.—Generalized sections across Grand Canyon, looking up Colorado River. A, in Eastern Kaibab division, east of Desert View Camp; B, in Central Kaibab division, near Hermit trail; C, in western Kaibab division, west of Bass Camp. K, Kaibab limestone; Q, Coconino sandstone; H, Hermit shale; S, Supai formation; R, Redwall limestone; M, Temple Butte and Muav limestone; BA, Bright Angel shale; T, Tapeats sandstone; GC, Grand Canyon series; V, Vishnu schist. The different profiles exhibited by the canyon in these sections are due to changes in the character and thickness of the rocks, as explained in the text.

## ARCHITECTURAL FORMS DOMINATE THE CANYON

As the formations lie in orderly horizontal layers, like beds of masonry, they have been carved into definite architectural forms, which are everywhere nearly identical in profile though varied and irregular in plan, and as they vary in their resistance to erosion, some being hard, some soft, every part of the canyon wall, every pinnacle and butte, is characterized by its own steplike alternation of cliff, slope, and shelf. Each resistant bed stands forth as a cliff, and each weak bed is marked by a slope. Each shelf or platform is made by the wasting back of a weak stratum that lies upon a resistant, cliff-making stratum, and the greater the thickness of the weak stratum the broader the shelf. The plateaus that border the canyon are themselves simply great terraces developed on a resistant formation, the Kaibab limestone, from which overlying softer beds have been washed away. As erosion goes on parts of the canyon wall or plateau become separated by the widening of branch canyons or ravines and stand as solitary outliers capped by remnants of a hard bed of rock. These remnants are the buttes and temples. The great height of the plateau gives rapid fall to the streams that enter the canyon and enables them to cut powerfully and deeply and thus to carve the rocks into forms that are fashioned on a gigantic scale. The erosion accomplished by these streams, though spasmodic, because the streams are mainly fed by spasmodic rainstorms in an arid climate, is none the less effective. The slopes here are partly bare of vegetation because the desert plants grow far apart, and the concentrated energy of a single torrential shower may therefore wreak more havoc than would be caused by a season's rainfall on plant-covered slopes in a humid region. It is this prevailing aridity that, by retarding the growth of vegetation and the formation of soil, keeps sharp and fresh profiles that in a moister region would soon be dulled or obscured.

## SECTIONS ACROSS THE CANYON

The three sections across the Grand Canyon shown in Figure 2 (*A*, *B*, *C*) illustrate the intimate relation between the profile of the wall and the character of the rocks. In *A*, where the rocks along the river are the weak shales of the Algonkian Grand Canyon series, the bottom of the canyon is a broad valley having gently sloping sides. In *B* these weak stratified rocks are replaced by the hard Archean crystalline rocks, and the river occupies a narrow gorge—the Granite Gorge. As these hard crystalline rocks are not arranged in beds and are all about equally resistant to erosion the walls of the Granite Gorge have a steep, continuous slope, which presents a striking contrast to the steplike profile of the wall in the overlying

bedded Paleozoic rocks. In *C* the river occupies a narrow box-shaped vertical-walled canyon in the hard Tapeats sandstone, the basal formation of the horizontal Paleozoic beds.

In *C* the weak Hermit shale, in the upper wall of the canyon, is thick and consequently wastes far back from the summit of the underlying hard Supai sandstone, leaving a wide platform known as the Esplanade. This platform, because of its great width and its conspicuous red color, is the dominant feature of the canyon landscape in all the western part of the national park. But the Hermit shale steadily gets thinner eastward in the canyon, as may be seen in sections *B* and *A*, whereas the overlying cliff-making Coconino sandstone, which defends the retreat of the wall above the Esplanade, gets steadily thicker in the same direction. The Esplanade thus becomes a narrow bench in *B* and fades to an inconspicuous ledge in *A*.

In *B* the weak Bright Angel shale has determined a similar platform in the bottom of the canyon. This platform, known as the Tonto platform, or the "lower plateau," is widest in the region about and east of Bright Angel and Hermit Trails, where it is a familiar feature to tourists. It gets narrower westward as the overlying Muav and Redwall formations grow thicker and become firmer in texture.

This marvelous adjustment of external form to the inequalities of rock structure and character affords to the geologist the strongest evidence that the canyon is the work of erosion.

#### A UNIQUE REVELATION OF GEOLOGIC HISTORY

A large part of ancient geologic history is revealed more clearly in the walls of the Grand Canyon than in any other place in the world. The beds of rock seen in the canyon were all laid down in water as layers of sand, mud, and limy ooze and in time were hardened into rock by the great weight of the layers above them, the lime and silica that they contained cementing their particles together. As rocks of this kind are composed of sediment deposited in water the geologist calls them sedimentary rocks, and as they are piled in beds or strata one above another they are said to be stratified, and the beds are called strata.

The horizontal strata seen in the walls of the canyon were formed during the Paleozoic era (the era of "old life"); they represent the oldest series of rocks that have yielded clearly identifiable traces of life. Many of the strata contain the remains of marine animals and were therefore evidently laid down on the bottom of the sea, although the region now stands high above the present sea level. Others, notably certain beds of red shale and sandstone in the Supai and Hermit formations (see fig. 1), appear to have been spread out as mud and sand on low-lying land or on delta plains by shifting streams;

and one formation, the Coconino sandstone, is regarded by some geologists as a sand-dune deposit. Nearly all the Paleozoic formations contain some traces of life—in the Kaibab and the Redwall limestones there are corals and many kinds of marine shells; in the formations of the Tonto group, the remains of primitive shellfish, worm trails, and impressions of seaweeds; in the Temple Butte limestone, the remains of an ancient type of fish; and in the Hermit shale, impressions of long-extinct plants. Fossil tracks of small animals, probably older forms of amphibia, occur in the Coconino sandstone along the Hermit Trail. The aggregate thickness of the Paleozoic rocks varies from place to place, but in the part of the Grand Canyon that is included within the national park it averages 4,000 feet.

#### ROCKS OLDER THAN THE PALEOZOIC

Ancient as are the formations of the Paleozoic era, two great systems of rocks—the Algonkian and the Archean—are buried beneath their base and appear only in the depths of the canyon. The rocks of the older system, the Archean, form the walls of the Granite Gorge. They are the foundation rocks of the region, and they are totally unlike the Paleozoic rocks, for they are entirely crystalline, are not stratified, and show a crumpled banding, due to the arrangement of their constituent minerals in parallel layers, an arrangement produced by heat, pressure, and recrystallization. The Archean rocks are mainly of the type known as gneiss and schist, but they include granite in large masses and dikes that have been intruded while molten into the gneiss and schist. The Archean rocks have been named the Vishnu schist. They contain no traces of life.

The rocks of the younger of these two systems, the Algonkian, are intermediate in age between the Archean and the Paleozoic rocks and occur here and there in the depths of the canyon in wedge-shaped masses that lie between the Archean and the Paleozoic. They can be easily distinguished by the casual observer in the region between Grand View and the mouth of the Little Colorado, where at least 12,000 feet of them remain. Small masses are exposed near the mouth of Bright Angel Creek opposite El Tovar, on Crystal Creek, on Shinumo Creek, and along Colorado River west of Powell Plateau. These rocks, like the Paleozoic, are stratified and do not differ greatly in character and appearance from some of the Paleozoic strata, notably the red Supai and Hermit formations, but, unlike the Paleozoic strata, they have been tilted from the horizontal position in which they were originally deposited, so that they are inclined at various angles. These Algonkian rocks have been named the Grand Canyon series. The few obscure fossils found in them are so poorly preserved that they tell very little concerning the primitive life of the period.

## GREAT UNCONFORMITIES

Each of these two great rock systems—the Archean and the Algonkian—is separated from the one that overlies it by a nearly even surface that cuts across or truncates all underlying beds or masses. This truncation marks what is known to geologists as an unconformity. Each unconformity means that the rocks below it were worn down by streams or waves to a nearly level surface before the material that formed the overlying rocks was deposited.

The top of the Paleozoic series is also marked as an unconformity, for although the Paleozoic beds are the highest that appear in the wall of the Grand Canyon they actually once lay beneath a later thick series of horizontal deposits. The traveler who comes to the Grand Canyon from the north descends step by step in southern Utah a great series of cliffs and terraces carved in horizontal beds, much like the Paleozoic. The most noted scenic features of southern Utah—Zion Canyon, Bryce Canyon, and the Vermilion, White, and Pink cliffs—are carved in these beds, which overlie the Paleozoic and represent deposits of later systems, the Triassic, Jurassic, and Cretaceous, which are of Mesozoic age, and part of a still later system, the Tertiary. These later beds once extended across the entire region in which the Grand Canyon lies, covering it to a thickness at least twice as great as the canyon is deep, but nearly all of them have been worn away by erosion. A few small masses of them still remain as buttes on the Coconino Plateau south of the Grand Canyon. One of these, Red Butte, lies 15 miles south of El Tovar. Another, Cedar Mountain, lies 2 miles east of the rim of the Grand Canyon near Desert View. Cedar Mountain is interesting because the formation that caps it, the Shinarump conglomerate, contains logs of petrified wood. The petrified forests of Arizona (Petrified Forest National Monument), which lie southeast of the Grand Canyon region, occur in a formation that immediately overlies the Shinarump conglomerate and that is exposed over wide areas but has been removed from Cedar Mountain and Red Butte by erosion.

The rock record just described is laid bare in the Grand Canyon and in the cliffs of southern Utah with the clearness of a diagram, so that the sequence of geologic events in the region can be read from it with ease and certainty. The unconformity that truncates the Archean rocks means that an enormous thickness of overlying rock had been removed from them before the Algonkian beds that now lie upon them were deposited, and consequently that a vast region, once high and mountainous, was reduced by erosion through long ages to the level plain represented by the unconformity.

When the land had been worn down to a plain it sank and was buried under at least 12,000 feet of mud and sand that now form the Grand Canyon series of Algonkian age. After these beds had thus accumulated they were uplifted, tilted, and broken into huge blocks that must have formed high ranges of mountains. Then followed a long period of erosion, during which the mountains were worn down nearly to a plain. This plain is represented by the unconformity that separates the eroded Archean and Algonkian rocks from the overlying horizontal Paleozoic strata. Exposed as it is for the entire length of the Granite Gorge and for many miles upstream from the Granite Gorge, and visible everywhere from the rim of the canyon, this unconformity is the most spectacular known illustration of such a feature. It was not so even a surface as the older unconformity, for some of the hard sandstones of the tilted Algonkian blocks long resisted erosion and stood as low hills on the plain. A section of one of these hills is visible in the canyon wall from El Tovar. It lies under Cheops Pyramid, just west of the mouth of Bright Angel Creek, and it rises well above the base of the Paleozoic beds, which were deposited around it.

#### SUBMERGENCE, DEPOSITION, UPLIFT, AND EROSION

At the end of Algonkian time the land was again submerged, and the horizontal Paleozoic, Mesozoic, and early Tertiary strata were slowly deposited. The time consumed by the deposition of these strata, whose aggregate thickness exceeds 15,000 feet, was long, even in the geologic sense of the word "long," for it must be estimated in millions rather than in thousands of years, spanning as it does the countless ages during which life was evolved from the primitive marine shellfish to the apelike predecessor of man. Yet it was short in comparison with the time consumed by the succession of events recorded before the Paleozoic strata were laid down, for that earlier period was inconceivably long, certainly far longer than all the time that has elapsed from the beginning of the Paleozoic era to the present day.

In Tertiary time the region was again uplifted and a period of erosion began. Streams cut channels into the surface of the land and in time formed broad valleys, which thus continued to expand until at last most of the land stood but little above the level of the sea. At the end of this period of erosion, which is sometimes called the great denudation, most of the strata above the Paleozoic had been removed from the Grand Canyon region; their edges had been worn back northward 50 miles to the border of Utah, and the surface of the region had been reduced to a nearly even plain. The present course of the Colorado River must have been determined by a topography different from that of to-day, for in most of the region that



lies within the national park, as one may see at El Tovar, the land south of the canyon slopes directly away from its rim, so that the canyon runs across instead of down a slope.

#### FOLDING AND FAULTING

The uplifts of the region that raised the Paleozoic and Mesozoic strata in Tertiary time were very different from those recorded beneath the unconformities in the canyon walls. The rocks were not compressed and folded, like the Archean, nor were they broken into tilted masses, like the Algonkian; instead, the whole region was lifted bodily, the strata still preserving essentially the horizontal attitude in which they were laid down. Yet the uplift was not equal over all parts of the region. If, for example, we should cross the Kaibab Plateau from east to west, say from House Rock Valley to Ryan, we should find the limestone strata at its western margin ending suddenly in a cliff and appearing again 1,500 feet below, on the surface of the plateau on the west—the Kanab Plateau. Such a break, along which the strata on one side have slipped past those on the other, is known as a fault. At the eastern margin of the plateau we should find the strata bending suddenly downward in a great curve returning again as sharply to a horizontal attitude, and continuing eastward as the surface of the Marble Platform. This type of dislocation is known as a flexure, or fold.

The uplifted Grand Canyon region is divided into great horizontal plateau blocks like the Kaibab Plateau by dislocations of the type just described, either folds or faults, that trend north and south; and the Grand Canyon crosses these plateaus from east to west. The name of each plateau has been given to the section of the canyon that crosses it. Thus the section of the canyon that transects the Kaibab Plateau is known as the Kaibab division. The Grand Canyon National Park includes all the Kaibab and part of the next western division—the Kanab.

In addition to the great dislocations that separate the plateaus there are numerous small faults and folds in the region, some of them in the Grand Canyon. Many visitors who have noticed the faults ask whether the canyon does not owe its origin or at least its course to a fault, but although geologists have studied the canyon at many places they have found no evidence of the existence of such a fracture. If it existed it could not have escaped notice, so perfect are the exposures of the beds in the rocky walls along the numerous turns of the river. Nor do any considerable parts of the canyon coincide with faults. On the other hand, it may be said that faults have guided the course of many tributary gorges in the Grand Canyon, and even some parts of the course of the river, though not in the way popularly supposed. Erosion, not dislocation, has been the

chief agent that determined the course of each gorge. Movement along some of the faults, by crushing the adjacent rock, has formed zones of weakness, which, under the searching action of erosion, have become ravines or gorges. An example is the gorge of Garden Creek, which is followed by the Bright Angel Trail in front of El Tovar. The course of this gorge has been determined by a small fault, which has shattered the great cliffs of the Coconino sandstone and Redwall limestone and has made possible the construction of the trail. The strata have been displaced about 100 feet by the faults, those on the west side having been relatively elevated.

#### THE WORK OF MAKING THE CANYON

During the last great uplift of the region, which may still be in progress and which has raised the plateau to its present height, the land rose so gradually that the river remained in its original channel and kept cutting deeper and deeper. The canyon is thus deep because the land is high and because in this arid region the river, fed by the rains and snows of the Rocky Mountains and armed with great quantities of mud and sand and gravel, washed into it by its tributaries, has lowered its bed faster than its tributaries could lower the adjacent plateau. But, although the Colorado River has thus dug the canyon, the various forms of rock sculpture seen in the walls of the canyon have been determined by variations in the behavior of the beds under the attack of the agents of erosion. And this erosion is still going on. The observer of to-day who stands in awe on the brink of the canyon or who finds his way precariously down the trails that lead to its depths should realize that the work of making this mighty chasm is not yet finished. The various agents that have modeled the canyon—the rushing torrent below and the small streams that descend to join it, the intermittent rain and snow and frost, and those subtle yet effective chemical activities that aid in the decay of the rocks, and, above all, the ever dominant pull of gravity on all loose particles—all are still at work on this wonderful piece of earth sculpture. In the Grand Canyon of to-day we see the accumulated results of the action of powers that apparently leave from year to year but slight traces of their action but that, persisting in their work through uncomputed ages, have produced results of marvelous immensity.

#### HISTORY OF THE CANYON\*

Don Lopez de Cardenas, of Coronado's expedition, discovered the Grand Canyon in 1540, as a result of stories told by the Hopi (Moquis) Indians to Don Pedro de Tovar. The old records describe a chasm which seemed to be more than 3 or 4 leagues across in an air line—*"que avia mas de tres o quatro leguas por el ayre."*

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\*Furnished by courtesy of Frederick S. Dellenbaugh.

For a long period thereafter the Grand Canyon region and the Colorado River remained practically unknown. It is next recorded as having been seen by two Spanish priests in 1776; Padre Garces crossing eastward from the lower Colorado to the Hopi towns, who halted, he says, "at the sight of the most profound caxones which ever onward continue, and within these flows the Colorado," and Padre Escalante, who, in searching for a place to cross from the north after his failure to proceed westward from Santa Fe to Monterey, finally found the old Ute ford, used by Indians for centuries, near the foot of Glen Canyon (in latitude 37°), and by means of it was able to reach Zuni. The ford then became known as *El Vado de los Padres*—the Crossing of the Fathers—for long the only known crossing of the Colorado in a distance of several hundred miles.

The first American to visit the region was James O. Pattie, accompanied by his father. They trapped beaver on the lower Colorado in 1825 and 1826. In 1826, returning eastward, they traveled for 13 days, following, apparently, the Grand Canyon as well as they could, but unable to reach the river at any point, till at last they arrived at a place where the river "emerges from these horrid mountains." This was the first extended trip on record of any human being along the brink of the Grand Canyon.

The same year that the Patties went to the lower Colorado, 1825, General Ashley, in pursuit of his fur-trading enterprise, attempted to descend Green River from near the present crossing of the Union Pacific Railway. They were forced after great hardship to give up the effort in the Uinta Valley.

The famous American trapper and pioneer, Jedediah Smith, crossed the river going west in the Mohave country in 1826 and again in 1827. In this latter year the Patties returned to the lower Colorado and trapped down the river from the mouth of the Gila in dugouts, the first navigators of this portion since Alarcon, of the Coronado expedition, came up in 1540. Quite unexpectedly they made the acquaintance of the great bore at the mouth of the river, where they were in waters that Lieutenant Hardy, of the British Navy, had entered the year before.

Other trappers after beaver then followed into the region, and the Government began sending out exploring parties. One of these under Sitgreaves crossed the Colorado in 1851 about 150 miles above Yuma, and three years later another under Whipple, surveying for a railway along the thirty-fifth parallel, crossed a few miles above the mouth of Bill Williams Fork.

When the California gold rush developed one trail of the Forty-niners led down the Gila and across the Colorado at its mouth, and now various activities on the lower river began. The first steamboat was brought to the mouth of the Colorado and up it in 1852. It was named the *Uncle Sam*.

Edward F. Beale, surveying a Government wagon road, crossed and recrossed in 1857 and 1858, near the mouth of Bill Williams Fork, and in 1858, January, the Government exploring expedition under Lieutenant Ives proceeded from the mouth up the river in a small stern-wheel iron steamer, the *Explorer*, as far as the foot of Black Canyon, whence the ascent was continued in a small boat to the mouth of the Vegas Wash. This was not the first steamer up, however, as Captain Johnson, of a commercial navigation company, had steamed up and passed with his steamboat clear through Black Canyon to its head some days before, mainly to "get ahead" of Ives, who had earlier displeased Johnson. Ives then proceeded overland to the mouth of Diamond Creek and to the Hopi towns via Havasu Canyon.

"It seems intended by nature," says Lieutenant Ives, after vainly trying to reach the rim, "that the Colorado River, along the greater part of its lonely and majestic way, shall be forever unvisited and undisturbed."

This same year of 1858 saw the first recorded crossing of the Colorado from the north, by white men, since Escalante. This was accomplished by Jacob Hamblin, a well-known Mormon, a missionary and Indian agent, from Utah to the Hopi towns. An Indian guided him to the Ute ford (Crossing of the Fathers) and he used it thereafter almost yearly. These Mormons for long years were the only persons besides Navajos and Utes to cross the river anywhere. The ford, known to few, was difficult and dangerous at all times and impossible except at low water.

In 1862 Hamblin went around the Grand Canyon by the west end to the Hopi towns and returned by the Crossing of the Fathers at the east end, practically, as Marble Canyon begins a few miles below. The next year he again went around by the west end to the Hopis, visiting the "hermit" tribe, the Havasupais, in their deep canyon home, on the way, the first white man on record to do so after Lieutenant Ives. The party returned to St. George around the west end of the Grand Canyon. Nobody, as yet, went to the rim and there was no known crossing of the Grand Canyon itself anywhere by white men.

Another attempt to descend Green River from the California Trail (near the present Union Pacific Railway) was made in 1849, by William Manly and party. They expected to find a shorter and easier road to the California gold fields. After a hard time they emerged into Uinta Valley, where they met the noted Ute chief Wakar ("Walker"), who was good to them and urged them not to try to go farther down the river.

In 1867 a man named James White was picked up from a raft near Callville, below the mouth of the Virgin, in an exhausted condition, and those who aided him immediately but erroneously assumed that

he had come down through the Grand Canyon, the result of an ignorance as great on their part as on that of White. He knew nothing about the interior of the great canyon and mentioned that he had run one big rapid, whereas he should have mentioned big rapids by the dozen.

So nothing became definitely known about the mysterious interior of the Grand Canyon or of the canyons of the Colorado River above as far as the Uinta Valley on Green River until Maj. John Wesley Powell, one-armed veteran of the Civil War, made his famous passage of all the canyons. He started with nine men and four boats from Green River City, Wyo. (on the Union Pacific Railway, then the only railway across the continent), on May 24, 1869. One of the men (Goodman) was disheartened and left the party in the Uinta Valley.

The terrifying waterfalls and underground passages described by trappers and Indians were not found, but the declivity was often extremely great and continuous (as in Cataract Canyon, where it is continuous for about 20 miles), producing violent cataracts, with huge waves and a water velocity of over 20 miles an hour, frequently studded with giant rocks.

The trip was one of incredible hardship and danger, led by the Major with his one left arm, the other having been lost at the Battle of Shiloh. The plunging rapids in the whole length of the journey numbered several hundred to overcome the 6,000 feet difference in altitude between Green River City and the sea. The boats were often upset and the passage of many of the rapids was perilous to a degree. Frequently the party would be forced to embark on long foaming declivities without being able to discover what other, perhaps greater, falls might lie around the precipitously walled bends in front of them.

One of the boats, some of the scientific instruments, and a considerable amount of the food supply were lost in the Canyon of Lodore; and some that was rescued had to be left, as the remaining boats were overloaded. For weeks the clothing of the adventurers was never dry; and when they finally entered the mighty depths of the Grand Canyon itself, in August, there was little food remaining.

The sharpest rapids occur in the granite, and the first Granite Gorge, running past the Powell Monument, contains the worst portion of the whole river. When, therefore, another "Granite Gorge" developed below Diamond Creek, the men, stalwart and full of nerve though they were, having become somewhat demoralized by lack of food and the tremendous strain, were disheartened. Three of them consequently announced that they would go no farther.

This was desertion, but they preferred it to risking the difficulties they saw ahead. They believed they could climb out and reach the well-known Mormon settlements on the north, and they believed a river party would be lost or starve.

"At one time," says Powell in his report, "I almost concluded to leave the river. But for years I have been contemplating this trip. To leave the exploration unfinished, to say that there is a part of the canyon which I can not explore, having already almost accomplished it, is more than I am willing to acknowledge, and I determine to go on. \* \* \* For the last time they entreat us not to go on, and tell us that it is madness to set out in this place." The same appeal that Dunn made to Hawkins, the cook of the party, as Hawkins himself tells it.

William R. Hawkins, writing of this in after years, says the three men had "made up their minds to go, and Dunn said he hated to leave Hall and myself, as we had been together a long time, and that we would perish in the river. [Note the fear of the river which had developed in the minds of at least three.] While we were talking, the major came up to me and laid his left arm [he had no right] across my neck, tears running down his cheeks. By that time the rest of the boys were present, and the major said to me: 'Bill, do you really mean what you say' [that he would stick to the major on the river]? I told him that I did, and he said that if he had one man that would stay with him that he would not abandon the river. I just simply said that he did not know his party."

He certainly had reason, with three men about to desert, to believe that others might. The other five were true, however, and it is only just to say that one of the deserters would have stood true, also, had it not been for his brother, who was determined to leave. They all then drank coffee together. The boat party went on, the deserters climbed out on the north, each party thinking the other party doomed. The deserters would have fared well enough and would have arrived at the Mormon settlements had it not been that the Shewits Indians on the plateau believed, or said later that they believed, that these were miners who had committed depredations on a tribe to the south. The men were therefore killed not far from Mount Dellenbaugh, and their clothing, rifles, etc., appropriated.

The place on the river where they left the major is now known as Separation Rapid. The day after they departed Powell and "the faithful five" reached the end of the great chasm without serious mishap. The names of the three deserters have justly been omitted from the roll of honor inscribed on the Powell Monument.

Powell's journal of this famous voyage is one of the most fascinating tales of adventure in literature. A large part of his meager notes having been lost, Powell repeated the trip on a more extensive basis in 1871 and 1872, obtaining then the data on which his report was based. There is no account of this second, vital expedition except in *A Canyon Voyage*, by Frederick S. Dellenbaugh, a member of that party. Afterwards Powell became director of the United States Geological Survey and of the Bureau of Ethnology, which he established.

## THE CANYON AS A RESORT

The Grand Canyon is very much more than a wonder place or a scientific museum on a titanic scale. It is a pleasure resort of the first order. It may be visited any day in the year. The railroad to the south rim is always running and the hotel always open. When most other resorts are closed the Grand Canyon is easily accessible.

During the winter snow falls in the pine forest along the rim; and though the upper portions are snow covered, the trails into the canyon are open and safe; the floor of the canyon is warm and comfortable the year round. When nipping frosts redden cheeks on the rim, the most fragile flowers are blooming in the canyon.

The weather in July and August is warm but not hot on the rim; the altitude takes care of that. There are cool mornings, evenings, and nights, no matter how warm it may be at midday.

Arizona is a land of sunshine; the air is dry and the winds are light. While spring and fall are more attractive than midsummer or midwinter, each season has its special charm. From December to March snow is more or less abundant on the rim and a few hundred feet down the trail. Camping-out parties must then confine themselves to the inner canyon, which is more comfortable than the rim areas.

## THE NORTH RIM OF THE CANYON

There is a remarkable difference between the north and south rims. The north rim, a thousand feet higher, is a colder country, clothed with thick, lusty forests of spruce, pine, fir, and quaking aspen, with no suggestions of the desert. Springs are found here; and deer are more plentiful than in any other area in the United States, as many as 1,000 having been counted along the auto road in one evening. It is a region soon to be used by hundreds of campers-out.

The views from the north rim are markedly different. One there sees close at hand the vast temples which form the background of the south rim view. One looks down upon them, and beyond them at the distant canyon floor and its gaping gorge which hides the river; and beyond these the south rim rises like a great streaked flat wall, and beyond that again, miles away, the dim blue San Francisco Peaks. It is certainly a spectacle full of sublimity and charm. There are those who, having seen both, consider it the greater. One of these was Dutton, whose description of the view from Point Sublime has become a classic. But there are many strenuous advocates of the superiority of the south rim view, which displays close at hand the detail of the mighty chasm of the Colorado, and views the monster temples at parade, far enough away to see them in full perspective.

The trail trip to the north rim is now perfectly feasible by the completion of the Kaibab Suspension Bridge over the Colorado River and the reconstruction of the Kaibab Trail up Bright Angel Canyon. It is about 32 miles from Grand Canyon to the Wylie Way Camp on Bright Angel Point. About 12 miles are made the first day, stopping overnight at Phantom Ranch; the remaining 20 miles are covered the second day.

Auto transportation and rates for reaching this side of the park from the north are given on page 58.

## TABLES OF DISTANCES AND ALTITUDES

## ROADS

## HERMIT RIM ROAD, GRAND CANYON TO HEAD OF HERMIT TRAIL AND HERMIT REST—7.9 MILES

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Hermit Trail		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	7.9	6,875	Administrative headquarters of Grand Canyon National Park.
Road to Havasupai.....	.5	7.4	6,820	To Havasupai Indian Reservation, 47 miles distant.
Trail to Hermit Rest.....	1.4	6.5	6,960	By foot or horseback to Hermit Rest or Hermit Trail, 5 miles.
Powell Memorial.....	2.0	5.9	7,050	Memorial to Maj. John Wesley Powell, Sentinel Point.
Hopi Point.....	2.2	5.7	7,071	Fine view. Sometimes called Sunset Point.
Mohave Point.....	3.0	4.9	7,000	View of canyon and river.
The Abyss.....	4.2	3.7	6,850	Looking down from the Great Mohave Wall.
Cut-off to Hermit Rest....	5.2	2.7	6,800	Old road to Hermit Rest.
Piñon Cove.....	6.0	1.9	6,750	Grove of piñon pines.
Pima Point.....	6.7	1.2	6,750	Fine view of canyon and river, with Hermit Creek Cabins visible beneath.
Cut-off to Grand Canyon..	7.4	.5	6,700	View of canyon and river.
Hermit Rest.....	7.6	.3	6,690	Interesting Harvey rest house. Light refreshments.
Trail to Natural Bridges..	7.6	.3	6,680	Natural Bridges in limestone, $\frac{1}{4}$ mile.
Head of Hermit Trail.....	7.9	0	6,665	7.5 miles to Hermit Creek Cabins.

## GRAND CANYON, GRAND VIEW, DESERT VIEW ROAD—GRAND CANYON TO DESERT VIEW—30 MILES

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Desert View		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	30.00	6,875	Administrative headquarters of Grand Canyon National Park.
Road to Yavapai Point..	.60	29.40	6,940	View of canyon and river. Kaibab Suspension Bridge visible beneath.
Motor crossing.....	.90	29.10	6,975	Cattle guard in drift fence that encircles headquarters district.
Trail to Yaki Point.....	1.50	28.50	6,925	Trail through forest. Sometimes called Cremation Point.
Moqui Trail.....	2.50	27.50	6,900	Saddle-horse trail to Grand View.
Rowe Well Road.....	3.50	26.50	6,925	Old road to Rowe Well.
Trail to Shoshone Point..	4.00	26.00	6,800	Locally called Inspiration Point, 4.5 miles.
Williams Road Junction..	4.30	25.70	6,850	Checking station. Take right-hand road to Maine, Williams, and Flagstaff.
Long Jim Canyon.....	5.30	24.70	6,811	A typical surface canyon or wash.
Long Jim tool cache.....	6.10	23.90	6,860	A cache for tools used by rangers in fighting fire. Telephone.
Long Jim Canyon, east end.	8.60	21.40	7,175	
Thor's Hammer.....	10.10	19.90	-----	Notable columns of limestone.
To Grand View Point....	12.25	17.75	7,406	Magnificent view of canyon, Painted Desert, Navajo Mountain, river, etc.
Grand View Hotel.....	13.10	16.90	7,500	Old stage hotel. Not in operation for many years. Highest point on south rim.
Grand View Camp Grounds.	13.25	16.75	7,490	Public camp grounds and ranger station, season May to October.
Hance ranch.....	14.20	15.80	-----	Old home of Capt. John Hance, first settler on rim of Grand Canyon.
Park boundary.....	14.80	15.20	-----	Grand View entrance to the park.
Flagstaff road.....	15.70	14.30	-----	Old stage road from Flagstaff. Abandoned.
Park boundary.....	25.75	4.25	7,060	Desert View entrance to the park.
Lipan Point.....	27.90	2.10	7,359	Locally called Lincoln Point.
Desert View.....	30.00	0	7,450	Navajo Point. Fine view of Marble Canyon, Painted Desert, Navajo Mountain, etc.



## ROADS—Continued

## GRAND CANYON, ROWES RANCH, TUBA CITY, MOENKOPI, FLAGSTAFF

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Tuba City		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	77.4	-----	One of the first settlers in Grand Canyon. The first view of the Painted Desert. Steel suspension bridge over Little Colorado. Headquarters, Navajo Indian agent. Hopi Village.
Rowes Ranch.....	27.7	49.7	-----	
Waterloo Hill.....	32.9	44.5	-----	
Cameron Bridge.....	54.6	22.8	-----	
Tuba City.....	77.4	0	-----	
Moenkopi via Tuba City.....	80.9	-----	-----	
Cameron Bridge to Flagstaff.....	58	-----	-----	
Flagstaff to Grand Canyon via Maine.....	84	-----	-----	

## TOPOCOBYA ROAD, GRAND CANYON TO HILL TOP—HEAD OF HAVASU TRAIL VIA ROWE WELL—33.2 MILES

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Hill Top		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	33.20	6,875	Administrative headquarters of Grand Canyon National Park.
Topocoby Road.....	.55	32.65	6,820	Road to Hill Top and Topocoby Spring the head of Havasu Trail, 15 miles to Havasupai Indian Reservation.
Trail to Hermit Rest.....	.70	32.50	6,800	Road to Rowe Well. To Hermit Trail, Hermit Basin, and Hermit Rest.
Drift fence.....	1.95	31.25	-----	
Railroad crossing.....	2.35	30.85	6,650	
Old road to Grand View.....	2.65	30.55	6,625	
Railroad crossing.....	2.95	30.25	-----	
Rowe Well Road.....	3.10	30.10	6,600	Trail to Dripping Springs. Fine spring and good trail, 3 miles. Fire tools.
Waldron Trail.....	6.25	26.95	6,462	
Dripping Springs tool cache.....	7.00	26.20	6,375	United States Geological Survey bench mark. Road to Havasupai Point.
Bench mark, United States Geological Survey.....	9.90	23.30	6,340	
Road to Bass Camp.....	12.50	20.70	6,235	
Ranch.....	14.00	19.20	-----	United States Geological Survey bench mark.
Section corner 10 and 11.....	15.80	17.40	-----	
Road to Bass Camp.....	17.60	15.60	6,154	
Bench mark, United States Geological Survey.....	20.00	13.20	6,074	United States Geological Survey bench mark. Indian pasture.
Supai drift fence.....	21.40	11.80	6,061	
Top of mesa.....	27.80	5.40	-----	
Top of grade.....	28.20	5.00	-----	Reservation storehouse at head of trail. Water.
Bench mark in Lee's Canyon.....	29.70	3.50	5,771	
Bench mark.....	31.30	1.90	5,772	
Supai warehouse.....	33.20	0	-----	
Topocoby Spring.....	33.70	.50	-----	

## ROADS—Continued

## APPROACH ROAD, GRAND CANYON TO NATIONAL OLD TRAILS ROAD AND SANTA FE RAILROAD AT MAINE

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Maine, Ariz.		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	64.00	6,875	Administrative headquarters of Grand Canyon National Park. Hotels, information, etc.
Road to Yavapai Point..	.65	63.35	6,890	Fine view of canyon. Kaibab Suspension Bridge visible beneath.
Motor crossing.....	.90	63.10	-----	Cattle-proof crossing through drift fence.
Park entrance checking station.	5.50	58.50	6,718	South entrance to Grand Canyon National Park. Ranger station. All cars stop and register.
Rain tank.....	9.90	54.10	-----	Earth tank for cattle.
Fork of road.....	10.00	54.00	-----	Left-hand fork to Maine, Ariz.
Red Butte.....	20.00	44.00	-----	
Mortz Lake.....	49.00	15.00	-----	
Maine.....	64.00	0	-----	Junction with Old Trails road.
Williams.....	79.00	15.00	6,762	Nearest shopping point to Grand Canyon.
Flagstaff.....	84.00	20.00	6,896	County seat of Coconino County.

## NORTH RIM GRAND CANYON NATIONAL PARK TO ZION NATIONAL PARK—170.9 MILES

Place	Distance from—		Altitude	Remarks
	North rim	Zion Park		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Wylie Way Camp.....	0	170.90	8,250	Accommodations for travelers on Bright Angel Point, north rim of Grand Canyon.
North rim ranger station.	2.00	168.90	8,100	National Park Service ranger station. Headquarters for north rim.
North entrance Grand Canyon National Park.	4.20	166.70	8,450	North entrance to Grand Canyon National Park.
De Motte Park.....	14.40	156.60	8,900	A typical park or meadow. Range of mule, deer.
Pleasant Valley.....	22.40	148.50	8,500	
Crane Lake.....	24.40	146.50	-----	
East Lake.....	26.90	144.00	-----	
Jacob's Lake lookout station.	29.20	141.70	-----	Range of white-tailed squirrels.
Jacob's Lake ranger station, Forest Service.	42.40	128.50	-----	Forest Service ranger station.
Drift fence.....	45.40	125.50	-----	Boundary line of proposed President's Forest.
Fredonia.....	75.40	95.50	-----	Only post office in Arizona north of the Grand Canyon.
Kanab.....	82.40	102.50	4,920	Most southerly town in Utah. Good hotel.
Pipe Spring.....	89.90	81.00	-----	Old Mormon fort. Spring formerly came out of the solid rock in the stockade.
Cedar Mountain.....	99.90	71.00	-----	
House, Antelope Springs.	121.90	49.00	-----	
Red Creek.....	125.40	45.50	-----	
Short Creek.....	135.90	35.00	-----	Sheep corrals.
Top Hurricane fault.....	141.40	29.50	-----	Great Hurricane fault.
Hurricane.....	142.40	28.50	-----	Utah's Dixie. Population, 1,021.
Zion National Park.....	170.90	0	-----	Yosemite done in oils.

## ROADS—Continued

## APPROACH ROAD, GRAND CANYON TO NATIONAL OLD TRAILS HIGHWAY AND SANTA FE RAILROAD AT WILLIAMS

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Williams		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	64.00	-----	Administrative headquarters of Grand Canyon National Park. Hotels, information, etc.
Road to Yavapai Point.....	.65	63.35	-----	Fine view of canyon. Kaibab Suspension Bridge and Phantom Ranch visible beneath.
Motor crossing.....	.90	63.10	-----	Cattle-proof crossing through drift fence.
Park entrance checking station.....	5.50	58.50	-----	South entrance to Grand Canyon National Park. Ranger station. All cars stop and register.
Rain tank.....	9.90	54.10	-----	Earth tank for cattle.
Fork of road.....	10.00	54.00	-----	Right-hand fork for Williams.
Anita.....	22.00	42.00	-----	Stock tanks and sheep corral.
Red Lake.....	56.00	8.00	-----	Small lake and junction with Spring Valley road—connection of Maine with Williams road.
Williams.....	64.00	0	-----	Nearest shopping point to Grand Canyon.

## TRAILS

## GRAND CANYON TO NORTH RIM RANGER STATION VIA KAIBAB TRAIL—30 MILES

Place	Distance from		Altitude	Remarks
	Grand Canyon	North rim		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	30.00	6,875	Administrative headquarters of Grand Canyon National Park. Hotels, etc.
Head of Kaibab Trail.....	3.50	26.50	-----	
Kaibab Suspension Bridge.....	11.00	19.00	2,500	Built by National Park Service in 1921. Only bridge across Colorado for several hundred miles.
Phantom Ranch.....	11.50	18.50	2,550	Interesting new Harvey Camp, stone cottages. Well located for hiking, climbing, etc.
Phantom Creek.....	13.00	17.00	2,950	A deep canyon coming in from the west.
Head of Box Canyon.....	15.00	15.00	3,850	Near end of granite in Bright Angel Creek.
Ribbon Falls.....	17.00	13.00	3,750	Very beautiful falls where creek drops over red wall.
Wall Creek.....	17.80	12.20	3,850	Creek coming from the right. Old name is Beaver Creek.
Transept Creek.....	19.00	11.00	4,150	The Transept on left.
Roaring Springs.....	21.00	9.00	4,750	Large springs gushing out on left.
Last Crossing.....	22.00	8.00	5,050	Last crossing of Bright Angel Creek. Fill your canteens.
Troughs Spring.....	24.00	6.00	6,325	Spring on top of red wall.
Topping-out point.....	26.00	4.00	8,250	End of climb. North rim.
DeWolley Cabin.....	29.00	1.00	8,200	Old ranger cabin. Headquarters of saddle-horse concessioners.
North rim ranger station.....	30.00	0	8,150	Ranger headquarters on north rim. Register. Information service.
Wylie Way Camp.....	32.00	0	8,250	Accommodations for north rim visitors.

## TRAILS—Continued

## GRAND CANYON TO HERMIT CREEK CABINS VIA BRIGHT ANGEL AND TONTO TRAILS—21 MILES

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Hermit Cabins		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	21.00	6,875	Administrative headquarters of Grand Canyon National Park. Hotels, post office, etc.
Jacob's Ladder.....	2.50	18.50	4,850	Trail through blue limestone, 550 feet.
Indian Gardens.....	3.70	17.30	3,876	Grove of cottonwood trees watered by Garden Creek. Former home of Indians.
Tonto Trail.....	4.30	16.70	3,750	Right-hand fork to Colorado River and Camp Roosevelt.
Plateau Point.....	4.70	16.30	3,750	Plateau Point, 1 mile.
Battleship.....	5.50	15.50	3,700	Battleship on left.
Horn Creek.....	7.20	13.80	3,550	
Dana Butte.....	9.00	12.00	3,550	View of gorge, river, etc.
The Inferno.....	11.50	9.50	3,400	Locally called Hell's Half Acre.
Salt Creek.....	12.30	8.70	3,440	
The Alligator.....	14.00	7.00	3,450	Butte called Alligator on left.
Cedar Spring.....	15.00	6.00	3,400	Good water.
Monument Creek.....	17.50	3.50	3,200	Very scenic.
Hermit Cabins.....	21.00	0	3,050	Fine Fred Harvey camp.
Colorado River, foot Hermit Trail.	23.00	2.00	2,440	Hermit Rapids.

## GRAND CANYON TO HERMIT CREEK CABINS THROUGH WOODS AND HERMIT TRAIL—12 MILES

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Hermit Cabins		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	12.00	6,875	Administrative headquarters of Grand Canyon National Park.
Hermit Trail.....	5.00	7.00	6,665	Harvey corral.
Marshal Foch Rock.....	5.30	6.70	6,575	Rock where Marshal Foch sat for half hour or more smoking his pipe December, 1921.
Waldron Trail.....	6.00	6.00	5,270	Trail to Rowe Well Road.
Dripping Springs Trail.....	5.50	6.50	5,260	Trail to Dripping Springs and Boucher Trail.
Santa Maria Spring.....	7.00	5.00	5,250	Good water. Rest pavilion.
Four Mile Spring.....	9.00	3.00	4,550	Good water.
Cathedral Stairs.....	10.00	2.00	4,530	
Hermit Cabins.....	12.00	0	3,050	Fine Harvey camp.

## SHORT WALKS NEAR GRAND CANYON

Place	Distance and direction from El Tovar	By—	Altitude	Remarks
	<i>Miles</i>		<i>Feet</i>	
The Lookout Telescope..	0.3 west.....	Grand Canyon Rim Trail.	6,866	Observatory. Curios on sale. Pictures.
Kolb Bros. Studio.....	0.4 west.....	do.....	6,850	Studio. Grand Canyon moving picture lecture daily of voyage through canyon.
Pictograph Rock, Hole in Wall.	0.6 west.....	Grand Canyon Rim Trail and foot trail.		Interesting foot trail from Bright Angel Trail. Ancient Indian pictographs.
Picnic Rock.....	0.8 west.....	Rim foot trail....	6,870	Walk through woods. Fine view of San Francisco peaks.
Maricopa Point.....	1.8 west.....	Grand Canyon Rim foot trail.	7,000	Fine view of canyon.
The Battleship.....	2.5 north.....	Bright Angel Trail.	5,867	Rough foot trail from Bright Angel Trail.
Indian Gardens.....	3.7 north.....	do.....	3,876	Fine creek of good water.
Independent Store.....	0.3 east.....	Grand Canyon Rim foot trail.	6,880	Indian handiwork and curios.
Grandeur Point.....	1.3 east.....	do.....	7,050	Fine view. Kaibab Suspension Bridge visible.
Yavapai Point.....	1.5 east.....	do.....		
Rowe Well.....	3.6 southwest.....	Rowe Well Road..	6,681	Good water.

## HOW LONG TO STAY

*Time required.*—While one ought to remain a week or two, a stop-over of three or four days from the transcontinental trip will be quite satisfactory. The Hermit Loop overnight trip, down one trail and up another, requires two days and a night, or more time may be taken and include Phantom Ranch. One day should be devoted to an auto ride along the Hermit Rim Road, and by auto to Grand View and Desert View. Another day go down Bright Angel Trail and back. A fourth day spent in short walks to nearby points or on horseback will enable visitors to get more intimate views.

The several trips mentioned above are all well worth while, and the high plateau above the rim affords many delightful horseback or hiking trips.

The north rim offers the best opportunity for camping out during the summer months. The high altitude makes the weather uniformly cool, while the magnificent forest through which roam thousands of deer creates a delightful setting. There are a number of springs, and the water supply is not a serious problem.

The National Park Service of the Department of the Interior recommends to the traveling public that stopovers of as long duration as practicable be planned at points within the park; that Grand Canyon National Park be regarded not alone as a region which may be glimpsed on a hurried trip, but also as a vacation playground for rest and recreation.

## WHAT TO WEAR

If much tramping is done, stout, thick, hobnailed shoes should be provided. Ladies will find that short walking skirts are a convenience; riding trousers are preferable, but not essential, for the horseback journey down the zigzag trails. Traveling caps and (in summer) broad-brimmed straw hats are useful adjuncts. Otherwise ordinary clothing will suffice. Riding trousers, divided skirts, and straw hats may be rented at El Tovar Hotel.

## ADMINISTRATION

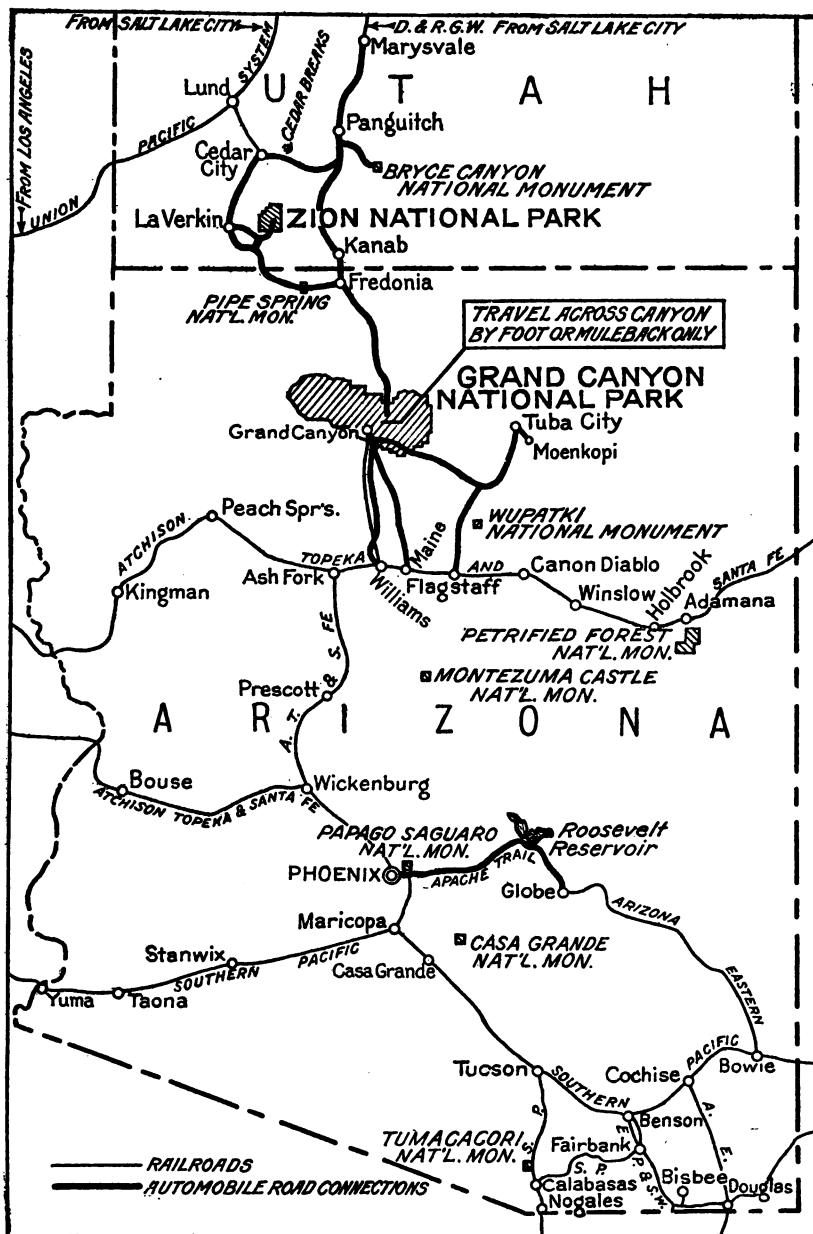
Grand Canyon National Park is under the jurisdiction of the Director, National Park Service, Department of the Interior, Washington, D. C. The park superintendent, Mr. J. R. Eakin, is located at Grand Canyon, Ariz., and information, maps, and pamphlets may be obtained at the office, where visitors are cordially welcomed. The office of the superintendent is 100 yards east of the Grand Canyon Railway station.

The park, El Tovar Hotel, the Bright Angel cottages, and the cabins at Hermit Creek and Phantom Ranch at the mouth of Bright Angel Creek are always open. Accommodations may be had at Wylie Way Camp on the north rim during the summer months only.

## HOW TO REACH THE PARK

## BY RAIL

The Grand Canyon National Park is directly reached by a branch line of the Atchison, Topeka & Santa Fe Railway extending 64 miles



MAP SHOWING RAILROAD CONNECTIONS TO GRAND CANYON NATIONAL PARK

northward from Williams, Ariz. On certain trains through standard Pullman cars are operated to and from Grand Canyon station. Pas-

sengers using other trains and stopping over at Williams will find excellent accommodations at the Fray Marcos, station hotel.

Stop-overs, not to exceed 10 days, are granted at Williams on all classes of railroad tickets for a visit to the canyon. Limits of through railroad tickets will be extended if necessary by agent at Grand Canyon. Through tickets may include side-trip coupons, Williams to Grand Canyon and return, at an additional charge of \$9.12.

Round-trip excursion tickets at reduced fares are on sale daily at practically all stations in the United States and Canada to Grand Canyon as a destination.

Baggage may be checked through to Grand Canyon station, if required. Passengers making brief side trips to Grand Canyon may check baggage to Williams only or through to destination. Certain regulations for free storage of baggage for Grand Canyon passengers are in effect.

For further information regarding railroad fares, service, etc., apply to railroad ticket agents, or address:

W. J. Black, passenger traffic manager, Atchison, Topeka & Santa Fe Railway system, Chicago, Ill.

J. B. Duffy, general passenger agent, Atchison, Topeka & Santa Fe Railway system, Coast Lines, Los Angeles, Calif.

The Union Pacific delivers tourists for the north rim at Cedar City, Utah, and the Denver & Rio Grande Western, at Marysvale. The former is approximately 175 miles from the Grand Canyon, and the latter approximately 217 miles. Regular stage service is maintained from both these points to the Grand Canyon National Park.

Complete information concerning these trips can be had from:

W. S. Basinger, passenger traffic manager, Union Pacific system, Omaha, Nebr.

F. A. Wadleigh, passenger traffic manager, Denver & Rio Grande Western, Denver, Colo.

Parties making the trip from either of these places to the Canyon can make an interesting trip covering Bryce Canyon, Cedar Breaks, and Zion National Park.

If parties desire, they can make the trip from the north, taking in all these features, cross the canyon and continue their trip on the Santa Fe Railroad. This can also be reversed, entering the park via the Santa Fe, crossing the canyon to the north rim, thence by motor bus to either of the two railways mentioned above, where the trip may be continued. Arrangements for such a trip should be made at the time tickets are purchased.

#### BY AUTOMOBILE

Automobile tourists may leave the National Old Trails Highway, which is the main east and west highway through Arizona at Maine or Williams. In wet weather, the latter road is better.

20°

L F O

PLATEAU

TO ZION  
NATIONAL PARK  
171 MILES  
KANAB 63 MILES

KAIBAB  
PLATEAU

Nat  
WYLLIE  
CAMP

Bright  
Angel Pt.

10°

Isis  
Temple

PHANTOM  
RANCH

SUSPENSION  
BRIDGE

TONTO

Indian  
Garden

Yavapai Pt.

Traki Pt.

GRAND CANYON

EL TOVAR HOTEL

Shoshone  
Pt.

36°

A

COUR

L PARK





**Flagstaff.**—It is 98 miles from Flagstaff to Grand Canyon via Williams and 84 miles via Maine. At times in early spring, during summer rains, or late fall it is advisable to inquire at Flagstaff or Williams as to road conditions. The Maine Road traverses more beautiful forests and is more scenic than the Williams Road, but is apt to be in worse condition, depending upon the amount of moisture



MAP SHOWING PRINCIPAL AUTOMOBILE ROUTES IN COLORADO, UTAH, ARIZONA, AND NEW MEXICO.

that has fallen. The town of Flagstaff is located in the heart of the San Francisco uplift and has good stores and garage facilities. In this vicinity are prehistoric cliff dwellings, extinct craters, volcanic cones, lava beds, and ice caves. The summit of Humphreys Peak, one of the peaks forming the San Francisco Mountains, is 12,750 feet above sea level.

*Williams.*—Williams, 64 miles from Grand Canyon, is 34 miles west of Flagstaff and 15 miles west of Maine, on the main east and west highway through Arizona. It is the nearest shopping center, and its stores and garages carry a good stock of everything necessary to the automobile tourist. Williams is a center for a number of interesting side trips.

The route from Williams passes Bill Williams Mountain (elevation 9,264 feet, which has seven distinct crests), Red Lake, Howard Lake, and Anita, running along the line of the Grand Canyon Railway. No supplies can be purchased between Williams or Maine and Grand Canyon, except at a point 10 miles south of Grand Canyon.

#### NORTH RIM—GRAND CANYON NATIONAL PARK

Autoists who desire to travel good roads only in driving from the south rim to the north rim must take a long detour through California, Nevada, Utah, and Arizona, or if the trip is made in the other direction must detour through New Mexico, Colorado, Utah, and back into Arizona. There is a poor road via Lee's Ferry which reduces the distance to 238 miles. None but experienced drivers over bad roads should attempt this trip. Those who undertake it must carry a reserve supply of gasoline and oil.

#### ROAD SIGN INFORMATION

As fast as funds are available for that purpose the National Park Service is having standard signs placed along the roads and trails of this park for the information and guidance of the motorists and other visitors that use the park roads and trails.

These signs, in general, consist of information signs, direction signs, elevation signs, and name signs, all of which are of rectangular shape and mounted horizontally; and milepost signs, rectangular in shape but mounted diagonally, all of which usually have dark, green background and white letters or vice versa; and danger or cautionary signs, most of which are circular in shape and usually have red background and white letters; and comfort station, lavatory, and similar signs, triangular in shape, having dark-green background and white letters. These last signs are so mounted that when pointing down they designate ladies' accommodations and when pointing upward they designate men's accommodations.

The text on the standard road signs is in sufficiently large type to ordinarily permit their being read by a motorist when traveling at a suitable speed; however, as an additional safeguard, the motorist must always immediately slow down or stop or otherwise fully comply with the injunctions shown on the circular red cautionary signs.

Because of lack of funds it has not been possible to place cautionary signs at all hazardous places in the roads; therefore the motorist must always have his car under full control, keep to the right, and sound horn when on curves that are blind, and not exceed the speed limit, which is 25 miles per hour on straight, fairly level road and 12 miles per hour on curves, narrow or steep descending sections of road.

#### AUTOMOBILE SUPPLIES

At Grand Canyon village is an excellent garage under the management of Fred Harvey. Storage or repair service, as well as gasoline and oil, may be procured here.

#### GROCERIES

The Babbitt Bros. Trading Co.'s general store at Grand Canyon carries a full line of groceries and campers' supplies.

#### WATER

A supply of water for drinking purposes and for radiation, sufficient to last to Grand Canyon, should be brought from Williams or Flagstaff. Campers may obtain water on the camp ground at Grand Canyon.

#### PUBLIC UTILITIES AND CONVENIENCES

##### POST OFFICE

The post office (third class), which does all kinds of postal business, is situated near the Hermit Rim Road, about 400 yards west of the railroad depot. It is open from 8 a. m. to 6 p. m. Mail trains arrive at 8.20 a. m. and 6.30 p. m. and leave at 9.15 a. m. and 7.25 p. m.

##### TELEGRAPH

The Western Union offices at the railroad depot are open from 7.30 a. m. to 8 p. m. and at El Tovar Hotel from 8 a. m. to 12 m. and from 4 p. m. to 8 p. m.

##### TELEPHONE

There is telephone connection between El Tovar Hotel, National Park Service Office, ranger stations, Hermit Cabins, Phantom Ranch, Havasupai Indian Reservation, Desert View, and the north rim. There is also telephone connection to points outside of the park.

#### LECTURE

Every evening at 8 o'clock a lecture, illustrated with moving pictures and slides, is given on Grand Canyon National Park and the surrounding country. Admission to this lecture, which is given in the music room at El Tovar Hotel, is free, and all visitors to the park are invited to attend.

## NATIONAL PARK SERVICE STATIONS

There are ranger stations or camps where assistance and shelter may in emergency be obtained at places here named. These may be unoccupied, and it is well to inquire at the office of the superintendent.

Hermit Basin, Pipe Creek on Tonto Trail 2 miles east of Indian Garden, Grand View Public Camp, Rowe Well, Pasture Wash, and Navahopi Junction ranger stations, the ranger station on the north rim, and Grand Canyon.

## MEDICAL SERVICE

There is a doctor of long experience in the park and a trained nurse at El Tovar Hotel. The nearest hospital is at Williams, Ariz. There is a hospital at Flagstaff, Ariz.

## PETRIFIED FOREST NATIONAL MONUMENT

Tourists visiting Grand Canyon National Park either by rail or by automobile should plan a stop-over at the Petrified Forest National Monument.

There are three groups of petrified trees in this reservation. The first forest lies 6 miles south of Adamana, Ariz., a station on the main line of the Atchison, Topeka & Santa Fe Railway, and the second forest is  $2\frac{1}{2}$  miles south of it. The third or Rainbow Forest lies 13 miles south of Adamana and 18 miles southeast of Holbrook, Ariz. It is best to approach the third forest from Holbrook; the other two are best reached from Adamana.

This area is of great interest because of the abundance of petrified coniferous trees which lie scattered about in great profusion. None are standing as in the Yellowstone National Park. These trees probably at one time grew beside an inland sea; after falling they became water-logged and during the decomposition the cell structure was entirely replaced by silica derived from sandstone in the surrounding land. Over a greater part of the entire area trees are scattered in all conceivable positions and in fragments of all sizes.

In the first forest may be seen the well-known natural bridge, consisting of a large petrified tree trunk 60 feet long spanning a canyon 45 feet wide, and forming a foot bridge over which anyone may easily pass. The trunks in the Rainbow Forest are larger than elsewhere, more numerous, and less broken. Several hundred entire trees are found here, some of which are more than 200 feet long. The color of the wood is deeper and more striking than in the other localities.

"There is no other petrified forest," says Prof. Lester F. Ward, "in which the wood assumes so many varied and interesting forms and colors, and it is these that present the chief attraction for the general public. The state of mineralization in which much of this

wood exists almost places them among the gems or precious stones. Not only are chalcedony, opals, and agates found among them, but many approach the condition of jasper and onyx. The degree of hardness attained by them is such that they are said to make an excellent quality of emery."

#### ADMINISTRATION

Petrified Forest National Monument is under the jurisdiction of the Director, National Park Service, Department of the Interior, Washington, D. C., and is in charge of a custodian residing in the third forest. At this place has been built a small museum housing a wonderful display of polished petrified wood, also a fine collection of the more rare specimens.

*Notice:* It is unlawful to take specimens of petrified wood, of *any size whatsoever*, from the reserved area. Samples for souvenirs may be obtained from various points outside of the boundaries of the monument.

#### COSTS OF TRIPS AND HOTEL ACCOMMODATIONS

Adamana is a small place, consisting chiefly of hotel, post office, railway station, and a small store. The Forest Hotel has electric lights, sanitary plumbing, with hot and cold water. Rates: \$5.50 per day, American plan; meals only \$1 each; 35 guests can be accommodated in summer.

From Adamana the following auto trips are made: (1) To the first and second forests and the natural bridge; (2) to the third or Rainbow Forest; (3) to the Blue Forest; (4) to the Painted Desert and the North Sigillaria Forest.

#### RATES

The round-trip fare from Adamana for trips 1, 3, and 4 is \$5 for one person, \$3 per capita for two persons, and \$2.50 per capita for three or more; round-trip fare for trip 2 is \$10, \$6, and \$5, respectively. About one-half day is allotted to each trip, although three trips can be made in a day.

Holbrook, the county seat of Navajo County, has satisfactory hotel accommodations, with prices about the same as at Adamana. Round-trip fare from Holbrook to third or Rainbow Forest is \$7.50 for one passenger, \$3.75 each for two passengers, \$2.50 each for three or more passengers.

The Petrified Forest may be visited from Adamana any day in the year, except when high waters make the streams temporarily impassable.

#### STOP-OVER ARRANGEMENTS

Stop-overs are allowed at Adamana, not to exceed 10 days, on all one-way railroad tickets, also on round-trip railroad tickets within their limits.

To obtain stop-overs on one-way railroad tickets, notify train conductor and deposit tickets with agent immediately after arrival; on round-trip tickets notify train conductors.

## RULES AND REGULATIONS

(Approved April 3, 1926, 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 Grand Canyon National Park are hereby established and made public pursuant to authority conferred by the act of Congress approved August 25, 1916 (39 Stat. 536), as amended June 2, 1920 (41 Stat. 732), and the act of February 26, 1919 (40 Stat. 1175):

1. *Preservation of natural features and curiosities.*—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.*—No camp shall be made along roads except at designated localities. Blankets, clothing, hammocks, or any other article likely to frighten teams shall not be hung near the road.

Many successive parties camp on the same sites during the season; therefore camp grounds shall be thoroughly cleaned before they are abandoned. Tin cans, bottles, cast-off clothing, and all other débris shall be placed in garbage cans or pits provided for the purpose. When camps are made in unfrequented localities where pits or cans may not be provided, all refuse shall be burned or hidden where it will not be offensive to the eye.

Campers may use only dead or fallen timber for fuel.

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 beds 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 animal in the park is prohibited.

The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, en-

snaring, or capturing birds or wild animals, or in possession of game killed on the park lands, 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 the responsibility of custody of any property for the convenience of visitors.

5. *Fishing*.—Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line, or for merchandise or profit, is prohibited. Fishing in particular water may be suspended, or the number of fish that may be taken by one person in any one day from the various streams or lakes may be regulated by the superintendent. All fish hooked less than 6 inches long shall be carefully handled with moist hands and returned at once to the water if not seriously injured. Fish retained shall be killed. Ten fish shall constitute the limit for a day's catch.

6. *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.

7. *Cameras*.—Still and motion picture cameras may be freely used in the park for general scenic purposes. For the filming of motion pictures requiring the use of artificial or special settings, or involving the performance of a professional cast, permission must first be obtained 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 on Government lands within the park, excepting such as the superintendent deems necessary for the convenience and guidance of the public.

10. *Mining*.—The location of mining claims on Government lands in the park is permitted only with the prior approval of the Secretary of the Interior.

11. *Patented lands*.—Owners of patented lands within the park limits are entitled to the full use and enjoyment thereof; the boundaries of such lands, however, shall be determined and marked and defined so that they may be readily distinguished from the park lands. While no limitations or conditions are imposed upon the use of private lands so long as such use does not interfere with or



injure the park, private owners shall provide against trespass by their live stock upon the park lands, and all trespasses committed will be punished to the full extent of the law. Stock may be taken over the park lands to patented private lands with the written permission and under the supervision of the superintendent, but such permission and supervision are not required when access to such private lands is had wholly over roads or lands not owned or controlled by the United States.

12. *Grazing*.—The running at large, herding, or grazing of live stock of any kind on the Government lands 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.

13. *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.

14. *Dogs and cats*.—Cats are not permitted on the Government lands in the park and dogs only to those persons passing through the park to the territory beyond, in which instances they shall be kept tied while crossing the park.

15. *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.

16. *Travel on trails*.—Pedestrians on trails, when saddle or pack animals are passing them, shall remain quiet until the animals have passed.

Persons traveling on the trails of the park either on foot or on saddle animals shall not make short cuts but shall confine themselves to the main trails.

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

(b) 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.

(c) 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.

18. *Miscellaneous.*—(a) Campers and others shall not wash clothing or cooking utensils in the waters of the park, or in any way pollute them, or bathe in any of the streams near the regularly traveled thoroughfares in the park without suitable bathing clothes.

(b) 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.

(c) 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.

(d) 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.

19. *Fines and penalties.*—Persons who render themselves obnoxious by disorderly conduct or bad behavior shall be subjected to the punishment hereinafter prescribed for violation of the foregoing regulations and 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.

20. *Lost and found articles.*—Persons finding lost articles should deposit them at the nearest ranger station, leaving their own names and addresses, so that if not claimed by owners within 60 days, articles may be turned over to those who found them.

#### AUTOMOBILE AND MOTOR CYCLE REGULATIONS

Pursuant to authority conferred by the act of Congress approved August 25, 1916 (39 Stat. 535), as amended June 2, 1920 (41 Stat. 732), and the act of February 26, 1919 (40 Stat. 1175), the following regulations covering the admission of automobiles and motor cycles into the Grand Canyon National Park are hereby established and made public:

1. *Entrances and roads.*—Automobiles and motor cycles may enter and leave the park by, and travel over, any of the roads therein which are open to motor vehicles.

Careful driving is demanded of all persons using the roads. The Government is in no way responsible for any kind of accident.

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), and any person operating an automobile in contravention of the provisions of this regulation will be deemed guilty of its violation.

3. *Motor cycles*.—Motor cycles 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 prescribed by the Director of the National Park Service. Schedules showing prescribed weight limitations for motor trucks may be seen at the office of the superintendent and at the ranger stations at the park entrances.

5. *Permits*.—For entrance to the park on the south rim a permit shall be secured at the ranger station where the automobile enters, which will entitle the permittee to operate the particular automobile indicated in the permit over any or all of the roads on the south rim; provided, however, that residents of the park operating automobiles therein shall not be required to secure such permit. The permit 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*.—The fee for automobile or motor cycle permit is \$1, payable in cash only. No charge, however, shall be made for such permit issued to residents of Coconino County entering the park in the conduct of their usual occupation or business.

7. *Intoxication*.—No person who is under the influence of intoxicating liquor, and no person who is addicted to the use of narcotic drugs, shall operate or drive a motor vehicle of any kind on the park roads.

8. *Distance apart; gears and brakes*.—Automobiles while in motion shall be not less than 50 yards apart, except for purpose of passing, which is permissible only on comparatively level stretches of roads and on slight grades. All automobiles, except while shifting gears, shall retain their gears constantly enmeshed. The driver of each automobile may be required to satisfy park officers 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. Motor cycles not equipped with brakes in good working order are not permitted to enter the park.

9. *Speeds*.—Automobiles and other vehicles shall be so operated as to be under the safe control of the driver at all times. The speed shall be kept within such limits as may be necessary to avoid accident.

Speed is limited to 12 miles per hour on grades and when rounding sharp curves, and in Grand Canyon village area. On straight, open stretches when no vehicle is nearer than 100 yards the speed may be increased to 25 miles per hour.

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 automobiles, motor cycles, 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 road. Headlights shall be dimmed when meeting other automobiles, motor cycles, riding or driving animals, or pedestrians.

12. *Muffler cut-outs*.—Muffler cut-outs shall be closed while approaching or passing riding horses, horse-drawn vehicles, hotels, camps, or checking stations, and in Grand Canyon village area.

13. *Teams*.—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 12 miles an 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, allowing the overtaking vehicle reasonably free passage, provided the overtaking vehicle does not exceed the speed limits specified for the road in question.

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*.—If, because of accident or stop for any reason, automobiles are unable to keep going, they 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 six months, or both, and be adjudged to pay all costs of the proceedings, and such violation shall subject the offender to immediate ejection from the park. Persons ejected from the park will not be permitted to return without prior sanction in writing from the Director of the National Park Service or the superintendent of the park.

## MAPS

The following maps<sup>4</sup> may be obtained from the Director of the United States Geological Survey, Washington, D. C. Remittances should be made by money order or in cash.

SHINUMO, 28½ by 25 inches, scale about 1 mile to 1½ inches, contour interval 50 feet.

BRIGHT ANGEL, 26 by 20½ inches, scale about 1 mile to 1½ inches, contour interval 50 feet. An account of the geologic history of the Grand Canyon and a description of the rocks, by L. F. Noble, is printed on the reverse side of the map.

VISHNU, 28 by 21 inches, scale about 1 mile to 1½ inches, contour interval 50 feet.

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

## LITERATURE

## GOVERNMENT PUBLICATIONS

Government publications on Grand Canyon 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.

## Map of National Parks and National Monuments.

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

## Map of the western United States.

Shows the National Park-to-Park Highway and other roads.

## Glimpses of Our National Parks. 59 pages, including 23 illustrations.

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

## Glimpses of Our National Monuments. 73 pages, including 34 illustrations.

Contains brief description of all the national monuments administered by the Department of the Interior.

## 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 indicated. Postage prepaid. Remittances should be made by money order or in cash.

**The National Parks Portfolio.** By Robert Sterling Yard. Third Edition. 270 pages, including 310 illustrations. Bound securely in cloth. \$1.<sup>4</sup>

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

**Guidebook of the Western United States, Part C, the Santa Fe Route, with a side trip to the Grand Canyon of the Colorado,** by N. H. Darton and others. (Bulletin 613, U. S. Geological Survey.) 1915. 194 pages, 25 route maps, 42 plates, 40 text figures. 50 cents.<sup>4</sup>

This guide describes the country along the Atchison, Topeka & Santa Fe Railway from Kansas City to Los Angeles. Although the description of the rocks and their relations and the scenic features form a large proportion of the matter, nearly every page gives information as to notable historic events, industrial resources, plants, and animals. The story of the Indians, past and present, especially the charac-

ter may be purchased also by personal application at the office of the superintendent of the park, but that can not fill mail orders.

teristic Pueblo tribes, is told in some detail. Many of the facts regarding the rocks are here presented for the first time. The book contains numerous views of prominent scenic features and pictures of restoration of some of the very remarkable animals whose bones are found in the clays.

**Exploration of the Colorado River of the West and Its Tributaries**, by John Wesley Powell. Explored in 1869, 1870, 1871, and 1872. Pp. 291. Under the direction of the Secretary of the Smithsonian Institution. Illustrated. Government Printing Office, Washington, 1875. (Out of print.)

**Pre-Cambrian Igneous Rocks of the Unkar Terrane, Grand Canyon of the Colorado, Ariz.**, by C. D. Walcott. U. S. Geol. Surv. 14th Ann. Rept., pt. 2, pp. 497-524, pls. 60-65. 1894. \$2.10.

**The Grand Canyon.** Senate Doc. No. 42, 65th Congress, 1st session, by Thomas Fulton Dawson, Government Printing Office, Washington, D. C., 1917. 67 pp. Price, 10 cents.

An article giving credit of first traversing the Grand Canyon to James White, a Colorado gold prospector.

**Tertiary History of the Grand Canyon District**, by Clarence E. Dutton. U. S. Geol. Surv. Mon. 2, 264 pages, illustrations, and atlas. 1882. \$10.

**The Shinumo Quadrangle, Grand Canyon District, Ariz.**, by L. F. Noble. U. S. Geol. Surv. Bull. 549, 1914. 100 pages, including 30 illustrations and a colored geologic map. Price, 20 cents.

Describes the geology and scenic features of the Grand Canyon in the western part of the National Park. Contains a detailed account of the Algonkian strata exposed on Shinumo Creek.

**A Reconnaissance of the Archean Complex of the Granite Gorge, Grand Canyon, Ariz.**, by L. F. Noble and J. Fred Hunter. U. S. Geol. Surv. Prof. Paper 98-I, 1916. 20 pages, 3 illustrations.

Describes the rocks that form the walls of the Granite Gorge in the bottom of the Canyon.

**A Section of the Paleozoic Formations of the Grand Canyon at the Bass Trail**, by L. F. Noble. U. S. Geol. Surv. Prof. Paper 131-B, 1922. 50 pages, 15 illustrations.

Describes the Paleozoic strata of the Grand Canyon in detail and contains diagrams showing the strata in profile as they appear in the walls.

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- "Breaking the Wilderness." Pp. 360. G. P. Putnam's Sons, New York, 1905. Fully illustrated. Grand Canyon chapter, pp. 318-327. Price, \$3.50.
- "The Romance of the Colorado River." Pp. 401. G. P. Putnam's Sons, New York. Fully illustrated. (A complete account of the discovery and of the explorations from 1540 to the present time, with particular reference to the two voyages of Powell through the line of the great canyons.) Price, \$3.50.
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### OTHER NATIONAL PARKS

Rules and Regulations similar to this for 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.  
 Hawaii National Park.  
 Hot Springs National Park.  
 Lafayette National Park.  
 Lassen Volcanic National Park.  
 Mesa Verde National Park.  
 Mount Rainier National Park.

Rocky Mountain National Park.  
 Sequoia and General Grant National  
 Parks.  
 Wind Cave National Park.  
 Yellowstone National Park.  
 Yosemite National Park.  
 Zion National Park.

## AUTHORIZED RATES FOR PUBLIC UTILITIES

All rates of the authorized public utilities are approved by the Government. Therefore complaints regarding overcharges should be made to the superintendent. Employees of the hotels, camps, and transportation lines are not Government employees, but discourteous treatment by public-utility employees should be reported to the park administration.

### THE SOUTH RIM

#### Hotels and Public Camps

The following hotels, etc., are operated by Fred Harvey:

#### El Tovar

El Tovar Hotel is located at the railroad terminus, near the head of Bright Angel Trail, at an elevation of 6,866 feet above sea level, and open all the year. It is a long, low structure, built of native bowlders and pine logs. There are 93 sleeping rooms, accommodating 175 guests. Forty-six of these rooms are connected with private bath.

There is a music room and rendezvous. In the main dining room 165 persons can be seated at one time.

Hot and cold water, steam heat, and electric light are supplied. El Tovar also has a steam laundry.

#### *Authorized rates at El Tovar Hotel*

##### American plan:

One person in room without bath, per day----- \$7. 00

One person in room with bath, per day----- \$8. 00-9. 00-10. 00

Reduction of 50 cents per person for 2 in a room with double bed.

##### Meals only:

Breakfast----- 1. 25

Luncheon----- 1. 25

Dinner----- 1. 50

Children, not transient, under 3 years, charge \$1.50 per day for meals only.

No charge for rooms.

Children 3 to 7 years, \$3 per day for meals and room without bath; \$4 per day for room with bath.

Children 8 years and over, full rate.

#### *El Tovar barber shop rates*

Shave----- \$0. 25

##### Haircut:

Men----- . 50

Women----- . 75

##### Hair singe:

Men----- . 50

Women----- . 75

##### Shampoo:

Men, plain----- . 50

Men, oil----- 1. 00

Women----- 1. 00

Hair tonic----- \$0. 25 and 0. 40

Facial or head massage----- \$0. 50 and 0. 75

**Bright Angel Cottages**

Cozy lodgings in cottages or tents are available at Bright Angel Cottages, adjacent to El Tovar. The accommodations are clean and comfortable. There are four cottages, open the year round, and many tent-cabins for summer only. All of the cottages have steam heat and electric light; one cottage also has baths. All tent-cabins have electric light, but no heat or baths. About 350 people can be accommodated here. Meals are furnished à la carte at the café. Kitchen facilities are ample for quick à la carte service.

*Authorized rates at Bright Angel Cottages*

Lodging only, per day, per person.....	\$1. 50-\$2. 00
Lodging only, per day, 2 persons.....	2. 50- 3. 50
Children 3 to 7 years, half rate.	
Children 8 years and over, full rate.	

**Hermit Cabins**

On Tonto Plateau at the foot of Hermit Trail; consists of a central dining room, lounge cottage, and 11 sleeping cottages; accommodations for 30 persons.

*Authorized rates at Hermit Cabins*

American plan, per day, per person.....	\$5
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**Phantom Ranch**

On the north side of the Colorado River near the mouth of Bright Angel Creek; consists of well-built stone and tent-cottages with mess hall and rendezvous with excellent accommodations for 30 persons.

*Authorized rates at Phantom Ranch*

American plan, per day, per person.....	\$6
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**REST HOUSES****The Lookout**

The Lookout is a quaint observatory and rest house, built on the edge of the rim near the head of Bright Angel Trail. It is equipped with a large binocular telescope in the tower, for observing the most distant reaches of the canyon. Canyon photos are for sale. The reception room has spacious windows, a fireplace, Navajo rugs, and easy chairs; it is electric-lighted and steam heated.

**Hermit's Rest**

Where Hermit Rim Road ends and Hermit Trail begins is a unique rest house, built into the hill, with a roofed-in porch and a parapet wall. As the name implies, it is intended to provide rest and shelter for parties who take the Rim Road drive, or the Hermit Trail trip. Guests may sit at the tables outside or sheltered by the glass front inside according to weather, and enjoy refreshments in unusual surroundings. Admission is free to those who arrive in Harvey transportation busses. The charge to others is 25 cents each. Open 9 a. m. to 12 noon; 1 p. m. to 6 p. m.

### Hopi House

Opposite El Tovar is a reproduction of the dwellings of the Hopi Indians and several Navajo hogans.

In Hopi House are installed collections of Indian handiwork. Here also live a small band of Hopis, who are among the more primitive of our Indians.

The homes of the Hopis are on the edge of the Painted Desert, perched on the crests of lofty mesas where they live as did their forbears and cling to their high dwelling place. They are industrious, thrifty, orderly, and mirthful. A round of ceremonies, each terminating in the pageants called "dances," marks the different seasons of the year. Subsisting almost wholly by agriculture in an arid region of uncertain crops, they find time between their labors for light-hearted dance and song, and for elaborate ceremonials, which are grotesque in the Katchina or masked dances, ideally poetic in the flute dance, and intensely dramatic in the snake dance. In the three and a half centuries of contact with the white race their manner of life has not materially changed. The Indian tribes that roamed over mountain and plain have become wards of the Government, but the Pueblo Indian has absolutely maintained his individuality.

The Navajo women weave fine blankets and many of the men are expert silversmiths, who fashion bracelets, rings, and other articles from Mexican coin silver. The Navajo Indian Reservation—one of the largest in the United States—borders Marble Canyon on the east. They are a pastoral people, intelligent, and, like the Hopis, self-supporting. They own large numbers of sheep, cattle, and horses. The Navajos are tall, rather slender, and agile. They have been rightly called the Bedouins of the Desert. Nowhere are they gathered into permanent villages. Although "civilized," they still cling to old customs and old religious forms. The medicine man, or Shaman, has a large following, if not a large per cent of cures. Their dance ceremonies are weird in the extreme. The fire dance is a spectacular 10-day ceremony, seldom witnessed by white men, and occurring only once in seven years.

Supai Indians from Havasu Canyon frequently visit Grand Canyon village.

### PUBLIC CAMP GROUNDS

No charge is made for use of camp grounds, firewood, water, etc. Water is hauled to the canyon by rail, and campers are urged to save water in every way possible.

### VERKAMP'S

Verkamp's, on the rim, just east of the Hopi House, carries a complete line of canyon souvenirs and Indian handicraft. It makes a specialty of Navajo rugs and silverware, Chimayo blankets, and

Indian baskets, and carries post cards, folders, and photographs of the canyon.

In this shop may also be seen one of the largest and best paintings of Grand Canyon as well as other work of the late Louis Aikin.

#### KOLB BROS.' STUDIO

Kolb Bros.' studio is at the head of Bright Angel Trail. The Kolb Bros. give, each day, an interesting lecture, illustrated with motion pictures and slides, describing their boat trip through the canyons of the Green and Colorado Rivers. Admission, 50 cents.

The exhibition above referred to illustrates Major Powell's original exploration of the entire series of canyons on these rivers and should not be confused with other excellent travel talks on the Grand Canyon, which latter describe and illustrate what can be seen by the visitor in a stay of a week or so at the canyon.

Here, too, visitors may view the canyon through a telescope and obtain reliable information. Photographic views and other pictures representing their many years' exploration of the Grand Canyon are for sale.

#### SIGHT-SEEING TRIPS BY ROAD

##### Regular Trips by Automobile

The following trips are available every day in the year by automobile:

##### TRIP No. 1.

*Hermit's Rest.*—Stopping en route at Sentinel, Hopi, Mohave, and Pima Points. First trip starts at 9.30 a. m., returning to El Tovar and Bright Angel about 12 noon. Second trip starts at 1.30 p. m., returning to El Tovar and Bright Angel about 4 p. m. Rate, \$3; children, 6 to 11, half rate; children under 6, no charge. This rate includes use of facilities and light refreshments at Hermit's Rest. This drive is 16 miles round trip along the rim road.

##### Special Short Trips

There is also a sunset trip to Hopi or Mohave Points, leaving El Tovar and Bright Angel Cottages about 6.30 and returning about 7.45. Minimum of four fares.

Hopi Point: El Tovar to Hopi Point, 2 miles west; rate, \$1.

Mohave Point: 3 miles west; rate, \$1.50.

##### Regular Summer Trips by Automobile

The following trips are available through the summer season (approximately from April 15 to November 15):

##### TRIP No. 2.

*Grand View.*—Through forest of tall pines via Long Jim Canyon and Thor's Hammer, 13 miles each way; time, about 3½ hours.

Leave El Tovar and Bright Angel Cottages 1.30 p. m. daily. Rates, \$4. From Grand View may be seen that section of the canyon from Bright Angel Creek to Marble Canyon, including the great bend of the Colorado. On the east wall are Moran, Zuni, Papago, Pinal, Lipan, Navajo (Desert View), and Comanche Points; and the mouth of the Little Colorado River. Still farther beyond is the Painted Desert and Navajo Mountain—the latter plainly seen, though 120 miles away. The rim trail to Moran Point is interesting. Grand View Trail enters the canyon near Grand View Point.

**TRIP No. 3.**

*Desert View.*—Thirty miles each way via Long Jim Canyon, Thor's Hammer, Grand View, Hull Tank, Trash Dam, Tanner Tank, Old Aztec Ruin, Lipan Point, and head of Tanner Trail. One round trip a day leaving El Tovar and Bright Angel Cottages at 1.15 p. m., returning about 6 p. m. Rate, \$8.

At this point there is a far outlook not only into the canyon above the Granite Gorge, where the river valley widens, but also across the Painted Desert, toward Hopi Land, and along the Desert Palisades to the mouth of the Little Colorado. At sunset and sunrise it is a glorious sight. For that reason one preferably should arrange to stay overnight—a camping trip elsewhere referred to. One and one-half miles west of Desert View is Lipan Point, affording an excellent view of this whole region.

**New Summer Trips by Automobile to the Navajo and Hopi Indian Reservations  
via the Navahopi Road**

*May 1 to October 31*

**TRIP No. 4—One day.**

Automobiles leave El Tovar and Bright Angel Cottages at 7.30 a. m. daily. Route is via Desert View Road to Trash Dam, thence through the Coconino Basin to a point overlooking the canyon of the Little Colorado. The road then follows the Little Colorado due east and the first stop is made at a newly discovered petrified forest, where some 30 or 40 trees, some larger than any living tree in Arizona, may be seen. Next stop is at the Navajo Indian trading post at Cameron. This is the western outpost of the Navajo Reservation and is 75 miles from the nearest railroad. The Little Colorado River is crossed at this point by way of the steel suspension bridge 660 feet long, and the route follows the main road across the Painted Desert to Tuba City, where the headquarters of the Navajo Indian agent are located. Some 400 Indian children are seen at well-equipped Government schools here. The Hopi village of Moenkopi is next visited, where the visitor has a glimpse of Indian life almost untouched by white civilization. Return to Grand Canyon is over same route, arriving at hotels between 7 and 8 p. m. same day. This trip provides

a unique opportunity to visit the well-known but little seen Navajo and Hopi Indian Reservations at a minimum of expense. Round trip, 159 miles. Rates, \$15 per passenger; lunch, \$1.25 extra, except for hotel guests. Minimum of four passengers required.

#### TRIP No. 5—Two days.

First day to Tuba City and Moenkopi as for trip No. 4, but return to Flagstaff, Ariz., via San Francisco Peaks and Sunset Mountain. Overnight at Flagstaff, visiting cliff dwellings in Walnut Canyon next morning, thereafter returning to Grand Canyon via National Old Trails Highway and Maine Road through Tusayan National Forest. Round trip, 250 miles, gives comprehensive idea of northern Arizona mountain scenery. Rates, \$25 per passenger; meals and overnight accommodations at Flagstaff extra. Minimum of four passengers required.

#### Combination tickets

Tickets combining trips Nos. 1 and 3 may be purchased for \$9, a reduction of \$2.

Tickets combining trips Nos. 1, 3, and 4 may be purchased for \$22, a reduction of \$4.

These two tickets will be sold at the Grand Canyon only, from May 15 to October 30 each year. Unless tickets are purchased the full rates for the three drives mentioned will be charged.

#### Special Summer Trips by Automobile

These trips depend upon condition of roads and may be at times discontinued. Lunch, \$1.25 extra, except for hotel room guests.

*Bass's Camp*, 30 miles, and *Havasupai Point*, 1 mile beyond. Rate, \$10. Minimum of four fares.

*Yavapai Point*.—This drive extends 2 miles east of El Tovar. Rate \$1. Minimum of four fares.

#### Authorized rates for special car service

	1, 2, or 3 persons	4 persons	5 or 6 persons
<i>Hermit Rim drive</i> .....	\$12	\$15	\$18
Regular rate, \$3.			
<i>Grand View drive</i> .....	16	20	24
Regular rate, \$4.			
<i>Desert View drive</i> .....	32	40	48
Regular rate, \$8.			

*Tuba City and Moenkopi*—1 day..... Special car requires purchase of a minimum of 5 seats, irrespective of number of passengers.  
Regular rate, \$15.

*Tuba City, Moenkopi, and Flagstaff*—  
2 days..... Do.  
Regular rate, \$25.

Regular car service on Tuba City, one-day, and the Flagstaff, two-day trips, requires the purchase of four seats. A minimum of four



people is required in order to make the trip; in other words, less than four passengers will have to pay for four seats.

Should the demand for regular-trip drives be so heavy as to require use of all autos available, special autos may be discontinued.

### Chartered Automobile Service

Six-passenger touring cars may be chartered for service within the park or elsewhere on routes not covered by scheduled transportation service at the rate of 30 cents per car-mile.

### Rates for Children

On all motor trips there is no charge for children under 6 years of age.

From the ages of 6 to 11 the charge is one-half fare.

All children over 11 years of age are charged full fare.

### GARAGE SERVICE

There is at Grand Canyon a large stone garage with ample facilities for repairing and supplying automobiles. The rate for storage of automobiles is 75 cents per day.

#### Charges

Garage storage-----	\$0. 75
Washing car-----	5. 00
Regular mechanical labor, per hour-----	1. 75
Welding, mechanic's time (material extra), per hour-----	2. 00
Electrical labor, per hour-----	2. 00
Lathe work, mechanic's time, per hour-----	2. 00
Charging battery-----	1. 50
Charging battery overnight-----	1. 00
Filling and testing battery-----	. 25

#### ROADSIDE WORK

Truck and driving mechanic going to car on road when no towing is done, per mile-----	. 40
Round trip plus mechanical labor for time worked on car, per hour-----	1. 50

#### TOWING CARS

For truck and driver, per mile towed, going included, per mile-----	1. 00
When extra mechanic is required, his time starts from the time he leaves the garage until his return-----	1. 50
A tow-car order stands until canceled by party ordering same.	

#### OVERTIME

Time and a half to be charged for mechanical labor after 5 p. m. Rate, per hour-----	2. 25
Overtime for driver of truck on tow job after 5 p. m., per hour-----	. 75

#### SUNDAY WORK

An extra rate will be charged for mechanical labor on Sundays. Rate, per hour-----	2. 50
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#### GAS AND OIL

Current prices.

## TRAIL TRIPS

**NOTE.**—The Bright Angel Trail is owned by Coconino County and a toll of \$1 is charged by the county for each saddle animal using this trail.

**Bright Angel Trail.**—The trail here is generally open the year round. In midwinter it is liable to be closed for a day or two at the top by snow, but such blockade is not frequent. The trail reaches from the hotel  $6\frac{1}{4}$  miles to the Colorado River, with a branch terminating at the top of the granite wall immediately overlooking the river. At this latter point the stream is 1,272 feet below, while El Tovar Hotel on the rim is 3,158 feet above. The trip is made on muleback, accompanied by a guide.

Those wishing to reach the river leave the main trail at Indian Garden and follow the downward course of Indian Garden and Pipe Creeks.

Starting time, 8.30 a. m. and 9.15 a. m. for the river trip,  $6\frac{1}{4}$  miles; return to rim 5 p. m. Rate, \$6 each person. Leave 10 a. m. for trip to plateau, 5 miles; rate, \$5 each. For special trips with less than three persons there is a party charge of \$5 extra for guide. Lunch extra, except for El Tovar room guests. One dollar of above rate is for toll on Bright Angel Trail, which is owned by Coconino County.

It is necessary that visitors who walk down Bright Angel Trail and desire that guide and mules be sent to meet them be charged full price and special guide fee of \$5. This is unavoidable, as the mules and guides are not available for any other trip.

**Two-day trip, Hermit Trail, stopping at Hermit Cabins overnight.**—Time, two days and one night. Hermit Road by auto. Down Hermit Trail, stay overnight at Hermit Cabins; go to river at mouth of Hermit Creek; return up Hermit Trail to rim; thence to El Tovar over Hermit Rim Road. Trips leave El Tovar and Bright Angel Cottages at 9.30 a. m. and return next afternoon. Rates, \$18.25, all expense, each person, including guide, overnight accommodations, and meals en route and at Hermit Cabins. Private guide, \$5 per day extra.

**Hermit-Tonto-Bright Angel Loop.**—This trip takes two days and one night. Hermit Rim Road to head Hermit Trail; down Hermit Trail; stay overnight at Hermit Cabins; go to river foot of Hermit Creek; return along Tonto Trail to Indian Garden; thence up Bright Angel Trail.

Start from El Tovar or Bright Angel Cottages at 9.30 a. m. and return next afternoon. Round-trip charge is \$23.25, all expense, for each person; private guide is \$5 a day extra; rate quoted includes regular guide, overnight accommodations, and meals en route. One dollar of above charge is for toll on Bright Angel Trail, which is owned by Coconino County.

**Two-day Phantom Ranch trip.**—Over new Yaki Point section of Kaibab Trail both ways, crossing Kaibab Suspension Bridge. All

expense, \$19 per person. If the party desires to return via Bright Angel Trail, \$1 extra per person is charged. This amount represents toll collected by Coconino County for use of the Bright Angel Trail by all mounted parties. Start is made from El Tovar Hotel and Bright Angel Cottages at 9.30 a. m.

*Three-day Ribbon Falls trip.*—Leave 9.30 a. m. Down Yaki Point section of Kaibab Trail, crossing the Colorado River by Kaibab Suspension Bridge, and reaching Phantom Ranch early afternoon. Overnight at Phantom Ranch. Following morning by way of Kaibab Trail in Bright Angel Canyon, 6 miles to Ribbon Falls, beautiful clear waterfall in the form of a crystal ribbon shedding its waters on a natural rock altar in the midst of a verdant amphitheater. Box lunch at falls and return to Phantom Ranch for overnight. On third day the return to El Tovar completes a never-to-be-forgotten experience. The all-expense rate for this trip is \$29 per person. Parties desiring to return via Bright Angel Trail must pay \$1 extra per person. This amount represents toll collected by Coconino County for use of the Bright Angel Trail by each mounted person.

*Four-day Hermit Cabins, Phantom Ranch, Ribbon Falls trip, returning via Yaki Point section Kaibab Trail.*—First day, Hermit Rim Road to Hermit Trail by motor; down Hermit Trail by mule-back to Hermit Creek Cabins. Second day, Tonto and Kaibab Trails to Phantom Ranch. Third day, Ribbon Falls, returning to Phantom Ranch. Fourth day, El Tovar Hotel and Bright Angel Cottages over Yaki Point section Kaibab Trail. All-expense trip, \$47.25 per person. Leave El Tovar Hotel and Bright Angel Cottages 9.30 a. m.

*Five-day trip across Grand Canyon to Kaibab National Forest on north rim.*—This combines an instructive and interesting excursion across the whole width of the Grand Canyon, from rim to rim, with a visit to the Kaibab National Forest. This beautiful virgin forest is the home of thousands of deer and the haunt of the mountain lion and the bobcat. Starting from the south rim, the round trip is made in five days, including one day spent in the forested section. The route is by the Yaki Point section of the Kaibab Trail, across the Kaibab Suspension Bridge to Phantom Ranch; thence along the Kaibab Trail and up Bright Angel Canyon to Wylie Way Camp at Bright Angel Point on the north rim. On the return, Ribbon Falls visited en route. For those who may wish to spend some time in the Kaibab Forest, saddle stock and camping outfits are available at Wylie Way Camp. Approximate expense, except personal accommodations at Wylie Way Camp, \$61.25 per person for the five-day trip. Wylie Way Camp, \$6 per day extra. For full particulars and advance reservations address Manager, Transportation Department, The Fred Harvey Co., Grand Canyon, Ariz.

Those desiring to return from Phantom Ranch via Bright Angel Trail are charged \$1 per person extra to cover toll collected by Coconino County for use of Bright Angel Trail.

*Dripping Spring.*—This trip is made on horse back all the way, via Hermit Rim Road to the head of Hermit Trail, down Hermit Trail to Dripping Spring, returning to El Tovar and Bright Angel through the forest; starts at 8.30 a. m. Rate, \$5 each for three or more persons; for less than three persons, \$5 extra for guide. Private parties of one or more persons, \$5 extra for guide. Lunch extra.

NOTE.—No toll is charged for use of any trail owned by the National Park Service.

#### Saddle Horses

Recently many new bridle paths along the rim and through the pines of Tusayan have been opened up, so that horseback riding now is possible for all. The animals are well trained and dependable. Saddle horses cost \$5 a day, or \$3 a half day. English, McClellan, Whitman, or western stock saddles furnished as requested. Side-saddles not provided. Rates quoted include, for parties of three or more, the services of a guide. For parties of less than three who desire a guide the rate is \$5 a day, or \$2.50 a half day. Horseback trips over any of the trails into the canyon are only permitted when accompanied by guide. This is necessary to avoid risk in meeting trail parties and pack trains.

There are several interesting foot trails near Grand Canyon village. Information as to these may be obtained at the superintendent's office.

#### INDEPENDENT CAMPING TRIPS

Independent camping trips with pack and saddle animals are organized, completely equipped, and placed in charge of experienced guides.

For climatic reasons it is well to arrange so that camping trips during the season from October to April are mainly confined to the inner canyon. For the remainder of the year, i. e., April to October, they may be planned to include both the canyon itself and the rim country.

The following 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

Rates include complete camping equipment, except provisions.

*Havasü Canyon and Havasupai village.*—This is the most popular camping trip. The best time to make it is from May to October. A journey of about 50 miles; first by auto 35 miles across a timbered plateau, then on horseback down Topocobya Trail along Topocobya and Havasü Canyons, to the home of the Havasupai Indians.

The home of this little band of 200 Indians is in Havasü Canyon, a tributary of the Grand Canyon, deep down in the earth two-fifths of a mile. The situation is romantic and the surroundings are beautified by falls of water over precipices several hundred feet high, backed by grottos of stalactites and stalagmites. This water all comes from springs that gush forth in surprising volume near the Havasupai village.

The baskets made by the Havasupai women consist of the burden basket, a shallow tray, and a water bottle of willow. Those made by the older weavers are of fine mesh, with attractive designs, and bring good prices. Havasupai means people of the blue water. Padre Garces was the first white man to visit their canyon home. In early days the Havasupais undoubtedly were cliff dwellers. They built nearly all the Grand Canyon trails, or rather their rude pathways were the advance guard of the present trails. Their summer homes resemble those of the Apaches. The winter homes afford more protection against the weather.

The round trip from El Tovar is made in five days.

## THE NORTH RIM

### Auto Stage Transportation from Utah Points

The north rim of the Grand Canyon National Park is reached from Cedar City, Utah, on the Union Pacific system, and from Marysville, Utah, on the Denver & Rio Grande Western Railroad, by automobiles operated by the Utah & Grand Canyon Transportation Co., Cedar City, Utah.

Special all-expense tours are offered combining visits to Zion National Park, Pipe Spring National Monument, Cedar Breaks, and Bryce Canyon National Monument. These tours leave Cedar City daily from June 1 to October 15.

### AUTHORIZED RATES

From Cedar City, Utah: <sup>5</sup>

Five-day tour of Zion National Park, Pipe Springs National Monument, Grand Canyon National Park (north rim), Kaibab Forest, Kanab, Bryce Canyon National Monument, and Cedar Breaks; fare for automobile transportation and 13 meals and 4 nights' lodgings.....	\$86. 75
Five-day tour of Cedar Breaks, Bryce Canyon National Monument, Kanab, Grand Canyon National Park (north rim), Kaibab Forest, Pipe Spring National Monument, and Zion National Park; fare for automobile transportation and 13 meals and 4 nights' lodgings.....	86. 75

From Marysville, Utah:

Two-day tour to Bryce Canyon operated for one or more full fares; automobile fare only.....	20. 00
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For going trip automobile may have to be sent from Bryce Canyon, and reasonable notice must be given to the Utah Parks Co. lodge at Bryce Canyon. Parties availing themselves of this tour may join other tours which are operated from Bryce Canyon. The fare from Bryce Canyon to Grand Canyon and return will be \$55; from Bryce Canyon to Zion National Park and return via Cedar City will be \$35.

Parties arriving at the south rim of the Grand Canyon National Park via the Santa Fe lines and desiring to cross from the south rim to the north rim and then visit Kaibab Forest, Zion National Park, and leave Cedar City via the Union Pacific system or desiring to make the trip in the opposite direction may arrange to do so. The cross-canyon trip requires two days and is made by horseback. The first night is spent at Phantom Ranch, in the bottom of the canyon,

<sup>5</sup> Reservations for these trips must be made in advance with the Utah & Grand Canyon Transportation Co., Cedar City, Utah.

and the Wylie Way Camp on Bright Angel Point on the north rim or El Tovar Hotel on the south rim is reached the following afternoon. The all-expense cost of the two days' cross-canyon trip is approximately \$30 per person, guide extra. The Utah & Grand Canyon Transportation Co. must be notified in advance to meet parties of a minimum of three at the north rim. Arrangements for the cross-canyon trip should be made in advance.

From Cedar City, Utah:

Three-day tour of Grand Canyon National Park (north rim) via Zion National Park, one-way tour; fare for automobile transportation and 6 meals and 2 nights' lodgings..... \$49. 75

Three-day tour of Grand Canyon National Park (north rim) via Bryce Canyon, one-way tour; fare for automobile transportation and 6 meals and 2 nights' lodgings..... 54. 50

Children under 12 years of age, one-half fare. Forty pounds of baggage on full-fare tickets; excess baggage will be charged for at rate of 5 cents per pound.

In connection with these automobile trips the following side trips are available for passengers coming to the north rim in the stages of the Utah & Grand Canyon Transportation Co.:

De Motte Park (V. T. Park) to Point Sublime and return, per passenger.... \$3. 50

Bright Angel Camp to Far View or Point Imperial and return, per passenger..... 3. 00

Bright Angel Camp to Cape Royal and return, per passenger..... 5. 00

Autos can only reach within  $2\frac{1}{2}$  miles of Cape Royal. In order for passengers to actually reach this point a walk of about 5 miles is necessary.

On all of the above side trips a minimum of four full fares is required.

Tickets for the first two side trips listed, if purchased at the same time, may be sold for \$5 for the two trips.

#### Special Auto Service

Arrangements also can be made with Harold Bowman, of Kanab, Utah, during the calendar year 1926 for special automobiles from Marysvale, Utah, to Bryce Canyon, north rim of the Grand Canyon National Park, and other scenic points and return to starting point at following rates:

Special cars carrying four persons for 50 cents per mile and cars carrying six persons for 60 cents per mile, these cars to be operated at the pleasure of the occupants as to distance traveled each day and as to places visited, with the proviso that a minimum charge will be made for 20 miles in any one day whether traveled or not. Twenty-five pounds of free baggage will be allowed each person; excess baggage will be charged for at the rate of 10 cents per pound.

#### Wylie Way Camp

On the north rim at Bright Angel Point, situated in a shady grove of pines, is a Wylie Way Camp, consisting of a central dining tent, assembly tent, and comfortable sleeping tents electrically lighted;

everything is spotlessly clean. Camp is open from June 1 to September 30, inclusive. There are accommodations for about 75 people.

Authorized rate at Wylie Way Camp, American plan, per person, per day, \$6.

#### SADDLE-HORSE TRIPS

Arrangements may be made at the Wylie Way Camp for saddle-horse trips to various points of interest on the north rim and in the canyon. Time required and rates are as follows:

Side trips and rates therefor from Wylie Way Camp, Bright Angel Point:

To Point Imperial; one-day trip.

To Point Sublime, two-day trip.

To Cape Royal, two-day trip.

Saddle horses for these trips or for special trips on the plateau, \$3 each per day; mounted guide for north rim trips, \$5 per day.

Down Bright Angel Trail to Colorado River and cross-canyon trips the rate is \$6 per day for each horse.

Guide for river and cross-canyon trips, \$6 per day.

For all overnight trips from Wylie Way Camp on the north rim one or more pack horses must accompany the party, the rates for these being the same as for saddle horses.

Bedding and provisions for north rim trips, \$2.50 per day for each person.









**A PORTION OF THE FIRST FOREST**

The profusion of petrified wood is clearly shown



Photograph by Wm. Nelson

**ROOT OF PETRIFIED TREE, 7 FEET IN DIAMETER**

The profile resembles a dog's or lion's head

**PETRIFIED FOREST NATIONAL MONUMENT, ARIZONA**



ACROSS THE CANYON FROM NEAR EL TOVAR ON SOUTH RIM



ACROSS THE CANYON FROM BRIGHT ANGEL POINT ON NORTH RIM  
Photographs By El Tovar Studio

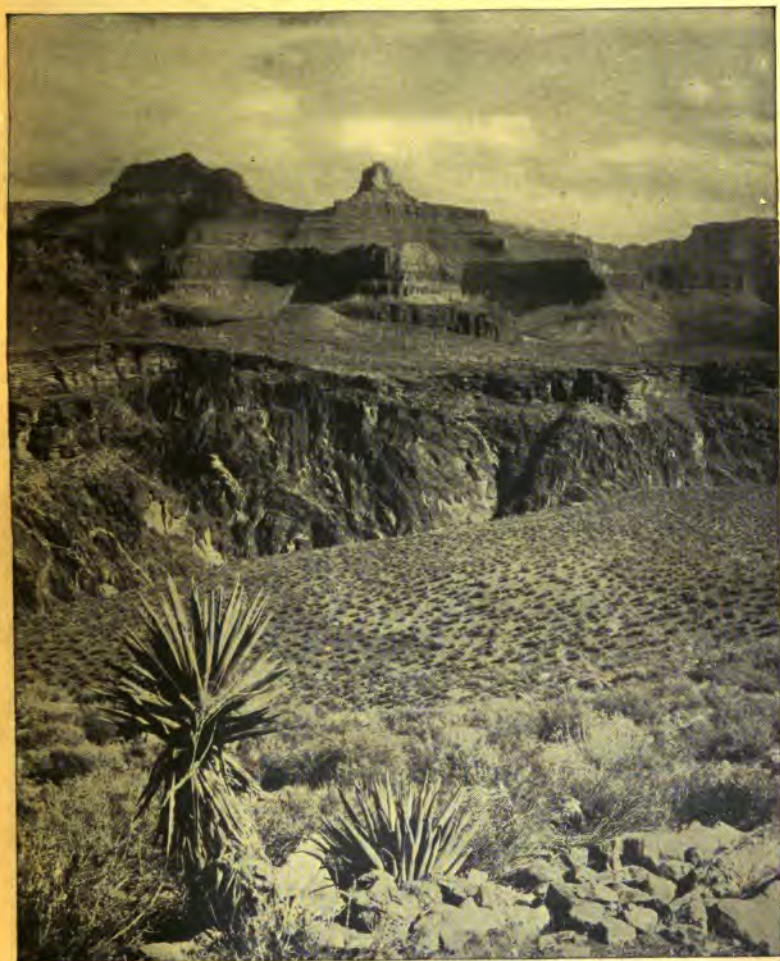
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UNITED STATES  
DEPARTMENT OF THE INTERIOR  
HUBERT WORK, SECRETARY  
NATIONAL PARK SERVICE  
STEPHEN T. MATHER, DIRECTOR

Ω  
RULES AND REGULATIONS

# GRAND CANYON NATIONAL PARK ARIZONA



Photograph by El Tovar Studio

VIEW ALONG THE TONTO TRAIL  
OPEN ALL THE YEAR





Photograph by El Tovar Studio

EL TOVAR HOTEL FROM ROOF OF HOPI HOUSE



Photograph by El Tovar Studio

VILLAGE OF MOENKOPI

Reached over the new Navahopi Road from Grand Canyon Park

N.S. Grant.  
1927  
5-31-1927

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# THE NATIONAL PARKS AT A GLANCE

[Number, 19; total area, 11,804 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—19 bath-houses under Government supervision.
Yellowstone..... 1872	Northwestern Wyo-ming.	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 Cali-fornia.	604	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 Cali-fornia.	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 Cali-fornia.	4	Created to preserve the celebrated General Grant Tree, 35 feet in diameter—6 miles from Sequoia National Park.
Mount Rainier..... 1899	West central Wash-ington.	325	Largest accessible single peak glacier system—28 glaciers, some of large size—48 square miles of glacier, 50 to 500 feet thick—Wonderful sub-alpine wild flower fields.
Crater Lake..... 1902	Southwestern Oregon.	249	Lake of extraordinary blue in crater of extinct volcano—Slides 1,000 feet high—Interesting lava formations—Fine fishing.
Platt..... 1902	Southern Oklahoma...	1½	Many sulphur and other springs possessing medicinal value.
Wind Cave..... 1903	South Dakota.....	17	Cavern having many miles of galleries and numerous chambers containing peculiar formations.
Sullys Hill..... 1904	North Dakota.....	1½	Small park with woods, streams, and a lake—Is an important wild-animal preserve.
Mesa Verde..... 1906	Southwestern Colo-rado.	77	Most notable and best preserved prehistoric cliff dwellings in United States, if not in the world.
Glacier..... 1910	Northwestern Mon-tana.	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 Colo-rado.	378	Heart of the Rockies—Snowy range, peaks 11,000 to 14,255 feet altitude—Remarkable records of glacial period.
Hawaii..... 1916	Hawaii.....	242	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 10,460 feet—Cinder Cone 6,907 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.	996	The greatest example of erosion and the most sublime spectacle in the world.
Lafayette..... 1919	Maine coast.....	12	A group of granite mountains upon Mount Desert Island.
Zion..... 1919	Southwestern Utah...	120	Magnificent gorge (Zion Canyon), depth from 1,500 to 2,500 feet, with precipitous walls—Of great beauty and scenic interest.



# The National Parks Portfolio.

(FOURTH EDITION)

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# GRAND CANYON NATIONAL PARK

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## GENERAL DESCRIPTION

The Grand Canyon National Park was created by an act of Congress, February 26, 1919. It is under the supervision of the National Park Service of the Department of the Interior. Its final creation came 33 years after Benjamin Harrison, then Senator from Indiana, introduced the first of several bills to give it park status. Politics, local apathy, and private interests, which sought to utilize its water power and to find minerals in its depths, were the principal causes of delay. All efforts failing to make it a national park, in 1908 President Roosevelt made it a national monument. Once a railroad was surveyed through it. A scenic railroad was projected along its south rim. Less than a year before it became a park efforts were making in New York to raise money to dam its waters for power and irrigation.

The Grand Canyon National Park is in northern Arizona. Its 958 square miles inclose 56 miles of the Grand Canyon stretching west of its beginning at the mouth of the Marble Canyon. Through it winds the Colorado River for a distance of 103 miles. From rim to rim that portion of the canyon within the park varies from 4 to 14 miles in width; it is more than a mile deep measured from the north rim, which averages nearly a thousand feet higher than the south rim. The eastern boundary includes the lofty painted walls east of which lies the Painted Desert. Its western boundary includes the broad Havasu Canyon, tributary from the south, in whose depths we find the Havasupai Indian Reservation and a group of fine waterfalls markedly different from any in our other national parks.

The park boundaries hug the rim closely. Very little of the country back of the rim is included in the reservation, scarcely enough in places to take care of the great increase of travel which national parkhood will bring to the Grand Canyon during the next several years. These borderlands are wonderfully attractive. The northern rim is heavily forested with pine, fir, and spruce, interspersed with beautiful glades of quaking aspen. The southern rim carries a slender semiarid flowering vegetation of rich beauty and wide variety, and south and east of the railroad station lies about 50 square miles of fine yellow pine forest.

## A MIGHTY SPECTACLE

There is no doubt that the Grand Canyon is one of the world's greatest spectacles. It is impossible to compare it with the tremendous white spectacle of the Himalayas, or with the House of Everlasting Fire of the Hawaii National Park, or with the 17,000 feet of snow and glacier which rise abruptly between the observers' eyes and the summit of Mount McKinley, because it has nothing in common with any of these. But of its own kind there is nothing in the world which approaches it in form, size, and glowing color; it is much the greatest example of stream erosion. And in its power to rouse the emotion of the looker-on, to stupefy or to exhilarate, it has no equal of any kind anywhere, unless it be the starry firmament itself.

Approaching by rail or road, the visitor comes upon it suddenly. Pushing through the woods from the motor camping ground, or climbing the stairs from the railroad station, it is there at one's feet, disclosed in the sublimity of its templed depths, in the bewildering glory of its gorgeous coloring. There is no preparation of mind and spirit. To some the revelation is a shock, no matter what the expectation. The rim of the Grand Canyon is one of the stillest places on earth, even when it is crowded with people.

To describe the Grand Canyon is as impossible as it is unnecessary. Few natural spectacles have been so fully pictured, few are so familiar even to the untraveled. Its motionless unreality is one of the first and most powerful impressions it makes. And yet the Grand Canyon is really a motion picture. There is no moment that it does not change. Always its shadows are insensibly altering, disappearing here, appearing there; lengthening here, shortening there. There is continual movement. With every quarter hour its difference may be measured.

There is the Grand Canyon of the early morning, when the light slants lengthwise from the Painted Desert. The great capes of the northern rim shoot into the picture, outlined in golden light against which their shapes gloom in hazy blues. Certain temples seem to rise slowly from the depths, or to step forward from hiding places in the opposite walls. Down on the green floor the twisting inner gorge discloses here and there lengths of gleaming water, sunlit and yellow.

An hour later all is wholly changed. The dark capes have retired somewhat and now are brilliant-hued and thoroughly defined. The temples of the dawn have become remodeled, and scores of others have emerged from the purple gloom. The Granite Gorge, now detailed fully, displays waters which are plainly muddy even at this

great distance. And now the opposite wall is seen to be convoluted, possessing many headlands and intervening gulfs.

And so, from hour to hour, the spectacle develops. Midday, with sun high behind the south rim, is the time of least charm, for the opposite walls have flattened and the temples of the depths have lost their defining shadows. But as afternoon progresses the spectacles of the morning creep back, now reversed and strangely altered in outline. It is a new Grand Canyon, the same but wonderfully different.

And just after sunset the reds deepen to dim purples and the grays and yellows and greens change to magical blues. In the dark of a moonless night the canyon suggests unimaginable mysteries.

### THE FIRST VIEW

From the railroad station the visitor ascends to El Tovar Hotel and the view of the canyon at a very interesting point. Here is where the temples loom up in contrast to the plateau at their feet; the plateau still being 1,500 feet above the river. The view at El Tovar is restricted by the extension of Grandeur Point and Maricopa Point on either side. These cut off the view of the great reaches of the canyon east and west. El Tovar view is a framed picture of limited size. It is better so; better for the newcomer to enter gradually into the realization of the whole which will come when he walks or rides out to the many points which push northward from the south rim; better also to return to after days spent on the rim or in the canyon's depths.

Having studied this view for general outlines and the canyon's conformation, stratification, and coloring, the visitor will find for himself, on foot or by motor stage or horseback, many points which will afford him varied outlooks upon the broad reaches of the canyon. It is advisable to see the canyon from end to end from the rim before exploring the trails to the floor and the river.

The traveler who is unlucky enough to have no more time at his disposal may, even in one day, see much of the Grand Canyon either from the rim or by mule-back descent to the depths as preference dictates. Probably the one-day visitor can see more by taking the 16-mile round-trip Hermit Rim Road drive west in the forenoon and the 60-mile round-trip drive east to Grand View and Desert View in the afternoon than in any other way. Both the rim drives and the descent into the canyon may be made in two days. Every day added to the schedule will give the visitor further novel experiences and glorious views, such as the Hermit Loop trip, the Phantom Ranch trip, or to the north rim of the canyon, visiting Ribbon Falls and Roaring Springs en route, or the long motor trip over the Navahopi Road to Tuba City and Moenkopi.

When you go to the Grand Canyon leave the duration of your stay open for decision when there. You will probably then remain from five days to two weeks. Two weeks of fairly steady going will enable you to see the Grand Canyon thoroughly without undertaking trips which are a hardship to persons unaccustomed to trail riding.

#### PARK SERVICE INFORMATION BUREAU

A free information bureau is maintained by the National Park Service in the Administration Building, 100 yards east of El Tovar and at the foot of the hill, where the superintendent's offices are. Park visitors are welcomed and are advised to apply to the attendant in charge of this bureau for official information of any kind.

A collection of various geological and paleontological specimens of the Grand Canyon is on exhibition, as well as charts of flowers and birds.

A suitable reference library is being accumulated for the use of visitors, and the Government maps and other publications may be consulted or secured here.

Automobile arrivals are requested to register at this bureau, unless previously registered at a checking station.

During the summer the park naturalist will conduct short trail trips along the canyon rim, starting at 2 p. m. He will explain all features relating to the natural history of the canyon. Full information regarding these trips may be had at the Park Information Office.

#### LIVING AT THE GRAND CANYON

Living is pleasant and comfortable. El Tovar Hotel offers delightful conditions at rates reasonable in these times for its high-class accommodations. Its porches are broad, its garden a collection of interesting semiarid vegetation, its rim walks inspiring. There is horseback riding through many miles of yellow-pine forest and out to viewpoints on the rim, but there are no sports. There is neither golf nor tennis. The canyon absorbs the whole attention of its visitors.

Adjoining the hotel there is a most comfortable annex of cottages and tents and café; rates are lower than those charged at the main hotel. There are comfortable cottages at Hermit Creek Cabins on the Hermit Trail and at Phantom Ranch across the Colorado River. The latter cottages are built of the native rock, with mess hall, etc. Both these resorts are first class in every respect.

Wylie Way Camp at Bright Angel Point on the north rim provides comfortable accommodations for visitors. Camping trips along the rim and down to the Havasupai Indian Reservation and the waterfalls of Havasu Canyon can be arranged. It is possible to

take your pack train across the river on the Kaibab Suspension Bridge, stay overnight at Phantom Ranch, and ascend the most interesting Kaibab Trail up Bright Angel Canyon to the north rim. This trip is a matter of several days and is correctly classed as a summer jaunt.

### FREE PUBLIC CAMP GROUND

From April to November the south rim is free from snow and the free public camp ground near Grand Canyon Village is available to campers. Motorists are urged to bring their own camp equipment and make use of this camp. Sites will be allotted free of charge on application to the office of the superintendent of the park. Fuel and water are furnished free of charge. There is a garage in the village where gasoline and oil can be procured. There is also a general store where groceries can be purchased.

Housekeeping cottages are available on auto camp grounds at reasonable rates. Autoists may rent blankets, linen, etc., in the event they do not have such equipment of their own.

In the camp lodge complete delicatessen service may be had. Newspapers, magazines, etc., are for sale. There is also a large rest room for the convenience of campers and for shelter in inclement weather. It is believed that the new camp ground which will be open in early spring sets a new standard.

During the summer months a camp-fire lecture will be given by the park naturalist at 8.00 p. m. each evening on the history and formation of the canyon.

### SEEING IT FROM THE RIM

East of the hotel are several points reached by motor roads which afford fine views of the upper half of the Grand Canyon. The most famous of these is Grand View, where still stands the first regular hotel of the canyon, now private property, and not affording hotel accommodations. The eastern terminus of the road is Desert View, which offers a view up the Marble Canyon, and eastward over the famous Painted Desert. West of the hotel the auto stages stop at a succession of fine points, each with its own individual view of the mighty spectacle.

There is much to see also in the neighborhood of El Tovar.

The Yavapai footpath extends eastward along the rim to Grandeur and Yavapai Points. This footpath is constructed of asphaltum macadam and is so located as to give the best views of the canyon.

A recently completed footpath extends along the rim westward to Powell Memorial. The views from this footpath are very inspiring.

## DESCENDING THE CANYON

There are three practicable trails from the south rim to the river. The one commonly used starts from El Tovar Hotel and descends the deep alcove between Grandeur and Maricopa Points. This is the celebrated Bright Angel Trail.

The descent of this trail is made on mule back in parties led by guides. It is a sad mistake for persons not in the soundest physical training to attempt it on foot, for the apparent distance as seen from the rim is misleading, and the climb back is most arduous at that elevation. The south rim of the canyon at El Tovar is 6,866 feet above sea level. Nearly every day one or more trampers, overconfident of their endurance, find the way up too arduous and have to be assisted by guides and mules sent down for them from the rim.

The descent is an experience of great charm. The trail is well built and kept in good condition. The traveler passes in review all the strata which form the canyon walls; their close examination will be a source of pleasure. Just under the rim the trail passes through a fine forest of Douglas fir, and from this down to the sage desert of the green floor the traveler will also pass in review a series of vegetation which represents scores or hundreds of miles of surface growths. There are two steep cliffs which the trail descends in series of short hitches of zigzags, one of which, known as Jacob's Ladder, carries the traveler down the famous Redwall limestone, which is so distinct a scenic feature of the canyon from every rim view. But there need be no alarm about these descents, for the zigzags, short and numerous though they are, maintain always a uniformly safe grade. It may affect the unaccustomed nervously to see his mule hang his head over short abysses at the turns, but the traveler himself does not hang over them, and the mule is sure-footed, stolid, and indifferent. There is only one creature with less imagination than a mule, and that is his cousin, the burro.

Indian Garden, which lies on the floor of the canyon on the Tonto Plateau, is so named because Havasupai Indians once cultivated the soil through which passes the stream which originates in springs below the Redwall. It is called Garden Creek. The Indian Garden now is a tangle of high brush, principally willow, through which the trail passes out upon the Tonto Plateau, and presently plunges down the rocky gorge which leads to the edge of the muddy Colorado.

## THE HERMIT TRAIL

A much finer trail from every point of view than the Bright Angel starts from Hermit's Rest, south of Pima Point, and descends the Hermit Canyon. It begins 8 miles west of El Tovar. This is a two days' journey, including a night spent in Hermit Cabins well

down in the canyon. It involves an experience worth many times the additional day which it requires.

The Hermit Canyon is one of extreme beauty; there is probably no other which equals it in gorgeous coloring and the variety of its rock forms. The grades on this trail are less than those on Bright Angel Trail, and it is also more scenic. It is longer than the Bright Angel Trail and leads out upon impressive points overlooking fascinating views. About 1,000 feet under the rim, at a place known locally as the White Zig Zags, may be seen an interesting series of prehistoric animal tracks in the sandstone.

The descent of the Redwall limestone is a masterpiece of trail building, and the only part of the Hermit Trail which gives an impression of steepness; but this may readily be walked down by the unaccustomed rider; its descent is not nerve racking. The night at Hermit Cabins, under a towering crimson gable, with colorful Hermit Canyon on the south and Grand Canyon opening northward over the green shale of the Tonto Platform, or "lower plateau," is as comfortable as it is fascinating. The trip to the river and back to the camp is usually made the first day.

Visitors to Hermit Cabins will find a band of antelope always in evidence.

### THE KAIBAB TRAIL

The cross-canyon trail is known as the Kaibab Trail. A new section of this trail from Yaki Point on the south rim to the Tonto Trail at the tip-off was built in the winter of 1924-25. It is built along a spur jutting out into the canyon and is the most scenic trail leading into the gorge. In the winter of 1925-26 the tip-off section was relocated and built to modern standards. The trail has also been rebuilt from Phantom Ranch to Roaring Springs. The new trail is the last word in trail construction and reduces time of travel to Phantom Ranch by two hours. This summer the trail will be relocated from Roaring Springs to the north rim in such a manner that there will be a saving in distance of 6 miles; the grades will be easier and the trail will be far more scenic and easier to maintain.

### THE TONTO TRAIL

Too few visitors to Hermit Cabins combine the two trail trips with a journey between them over the Tonto Plateau. The descent is by the Hermit Trail with a night at its foot. The next morning the journey is made on mule back along the Tonto Plateau to the Indian Gardens. This journey is extremely interesting. The side walls of the canyon and the numerous temples give one the sense of being in the mountains instead of halfway down the depths of a



canyon. From the Indian Gardens, after lunch by the stream side, parties ascend Bright Angel Trail to El Tovar.

### THE HAVASU CANYON

The Havasu Canyon, in the far western end of the national park, is rarely visited. The trail begins at the end of a long desert road by descending precipitously to a gorge through which the Havasupai Indian Reservation is reached. There are less than 200 Indians on the reservation. These live by farming the land irrigated from Havasu Creek; corn is their principal product, but melons, figs, and peaches are also produced. The reservation fills a broad amphitheater in the gorge, surrounded by lofty red sandstone cliffs of the Supai formation. There are no hotels or camps, and the heat is intense in summer. The Havasu Creek water is strongly impregnated with lime and unpalatable, though entirely wholesome. Nevertheless, the visit to the reservation is one of unusual character and charm for those who do not object to a little hardship.

Below the reservation the canyon breaks into a series of waterfalls, two of which are unusual in kind and beauty. These are the Havasu Fall and the Mooney Fall. Both drop over lofty shelves, which are plastered on back and sides by richly carved festoons of lime travertine. Both the falls occur in deep gorges in the Redwall limestone. Bright green cottonwoods, cactus, and other desert vegetation enliven the scene, which is as different as imagination can well paint from anything else in the Grand Canyon National Park.

In the spring, following the melting of the rim snows, there are various waterfalls in the Grand Canyon itself, several of which last for some months. These occur on the north side of the river, where there is a greater supply of water, the south side being arid except for brief periods following meltings and cloudbursts. One of these temporary north-side waterfalls in Clear Creek, which has been visited by very few persons, is about 800 feet in height. With the crossing of the river, which is now possible over the Kaibab Suspension Bridge, these and many other fascinating spectacles, now little known, will become familiar sights to many. The destiny of the Grand Canyon is to become one of the most used national parks.

### ORIGIN AND GEOLOGIC HISTORY OF THE GRAND CANYON<sup>1</sup>

The Grand Canyon is the deepest and widest of a long series of canyons through which the Colorado River flows for 500 miles across a region of high table-lands known as the plateau province or the Colorado Plateaus. These canyons are unusually steep sided and unusually deep, but they are merely parts of the valley of the river,

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<sup>1</sup> By L. F. Noble, geologist, U. S. Geological Survey.

and, like most other river valleys, they have been formed by the stream that occupies them; they are not, as some who are unfamiliar with geologic processes have supposed, due to any violent or catastrophic breaking of the earth's crust. The Grand Canyon is perhaps the world's most spectacular illustration of the accumulated results of erosion—of the combined action of running water, rain, wind, and the various atmospheric agencies that attack the rocks and sculpture them into the forms that give character to a landscape.

#### A PECULIAR TYPE OF LAND SCULPTURE

The scenery of the Grand Canyon is the supreme expression of a type of land sculpture that is peculiar to the plateau country, a type whose elements are cliffs and tabular forms—butes, mesas, terraces, and plateaus. The high plateau into which the river has cut its way is built up of layer upon layer of rock beds that lie nearly level and that extend continuously over great distances. These beds, as one may see in the walls of the canyon, consist of sandstone, shale, and limestone, which have been grouped by geologists into the formations shown in the generalized columnar section forming Figure 1. This figure presents a summary of the facts relating to the character of the rocks exposed in the Grand Canyon National Park and the thickness, attitude, order of accumulation, and structural relations of the formations.<sup>2</sup>

#### ARCHITECTURAL FORMS DOMINATE THE CANYON

As the formations lie in orderly horizontal layers, like beds of masonry, they have been carved into definite architectural forms, which are everywhere nearly identical in profile though varied and irregular in plan, and as they vary in their resistance to erosion, some being hard, some soft, every part of the canyon wall, every pinnacle and butte, is characterized by its own steplike alternation of cliff, slope, and shelf. Each resistant bed stands forth as a cliff, and each weak bed is marked by a slope. Each shelf or platform is made by the wasting back of a weak stratum that lies upon a resistant, cliff-making stratum, and the greater the thickness of the weak stratum the broader the shelf. The plateaus that border the canyon are themselves simply great terraces developed on a resistant formation, the Kaibab limestone, from which overlying softer beds have been washed away. As erosion goes on, parts of the canyon wall or

<sup>2</sup> The term "formation" is generally applied to a group of rock beds that are of about the same age, as shown by the fossils they contain, or that are considered together for convenience in mapping or description. A formation is named from the place where it was first studied or from some place or region where it is well exposed. The Kaibab limestone, for example, is so named because it is well exposed on the Kaibab Plateau.

plateau become separated by the widening of branch canyons or ravines and stand as solitary outliers capped by remnants of a hard bed of rock. These remnants are the buttes and temples. The

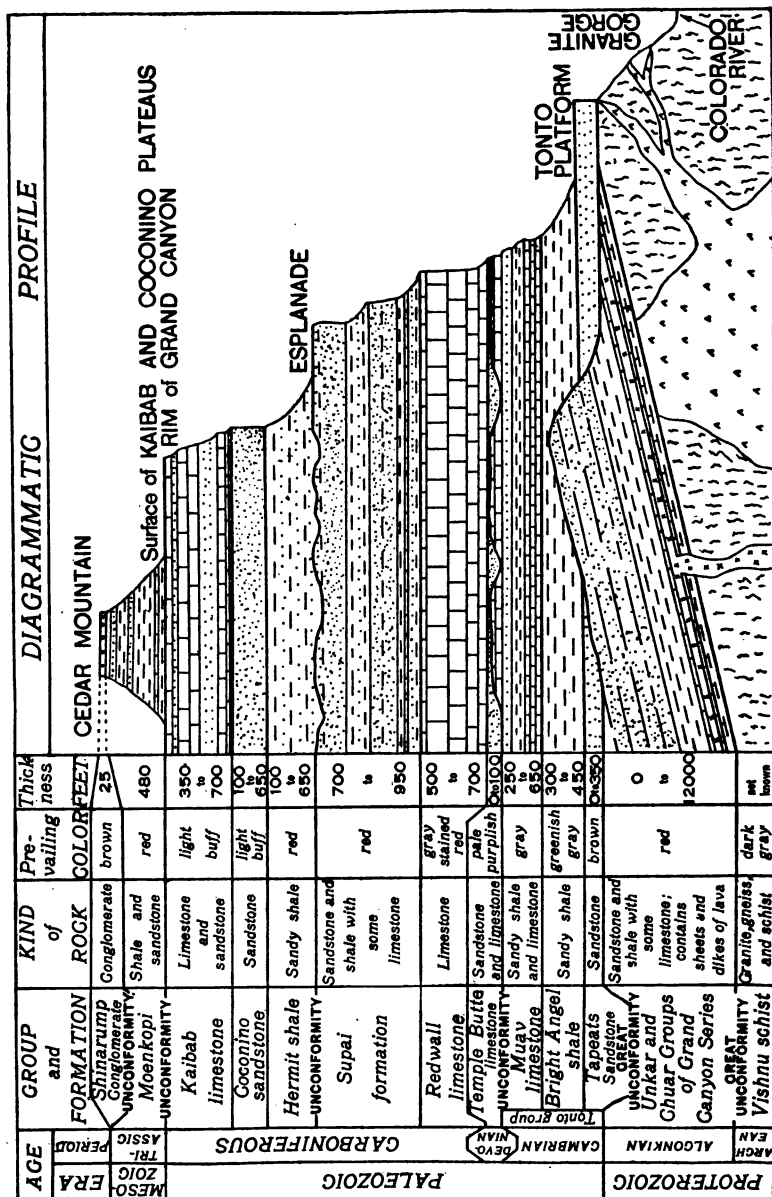


FIGURE 1.—Generalized columnar section, showing position and structural relations of the rocks of the Grand Canyon National Park, and the age, character, and thickness of the groups and formations into which they are divided

great height of the plateau gives rapid fall to the streams that enter the canyon and enables them to cut powerfully and deeply and thus to carve the rocks into forms that are fashioned on a gigantic scale.

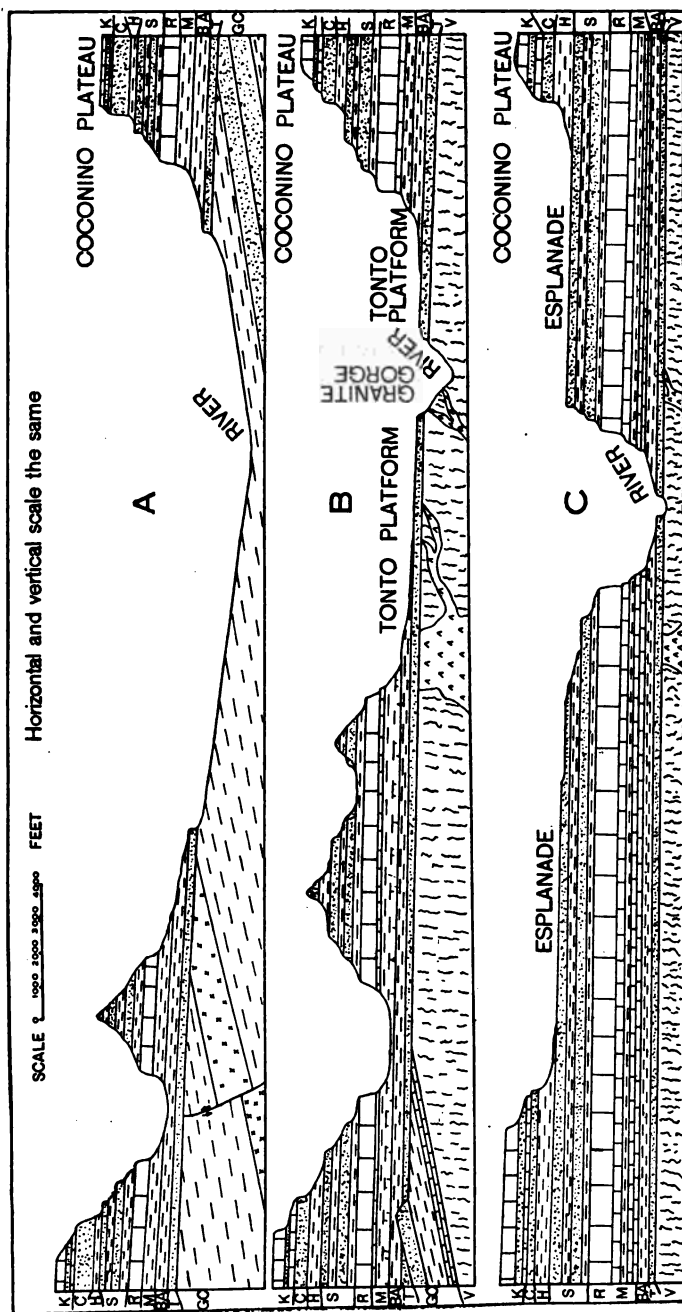


FIGURE 2.—Generalized sections across Grand Canyon, looking up Colorado River. A, in Eastern Kaibab division, east of Desert View Camp; B, in Central Kaibab division, near Hermit trail; C, in western Kaibab division, west of Bass Camp. K, Kaibab limestone; C, Coconino sandstone; H, Hermite shale; S, Supai formation; R, Redwall limestone; M, Temple Butte and Muav limestones; BA, Bright Angel shale; T, Tapeats sandstone; GC, Grand Canyon series; V, Vishnu schist. The different profiles exhibited by the canyon in these sections are due to changes in the character and thickness of the rocks, as explained in the text

The erosion accomplished by these streams, though spasmodic, because the streams are mainly fed by spasmodic rainstorms in an arid climate, is none the less effective. The slopes here are partly bare of vegetation because the desert plants grow far apart, and the concentrated energy of a single torrential shower may therefore wreak more havoc than would be caused by a season's rainfall on plant-covered slopes in a humid region. It is this prevailing aridity that, by retarding the growth of vegetation and the formation of soil, keeps sharp and fresh profiles that in a moister region would soon be dulled or obscured.

#### SECTIONS ACROSS THE CANYON

The three sections across the Grand Canyon shown in Figure 2 (*A*, *B*, *C*) illustrate the intimate relation between the profile of the wall and the character of the rocks. In *A*, where the rocks along the river are the weak shales of the Algonkian Grand Canyon series, the bottom of the canyon is a broad valley having gently sloping sides. In *B* these weak stratified rocks are replaced by the hard Archean crystalline rocks, and the river occupies a narrow gorge—the Granite Gorge. As these hard crystalline rocks are not arranged in beds and are all about equally resistant to erosion the walls of the Granite Gorge have a steep, continuous slope, which presents a striking contrast to the steplike profile of the wall in the overlying bedded Paleozoic rocks. In *C* the river occupies a narrow box-shaped vertical-walled canyon in the hard Tapeats sandstone, the basal formation of the horizontal Paleozoic beds.

In *C* the weak Hermit shale, in the upper wall of the canyon, is thick and consequently wastes far back from the summit of the underlying hard Supai sandstone, leaving a wide platform known as the Esplanade. This platform, because of its great width and its conspicuous red color, is the dominant feature of the canyon landscape in all the western part of the national park. But the Hermit shale steadily gets thinner eastward in the canyon, as may be seen in sections *B* and *A*, whereas the overlying cliff-making Coconino sandstone, which defends the retreat of the wall above the Esplanade, gets steadily thicker in the same direction. The Esplanade thus becomes a narrow bench in *B* and fades to an inconspicuous ledge in *A*.

In *B* the weak Bright Angel shale has determined a similar platform in the bottom of the canyon. This platform, known as the Tonto platform, or the "lower plateau," is widest in the region about and east of Bright Angel and Hermit Trails, where it is a familiar feature to tourists. It gets narrower westward as the overlying Muav and Redwall formations grow thicker and become firmer in texture.

This marvelous adjustment of external form to the inequalities of rock structure and character affords to the geologist the strongest evidence that the canyon is the work of erosion.

#### A UNIQUE REVELATION OF GEOLOGIC HISTORY

A large part of ancient geologic history is revealed more clearly in the walls of the Grand Canyon than in any other place in the world. The beds of rock seen in the canyon were all laid down in water as layers of sand, mud, and limy ooze and in time were hardened into rock by the great weight of the layers above them, the lime and silica that they contained cementing their particles together. As rocks of this kind are composed of sediment deposited in water the geologist calls them sedimentary rocks, and as they are piled in beds or strata one above another they are said to be stratified, and the beds are called strata.

The horizontal strata seen in the walls of the canyon were formed during the Paleozoic era (the era of "old life"); they represent the oldest series of rocks that have yielded clearly identifiable traces of life. Many of the strata contain the remains of marine animals and were therefore evidently laid down on the bottom of the sea, although the region now stands high above the present sea level. Others, notably certain beds of red shale and sandstone in the Supai and Hermit formations (see fig. 1), appear to have been spread out as mud and sand on low-lying land or on delta plains by shifting streams; and one formation, the Coconino sandstone, is regarded by some geologists as a sand-dune deposit. Nearly all the Paleozoic formations contain some traces of life—in the Kaibab and the Redwall limestones there are corals and many kinds of marine shells; in the formations of the Tonto group, the remains of primitive shellfish, worm trails, and impressions of seaweeds; in the Temple Butte limestone, the remains of an ancient type of fish; and in the Hermit shale, impressions of long-extinct plants. Fossil tracks of small animals, probably older forms of amphibia, occur in the Coconino sandstone along the Hermit Trail. The aggregate thickness of the Paleozoic rocks varies from place to place, but in the part of the Grand Canyon that is included within the national park it averages 4,000 feet.

#### ROCKS OLDER THAN THE PALEOZOIC

Ancient as are the formations of the Paleozoic era, two great systems of rocks—the Algonkian and the Archean—are buried beneath their base and appear only in the depths of the canyon. The rocks of the older system, the Archean, form the walls of the Granite Gorge. They are the foundation rocks of the region, and they are totally unlike the Paleozoic rocks, for they are entirely crystalline, are not

stratified, and show a crumpled banding, due to the arrangement of their constituent minerals in parallel layers, an arrangement produced by heat, pressure, and recrystallization. The Archean rocks are mainly of the type known as gneiss and schist, but they include granite in large masses and dikes that have been intruded while molten into the gneiss and schist. The Archean rocks have been named the Vishnu schist. They contain no traces of life.

The rocks of the younger of these two systems, the Algonkian, are intermediate in age between the Archean and the Paleozoic rocks and occur here and there in the depths of the canyon in wedge-shaped masses that lie between the Archean and the Paleozoic. They can be easily distinguished by the casual observer in the region between Grand View and the mouth of the Little Colorado, where at least 12,000 feet of them remain. Small masses are exposed near the mouth of Bright Angel Creek opposite El Tovar, on Crystal Creek, on Shinumo Creek, and along Colorado River west of Powell Plateau. These rocks, like the Paleozoic, are stratified and do not differ greatly in character and appearance from some of the Paleozoic strata, notably the red Supai and Hermit formations, but, unlike the Paleozoic strata, they have been tilted from the horizontal position in which they were originally deposited, so that they are inclined at various angles. These Algonkian rocks have been named the Grand Canyon series. The few obscure fossils found in them are so poorly preserved that they tell very little concerning the primitive life of the period.

#### GREAT UNCONFORMITIES

Each of these two great rock systems—the Archean and the Algonkian—is separated from the one that overlies it by a nearly even surface that cuts across or truncates all underlying beds or masses. This truncation marks what is known to geologists as an unconformity. Each unconformity means that the rocks below it were worn down by streams or waves to a nearly level surface before the material that formed the overlying rocks was deposited.

The top of the Paleozoic series is also marked as an unconformity, for although the Paleozoic beds are the highest that appear in the wall of the Grand Canyon they actually once lay beneath a later thick series of horizontal deposits. The traveler who comes to the Grand Canyon from the north descends step by step in southern Utah a great series of cliffs and terraces carved in horizontal beds, much like the Paleozoic. The most noted scenic features of southern Utah—Zion Canyon, Bryce Canyon, and the Vermilion, White, and Pink cliffs—are carved in these beds, which overlie the Paleozoic and represent deposits of later systems, the Triassic, Jurassic, and Cretaceous,

which are of Mesozoic age, and part of a still later system, the Tertiary. These later beds once extended across the entire region in which the Grand Canyon lies, covering it to a thickness at least twice as great as the canyon is deep, but nearly all of them have been worn away by erosion. A few small masses of them still remain as buttes on the Coconino Plateau south of the Grand Canyon. One of these, Red Butte, lies 15 miles south of El Tovar. Another, Cedar Mountain, lies 2 miles east of the rim of the Grand Canyon near Desert View. Cedar Mountain is interesting because the formation that caps it, the Shinarump conglomerate, contains logs of petrified wood. The petrified forests of Arizona (Petrified Forest National Monument), which lies southeast of the Grand Canyon region, occur in a formation that immediately overlies the Shinarump conglomerate and that is exposed over wide areas, but has been removed from Cedar Mountain and Red Butte by erosion.

The rock record just described is laid bare in the Grand Canyon and in the cliffs of southern Utah with the clearness of a diagram, so that the sequence of geologic events in the region can be read from it with ease and certainty. The unconformity that truncates the Archean rocks means that an enormous thickness of overlying rock had been removed from them before the Algonkian beds that now lie upon them were deposited, and consequently that a vast region, once high and mountainous, was reduced by erosion through long ages to the level plain represented by the unconformity.

When the land had been worn down to a plain it sank and was buried under at least 12,000 feet of mud and sand that now form the Grand Canyon series of Algonkian age. After these beds had thus accumulated they were uplifted, tilted, and broken into huge blocks that must have formed high ranges of mountains. Then followed a long period of erosion, during which the mountains were worn down nearly to a plain. This plain is represented by the unconformity that separates the eroded Archean and Algonkian rocks from the overlying horizontal Paleozoic strata. Exposed as it is for the entire length of the Granite Gorge and for many miles upstream from the Granite Gorge, and visible everywhere from the rim of the canyon, this unconformity is the most spectacular known illustration of such a feature. It was not so even a surface as the older unconformity, for some of the hard sandstones of the tilted Algonkian blocks long resisted erosion and stood as low hills on the plain. A section of one of these hills is visible in the canyon wall from El Tovar. It lies under Cheops Pyramid, just west of the mouth of Bright Angel Creek, and it rises well above the base of the Paleozoic beds, which were deposited around it.



## SUBMERGENCE, DEPOSITION, UPLIFT, AND EROSION

At the end of Algonkian time the land was again submerged, and the horizontal Paleozoic, Mesozoic, and early Tertiary strata were slowly deposited. The time consumed by the deposition of these strata, whose aggregate thickness exceeds 15,000 feet, was long, even in the geologic sense of the word "long," for it must be estimated in millions rather than in thousands of years, spanning as it does the countless ages during which life was evolved from the primitive marine shellfish to the apelike predecessor of man. Yet it was short in comparison with the time consumed by the succession of events recorded before the Paleozoic strata were laid down, for that earlier period was inconceivably long, certainly far longer than all the time that has elapsed from the beginning of the Paleozoic era to the present day.

In Tertiary time the region was again uplifted and a period of erosion began. Streams cut channels into the surface of the land and in time formed broad valleys, which thus continued to expand until at last most of the land stood but little above the level of the sea. At the end of this period of erosion, which is sometimes called the great denudation, most of the strata above the Paleozoic had been removed from the Grand Canyon region; their edges had been worn back northward 50 miles to the border of Utah, and the surface of the region had been reduced to a nearly even plain. The present course of the Colorado River must have been determined by a topography different from that of to-day, for in most of the region that lies within the national park, as one may see at El Tovar, the land south of the canyon slopes directly away from its rim, so that the canyon runs across instead of down a slope.

## FOLDING AND FAULTING

The uplifts of the region that raised the Paleozoic and Mesozoic strata in Tertiary time were very different from those recorded beneath the unconformities in the canyon walls. The rocks were not compressed and folded, like the Archean, nor were they broken into tilted masses, like the Algonkian; instead, the whole region was lifted bodily, the strata still preserving essentially the horizontal attitude in which they were laid down. Yet the uplift was not equal over all parts of the region. If, for example, we should cross the Kaibab Plateau from east to west, say from House Rock Valley to Ryan, we should find the limestone strata at its western margin ending suddenly in a cliff and appearing again 1,500 feet below, on the surface of the plateau on the west—the Kanab Plateau. Such a break, along which the strata on one side have slipped past those on the other, is

known as a fault. At the eastern margin of the plateau we should find the strata bending suddenly downward in a great curve, returning again as sharply to a horizontal attitude, and continuing eastward as the surface of the Marble Platform. This type of dislocation is known as a flexure, or fold.

The uplifted Grand Canyon region is divided into great horizontal plateau blocks like the Kaibab Plateau by dislocations of the type just described, either folds or faults, that trend north and south; and the Grand Canyon crosses these plateaus from east to west. The name of each plateau has been given to the section of the canyon that crosses it. Thus the section of the canyon that transects the Kaibab Plateau is known as the Kaibab division. The Grand Canyon National Park includes all the Kaibab and part of the next western division—the Kanab.

In addition to the great dislocations that separate the plateaus there are numerous small faults and folds in the region, some of them in the Grand Canyon. Many visitors who have noticed the faults ask whether the canyon does not owe its origin or at least its course to a fault, but although geologists have studied the canyon at many places they have found no evidence of the existence of such a fracture. If it existed it could not have escaped notice, so perfect are the exposures of the beds in the rocky walls along the numerous turns of the river. Nor do any considerable parts of the canyon coincide with faults. On the other hand, it may be said that faults have guided the course of many tributary gorges in the Grand Canyon, and even some parts of the course of the river, though not in the way popularly supposed. Erosion, not dislocation, has been the chief agent that determined the course of each gorge. Movement along some of the faults, by crushing the adjacent rock, has formed zones of weakness, which, under the searching action of erosion, have become ravines or gorges. An example is the gorge of Garden Creek, which is followed by the Bright Angel Trail in front of El Tovar. The course of this gorge has been determined by a small fault, which has shattered the great cliffs of the Coconino sandstone and Redwall limestone and has made possible the construction of the trail. The strata have been displaced about 100 feet by the faults, those on the west side having been relatively elevated.

#### THE WORK OF MAKING THE CANYON

During the last great uplift of the region, which may still be in progress and which has raised the plateau to its present height, the land rose so gradually that the river remained in its original channel and kept cutting deeper and deeper. The canyon is thus deep because the land is high and because in this arid region the river, fed by the rains and snows of the Rocky Mountains and armed with

great quantities of mud and sand and gravel, washed into it by its tributaries, has lowered its bed faster than its tributaries could lower the adjacent plateau. But, although the Colorado River has thus dug the canyon, the various forms of rock sculpture seen in the walls of the canyon have been determined by variations in the behavior of the beds under the attack of the agents of erosion. And this erosion is still going on. The observer of to-day who stands in awe on the brink of the canyon or who finds his way precariously down the trails that lead to its depths should realize that the work of making this mighty chasm is not yet finished. The various agents that have modeled the canyon—the rushing torrent below and the small streams that descend to join it, the intermittent rain and snow and frost, and those subtle yet effective chemical activities that aid in the decay of the rocks, and, above all, the ever dominant pull of gravity on all loose particles—all are still at work on this wonderful piece of earth sculpture. In the Grand Canyon of to-day we see the accumulated results of the action of powers that apparently leave from year to year but slight traces of their action but that, persisting in their work through uncomputed ages, have produced results of marvelous immensity.

#### HISTORY OF THE CANYON\*

Don Lopez de Cardenas, of Coronado's expedition, discovered the Grand Canyon in 1540, as a result of stories told by the Hopi (Moquis) Indians to Don Pedro de Tovar. The old records describe a chasm which seemed to be more than 3 or 4 leagues across in an air line—" *que avia mas de tres-o quatro leguas por el ayre.*"

For a long period thereafter the Grand Canyon region and the Colorado River remained practically unknown. It is next recorded as having been seen by two Spanish priests in 1776; Padre Garces crossing eastward from the lower Colorado to the Hopi towns, who halted, he says, "at the sight of the most profound caxones which ever onward continue, and within these flows the Colorado," and Padre Escalante, who, in searching for a place to cross from the north after his failure to proceed westward from Santa Fe to Monterey, finally found the old Ute ford, used by Indians for centuries, near the foot of Glen Canyon (in latitude 37°), and by means of it was able to reach Zuni. The ford then became known as *El Vado de los Padres*—the Crossing of the Fathers—for long the only known crossing of the Colorado in a distance of several hundred miles.

The first American to visit the region was James O. Pattie, accompanied by his father. They trapped beaver on the lower Colorado in 1825 and 1826. In 1826, returning eastward, they traveled for 13 days, following, apparently, the Grand Canyon as well as they

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\*Furnished by courtesy of Frederick S. Dellenbaugh.

could, but unable to reach the river at any point, till at last they arrived at a place where the river "emerges from these horrid mountains." This was the first extended trip on record of any human being along the brink of the Grand Canyon.

The same year that the Patties went to the lower Colorado, 1825, General Ashley, in pursuit of his fur-trading enterprise, attempted to descend Green River from near the present crossing of the Union Pacific Railway. They were forced after great hardship to give up the effort in the Uinta Valley.

The famous American trapper and pioneer, Jedediah Smith, crossed the river going west in the Mohave country in 1826 and again in 1827. In this latter year the Patties returned to the lower Colorado and trapped down the river from the mouth of the Gila in dugouts, the first navigators of this portion since Alarcon, of the Coronado expedition, came up in 1540. Quite unexpectedly they made the acquaintance of the great bore at the mouth of the river, where they were in waters that Lieutenant Hardy, of the British Navy, had entered the year before.

Other trappers after beaver then followed into the region, and the Government began sending out exploring parties. One of these under Sitgreaves crossed the Colorado in 1851 about 150 miles above Yuma, and three years later another under Whipple, surveying for a railway along the thirty-fifth parallel, crossed a few miles above the mouth of Bill Williams Fork.

When the California gold rush developed one trail of the Forty-niners led down the Gila and across the Colorado at its mouth, and now various activities on the lower river began. The first steamboat was brought to the mouth of the Colorado and up it in 1852. It was named the *Uncle Sam*.

Edward F. Beale, surveying a Government wagon road, crossed and recrossed in 1857 and 1858, near the mouth of Bill Williams Fork, and in 1858, January, the Government exploring expedition under Lieutenant Ives proceeded from the mouth up the river in a small stern-wheel iron steamer, the *Explorer*, as far as the foot of Black Canyon, whence the ascent was continued in a small boat to the mouth of the Vegas Wash. This was not the first steamer up, however, as Captain Johnson, of a commercial navigation company, had steamed up and passed with his steamboat clear through Black Canyon to its head some days before, mainly to "get ahead" of Ives, who had earlier displeased Johnson. Ives then proceeded overland to the mouth of Diamond Creek and to the Hopi towns via Havasu Canyon.

"It seems intended by nature," says Lieutenant Ives, after vainly trying to reach the rim, "that the Colorado River, along the greater

part of its lonely and majestic way, shall be forever unvisited and undisturbed."

This same year of 1858 saw the first recorded crossing of the Colorado from the north, by white men, since Escalante. This was accomplished by Jacob Hamblin, a well-known Mormon, a missionary and Indian agent, from Utah to the Hopi towns. An Indian guided him to the Ute ford (Crossing of the Fathers) and he used it thereafter almost yearly. These Mormons for long years were the only persons besides Navajos and Utes to cross the river anywhere. The ford, known to few, was difficult and dangerous at all times and impossible except at low water.

In 1862 Hamblin went around the Grand Canyon by the west end to the Hopi towns and returned by the Crossing of the Fathers at the east end, practically, as Marble Canyon begins a few miles below. The next year he again went around by the west end to the Hopis, visiting the "hermit" tribe, the Havasupais, in their deep canyon home, on the way, the first white man on record to do so after Lieutenant Ives. The party returned to St. George around the west end of the Grand Canyon. Nobody, as yet, went to the rim and there was no known crossing of the Grand Canyon itself anywhere by white men.

Another attempt to descend Green River from the California Trail (near the present Union Pacific Railway) was made in 1849, by William Manly and party. They expected to find a shorter and easier road to the California gold fields. After a hard time they emerged into Uinta Valley, where they met the noted Ute chief Wakar ("Walker"), who was good to them and urged them not to try to go farther down the river.

In 1867 a man named James White was picked up from a raft near Callville, below the mouth of the Virgin, in an exhausted condition, and those who aided him immediately but erroneously assumed that he had come down through the Grand Canyon, the result of an ignorance as great on their part as on that of White. He knew nothing about the interior of the great canyon and mentioned that he had run one big rapid, whereas he should have mentioned big rapids by the dozen.

So nothing became definitely known about the mysterious interior of the Grand Canyon or of the canyons of the Colorado River above as far as the Uinta Valley on Green River until Maj. John Wesley Powell, one-armed veteran of the Civil War, made his famous passage of all the canyons. He started with nine men and four boats from Green River City, Wyo. (on the Union Pacific Railway, then the only railway across the continent), on May 24, 1869. One of the men (Goodman) was disheartened and left the party in the Uinta Valley.

The terrifying waterfalls and underground passages described by trappers and Indians were not found, but the declivity was often extremely great and continuous (as in Cataract Canyon, where it is continuous for about 20 miles), producing violent cataracts, with huge waves and a water velocity of over 20 miles an hour, frequently studded with giant rocks.

The trip was one of incredible hardship and danger, led by the major with his one left arm, the other having been lost at the Battle of Shiloh. The plunging rapids in the whole length of the journey numbered several hundred to overcome the 6,000 feet difference in altitude between Green River City and the sea. The boats were often upset and the passage of many of the rapids was perilous to a degree. Frequently the party would be forced to embark on long foaming declivities without being able to discover what other, perhaps greater, falls might lie around the precipitously walled bends in front of them.

One of the boats, some of the scientific instruments, and a considerable amount of the food supply were lost in the Canyon of Lodore; and some that was rescued had to be left, as the remaining boats were overloaded. For weeks the clothing of the adventurers was never dry; and when they finally entered the mighty depths of the Grand Canyon itself, in August, there was little food remaining.

The sharpest rapids occur in the granite, and the first Granite Gorge, running past the Powell Monument, contains the worst portion of the whole river. When, therefore, another "Granite Gorge" developed below Diamond Creek, the men, stalwart and full of nerve though they were, having become somewhat demoralized by lack of food and the tremendous strain, were disheartened. Three of them consequently announced that they would go no further.

This was desertion, but they preferred it to risking the difficulties they saw ahead. They believed they could climb out and reach the well-known Mormon settlements on the north, and they believed a river party would be lost or starve.

"At one time," says Powell in his report, "I almost concluded to leave the river. But for years I have been contemplating this trip. To leave the exploration unfinished, to say that there is a part of the canyon which I can not explore, having already almost accomplished it, is more than I am willing to acknowledge, and I determine to go on. \* \* \* For the last time they entreat us not to go on, and tell us that it is madness to set out in this place." The same appeal that Dunn made to Hawkins, the cook of the party, as Hawkins himself tells it.

William R. Hawkins, writing of this in after years, says the three men had "made up their minds to go, and Dunn said he hated to

leave Hall and myself, as we had been together a long time, and that we would perish in the river. [Note the fear of the river which had developed in the minds of at least three.] While we were talking, the major came up to me and laid his left arm [he had no right] across my neck, tears running down his cheeks. By that time the rest of the boys were present, and the major said to me: 'Bill, do you really mean what you say' [that he would stick to the major on the river]? I told him that I did, and he said that if he had one man that would stay with him he would not abandon the river. I just simply said that he did not know his party."

He certainly had reason, with three men about to desert, to believe that others might. The other five were true, however, and it is only just to say that one of the deserters would have stood true, also, had it not been for his brother, who was determined to leave. They all then drank coffee together. The boat party went on, the deserters climbed out on the north, each party thinking the other party doomed. The deserters would have fared well enough and would have arrived at the Mormon settlements had it not been that the Shewits Indians on the plateau believed, or said later that they believed, that these were miners who had committed depredations on a tribe to the south. The men were therefore killed not far from Mount Dellenbaugh, and their clothing, rifles, etc., appropriated.

The place on the river where they left the major is now known as Separation Rapid. The day after they departed Powell and "the faithful five" reached the end of the great chasm without serious mishap. The names of the three deserters have justly been omitted from the roll of honor inscribed on the Powell Monument.

Powell's journal of this famous voyage is one of the most fascinating tales of adventure in literature. A large part of his meager notes having been lost, Powell repeated the trip on a more extensive basis in 1871 and 1872, obtaining then the data on which his report was based. There is no account of this second vital expedition except in *A Canyon Voyage*, by Frederick S. Dellenbaugh, a member of that party. Afterwards Powell became director of the United States Geological Survey and of the Bureau of Ethnology, which he established.

#### THE CANYON AS A RESORT

The Grand Canyon is very much more than a wonder place or a scientific museum on a titanic scale. It is a pleasure resort of the first order. It may be visited any day in the year. The railroad to the south rim is always running and the hotel always open. When most other resorts are closed the Grand Canyon is easily accessible.

During the winter snow falls in the pine forest along the rim; but, though the upper portions are snow-covered, the trails into the canyon are open and safe, for more moderate weather prevails in the canyon.

The weather in July and August is warm, but not hot on the rim; the altitude takes care of that. There are cool mornings, evenings, and nights, no matter how warm it may be at midday.

Arizona is a land of sunshine; the air is dry and the winds are light. While spring and fall are more attractive than midsummer or midwinter, each season has its special charm. From December to March, snow is more or less abundant on the rim and a few hundred feet down the trail. Camping-out parties must then confine themselves to the inner canyon, which is more comfortable than the rim areas.

### THE NORTH RIM OF THE CANYON

There is a remarkable difference between the north and south rims. The north rim, a thousand feet higher, is a colder country, clothed with thick, lusty forests of spruce, pine, fir, and quaking aspen, with no suggestions of the desert. Springs are found here; and deer are more plentiful than in any other area in the United States, as many as 1,000 having been counted along the auto road in one evening. It is a region soon to be used by hundreds of campers.

The views from the north rim are markedly different. One there sees close at hand the vast temples which form the background of the south rim view. One looks down upon them, and beyond them at the distant canyon floor and its gaping gorge which hides the river; and beyond these the south rim rises like a great streaked flat wall, and beyond that again, miles away, the dim blue San Francisco Peaks. It is certainly a spectacle full of sublimity and charm. There are those who, having seen both, consider it the greater. One of these was Dutton, whose description of the view from Point Sublime has become a classic. But there are many strenuous advocates of the superiority of the south rim view, which displays close at hand the detail of the mighty chasm of the Colorado, and views the monster temples at parade, far enough away to see them in full perspective.

The trail trip to the north rim is now perfectly feasible by the completion of the Kaibab Suspension Bridge over the Colorado River and the reconstruction of the Kaibab Trail up Bright Angel Canyon. It is about 32 miles from Grand Canyon to the Wylie Way Camp on Bright Angel Point. About 12 miles are made the first day, stopping overnight at Phantom Ranch; the remaining 20 miles are covered the second day.

Auto transportation and rates for reaching this side of the park from the north are given on page 63.



## TABLES OF DISTANCES AND ALTITUDES

## ROADS

## HERMIT RIM ROAD, GRAND CANYON TO HEAD OF HERMIT TRAIL AND HERMIT REST—7.9 MILES

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Hermit Trail		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	7.9	6,875	Administrative headquarters of Grand Canyon National Park.
Road to Havasupai.....	.5	7.4	6,820	To Havasupai Indian Reservation, 47 miles distant.
Trail to Hermit Rest.....	1.4	6.5	6,960	By foot or horseback to Hermit Rest or Hermit Trail, 5 miles.
Powell Memorial.....	2.0	5.9	7,050	Memorial to Maj. John Wesley Powell, Sentinel Point.
Hopi Point.....	2.2	5.7	7,071	Fine view. Sometimes called Sunset Point.
Mohave Point.....	3.0	4.9	7,000	View of canyon and river.
The Abyss.....	4.2	3.7	6,850	Looking down from the Great Mohave Wall.
Cut-off to Hermit Rest.....	5.2	2.7	6,900	Old road to Hermit Rest.
Piñon Cove.....	6.0	1.9	6,750	Grove of piñon pines.
Pima Point.....	6.7	1.2	6,750	Fine view of canyon and river, with Hermit Creek Cabins visible beneath.
Cut-off to Grand Canyon.....	7.4	.5	6,700	Old road to Grand Canyon, 5 miles.
Hermit Rest.....	7.6	.3	6,690	Interesting Harvey rest house. Light refreshments.
Trail to Natural Bridges.....	7.6	.3	6,680	Natural Bridges in limestone, $\frac{1}{4}$ mile.
Head of Hermit Trail.....	7.9	0	6,665	7.5 miles to Hermit Creek Cabins.

## GRAND CANYON, GRAND VIEW, DESERT VIEW ROAD—GRAND CANYON TO DESERT VIEW—30 MILES

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Desert View		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	30.00	6,875	Administrative headquarters of Grand Canyon National Park.
Road to Yavapai Point.....	.60	29.40	6,940	View of canyon and river. Kaibab Suspension Bridge visible beneath.
Motor crossing.....	.90	29.10	6,975	Cattle guard in drift fence that encircles headquarters district.
Trail to Yaki Point.....	1.50	28.50	6,925	Trail through forest. Sometimes called Cremation Point.
Moqui Trail.....	2.50	27.50	6,900	Saddle-horse trail to Grand View.
Rowe Well Road.....	3.50	26.50	6,925	Old road to Rowe Well.
Trail to Shoshone Point.....	4.00	26.00	6,800	Locally called Inspiration Point, 4.5 miles.
Williams Road Junction.....	4.30	25.70	6,850	Checking station. Take right-hand road to Malne, Williams, and Flagstaff.
Long Jim Canyon.....	5.30	24.70	6,811	A typical surface canyon or wash.
Long Jim tool cache.....	6.10	23.90	6,880	A cache for tools used by rangers in fighting fire. Telephone.
Long Jim Canyon, east end.....	8.60	21.40	7,175	
Thor's Hammer.....	10.10	19.90		Notable columns of limestone.
To Grand View Point.....	12.25	17.75	7,406	Magnificent view of canyon, Painted Desert, Navajo Mountain, river, etc.
Grand View Hotel.....	13.10	16.90	7,500	Old stage hotel. Not in operation for many years. Highest point on south rim.
Grand View Camp Grounds.....	13.25	16.75	7,490	Public camp grounds and ranger station, season May to October.
Hance ranch.....	14.20	15.80		Old home of Capt. John Hance, first settler on rim of Grand Canyon.
Park boundary.....	14.80	15.20		Grand View entrance to the park.
Flagstaff road.....	15.70	14.30		Old stage road from Flagstaff. Abandoned.
Park boundary.....	25.75	4.25	7,080	Desert View entrance to the park.
Lipan Point.....	27.90	2.10	7,359	Locally called Lincoln Point.
Desert View.....	30.00	0	7,450	Navajo Point. Fine view of Marble Canyon, Painted Desert, Navajo Mountain, etc.

## GRAND CANYON, ROWES RANCH, TUBA CITY, MOENKOPI, FLAGSTAFF

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Tuba City		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	77.4	-----	One of the first settlers in Grand Canyon. The first view of the Painted Desert. Steel suspension bridge over Little Colorado. Headquarters, Navajo Indian agent. Hopi Village.
Rowes Ranch.....	27.7	49.7	-----	
Waterloo Hill.....	32.9	44.5	-----	
Cameron Bridge.....	54.6	22.8	-----	
Tuba City.....	77.4	0	-----	
Moenkopi via Tuba City.....	80.9	-----	-----	
Cameron Bridge to Flagstaff.....	58	-----	-----	
Flagstaff to Grand Canyon via Maine.....	84	-----	-----	

## TOPOCOBYA ROAD, GRAND CANYON TO HILL TOP—HEAD OF HAVASU TRAIL VIA ROWE WELL—33.2 MILES

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Hill Top		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	33.20	6,875	Administrative headquarters of Grand Canyon National Park. Road to Hill Top and Topocobya Spring the head of Havasu Trail, 15 miles to Havasupai Indian Reservation.
Topocobya Road.....	.55	32.65	6,820	
Trail to Hermit Rest.....	.70	32.50	6,800	Road to Rowe Well. To Hermit Trail, Hermit Basin, and Hermit Rest. Trail to Dripping Springs. Fine spring and good trail, 3 miles. Fire tools.
Drift fence.....	1.95	31.25	-----	
Railroad crossing.....	2.35	30.85	6,650	
Old road to Grand View.....	2.65	30.55	6,625	
Railroad crossing.....	2.95	30.25	-----	
Rowe Well Road.....	3.10	30.10	6,600	
Waldron Trail.....	6.25	26.95	6,462	
Dripping Springs tool cache.....	7.00	26.20	6,375	
Bench mark, United States Geological Survey.....	9.90	23.30	6,340	
Road to Bass Camp.....	12.50	20.70	6,235	
Ranch.....	14.00	19.20	-----	United States Geological Survey bench mark. Road to Havasupai Point.
Section corner 10 and 11.....	15.80	17.40	-----	
Road to Bass Camp.....	17.60	15.60	6,154	United States Geological Survey bench mark.
Bench mark, United States Geological Survey.....	20.00	13.20	6,074	
Supai drift fence.....	21.40	11.80	6,061	United States Geological Survey bench mark. Indian pasture.
Top of mesa.....	27.80	5.40	-----	
Top of grade.....	28.20	5.00	-----	Reservation storehouse at head of trail. Water.
Bench mark in Lee's Canyon.....	29.70	3.50	5,771	
Bench mark.....	31.30	1.90	5,772	
Supai warehouse.....	33.20	0	-----	
Topocobya Spring.....	33.70	.50	-----	

## GRAND CANYON NATIONAL PARK

## APPROACH ROAD, GRAND CANYON TO NATIONAL OLD TRAILS ROAD AND SANTA FE RAILROAD AT MAINE

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Maine, Ariz.		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	64.00	6,875	Administrative headquarters of Grand Canyon National Park. Hotels, information, etc.
Road to Yavapai Point..	.65	63.35	6,890	Fine view of canyon. Kaibab Suspension Bridge visible beneath.
Motor crossing.....	.90	63.10	-----	Cattle-proof crossing through drift fence.
Park entrance checking station.	5.50	58.50	6,718	South entrance to Grand Canyon National Park. Ranger station. All cars stop and register.
Rain tank.....	9.90	54.10	-----	Earth tank for cattle.
Fork of road.....	10.00	54.00	-----	Left-hand fork to Maine, Ariz.
Red Butte.....	20.00	44.00	-----	
Mortz Lake.....	49.00	15.00	-----	
Maine.....	64.00	0	-----	Junction with Old Trails road.
Williams.....	79.00	15.00	6,762	Nearest shopping point to Grand Canyon.
Flagstaff.....	84.00	20.00	6,896	County seat of Coconino County.

## NORTH RIM GRAND CANYON NATIONAL PARK TO ZION NATIONAL PARK—170.9 MILES

Place	Distance from—		Altitude	Remarks
	North rim	Zion Park		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Wylie Way Camp.....	0	170.90	8,250	Accommodations for travelers on Bright Angel Point, north rim of Grand Canyon.
North rim ranger station.	2.00	168.90	8,100	National Park Service ranger station. Headquarters for north rim.
North entrance Grand Canyon National Park.	4.20	166.70	8,450	North entrance to Grand Canyon National Park.
De Motte Park.....	14.40	156.60	8,900	A typical park or meadow. Range of mule, deer.
Pleasant Valley.....	22.40	148.50	8,500	
Crane Lake.....	24.40	146.50	-----	
East Lake.....	26.90	144.00	-----	
Jacob's Lake lookout station.	29.20	141.70	-----	Range of white-tailed squirrels.
Jacob's Lake ranger station, Forest Service.	42.40	128.50	-----	Forest Service ranger station.
Drift fence.....	45.40	125.50	-----	Boundary line of proposed President's Forest.
Fredonia.....	75.40	95.50	-----	Only post office in Arizona north of the Grand Canyon.
Kanab.....	82.40	102.50	4,920	Most southerly town in Utah. Good hotel.
Pipe Spring.....	89.90	81.00	-----	Old Mormon fort. Spring formerly came out of the solid rock in the stockade.
Cedar Mountain.....	99.90	71.00	-----	
House, Antelope Springs.	121.90	49.00	-----	
Red Creek.....	125.40	45.50	-----	
Short Creek.....	135.90	35.00	-----	Sheep corrals.
Top Hurricane fault.....	141.40	29.50	-----	Great Hurricane fault.
Hurricane.....	142.40	28.50	-----	Utah's Dixie. Population, 1,021.
Zion National Park.....	170.90	0	-----	Yosemite done in oils.

## APPROACH ROAD, GRAND CANYON TO NATIONAL OLD TRAILS HIGHWAY AND SANTA FE RAILROAD AT WILLIAMS

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Williams		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	64. 00	-----	Administrative headquarters of Grand Canyon National Park. Hotels, information, etc.
Road to Yavapai Point..	. 65	63. 35	-----	Fine view of canyon. Kaibab Suspension Bridge and Phantom Ranch visible beneath.
Motor crossing.....	. 90	63. 10	-----	Cattle-proof crossing through drift fence.
Park entrance checking station.	5. 50	58. 50	-----	South entrance to Grand Canyon National Park. Ranger station. All cars stop and register.
Rain tank.....	9. 90	54. 10	-----	Earth tank for cattle.
Fork of road.....	10. 00	54. 00	-----	Right-hand fork for Williams.
Anita.....	22. 00	42. 00	-----	Stock tanks and sheep corral.
Red Lake.....	56. 00	8. 00	-----	Small lake and junction with Spring Valley road—connection of Maine with Williams road.
Williams.....	64. 00	0	-----	Nearest shopping point to Grand Canyon.

## TRAILS

## GRAND CANYON TO NORTH RIM RANGER STATION VIA KAIBAB TRAIL—30 MILES

Place	Distance from—		Altitude	Remarks
	Grand Canyon	North rim		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	30. 00	6, 875	Administrative headquarters of Grand Canyon National Park. Hotels, etc.
Head of Kaibab Trail....	3. 50	26. 50	-----	
Kaibab Suspension Bridge.	11. 00	19. 00	2, 500	Built by National Park Service in 1921. Only bridge across Colorado for several hundred miles.
Phantom Ranch.....	11. 50	18. 50	2, 550	Interesting new Harvey Camp, stone cottages. Well located for hiking, climbing, etc.
Phantom Creek.....	13. 00	17. 00	2, 950	A deep canyon coming in from the west.
Head of Box Canyon.....	15. 00	15. 00	3, 350	Near end of granite in Bright Angel Creek.
Ribbon Falls.....	17. 00	13. 00	3, 750	Very beautiful falls where creek drops over red wall.
Wall Creek.....	17. 80	12. 20	3, 850	Creek coming from the right. Old name is Beaver Creek.
Transept Creek.....	19. 00	11. 00	4, 150	The Transept on left.
Roaring Springs.....	21. 00	9. 00	4, 750	Large springs gushing out on left.
Last Crossing.....	22. 00	8. 00	5, 050	Last crossing of Bright Angel Creek. Fill your canteens.
Troughs Spring.....	24. 00	6. 00	6, 325	Spring on top of red wall.
Topping-out point.....	26. 00	4. 00	8, 250	End of climb. North rim.
DeWolley Cabin.....	29. 00	1. 00	8, 200	Old ranger cabin. Headquarters of saddle-horse concessions.
North rim ranger station.	30. 00	0	8, 150	Ranger headquarters on north rim. Register. Information service.
Wylie Way Camp.....	32. 00	0	8, 250	Accommodations for north rim visitors.

## GRAND CANYON TO HERMIT CREEK CABINS VIA BRIGHT ANGEL AND TONTO TRAILS—21 MILES

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Hermit Cabins		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	21.00	6,875	Administrative headquarters of Grand Canyon National Park. Hotels, post office, etc.
Jacob's Ladder.....	2.50	18.50	4,850	Trail through blue limestone, 550 feet.
Indian Gardens.....	3.70	17.30	3,876	Grove of cottonwood trees watered by Garden Creek. Former home of Indians.
Tonto Trail.....	4.30	16.70	3,750	Right-hand fork to Colorado River and Camp Roosevelt.
Plateau Point.....	4.70	16.30	3,750	Plateau Point, 1 mile.
Battleship.....	5.50	15.50	3,700	Battleship on left.
Horn Creek.....	7.20	13.80	3,550	
Dana Butte.....	9.00	12.00	3,650	View of gorge, river, etc.
The Inferno.....	11.50	9.50	3,400	Locally called Hell's Half Acre.
Salt Creek.....	12.50	8.70	3,440	
The Alligator.....	14.00	7.00	3,450	Butte called Alligator on left.
Cedar Spring.....	15.00	6.00	3,400	Good water.
Monument Creek.....	17.50	3.50	3,200	Very scenic.
Hermit Cabins.....	21.00	0	3,050	Fine Fred Harvey camp.
Colorado River, foot Hermit Trail.....	23.00	2.00	2,440	Hermit Rapids.

## GRAND CANYON TO HERMIT CREEK CABINS THROUGH WOODS AND HERMIT TRAIL—12 MILES

Place	Distance from—		Altitude	Remarks
	Grand Canyon	Hermit Cabins		
	<i>Miles</i>	<i>Miles</i>	<i>Feet</i>	
Grand Canyon.....	0	12.00	6,875	Administrative headquarters of Grand Canyon National Park.
Hermit Trail.....	5.00	7.00	6,665	Harvey corral.
Marshal Foch Rock.....	5.30	6.70	6,675	Rock where Marshal Foch sat for half hour or more smoking his pipe December, 1921.
Waldron Trail.....	6.00	6.00	5,270	Trail to Rowe Well Road.
Dripping Springs Trail.....	5.50	6.50	5,260	Trail to Dripping Springs and Boucher Trail.
Santa Maria Spring.....	7.00	5.00	5,250	Good water. Rest pavilion.
Four Mile Spring.....	9.00	3.00	4,550	Good water.
Cathedral Stairs.....	10.00	2.00	4,530	
Hermit Cabins.....	12.00	0	3,050	Fine Harvey camp.

## SHORT WALKS NEAR GRAND CANYON

Place	Distance and direction from El Tovar	By—	Altitude	Remarks
	<i>Miles</i>		<i>Feet</i>	
The Lookout Telescope.....	0.3 west.....	Grand Canyon Rim Trail.	6,866	Observatory. Curios on sale. Pictures.
Kolb Bros. Studio.....	0.4 west.....	do.....	6,850	Studio. Grand Canyon moving picture lecture daily of voyage through canyon.
Pictograph Rock, Hole in Wall.....	0.6 west.....	Grand Canyon Rim Trail and foot trail.		Interesting foot trail from Bright Angel Trail. Ancient Indian pictographs.
Picnic Rock.....	0.8 west.....	Rim foot trail.....	6,870	Walk through woods. Fine view of San Francisco peaks.
Maricopa Point.....	1.8 west.....	Grand Canyon Rim foot trail.	7,000	Fine view of canyon.
The Battleship.....	2.5 north.....	Bright Angel Trail.	5,867	Rough foot trail from Bright Angel Trail.
Indian Gardens.....	3.7 north.....	do.....	3,876	Fine creek of good water.
Independent Store.....	0.3 east.....	Grand Canyon Rim foot trail.	6,880	Indian handwork and curios.
Grandeur Point.....	1.3 east.....	do.....	7,050	Fine view. Kaibab Suspension Bridge visible.
Yavapai Point.....	1.5 east.....	do.....		
Rowe Well.....	3.6 southwest.....	Rowe Well Road.....	6,681	Good water.

## HOW LONG TO STAY

*Time required.*—While one ought to remain a week or two, a stop-over of three or four days from the transcontinental trip will be quite satisfactory. The Hermit Loop overnight trip, down one trail and up another, requires two days and a night, or more time may be taken and include Phantom Ranch. One day should be devoted to an auto ride along the Hermit Rim Road, and by auto to Grand View and Desert View. Another day go down Bright Angel Trail and back. A fourth day spent in short walks to near-by points or on horseback will enable visitors to get more intimate views.

The several trips mentioned above are all well worth while, and the high plateau above the rim affords many delightful horseback or hiking trips.

The north rim offers the best opportunity for camping out during the summer months. The high altitude makes the weather uniformly cool, while the magnificent forest through which roam thousands of deer creates a delightful setting. There are a number of springs, and the water supply is not a serious problem.

The National Park Service of the Department of the Interior recommends to the traveling public that stopovers of as long duration as practicable be planned at points within the park; that Grand Canyon National Park be regarded not alone as a region which may be glimpsed on a hurried trip but also as a vacation playground for rest and recreation.

## WHAT TO WEAR

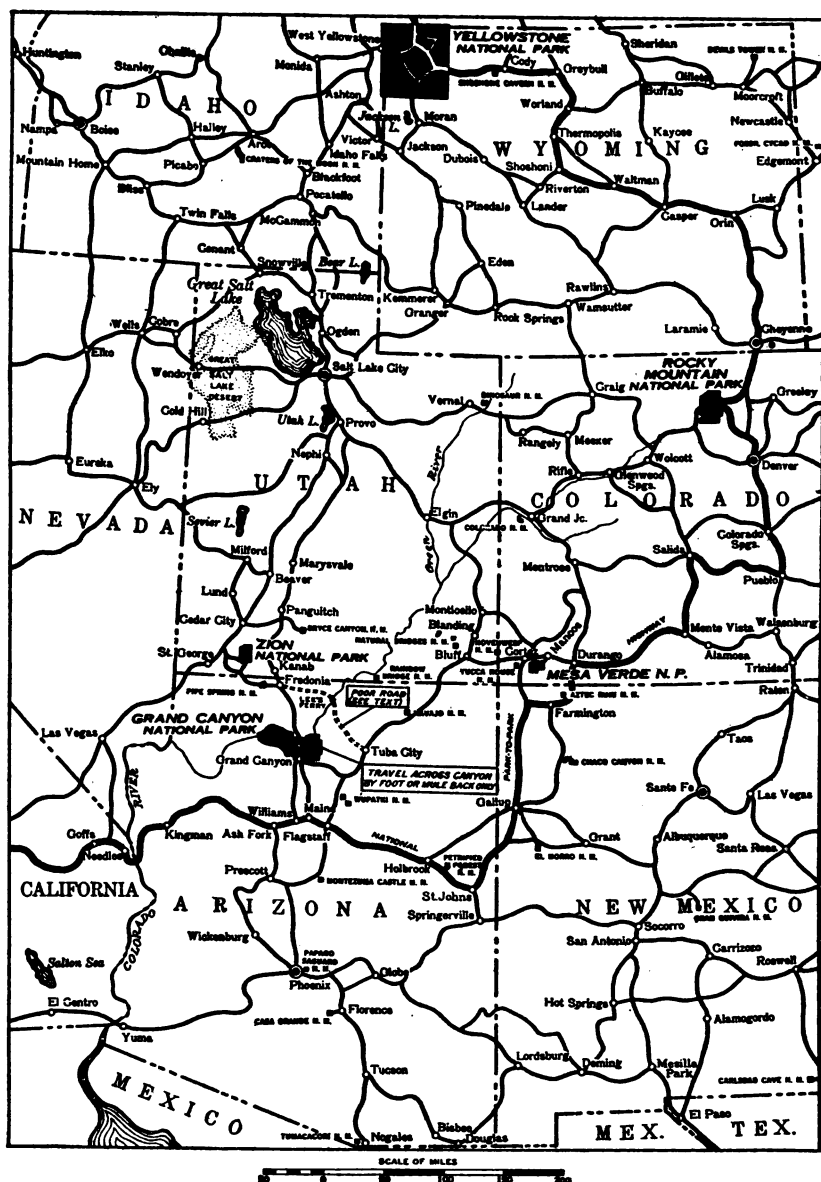
If much tramping is done, stout, thick, hobnailed shoes should be provided. Ladies will find that short walking skirts, knickers, or riding breeches are a convenience; riding trousers are preferable, but not essential, for the horseback journey down the zigzag trails. Traveling caps and (in summer) broad-brimmed straw hats are useful adjuncts. Otherwise ordinary clothing will suffice. Riding trousers, divided skirts, and straw hats may be rented at El Tovar Hotel.

## ADMINISTRATION

Grand Canyon National Park is under the jurisdiction of the Director, National Park Service, Department of the Interior, Washington, D. C. The park superintendent, Miner R. Tillotson, is located at Grand Canyon, Ariz., and information, maps, and pamphlets may be obtained at the office, where visitors are cordially welcomed. The office of the superintendent is 100 yards east of the Grand Canyon Railway station.

The park, El Tovar Hotel, the Bright Angel cottages, and the cabins at Hermit Creek and Phantom Ranch at the mouth of Bright

Angel Creek are always open. Accommodations may be had at Wylie Way Camp on the north rim during the summer months only.



MAP SHOWING PRINCIPAL AUTOMOBILE ROUTES

## HOW TO REACH THE PARK

### BY RAIL

The Grand Canyon National Park is directly reached by a branch line of the Atchison, Topeka & Santa Fe Railway extending 64 miles

northward from Williams, Ariz. On certain trains through standard Pullman cars are operated to and from Grand Canyon station. Passengers using other trains and stopping over at Williams will find excellent accommodations at the Fray Marcos, station hotel.

Stop-overs, not to exceed 10 days, are granted at Williams on all classes of railroad tickets for a visit to the canyon. Limits of through railroad tickets will be extended if necessary by agent at Grand Canyon. Through tickets may include side-trip coupons, Williams to Grand Canyon and return, at an additional charge of \$9.12.

Round-trip excursion tickets at reduced fares are on sale daily at practically all stations in the United States and Canada to Grand Canyon as a destination.

Baggage may be checked through to Grand Canyon station, if required. Passengers making brief side trips to Grand Canyon may check baggage to Williams only or through to destination. Certain regulations for free storage of baggage for Grand Canyon passengers are in effect.

For further information regarding railroad fares, service, etc., apply to railroad ticket agents, or address:

W. J. Black, passenger traffic manager, Atchison, Topeka & Santa Fe Railway system, Chicago, Ill.

J. B. Duffy, general passenger agent, Atchison, Topeka & Santa Fe Railway system, Coast Lines, Los Angeles, Calif.

The Union Pacific delivers tourists for the north rim at Cedar City, Utah, and the Denver & Rio Grande Western, at Marysville. The former is approximately 175 miles from the Grand Canyon, and the latter approximately 217 miles. Regular stage service is maintained from both these points to the Grand Canyon National Park.

Complete information concerning these trips can be had from:

W. S. Basinger, passenger traffic manager, Union Pacific system, Omaha, Nebr.

F. A. Wadleigh, passenger traffic manager, Denver & Rio Grande Western, Denver, Colo.

Parties making the trip from either of these places to the canyon can make an interesting trip covering Bryce Canyon, Cedar Breaks, and Zion National Park.

If parties desire, they can make the trip from the north, taking in all these features, cross the canyon and continue their trip on the Santa Fe Railroad. This can also be reversed, entering the park via the Santa Fe, crossing the canyon to the north rim, thence by motor bus to either of the two railways mentioned above, where the trip may be continued. Arrangements for such a trip should be made at the time tickets are purchased.



## BY AUTOMOBILE

Automobile tourists may leave the National Old Trails Highway, which is the main east and west highway through Arizona, at Maine or Williams. In wet weather, the latter road is better.

*Flagstaff.*—It is 98 miles from Flagstaff to Grand Canyon via Williams and 84 miles via Maine. At times in early spring, during summer rains, or late fall it is advisable to inquire at Flagstaff or Williams as to road conditions. The Maine Road traverses more beautiful forests and is more scenic than the Williams Road, but is apt to be in worse condition, depending upon the amount of moisture that has fallen. The town of Flagstaff is located in the heart of the San Francisco uplift and has good stores and garage facilities. In this vicinity are prehistoric cliff dwellings, extinct craters, volcanic cones, lava beds, and ice caves. The summit of Humphreys Peak, one of the peaks forming the San Francisco Mountains, is 12,750 feet above sea level.

*Williams.*—Williams, 64 miles from Grand Canyon, is 34 miles west of Flagstaff and 15 miles west of Maine, on the main east and west highway through Arizona. It is the nearest shopping center, and its stores and garages carry a good stock of everything necessary to the automobile tourist. Williams is a center for a number of interesting side trips.

The route from Williams passes Bill Williams Mountain (elevation 9,264 feet, which has seven distinct crests), Red Lake, Howard Lake, and Anita, running along the line of the Grand Canyon Railway. No supplies can be purchased between Williams or Maine and Grand Canyon, except at a point 10 miles south of Grand Canyon.

## NORTH RIM—GRAND CANYON NATIONAL PARK

Autoists who desire to travel good roads only in driving from the south rim to the north rim must take a long detour through California, Nevada, Utah, and Arizona, or if the trip is made in the other direction must detour through New Mexico, Colorado, Utah, and back into Arizona. There is a poor road via Lee's Ferry which reduces the distance to 238 miles. None but experienced drivers over bad roads should attempt this trip. Those who undertake it must carry a reserve supply of gasoline and oil.

## ROAD SIGN INFORMATION

As fast as the funds are available for that purpose the National Park Service is having standard signs placed along the roads and trails of this park for the information and guidance of the motorists and other visitors that use the park roads and trails.

These signs, in general, consist of information signs, direction signs, elevation signs, and name signs, all of which are of rectangular



MAP SHOWING PRINCIPAL RAILROAD ROUTES TO GRAND CANYON, YELLOWSTONE, ROCKY MOUNTAIN, MESA VERDE, AND ZION NATIONAL PARKS

shape and mounted horizontally; and milepost signs, rectangular in shape but mounted diagonally, all of which usually have dark-green background and white letters or vice versa; and danger or

cautionary signs, most of which are circular in shape and usually have red background and white letters; and comfort station, lava tory, and similar signs, triangular in shape, having dark-green background and white letters. These last signs are so mounted that when pointing down they designate ladies' accommodations and when pointing upward they designate men's accommodations.

The text on the standard road sign is in sufficiently large type to ordinarily permit their being read by a motorist when traveling at suitable speed; however, as an additional safeguard, the motorist must always immediately slow down or stop or otherwise fully comply with the injunctions shown on the circular red cautionary signs.

Because of lack of funds, it has not been possible to place cautionary signs at all hazardous places in the roads; therefore, the motorist must always have his car under full control, keep to the right, and sound horn when on curves that are blind, and not exceed the speed limit, which is 25 miles per hour on straight, fairly level road and 12 miles per hour on curves, narrow, or steep descending sections of road.

#### AUTOMOBILE SUPPLIES

At Grand Canyon village is an excellent garage under the management of Fred Harvey. Storage or repair service, as well as gasoline and oil, may be procured here.

#### GROCERIES

The Babbitt Bros. Trading Co.'s general store at Grand Canyon carries a full line of groceries and campers' supplies.

#### WATER

A supply of water for drinking purposes and for radiation, sufficient to last to Grand Canyon, should be brought from Williams or Flagstaff. Campers may obtain water on the camp ground at Grand Canyon free of charge.

#### PUBLIC UTILITIES AND CONVENIENCES, SOUTH RIM

##### POST OFFICE

The post office (third class), which does all kinds of postal business, is situated near the Hermit Rim Road, about 400 yards west of the railroad depot. It is open from 8 a. m. to 6 p. m. Mail trains arrive at 8.20 a. m. and 6.30 p. m. and leave at 12.45 p. m. and 8 p. m.

##### TELEGRAPH

The Western Union offices at the railroad depot are open from 7.30 a. m. to 8 p. m. and at El Tovar Hotel from 8 a. m. to 12 m. and from 4 p. m. to 8 p. m.





### TELEPHONE

There is telephone connections between El Tovar Hotel, National Park Service office, ranger stations, Hermit Cabins, Phantom Ranch, Havasupai Indian Reservation, Desert View, and the north rim. There is also telephone connection to points outside the park.

### LECTURE

Every evening at 8 o'clock a lecture, illustrated with moving pictures and slides, is given on Grand Canyon National Park and the surrounding country. Admission to this lecture, which is given in the music room at El Tovar Hotel, is free, and all visitors to the park are invited to attend.

### NATIONAL PARK SERVICE STATIONS

There are ranger stations or camps where assistance and shelter may in emergency be obtained at places here named. These may be unoccupied, and it is well to inquire at the office of the superintendent.

Hermit Basin, Pipe Creek on Tonto Trail 2 miles east of Indian Garden, Grand View Public Camp, Rowe Well, Pasture Wash, and Navahopi Junction ranger stations, the ranger station on the north rim, and Grand Canyon.

### MEDICAL SERVICE

There is a doctor of long experience in the park and a trained nurse at El Tovar Hotel. The nearest hospital is at Williams, Ariz. There is a hospital at Flagstaff, Ariz.

### PETRIFIED FOREST NATIONAL MONUMENT

Tourists visiting Grand Canyon National Park either by rail or by automobile should plan a stop-over at the Petrified Forest National Monument.

There are three groups of petrified trees in this reservation. The first forest lies 6 miles south of Adamana, Ariz., a station on the main line of the Atchison, Topeka & Santa Fe Railway, and the second forest is  $2\frac{1}{2}$  miles south of it. The third or Rainbow Forest lies 13 miles south of Adamana and 18 miles southeast of Holbrook, Ariz. It is best to approach the third forest from Holbrook; the other two are best reached from Adamana.

This area is of great interest because of the abundance of petrified coniferous trees which lie scattered about in great profusion. None is standing as in the Yellowstone National Park. These trees probably at one time grew beside an inland sea; after falling they became water-logged and during the decomposition the cell structure was entirely replaced by silica derived from sandstone in the

surrounding land. Over a greater part of the entire area trees are scattered in all conceivable positions and in fragments of all sizes.

In the first forest may be seen the well-known natural bridge, consisting of a large petrified tree trunk 60 feet long spanning a canyon 45 feet wide, and forming a foot bridge over which anyone may easily pass. The trunks in the Rainbow Forest are larger than elsewhere, more numerous, and less broken. Several hundred entire trees are found here, some of which are more than 200 feet long. The color of the wood is deeper and more striking than in the other localities.

"There is no other petrified forest," says Prof. Lester F. Ward, "in which the wood assumes so many varied and interesting forms and colors, and it is these that present the chief attraction for the general public. The state of mineralization in which much of this wood exists almost places them among the gems or precious stones. Not only are chalcedony, opals, and agates found among them, but many approach the condition of jasper and onyx. The degree of hardness attained by them is such that they are said to make an excellent quality of emery."

#### ADMINISTRATION

Petrified Forest National Monument is under the jurisdiction of the Director, National Park Service, Department of the Interior, Washington, D. C., and is in charge of a custodian residing in the third forest. At this place has been built a small museum housing a wonderful display of polished petrified wood, also a fine collection of the more rare specimens.

*Notice:* It is unlawful to take specimens of petrified wood, of *any size whatsoever*, from the reserved area.

#### COSTS OF TRIPS AND HOTEL ACCOMMODATIONS

Adamana is a small place, consisting chiefly of hotel, post office, railway station, and a small store. The Forest Hotel has electric lights, sanitary plumbing, with hot and cold water. Rates: \$5.50 per day, American plan; meals only \$1 each; 35 guests can be accommodated in summer.

From Adamana the following auto trips are made: (1) To the first and second forests and the natural bridge; (2) to the third or Rainbow Forest; (3) to the Blue Forest; (4) to the Painted Desert and the North Sigillaria Forest.

#### RATES

The round-trip fare from Adamana for trips 1, 3, and 4 is \$5 for one person, \$3 per capita for two persons, and \$2.50 per capita for three or more; round-trip fare for trip 2 is \$10, \$6, and 5, respectively.

About one-half day is allotted to each trip, although three trips can be made in a day.

Holbrook, the county seat of Navajo County, has satisfactory hotel accommodations, with prices about the same as at Adamana. Round-trip fare from Holbrook to third or Rainbow Forest is \$7 for one passenger, \$3.50 each for two passengers, \$2.25 each for three or more passengers.

The Petrified Forest may be visited from Adamana any day in the year, except when high waters make the streams temporarily impassable.

#### STOP-OVER ARRANGEMENTS

Stop-overs are allowed at Adamana, not to exceed 10 days, on all one-way railroad tickets, also on round-trip railroad tickets within their limits.

To obtain stop-overs on one-way railroad tickets, notify train conductor and deposit tickets with agent immediately after arrival; on round-trip tickets notify train conductors.

#### RULES AND REGULATIONS

(Approved March 5, 1927, 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 Grand Canyon National Park are hereby established and made public pursuant to authority conferred by the act of Congress approved August 25, 1916 (39 Stat. 536), as amended June 2, 1920 (41 Stat. 732), and the act of February 26, 1919 (40 Stat. 1175):

1. *Preservation of natural features and curiosities.*—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.*—No camp shall be made along roads except at designated localities. Blankets, clothing, hammocks, or any other article likely to frighten teams shall not be hung near the road.

Many successive parties camp on the same sites during the season; therefore camp grounds shall be thoroughly cleaned before they are abandoned. Tin cans, bottles, cast-off clothing, and all other débris shall be placed in garbage cans or pits provided for the purpose. When camps are made in unfrequented localities where pits or cans may not be provided, all refuse shall be burned or hidden where it will not be offensive to the eye.



Campers may use only dead or fallen timber for fuel.

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 beds 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 animal in the park 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, 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 the responsibility of custody of any property for the convenience of visitors.

5. *Fishing*.—Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line, or for merchandise or profit, is prohibited. Fishing in particular water may be suspended, or the number of fish that may be taken by one person in any one day from the various streams or lakes may be regulated by the superintendent. All fish hooked less than 6 inches long shall be carefully handled with moist hands and returned at once to the water if not seriously injured. Fish retained shall be killed. Ten fish shall constitute the limit for a day's catch.

6. *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 through the superintendent of the park.

7. *Cameras.*—Still and motion picture cameras may be freely used in the park for general scenic purposes. For the filming of motion pictures requiring the use of artificial or special settings, or involving the performance of a professional cast, permission must first be obtained 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 on Government lands within the park, excepting such as the superintendent deems necessary for the convenience and guidance of the public.

10. *Mining.*—The location of mining claims on Government lands in the park is permitted only with the prior approval of the Secretary of the Interior.

11. *Patented lands.*—Owners of patented lands within the park limits are entitled to the full use and enjoyment thereof; the boundaries of such lands, however, shall be determined and marked and defined so that they may be readily distinguished from the park lands. While no limitations or conditions are imposed upon the use of private lands so long as such use does not interfere with or injure the park, private owners shall provide against trespass by their livestock upon the park lands, and all trespasses committed will be punished to the full extent of the law. Stock may be taken over the park lands to patented private lands with the written permission and under the supervision of the superintendent, but such permission and supervision are not required when access to such private lands is had wholly over roads or lands not owned or controlled by the United States.

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

13. *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.

14. *Dogs and cats.*—Cats are not permitted on the Government lands in the park and dogs only to those persons passing through the park to the territory beyond, in which instances they shall be kept tied while crossing the park.

15. *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.

16. *Travel on trails.*—Pedestrians on trails, when saddle or pack animals are passing them, shall remain quiet until the animals have passed.

Persons traveling on the trails of the park either on foot or on saddle animals shall not make short cuts but shall confine themselves to the main trails.

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

(b) 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.

(c) 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.

18. *Miscellaneous.*—(a) Campers and others shall not wash clothing or cooking utensils in the waters of the park, or in any way pollute them, or bathe in any of the streams near the regularly traveled thoroughfares in the park without suitable bathing clothes.

(b) 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.

(c) 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.

(d) 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.

19. *Fines and penalties.*—Persons who render themselves obnoxious by disorderly conduct or bad behavior shall be subjected to the punishment hereinafter prescribed for violation of the foregoing regulations and 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.

20. *Lost and found articles.*—Persons finding lost articles should deposit them at the nearest ranger station, leaving their own names and addresses, so that if not claimed by owners within 60 days, articles may be turned over to those who found them.

#### AUTOMOBILE AND MOTOR CYCLE REGULATIONS

Pursuant to authority conferred by the act of Congress approved August 25, 1916 (39 Stat. 535), as amended June 2, 1920 (41 Stat. 732), and the act of February 26, 1919 (40 Stat. 1175), the following regulations covering the admission of automobiles and motor cycles into the Grand Canyon National Park are hereby established and made public:

1. *Entrances and roads.*—Automobiles and motor cycles may enter and leave the park by, and travel over, any of the roads therein which are open to motor vehicles.

Careful driving is demanded of all persons using the roads. The Government is in no way responsible for any kind of accident.

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), and any person operating an automobile in contravention of the provisions of this regulation will be deemed guilty of its violation.

3. *Motor cycles.*—Motor cycles 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 prescribed by the Director of the National Park Service. Schedules showing prescribed weight limitations for motor

trucks may be seen at the office of the superintendent and at the ranger stations at the park entrances.

5. *Permits*.—For entrance to the park on the south rim a permit shall be secured at the ranger station where the automobile enters, which will entitle the permittee to operate the particular automobile indicated in the permit over any or all of the roads on the south rim; provided, however, that residents of the park operating automobiles therein shall not be required to secure such permit. The permit 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*.—The fee for automobile or motor cycle permit is \$1, payable in cash only. No charge, however, shall be made for such permit issued to residents of Coconino County entering the park in the conduct of their usual occupation or business.

7. *Intoxication*.—No person who is under the influence of intoxicating liquor, and no person who is addicted to the use of narcotic drugs, shall operate or drive a motor vehicle of any kind on the park roads.

8. *Distance apart; gears and brakes*.—Automobiles while in motion shall be not less than 50 yards apart, except for purpose of passing, which is permissible only on comparatively level stretches of roads and on slight grades. All automobiles, except while shifting gears, shall retain their gears constantly enmeshed. The driver of each automobile may be required to satisfy park officers 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. Motor cycles not equipped with brakes in good working order are not permitted to enter the park.

9. *Speeds*.—Automobiles and other vehicles shall be so operated as to be under the safe control of the driver at all times. The speed shall be kept within such limits as may be necessary to avoid accident.

Speed is limited to 12 miles per hour on grades and when rounding sharp curves, and in Grand Canyon village area. On straight, open stretches the speed may be increased to 25 miles per hour.

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 automobiles, motor cycles, 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 road. Headlights shall be dimmed when meeting other automobiles, motor cycles, riding or driving animals, or pedestrians.

12. *Muffler cut-outs*.—Muffler cut-outs shall be closed while approaching or passing riding horses, horse-drawn vehicles, hotels, camps, or checking stations, and in Grand Canyon village area.

13. *Teams*.—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 12 miles an 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, allowing the overtaking vehicle reasonably free passage, provided the overtaking vehicle does not exceed the speed limits specified for the road in question.

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*.—If, because of accident or stop for any reason, automobiles are unable to keep going, they 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 six months, or both, and be adjudged to pay all costs of the proceedings, and such violation shall subject the offender to immediate ejection from the park. Persons ejected from the park will not be permitted to return without prior sanction in writing from the Director of the National Park Service or the superintendent of the park.

## MAPS

The following maps<sup>4</sup> may be obtained from the Director of the United States Geological Survey, Washington, D. C. Remittances should be made by money order or in cash.

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<sup>4</sup> May be purchased also by personal application at the office of the superintendent of the park, but that office can not fill mail orders.

**SHINUMO**, 28½ by 25 inches, scale about 1 mile to 1½ inches, contour interval 50 feet. 20 cents.

**BRIGHT ANGEL**, 26 by 20½ inches, scale about 1 mile to 1½ inches, contour interval 50 feet. An account of the geologic history of the Grand Canyon and a description of the rocks, by L. F. Noble, is printed on the reverse side of the map. 20 cents.

**VISHNU**, 28 by 21 inches, scale about 1 mile to 1½ inches, contour interval 50 feet. 20 cents.

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

## LITERATURE

### GOVERNMENT PUBLICATIONS

Government publications on Grand Canyon 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.

**Map of the western United States.**

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

**Map of the western United States.**

Shows the National Park-to-Park Highway and other roads.

**Glimpses of Our National Parks.** 59 pages, including 23 illustrations.

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

**Glimpses of Our National Monuments.** 73 pages, including 34 illustrations.

Contains brief description of all the national monuments administered by the Department of the Interior.

#### 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 indicated. Postage prepaid. Remittances should be made by money order or in cash.

**The National Parks Portfolio.** By Robert Sterling Yard. Third Edition. 270 pages, including 310 illustrations. Bound securely in cloth. \$1.<sup>4</sup>

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

**Guidebook of the Western United States, Part C, the Santa Fe Route, with a side trip to the Grand Canyon of the Colorado,** by N. H. Darton and others. (Bulletin 613, U. S. Geological Survey.) 1915. 194 pages, 25 routes maps, 42 plates, 40 text figures. 50 cents.<sup>4</sup>

This guide describes the country along the Atchison, Topeka & Santa Fe Railway from Kansas City to Los Angeles. Although the description of the rocks and their relations and the scenic features form a large proportion of the matter, nearly every page gives

<sup>4</sup> May be purchased also by personal application at the office of the superintendent of the park, but that office can not fill mail orders.

information as to notable historic events, industrial resources, plants, and animals. The story of the Indians, past and present, especially the characteristic Pueblo tribes, is told in some detail. Many of the facts regarding the rocks are here presented for the first time. The book contains numerous views of prominent scenic features and pictures of restoration of some of the very remarkable animals whose bones are found in the clays.

**Exploration of the Colorado River of the West and Its Tributaries**, by John Wesley Powell. Explored in 1869, 1870, 1871, and 1872. Pp. 291. Under the direction of the Secretary of the Smithsonian Institution. Illustrated. Government Printing Office, Washington, 1875. (Out of print.)

**Pre-Cambrian Igneous Rocks of the Unkar Terrane, Grand Canyon of the Colorado, Ariz.**, by C. D. Walcott. U. S. Geol. Surv. 14th Ann. Rept., pt. 2, pp. 497-524, pls. 60-65. 1894. \$2.10.

**The Grand Canyon**. Senate Doc. No. 42, 65th Congress, 1st session, by Thomas Fulton Dawson, Government Printing Office, Washington, D. C., 1917. 67 pp. Price, 10 cents.

An article giving credit of first traversing the Grand Canyon to James White, a Colorado gold prospector.

**Tertiary History of the Grand Canyon District**, by Clarence E. Dutton. U. S. Geol. Surv. Mon. 2,264 pages, illustrations, and atlas. 1882. \$10.

**The Shinumo Quadrangle, Grand Canyon District, Ariz.**, by L. F. Noble. U. S. Geol. Surv. Bull. 549, 1914. 100 pages, including 30 illustrations and a colored geologic map. Price, 20 cents.

Describes the geology and scenic features of the Grand Canyon in the western part of the national park. Contains a detailed account of the Algonkian strata exposed on Shinumo Creek.

**A Reconnaissance of the Archean Complex of the Granite Gorge, Grand Canyon, Ariz.**, by L. F. Noble and J. Fred Hunter. U. S. Geol. Surv., Prof. Paper 98-I, 1916. 20 pages, 3 illustrations.

Describes the rocks that form the walls of the Granite Gorge in the bottom of the canyon.

**A section of the Paleozoic Formations of the Grand Canyon at the Bass Trail**, by L. F. Noble. U. S. Geol. Surv. Prof. Paper 131-B, 1922. 50 pages, 15 illustrations.

Describes the Paleozoic strata of the Grand Canyon in detail and contains diagrams showing the strata in profile as they appear in the walls.

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#### OTHER NATIONAL PARKS

Rules and Regulations similar to this for 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.  
Hawaii National Park.  
Hot Springs National Park.  
Lafayette National Park.  
Lassen Volcanic National Park.  
Mesa Verde National Park.  
Mount Rainier National Park.

Rocky Mountain National Park.  
Sequoia and General Grant National  
Parks.  
Wind Cave National Park.  
Yellowstone National Park.  
Yosemite National Park.  
Zion National Park.

## AUTHORIZED RATES FOR PUBLIC UTILITIES

SEASON OF 1927

All rates of the authorized public utilities are approved by the Government. Therefore complaints regarding overcharges should be made to the superintendent. Employees of the hotels, camps, and transportation lines are not Government employees, but discourteous treatment by public-utility employees should be reported to the park administration.

### THE SOUTH RIM

#### Hotels and Public Camps

The following hotels, etc., are operated by Fred Harvey:

#### EL TOVAR

El Tovar Hotel is located at the railroad terminus, near the head of Bright Angel Trail, at an elevation of 6,866 feet above sea level, and open all the year. It is a long, low structure, built of native boulders and pine logs. There are 93 sleeping rooms, accommodating 175 guests. Forty-six of these rooms are connected with private bath.

There is a music room and rendezvous. In the main dining room 165 persons can be seated at one time.

Hot and cold water, steam heat, and electric light are supplied. El Tovar also has a steam laundry.

#### *Authorized rates at El Tovar Hotel*

##### American plan:

One person in room without bath, per day-----	\$7. 00
One person in room with bath, per day-----	\$8. 00-9. 00-10. 00
Reduction of 50 cents per person for 2 in a room with double bed.	

##### Meals only:

Breakfast-----	1. 25
Luncheon-----	1. 50
Dinner-----	1. 75

Children, not transient, under 3 years, charge \$1.50 per day for meals only.

No charge for rooms.

Children 3 to 7 years, \$3 per day for meals and room without bath ; \$4 per day for room with bath.

Children 8 years and over, full rate.

#### *El Tovar barber shop rates*

Shave----- \$0. 25

##### Haircut:

Men-----	. 50
Women-----	. 75

##### Hair singe:

Men-----	. 50
Women-----	. 75

*El Tovar barber shop rates—Continued***Shampoo:**

Men, plain.....	\$0. 50
Men, oil.....	1. 00
Women.....	1. 00
Hair tonic.....	\$0. 25 and 0. 40
Facial or head massage.....	\$0. 50 and 0. 75

**Bright Angel Cottages**

Cozy lodgings in cottages or tents are available at Bright Angel Cottages, adjacent to El Tovar. The accommodations are clean and comfortable. There are two cottages, open the year round, and many tent-cabins for summer only. Both cottages have steam heat and electric light; one cottage also has baths. All tent-cabins have electric light, but no heat or baths. About 350 people can be accommodated here. Meals are furnished à la carte at the café. Kitchen facilities are ample for quick à la carte service.

*Authorized rates at Bright Angel Cottages*

Lodging only, per day, per person.....	\$1. 50, \$1. 75, \$2. 00
Lodging only, per day, 2 persons.....	\$3. 00, \$3. 50, \$4. 00
Children 3 to 7 years, half rate.	
Children 8 years and over, full rate.	

**HOUSEKEEPING COTTAGES, CAMP LODGE, AND DELICATESSEN****AUTOMOBILE CAMP GROUNDS**

A new unit designed especially for the comfort and convenience of motorists will be opened May 1. It consists of housekeeping cottages, a delicatessen, and camp lodge. These are located adjacent to the free public auto camp ground. The camp lodge has a large room with fireplace and a large covered porch which may be used by all campers free of charge, whether or not they patronize housekeeping cottages. Cooked foods and emergency groceries in small packages may be purchased at the delicatessen at rates approved by the National Park Service. Near by is a general store where foods, clothing, hardware, etc., may be purchased in any quantity.

*Authorized rates for housekeeping cottages*

Minimum charge for cabin per day.....	\$1. 00
Two or more persons in one cabin, per person, per day.....	. 50

Above charge includes two double beds with springs and mattresses, stove for cooking and heating, electric light, table and benches, fuel and water.

Visitors who are traveling light, may rent bed clothes and towels at the following additional charges:

Blankets per pair per day.....	\$0. 25
Sheets, pillows, pillow cases, towels:	
Per person, first day.....	. 50
Per person, each additional day.....	. 25

Above charges on basis of two clean towels per day.

## PUBLIC AUTO CAMP

The public auto camp is maintained by the National Park Service. No charge is made for camp grounds, firewood, water, etc. Water is hauled to the canyon by rail, and campers are urged to save water in every way possible.

## HERMIT CABINS

On Tonto Plateau at the foot of Hermit Trail; consists of a central dining room, lounge cottage, and 11 sleeping cottages; accommodations for 30 persons.

*Authorized rates at Hermit Cabins*

American plan, per day, per person----- \$5.00

## PHANTOM RANCH

On the north side of the Colorado River near the mouth of Bright Angel Creek; consists of well-built stone and tent-cottages with mess hall and rendezvous with excellent accommodations for 30 persons.

*Authorized rates at Phantom Ranch*

American plan, per day, per person----- \$6.00

## REST HOUSES

## THE LOOKOUT

The Lookout is a quaint observatory and rest house, built on the edge of the rim near the head of Bright Angel Trail. It is equipped with a large binocular telescope in the tower, for observing the most distant reaches of the canyon. Canyon photos are for sale. The reception room has spacious windows, a fireplace, Navajo rugs, and easy chairs; it is electric-lighted and steam heated.

## HERMITS REST

Where Hermit Rim Road ends and Hermit Trail begins is a unique rest house, built into the hill, with a roofed-in porch and a parapet wall. As the name implies, it is intended to provide rest and shelter for parties who take the Rim Road drive, or the Hermit Trail trip. Guests may sit at the tables outside or sheltered by the glass front inside according to weather, and enjoy refreshments in unusual surroundings. Admission is free to those who arrive in Harvey transportation busses. The charge to others is 25 cents. each. Open 9 a. m. to 12 noon; 1 p. m. to 6 p. m.

## HOPI HOUSE

Opposite El Tovar is a reproduction of the dwellings of the Hopi Indians and several Navajo hogans.

In Hopi House are installed collections of Indian handiwork. Here also live a small band of Hopis, who are among the more primitive of our Indians.



The homes of the Hopis are on the edge of the Painted Desert, perched on the crests of lofty mesas where they live as did their forbears and cling to their high dwelling place. They are industrious, thrifty, orderly, and mirthful. A round of ceremonies, each terminating in the pageants called "dances," marks the different seasons of the year. Subsisting almost wholly by agriculture in an arid region of uncertain crops, they find time between their labors for light-hearted dance and song, and for elaborate ceremonials, which are grotesque in the Katchina or masked dances, ideally poetic in the flute dance, and intensely dramatic in the snake dance. In the three and a half centuries of contact with the white race their manner of life has not materially changed. The Indian tribes that roamed over mountain and plain have become wards of the Government, but the Pueblo Indian has absolutely maintained his individuality.

The Navajo women weave fine blankets and many of the men are expert silversmiths, who fashion bracelets, rings, and other articles from Mexican coin silver. The Navajo Indian Reservation—one of the largest in the United States—borders Marble Canyon on the east. They are a pastoral people, intelligent, and, like the Hopis, self-supporting. They own large numbers of sheep, cattle, and horses. The Navajos are tall, rather slender, and agile. They have been rightly called the Bedouins of the Desert. Nowhere are they gathered into permanent villages. Although "civilized," they still cling to old customs and old religious forms. The medicine man, or Shaman, has a large following, if not a large per cent of cures. Their dance ceremonies are weird in the extreme. The fire dance is a spectacular 10-day ceremony, seldom witnessed by white men, and occurring only once in seven years.

Supai Indians from Havasu Canyon frequently visit Grand Canyon village, and Navajo and Hopi Indians may be seen occasionally.

#### VERKAMP'S

Verkamp's, on the rim, just east of the Hopi House, carries a complete line of canyon souvenirs and Indian handicraft. It makes a specialty of Navajo rugs and silverware, Chimayo blankets, and Indian baskets, and carries post cards, folders, and photographs of the canyon.

In this shop may also be seen one of the largest and best paintings of Grand Canyon as well as other work of the late Louis Aikin.

#### KOLB BROS.' STUDIO

Kolb Bros.' studio is at the head of Bright Angel Trail. The Kolb Bros. give, each day, an interesting lecture, illustrated with motion

pictures and slides, describing their boat trip through the canyons of the Green and Colorado Rivers. Admission, 50 cents.

The exhibition above referred to illustrates Major Powell's original exploration of the entire series of canyons on these rivers and should not be confused with other excellent travel talks on the Grand Canyon, which latter describe and illustrate what can be seen by the visitor in a stay of a week or so at the canyon.

Here, too, visitors may view the canyon through a telescope and obtain reliable information. Photographic views and other pictures representing their many years' exploration of the Grand Canyon are for sale.

### SIGHT-SEEING TRIPS BY ROAD

#### Regular Trips by Automobile

The following trips are available every day in the year by automobile:

#### TRIP No. 1.

*Hermit's Rest.*—Stopping en route at Sentinel, Hopi, Mohave, and Pima Points. First trip starts at 9.30 a. m., returning to El Tovar and Bright Angel about 12 noon. Second trip starts at 1.30 p. m., returning to El Tovar and Bright Angel about 4 p. m. Rate, \$3; children, 6 to 11, half rate; children under 6, no charge. This rate includes use of facilities and light refreshments at Hermit's Rest. This drive is 16 miles round trip along the rim road.

#### Special Short Trips

There is also a sunset trip to Hopi or Mohave Points, leaving El Tovar and Bright Angel Cottages about 6.30 and returning about 7.45. Minimum of four fares.

Hopi Point: El Tovar to Hopi Point, 2 miles west; rate, \$1.

Mohave Point: 3 miles west; rate, \$1.50.

#### Regular Summer Trips by Automobile

The following trips are available through the summer season (approximately from April 15 to November 15):

#### TRIP No. 2.

*Grand View.*—Through forest of tall pines via Long Jim Canyon and Thor's Hammer, 13 miles each way; time, about 3½ hours. Leave El Tovar and Bright Angel Cottages 1.30 p. m. daily. Rates, \$4. From Grand View may be seen that section of the canyon from Bright Angel Creek to Marble Canyon, including the great bend of the Colorado. On the east wall are Moran, Zuni, Papago, Pinal, Lipan, Navajo (Desert View), and Comanche Points; and the mouth of the Little Colorado River. Still farther beyond is the Painted

Desert and Navajo Mountain—the latter plainly seen, though 120 miles away. The rim trail to Moran Point is interesting. Grand View Trail enters the canyon near Grand View Point.

**TRIP No. 3.**

*Desert View.*—Thirty miles each way via Long Jim Canyon, Thor's Hammer, Grand View, Hull Tank, Trash Dam, Tanner Tank, Old Aztec Ruin, Lipan Point, and head of Tanner Trail. One round trip a day leaving El Tovar and Bright Angel Cottages at 1.15 p. m., returning about 6 p. m. Rate, \$8.

At this point there is a far outlook not only into the canyon above the Granite Gorge, where the river valley widens, but also across the Painted Desert, toward Hopi Land, and along the Desert Palisades to the mouth of the Little Colorado. At sunset and sunrise it is a glorious sight. For that reason one preferably should arrange to stay overnight—a camping trip elsewhere referred to. One and one-half miles west of Desert View is Lipan Point, affording an excellent view of this whole region.

**New Summer Trips by Automobile to the Navajo and Hopi Indian Reservations  
via the Navahopi Road**

*May 1 to October 31*

**TRIP No. 4—One day.**

Automobiles leave El Tovar and Bright Angel Cottages at 7.30 a. m. daily. Route is via Desert View Road to Trash Dam, thence through the Coconino Basin to a point overlooking the canyon of the Little Colorado. The road then follows the Little Colorado due east and the first stop is made at a newly discovered petrified forest, where some 30 or 40 trees, some larger than any living tree in Arizona, may be seen. Next stop is at the Navajo Indian trading post at Cameron. This is the western outpost of the Navajo Reservation and is 75 miles from the nearest railroad. The little Colorado River is crossed at this point by way of the steel suspension bridge 660 feet long, and the route follows the main road across the Painted Desert to Tuba City, where the headquarters of the Navajo Indian agent are located. Some 400 Indian children are seen at well-equipped Government schools here. The Hopi village of Moenkopi is next visited, where the visitor has a glimpse of Indian life almost untouched by white civilization. Return to Grand Canyon is over same route, arriving at hotels between 7 and 8 p. m. same day. Train connections are not guaranteed. This trip provides a unique opportunity to visit the well-known but little seen Navajo and Hopi Indian Reservations at a minimum of expense. Round trip, 159 miles. Rates, \$16 per passenger—all expense. Minimum of one or more fares.

## COMBINATION TICKETS

Tickets combining trips Nos. 1 and 3 may be purchased for \$9, a reduction of \$2.

Tickets combining trips Nos. 1, 3, and 4 may be purchased for \$22, a reduction of \$5.

These two tickets will be sold at the Grand Canyon only from May 15 to October 30 each year. Unless tickets are purchased, the full rates for the three drives mentioned will be charged.

## SPECIAL SUMMER TRIPS BY AUTOMOBILE

These trips depend upon condition of the roads and may be at times discontinued.

BASS'S CAMP, 30 miles, and HAVASUPAI POINT, 1 mile beyond. Rate, \$11—all expense. Minimum of four fares.

YAVAPAI POINT.—This drive extends 2 miles east of El Tovar. Rate, \$1. Minimum of four fares.

*Authorized rates for special-car service*

	1, 2, or 3 persons	4 persons	5 or 6 persons
Hermit Rim Drive.....	\$12	\$15	\$18
Regular rate, \$3.			
Grand View Drive.....	16	20	24
Regular rate, \$4.			
Desert View Drive.....	32	40	48
Regular rate, \$3.			

Tuba City and Moenkopi—one day (regular rate, \$16).—Special car requires purchase of a minimum of five seats, irrespective of number of passengers.

Should the demand for regular-trip drives be so heavy as to require use of all autos available, special autos may be discontinued.

## CHARTERED AUTOMOBILE SERVICE

Six-passenger touring cars may be chartered for service within the park or elsewhere on routes not covered by scheduled transportation service at the rate of 35 cents per car-mile.

## RATES FOR CHILDREN

On all motor trips there is no charge for children under 6 years of age.

From the ages of 6 to 11 the charge is one-half fare.

All children over 11 years of age are charged full fare.

## Garage Service

There is at Grand Canyon a large stone garage with ample facilities for repairing and supplying automobiles. The rate for storage of automobiles is 75 cents per day.

*Charges*

Garage storage-----	\$0. 75
Washing car-----	3. 00
Regular mechanical labor, per hour-----	1. 75
Welding, mechanic's time (material extra), per hour-----	2. 00
Electrical labor, per hour-----	2. 00
Lathe work, mechanic's time, per hour-----	2. 00
Charging battery-----	1. 50
Charging battery overnight-----	1. 00
Filling and testing battery-----	. 25

## ROADSIDE WORK

Truck and driving mechanic going to car on road when no towing is done, per mile-----	. 40
Round trip plus mechanical labor for time worked on car, per hour-----	1. 50

## TOWING CARS

For truck and driver, per mile towed, going included, per mile-----	1. 00
When extra mechanic is required, his time starts from the time he leaves the garage and ends with his return, per hour-----	1. 50
A tow-car order stands until canceled by party ordering same.	

## OVERTIME

Time and a half to be charged for mechanical labor after 5 p. m. Rate, per hour-----	2. 50
Overtime for driver of truck on tow job after 5 p. m., per hour-----	. 75

## SUNDAY WORK

An extra rate will be charged for mechanical labor on Sundays. Rate, per hour-----	2. 50
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## GAS AND OIL

Current prices.

## TRAIL TRIPS

**NOTE**—The Bright Angel Trail is owned by Coconino County, and a toll of \$1 is charged by the county for each saddle animal using this trail.

*Bright Angel Trail.*—The trail here is generally open the year round. In midwinter it is liable to be closed for a day or two at the top by snow, but such blockade is not frequent. The trail reaches from the hotel  $6\frac{1}{4}$  miles to the Colorado River, with a branch terminating at the top of the granite wall immediately overlooking the river. At this latter point the stream is 1,272 feet below, while El Tovar Hotel on the rim is 3,158 feet above. The trip is made on mule back, accompanied by a guide.

Those wishing to reach the river leave the main trail at Indian Garden and follow the downward course of Indian Garden and Pipe Creeks.

Starting time, 8.30 a. m. and 9.15 a. m. for the river trip,  $6\frac{1}{4}$  miles; return to rim 5 p. m. Rate, \$6 each person. Leave 10

a. m. for trip to plateau, 5 miles; rate, \$5 each. For special trips with less than three persons there is a party charge of \$5 extra for guide. Lunch extra, except for El Tovar room guests. One dollar of above rate is for toll on Bright Angel Trail, which is owned by Coconino County.

It is necessary that visitors who walk down Bright Angel Trail and desire that guide and mules be sent to meet them be charged full price and special guide fee of \$5. This is unavoidable, as the mules and guides are not available for any other trip.

*Two-day trip, Hermit Trail, stopping at Hermit Cabins overnight.*—Time, two days and one night. Hermit Road by auto. Down Hermit Trail, stay overnight at Hermit Cabins; go to river at mouth of Hermit Creek; return up Hermit Trail to rim; thence to El Tovar over Hermit Rim Road. Trips leave El Tovar and Bright Angel Cottages at 9.30 a. m. and return next afternoon. Rates, \$18, all expense, each person, including guide, overnight accommodations, and meals en route and at Hermit Cabins. Private guide, \$5 per day extra.

*Hermit-Tonto-Bright Angel Loop.*—This trip takes two days and one night. Hermit Rim Road to head Hermit Trail; down Hermit Trail; stay overnight at Hermit Cabins; go to river foot of Hermit Creek; return along Tonto Trail to Indian Garden; thence up Bright Angel Trail.

Start from El Tovar or Bright Angel Cottages at 9.30 a. m. and return next afternoon. Round-trip charge is \$19, all expense, for each person; private guide is \$5 a day extra; rate quoted includes regular guide, overnight accommodations, and meals en route. One dollar of above charge is for toll on Bright Angel Trail, which is owned by Coconino County.

*Two-day Phantom Ranch trip.*—Over new Yaki Point section of Kaibab Trail both ways, crossing Kaibab Suspension Bridge. All expense, \$22 per person. If the party desires to return via Bright Angel Trail, \$1 extra per person is charged. This amount represents toll collected by Coconino County for use of the Bright Angel Trail by all mounted parties. Start is made from El Tovar Hotel and Bright Angel Cottages at 9.30 a. m.

*Three-day trip to Roaring Springs via Ribbon Falls.*—Leave 9.30 a. m. Down Yaki Point section of Kaibab Trail, crossing the Colorado River by Kaibab Suspension Bridge, and reaching Phantom Ranch early afternoon. Overnight at Phantom Ranch. Following morning by way of Kaibab Trail in Bright Angel Canyon, 5½ miles to Ribbon Falls, beautiful clear waterfall in the form of a crystal ribbon shedding its waters on a natural rock altar in the midst of a

verdant amphitheater and on to Roaring Springs, a beautiful series of cascades. Box lunch at falls and return to Phantom Ranch for overnight. On third day the return to El Tovar completes a never-to-be-forgotten experience. The all-expense rate for this trip is \$33 per person. Parties desiring to return via Bright Angel Trail must pay \$1 extra per person. This amount represents toll collected by Coconino County for use of the Bright Angel Trail by each mounted person.

*Four-day Hermit Cabins, Phantom Ranch, Ribbon Falls, Roaring Springs trip, returning via Yaki Point section Kaibab Trail.*—First day, Hermit Rim Road to Hermit Trail by motor; down Hermit Trail by muleback to Hermit Creek Cabins. Second day, Tonto and Kaibab Trails to Phantom Ranch. Third day, Ribbon Falls and Roaring Springs, returning to Phantom Ranch. Fourth day, El Tovar Hotel and Bright Angel Cottages over Yaki Point section Kaibab Trail. All-expense trip, \$40 per person. Leave El Tovar Hotel and Bright Angel Cottages, 9.30 a. m.

*Five-day trip across Grand Canyon to Kaibab National Forest on north rim.*—This combines an instructive and interesting excursion across the whole width of the Grand Canyon, from rim to rim, with a visit to the Kaibab National Forest. This beautiful virgin forest is the home of thousands of deer and the haunt of the mountain lion and the bobcat. Starting from the south rim, the round trip is made in five days, including one day spent in the forested section. The route is by the Yaki Point section of the Kaibab Trail, across the Kaibab Suspension Bridge to Phantom Ranch; thence along the Kaibab Trail and up Bright Angel Canyon to Wylie Way Camp at Bright Angel Point on the north rim. On the return, Roaring Springs and Ribbon Falls visited en route. For those who may wish to spend some time in the Kaibab Forest, saddle stock and camping outfits are available at Wylie Way Camp. Rate, all expense, except personal accommodations at Wylie Way Camp, \$61 per person for the five-day trip. Wylie Way Camp, \$6 per day extra. For full particulars and advance reservations address Manager, Transportation Department, The Fred Harvey Co., Grand Canyon, Ariz. Those desiring to return from Phantom Ranch via Bright Angel Trail are charged \$1 per person extra to cover toll collected by Coconino County for use of Bright Angel Trail.

*Two-day trip across Grand Canyon to Kaibab National Forest on north rim, one way only.*—Overnight stop at Phantom Ranch. All expense, trip, \$46. Although only two days are spent on this trip, the visitor must pay for the time required to take the mules back to the south rim. Hence the charge made for guide and mules is on the basis of four days.

*Dripping Spring.*—This trip is made on horseback all the way, via Hermit Rim Road, to the head of Hermit Trail, down Hermit Trail to Dripping Spring, returning to El Tovar and Bright Angel through the forest; starts at 8.30 a. m. Rate, \$5 each for three or more persons; for less than three persons, \$5 extra for guide. Private parties of one or more persons, \$5 extra for guide. Lunch extra.

**NOTE.**—No toll is charged for use of any trail owned by the National Park Service.

### Saddle Horses

Recently many new bridle paths along the rim and through the pines of Tusayan have been opened up, so that horseback riding now is possible for all. The animals are well trained and dependable. Saddle horses cost \$5 a day, or \$3 a half day. English, McClellan, Whitman, or western stock saddles furnished as requested. Side-saddles not provided. Rates quoted include, for parties of three or more, the services of a guide. For parties of less than three who desire a guide the rate is \$5 a day, or \$2.50 a half day. Horseback trips over any of the trails into the canyon are only permitted when accompanied by guide. This is necessary to avoid risk in meeting trail parties and pack trains.

There are several interesting foot trails near Grand Canyon village. Information as to these may be obtained at the superintendent's office.

### INDEPENDENT CAMPING TRIPS

Independent camping trips with pack and saddle animals are organized, completely equipped, and placed in charge of experienced guides.

For climatic reasons it is well to arrange so that camping trips during the season from October to April are mainly confined to the inner canyon. For the remainder of the year, i. e., April to October, they may be planned to include both the canyon itself and the rim country.

The following 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.....	20. 00
3 persons.....	15. 00
4 persons.....	14. 00
5 persons.....	13. 00
6 persons.....	12. 00
7 persons or more.....	11. 00

Rates include complete camping equipment, except provisions.



*Havasu Canyon and Havasupai village.*—This is the most popular camping trip. The best time to make it is from May to October. A journey of about 50 miles; first by auto 35 miles across a timbered plateau, then on horseback down Topocobya Trail along Topocobya and Havasu Canyons, to the home of the Havasupai Indians.

The home of this little band of 200 Indians is in Havasu Canyon, a tributary of the Grand Canyon, deep down in the earth two-fifths of a mile. The situation is romantic and the surroundings are beautified by falls of water over precipices several hundred feet high, backed by grottos of stalactites and stalagmites. This water all comes from springs that gush forth in surprising volume near the Havasupai village.

The baskets made by the Havasupai women consist of the burden basket, a shallow tray, and a water bottle of willow. Those made by the older weavers are of fine mesh, with attractive designs, and bring good prices. Havasupai means people of the blue water. Padre Garces was the first white man to visit their canyon home. In early days the Havasupais undoubtedly were cliff dwellers. They built nearly all the Grand Canyon trails, or rather their rude pathways were the advance guard of the present trails. Their summer homes resemble those of the Apaches. The winter homes afford more protection against the weather.

The round trip from El Tovar is made in five days.

### RAINBOW BRIDGE

During the past year another of the great natural wonders of America has been made available to the Grand Canyon visitor. This is the interesting Rainbow Bridge. Although its existence has been known for 18 years, it is estimated that only about 600 white persons have ever seen this inspiring sight, as a hard two weeks' trip by pack train was necessary to reach it. Now autos can be driven to a point within 18 miles, and the remaining distance can be made in a two-day pack trip.

The route of the trip is by auto via the Navahopi Road, Cameron Bridge, Painted Desert, Tuba City, Red Lake, Navajo Canyon, and Rainbow Lodge. By horseback it is over a spectacular trail, traversing hitherto impassable country to Bridge Canyon, where this wonder is found.

The all-expense rate for this trip is \$214 for one person, \$276 for two; \$338 for three; \$400 for four, and \$462 for five.

In case private motorists intend to make the trip in their own cars, they should inquire at the Government information office before starting.

The road is an average desert road.

The Rainbow Bridge is a national monument administered by the National Park Service.

### THE NORTH RIM

#### Auto Stage Transportation from Utah Points

The north rim of the Grand Canyon National Park is reached from Cedar City, Utah, on the Union Pacific system, and from Marysville, Utah, on the Denver & Rio Grande Western Railroad, by automobiles operated by the Utah Parks Co., Cedar City, Utah.

Special all-expense tours are offered combining visits to Zion National Park, Pipe Spring National Monument, Cedar Breaks, and Bryce Canyon National Monument. These tours leave Cedar City daily from June 1 to October 15.

#### AUTHORIZED RATES

##### From Cedar City, Utah : \*

Five-day tour of Zion National Park, Pipe Spring National Monument, Grand Canyon National Park (north rim), Kaibab Forest, Kanab, Bryce Canyon National Monument, and Cedar Breaks; fare for automobile transportation and 13 meals and 4 nights' lodgings.....	\$86.75
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Five-day tour of Cedar Breaks, Bryce Canyon National Monument, Kanab, Grand Canyon National Park (north rim), Kaibab Forest, Pipe Spring National Monument, and Zion National Park; fare for automobile transportation and 13 meals and 4 nights' lodgings.....	86.75
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##### From Marysville, Utah :

Two-day tour to Bryce Canyon operated for one or more full fares; automobile fare only.....	20.00
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For going trip automobile may have to be sent from Bryce Canyon, and reasonable notice must be given to the Utah Parks Co. lodge at Bryce Canyon. Parties availing themselves of this tour may join other tours which are operated from Bryce Canyon. The fare from Bryce Canyon to Grand Canyon and return will be \$55; from Bryce Canyon to Zion National Park and return via Cedar City will be \$35.

Parties arriving at the south rim of the Grand Canyon National Park via the Santa Fe lines and desiring to cross from the south rim to the north rim and then visit Kaibab Forest, Zion National Park, and leave Cedar City via the Union Pacific system or desiring to make the trip in the opposite direction may arrange to do so. The cross-canyon trip requires two days and is made by horseback. The first night is spent at Phantom Ranch, in the bottom of the canyon, and the Wylie Way Camp on Bright Angel Point on the north rim or El Tovar Hotel on the south rim is reached the following afternoon. The all-expense cost of the two days' cross-canyon trip is \$46 per person. The Utah Parks Co. must be notified in advance to

\* Reservations for these trips must be made in advance with the Utah Parks Co., Cedar City, Utah.

meet parties of a minimum of three at the north rim. Arrangements for the cross-canyon trip should be made in advance.

From Cedar City, Utah:

Three-day tour of Grand Canyon National Park (north rim) via Zion National Park, one-way tour; fare for automobile transportation and 6 meals and 2 nights' lodgings..... \$49.75

Three-day tour of Grand Canyon National Park (north rim) via Bryce Canyon, one-way tour; fare for automobile transportation and 6 meals and 2 nights' lodgings..... 54.50

Children under 12 years of age, one-half fare. Forty pounds of baggage on full-fare tickets; excess baggage will be charged for at rate of 5 cents per pound.

In connection with these automobile trips the following side trips are available for passengers coming to the north rim in the stages of the Utah Parks Co.:

Bright Angel Camp to Cape Royal and return, per passenger..... \$5.00

Autos can only reach within 2½ miles of Cape Royal. In order for passengers to actually reach this point a walk of about 5 miles is necessary.

Bright Angel Camp to Point Sublime and return, per passenger, minimum 3 persons..... \$6.00

Side-trip ticket from Bright Angel Camp to Cape Royal and return when included in regular interpark tour is sold at special rate of \$3 per passenger.

### Special Auto Service

Arrangements also can be made with Harold Bowman, of Kanab, Utah, during the calendar year 1927 for special automobiles from Marysville, Utah, to Bryce Canyon, north rim of the Grand Canyon National Park, and other scenic points and return to starting point at following rates:

Special cars carrying four persons for 50 cents per mile and cars carrying six persons for 60 cents per mile, these cars to be operated at the pleasure of the occupants as to distance traveled each day and as to places visited, with the proviso that a minimum charge will be made for 20 miles in any one day whether traveled or not. Twenty-five pounds of free baggage will be allowed each person; excess baggage will be charged for at the rate of 10 cents per pound.

### Wylie Way Camp

On the north rim at Bright Angel Point, situated in a shady grove of pines, is the Bright Angel Camp, consisting of a central dining tent, assembly tent, and comfortable sleeping tents electrically lighted; everything is spotlessly clean. Camp is open from June 1 to September 30, inclusive. There are accommodations for about 75 people.

Authorized rate at Bright Angel Camp, American plan, per person, per day, \$6.

## SADDLE-HORSE TRIPS

Arrangements may be made at the Bright Angel Camp for saddle-horse trips to various points of interest on the north rim and in the canyon. Time required and rates are as follows:

Side trips and rates therefor from Bright Angel Camp, Bright Angel Point:

To point Imperial and return .....	1 day.
To Roaring Springs and return.....	1 day.
To Phantom Ranch and return.....	2 days.
To Cape Royal and return.....	2 days.
To Dutton Point, Powell Plateau, and return.....	5 days.
To Thunder River and return .....	8 days.

Pack Camp is required for the trips to Cape Royal, Dutton Point, and Thunder River.

Saddle horses for trips on the North Rim, \$3 each per day; mounted guide for North Rim trips, \$5 per day. For overnight trips one or more pack horses must accompany the party. Persons making these trips must provide bedding and provisions.

*Authorized rates for trips into inner canyon*

1-day trip to Roaring Springs.....	\$6.00
2-day trip to Phantom Ranch .....	16.00

Above trips are for a minimum of two fares. For one fare the charge is increased \$5 per day for guide.

4-day trip to South Rim .....	\$40.00
5-day trip to South Rim .....	49.00

Above trips are for transportation only, and do not include subsistence.

Authorized rates for independent camping trips on north rim with pack and saddle animals and accompanied by experienced guide are as follows:

1 person, per day.....	\$27.00
2 persons, per day, each .....	20.00
3 persons, per day, each .....	15.00
4 persons, per day, each .....	14.00
5 persons, per day, each .....	13.00
6 persons, per day, each .....	12.00
7 persons, per day, each .....	11.00

Above rates apply for trips of five days or more and include everything except provisions. Special arrangements may be made for trips of less than five days.

## DERIVATION OF NAMES USED ON GRAND CANYON MAPS

While some of them are purely descriptive, many commemorate scientists, explorers, Indian tribes, leaders of religion, mythologic and romantic personages. Aztec and Indian terms occur and the origin of a few names is unknown.

**Alarcon Terrace.**—Spanish navigator, first to ascend the Colorado River.

**Apache Point.**—Name of a large Indian tribe of Arizona and New Mexico region which was untiring in raiding and depredating both Pueblos and whites,

**Apollo Temple.**—The son of Jupiter and brother of Diana, god of the sun in Roman and Greek mythology.

**Awatubi Crest.**—Awatubi, village of the Hopi Indians on the Painted Desert, destroyed in 1770.

**Aztec Amphitheater.**—General name for all Nahua tribes in Mexico at time of Cortez.

**Bass Camp.**—Owned by one of the pioneer settlers.

**Beale Point.**—Army officer who surveyed first road across the Arizona Plateau.

**Brahma Temple.**—In the Hindu triad Brahma was the evolver of the universe, Vishnu the redeemer, Siva or Shiva the destroyer.

**Buddha Temple.**—The title of Siddhartha, founder of Buddhism in fifth century B. C.

**Cardenas Butte.**—Member of Coronado's party and the first white man to see the Grand Canyon.

**Castor Temple.**—Castor and Pollux were inseparable brothers in Greek mythology.

**Centeotl Point.**—Probably an Aztec deity.

**Chemuhuevi Point.**—The southernmost of the Pinto Tribe in Lower California.

**Cheop's Pyramid.**—An Egyptian king of the fourth dynasty, builder of the famous pyramid at Gizeh.

**Chuas Butte and Creek.**—Name of Indian chief.

**Cocopa Point.**—A tribe of Yuma Indians living on the Colorado River.

**Coconino Plateau.**—A name sometimes used for the Havasupai, who originally occupied much of the Arizona Plateau.

**Comanche Point.**—Plains Indians from farther east, whose raids were greatly feared by the Pueblos.

**Confucius Temple.**—The Chinese philosopher who taught practical morality. Lived in fourth century B. C.

**Conquistador Aisle.**—Spanish for "conqueror." The conquistadores were especially the members of Coronado's expedition.

**Cope Butte.**—E. D. Cope, 1840-1897. A great American naturalist, specializing in fossil animals.

**Coronado Butte.**—In 1540 Coronado led the great Spanish expedition that penetrated as far as Kansas.

**Dana Butte.**—James D. Dana, 1813-1895. Noted professor of geology at Yale for many years.

**Darwin Plateau.**—C. D. Darwin, famous English naturalist, founder of Darwinian theory of evolution.

**Deva Temple.**—Divine epithet, applied commonly to goddess Durga, wife of Shiva of the Hindu triad.

**De Vaca Terrace.**—Cabeza De Vaca was shipwrecked on the Gulf coast and wandered for eight years among Indians before reaching a Spanish settlement.

**Diana Temple.**—Roman goddess of the moon, sister to Apollo and daughter of Jupiter.

**Drummond Plateau.**—Henry Drummond, 1851-1897. A famous Scottish religious writer.

**Dutton Point.**—Maj. C. E. Dutton, United States Army, who wrote for the Government a monograph on the Grand Canyon.

**Elaine Castle.**—The Ily maid of Astolat in Tennyson's poem, "The Idylls of the King."

**Escalante Butte.**—A Spanish missionary who crossed the Arizona Plateau in 1775.

**Excalibur.**—The magical sword of King Arthur of the Round Table.

**Fiske Butte.**—John Fiske, 1842-1901. American philosopher.

**Freya Castle.**—In Scandinavian mythology Freya is the goddess of love and womanly goodness.

**Galahad Castle.**—The purest knight of the Round Table, featured in "The Idylls of the King."

**Garces Terrace.**—A Franciscan who journeyed to the Hopi country in 1776.

**Gawain Abyss.**—Gawain the courteous, one of the principal knights of the Round Table.

**Geikie Peak.**—Sir Archibald Geikie, many years director British Geological Survey.

**Guinevere Castle.**—The wife of King Arthur of the Round Table.

**Gunther Castle.**—The Burgundian king of the Nibelungen epic, husband of Brunnhilde.

**Hance Creek.**—John Hance, a local character and pioneer.

**Havasupai Point.**—This tribe, formerly occupying Arizona Plateau, now live in Havasu Canyon about 60 miles from El Tovar.

**Holy Grail Temple.**—The cup used at the Last Supper, which the order of the Round Table was instituted to protect.

**Horus, Temple of.**—In Egyptian mythology the son of Osiris and Isis, principal deities.

**Hopi Point.**—The Hopis, sometimes called the Moquis, have maintained villages overlooking the Painted Desert since long before the Spanish invasion of 1540.

**Mount Huethewall.**—Indian word for observation point.

**Huxley Terrace.**—Famous English biologist, 1823-1895.

**Isis Temple.**—Principal female deity of Egypt, wife of Osiris, mother of Horus, and sometimes called "the daughter of Ra."

**Ives' Point.**—Lieut. Joseph C. Ives, United States Army, the leader of Colorado River exploration, 1857 and 1858.

**Jicarillo Point.**—An Apache Tribe of northeastern New Mexico, cruel raiders.

**Juno Temple.**—Wife and sister of Jupiter, queen of heaven in Roman mythology.

**Jupiter Temple.**—The supreme deity of the Romans.

**Kaibab Plateau.**—Piute word meaning mountain lying down.

**King Crest.**—Clarence King was the first director of the United States Geological Survey.

**King Arthur Castle.**—A British chieftain of the sixth century, who with his knights of the Round Table has inspired romances galore.

**Krishna Shrine.**—In Hindu mythology Krishna is the name of the eighth of the ten incarnations of the supreme god Vishnu. The ninth was in the form of Buddha; the tenth is still to come.

**Kwagunt Butte and Creek.**—Probably a Shoshonean name.

**Lancelot Point.**—A knight of the Round Table, featured in Tennyson's poem, "Idylls of the King."

**Leconte Plateau.**—Joseph LeConte was professor of geology in the University of California for over 30 years; died 1901.

**Lipan Point.**—An Apache Tribe.

**Lyell Butte.**—Sir Charles Lyell was a famous English geologist.

**Manu Temple.**—A Sanskrit word meaning "man," one of 14 demiurgic beings each of whom presided over a period of race progression. Manu Vaivasvata, the sun-born, is the manu of the present race of beings.

**Marcos Terrace.**—Fray Marcos de Niza led the first expedition into our country from Mexico in 1539 as far as Zuni. His accounts inspired Coronado's exploration.

**Maricopa Point.**—A tribe of Yuma Indians who moved from Colorado River to join the Pimas.

**Marsh Butte.**—O. C. Marsh, the paleontologist, who made a specialty of extinct animals.

**Mencius Temple.**—The Latin name of the Chinese philosopher, Meng, an early Confucian.

**Merlin Abyss.**—A semilegendary character of the fifth century who figures in Tennyson's "Idylls of the King."

**Mescalero Point.**—An Apache Tribe that roamed principally in New Mexico.

**Mimbreno Point.**—An Apache Tribe taking its name from the Mimbres Mountains in New Mexico.

**Modred Abyss.**—The treacherous nephew of King Arthur, King of the Round Table.

**Mohave Point.**—A Yuma Tribe living in vicinity of Needles, Calif.

**Montezuma Point.**—Montezuma, 1479-1520, ruled the Aztecs at the time of the Spanish conquest. He was regarded by later Indians as a deity.

**Moran Point.**—The artist who was with Major Powell, surveying Colorado River country in 1873.

**Natchi Point.**—A noted Apache warrior.

**Navaho Point.**—Nomadic Indians of the plateau region who maintained a long warfare against Pueblos and whites.

**Newberry Point and Butte.**—J. S. Newberry, geologist with Ives' expedition to the canyon. Long-time professor Columbia College, New York City.

**Newton Butte.**—Sir Isaac Newton, 1642-1727, famous English physicist who discovered law of gravitation.

**O'Neill Butte.**—Arizona politician, once governor.

**Osiris.**—Chief Egyptian deity of good, the principle of good closely associated with Ra.

**Papago Point.**—A branch tribe of Pima Indians of southern Arizona region.

**Pima Point.**—Popular name of tribes living in the valleys of Gila and Salt Rivers, Ariz.

**Pinall Point.**—An Apache tribe.

**Piute Point.**—A name applied to many Shoshonean Tribes, but perhaps belongs properly only to those living in southwestern Utah.

**Pollux Temple.**—The devoted brother of Castor, in the Greek legends.

**Powell Plateau.**—Maj. J. W. Powell made the first expedition down the Colorado River in 1869. Subsequently director of the United States Geological Survey and the Bureau of Ethnology.

**Quetzal Point.**—An Aztec word signifying a bird of iridescence.

**Ra, Tower of.**—The Egyptian sun god, type of supreme deity, always victorious.

**Rana Shrine.**—Hindu word for prince.

**Sagittarius Ridge.**—A zodiac constellation visible in southern United States in summer. Latin word signifying "Archer."

**Scorpion Ridge.**—One of the constellations of the zodiac.

**Scylla Butte.**—The promontory at the entrance of the strait between Italy and Sicily, around which ancient mariners feared to go.

**Set, Tower of.**—The brother or son of Osiris and his deadly enemy in Hindu mythology.

**Shaler Plateau.**—An American geologist, long-time professor at Harvard University.

**Sheba Temple.**—The ancient capitol of the Sebaeans in Arabia, whose queen visited Solomon.

**Shinumo Creek.**—Name applied by Powell to the Hopi confederacy.

**Shiva Temple.**—The avenging associate of Brahma and Vishnu in ruling the universe, now the most popular Hindu god.

**Sinyella, Mount.**—Judge Sinyella, Indian chief, born 1853, has always resided on the Havasupai Indian Reservation. Living in 1923.

**Solomon Temple.**—Solomon, 1033–975 B. C., son of David and Bathsheba, king of the Jews.

**Spencer Terrace.**—Herbert Spencer, 1820–1903, a distinguished English philosopher.

**Supal Formation.**—The colloquial name of the Havasupai, a small tribe now occupying Havasu Canyon.

**Thompson Point.**—A. H. Thompson, brother-in-law of Major Powell, who accompanied him in his famous boat trip down the canyon.

**Thor Temple.**—Second principal Norse deity, god of thunder, son of Odin, the supreme being, and Jordh, the earth.

**Tiyo Point.**—Indian name.

**Tovar Terrace.**—Pedro de Tovar was sent by Coronado in 1540 to inspect the Hopi villages where he learned of the existence of the Grand Canyon.

**Toltec Point.**—The Toltecs were either an early tribe of the Aztecs or a people that preceded them on the Mexican Plateau.

**Tonto Platform.**—Spanish word “fool” applied to Indians of Arizona plateau, especially to the Apache Mohave.

**Topocobya Trail.**—A Havasupai word, “To-po-co-bah,” meaning “where the water comes down.”

**Tyndall Dome.**—John Tyndall, 1820–1893, a famous British physicist.

**Unkar Creek.**—A Pai Ute word, meaning “red creek.”

**Venus, Temple of.**—The Roman goddess of beauty and love.

**Vesta, Temple of.**—The Roman goddess of the hearth in whose honor the Vestal Virgins kept the symbolic fire burning.

**Vishnu Temple and Creek.**—In Hindu mythology the associate of Brahma and Shiva who was the redeemer of the universe.

**Walhalla Plateau.**—The great hall of the Scandinavian gods, the warriors' heaven of the Vikings.

**Wallace Butte.**—An English explorer and naturalist and authority on natural selection.

**Wheeler Point.**—Gen. George M. Wheeler, United States Army, in charge of surveys west of one-hundredth meridian in 1872–1879.

**Yaki Point.**—Probably a version of the name of the Yaquis, the unconquerable tribe of northwestern Mexico.

**Yavapai Point.**—These Indians are commonly known as the Apache Mohave, formerly roaming central Arizona.

**Yuma Point.**—Great family of Indians of several tribes in lower Colorado region. Called themselves Kwichana.

**Zoroaster Temple.**—Founder of the ancient religion now represented by the Guebers and Parsees of Persia and India.

**Zuni Point.**—The Zuni pueblo south of Gallup, N. Mex., is the remnant of the historic Seven Cities of Cibola.









A PORTION OF THE FIRST FOREST  
The profusion of petrified wood is clearly shown



Photograph by Wm. Nelson

ROOT OF PETRIFIED TREE, 7 FEET IN DIAMETER

The profile resembles a dog's or lion's head

PETRIFIED FOREST NATIONAL MONUMENT, ARIZONA



THE NORTH RIM, ACROSS THE CANYON FROM NEAR EL TOVAR



THE SOUTH RIM, ACROSS THE CANYON FROM BRIGHT ANGEL POINT

Photographs by El Tovar Studio





