

DEPARTMENT OF THE INTERIOR

HUBERT WORK, SECRETARY

NATIONAL PARK SERVICE

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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

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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—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	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.

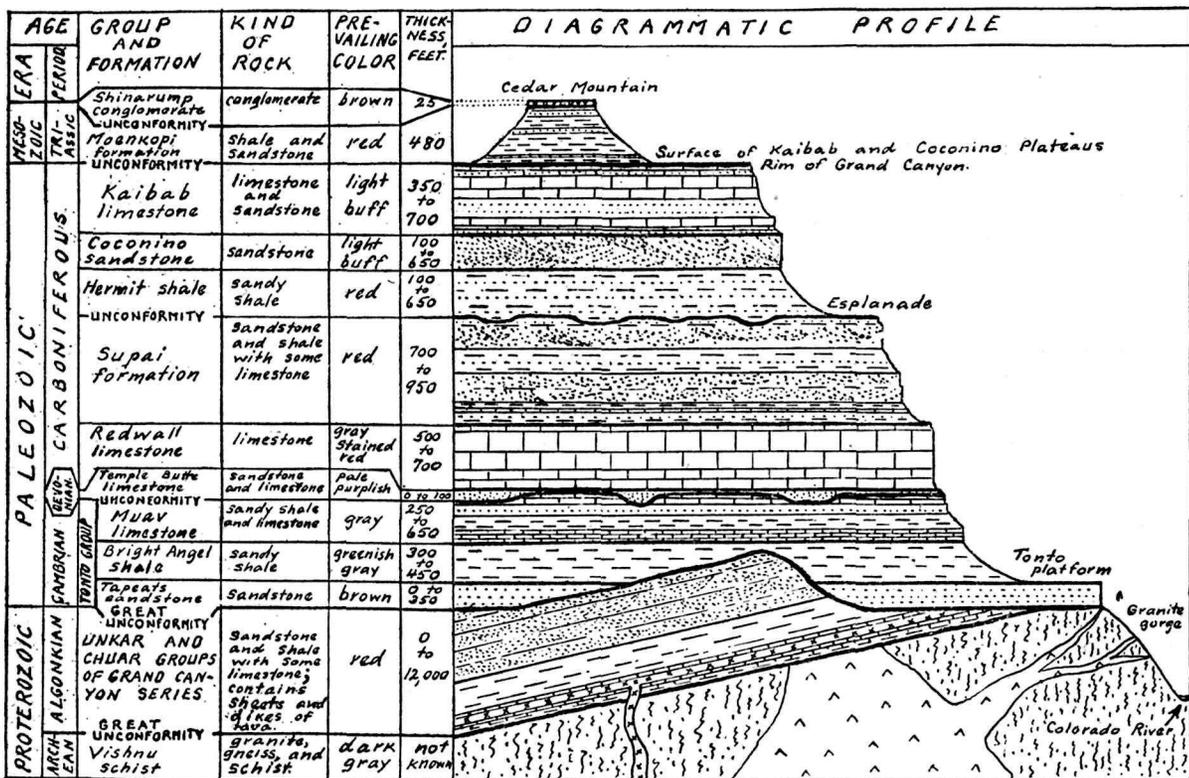


FIGURE 1.—Generalized columnar section, showing position and structural relations of the rocks of the Grand Canyon National Park, and the age, character, and thickness of the groups and formations into which they are divided.

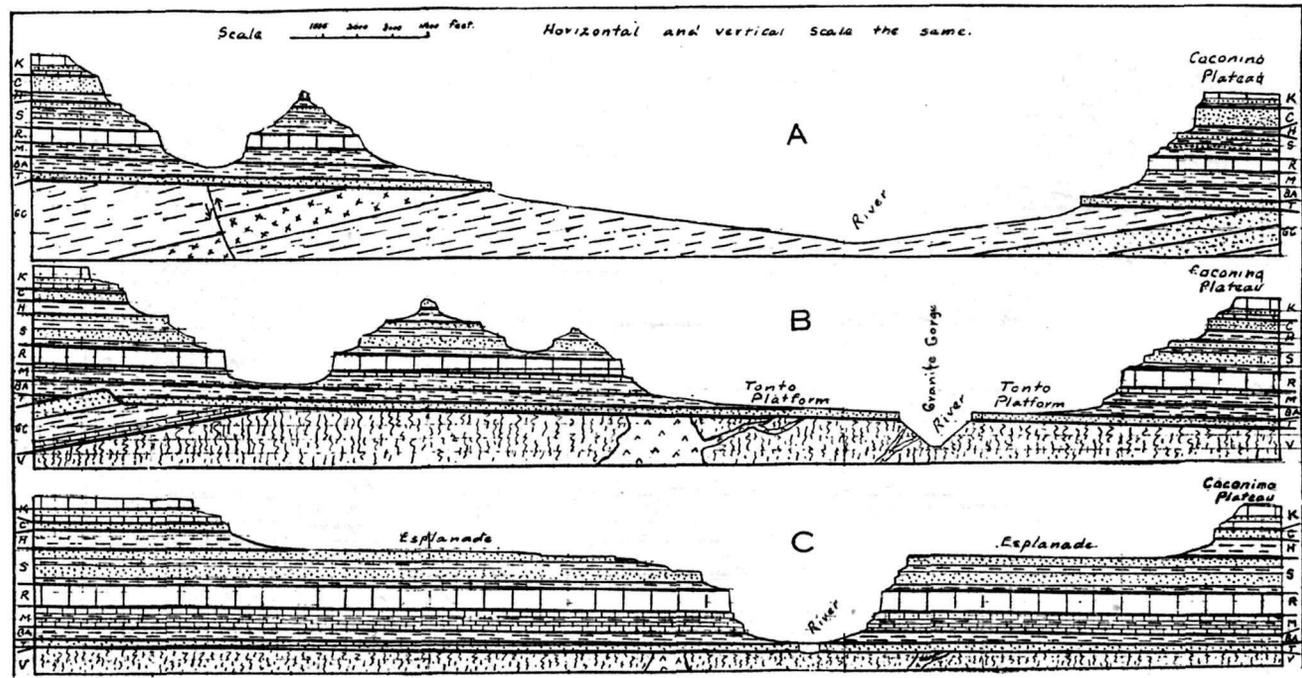


FIGURE 2.—Generalized sections across Grand Canyon, looking up Colorado River. *A*, in Eastern Kaibab division, east of Desert View Camp; *B*, in Central Kaibab division, near Hermit trail; *C*, in western Kaibab division, west of Bass Camp. K, Kaibab limestone; C, Coconino sandstone; H, Hermit shale; S, Supai formation; R, Redwall limestone; M, Temple Butte and 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.

## 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<sup>3</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."*

<sup>3</sup> 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  $37^{\circ}$ ), 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		
	Miles	Miles	Feet	
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.
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 mi 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, ¼ 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		
	Miles	Miles	Feet	
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	-----	
Rowes Ranch.....	27.7	49.7	-----	One of the first settlers in Grand Canyon.
Waterloo Hill.....	32.9	44.5	-----	The first view of the Painted Desert.
Cameron Bridge.....	54.6	22.8	-----	Steel suspension bridge over Little Colorado.
Tuba City.....	77.4	0	-----	Headquarters, Navajo Indian agent.
Moenkopi via Tuba City.....	80.9	-----	-----	Hopi Village.
Cameron Bridge to Flagstaff.....	58	-----	-----	
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.
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.
Topocoby 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.		
Grand Canyon.....	<i>Miles</i> 0	<i>Miles</i> 64.00	<i>Feet</i> 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		
Wylie Way Camp.....	<i>Miles</i> 0	<i>Miles</i> 170.90	<i>Feet</i> 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. 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.

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		
Grand Canyon.....	<i>Miles</i> 0	<i>Miles</i> 21.00	<i>Feet</i> 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		
Grand Canyon.....	<i>Miles</i> 0	<i>Miles</i> 12.00	<i>Feet</i> 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
The Lookout Telescope.....	<i>Miles</i> 0.3 west.....	Grand Canyon Rim Trail.	<i>Feet</i> 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.
Picnie 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.

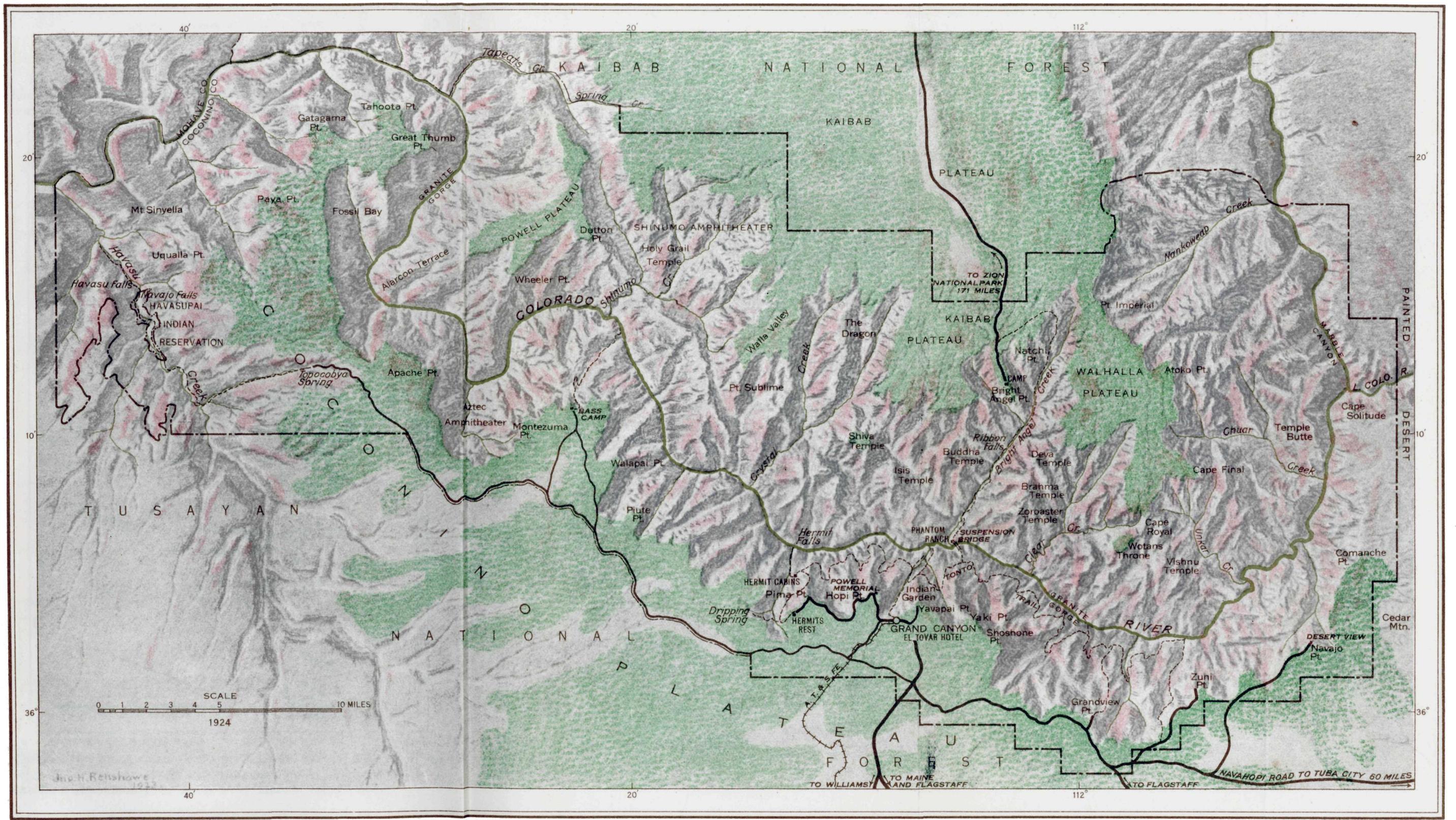
### WHAT TO WEAR

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.

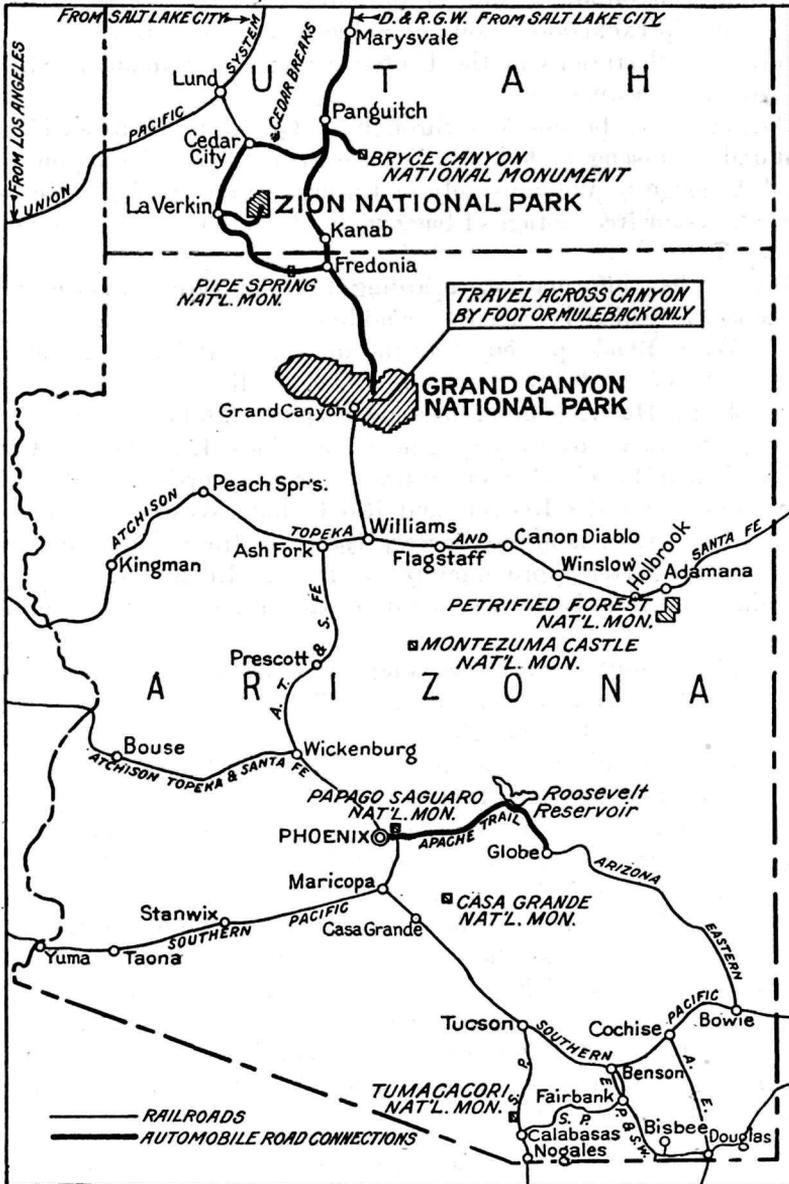


MAP OF GRAND CANYON NATIONAL PARK

ENGRAVED AND PRINTED BY THE U.S. GEOLOGICAL SURVEY

**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 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 Railroad, Omaha, Nebr.

F. A. Wadleigh, passenger traffic manager, Denver & Rio Grande Western, Denver, Colo.

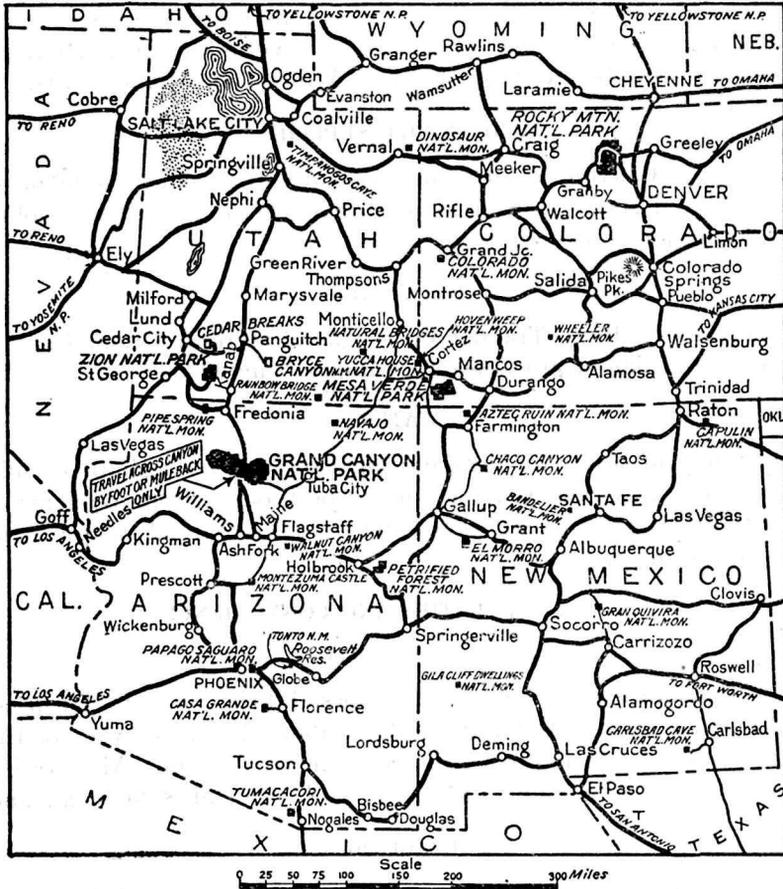
Parties making the trip from either of these places to the Canyon can make an interesting trip covering Bryce Canyon, Cedar Breaks, and Zion National Park.

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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- "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

### 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-\$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.

*Havasu 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 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, 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

<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

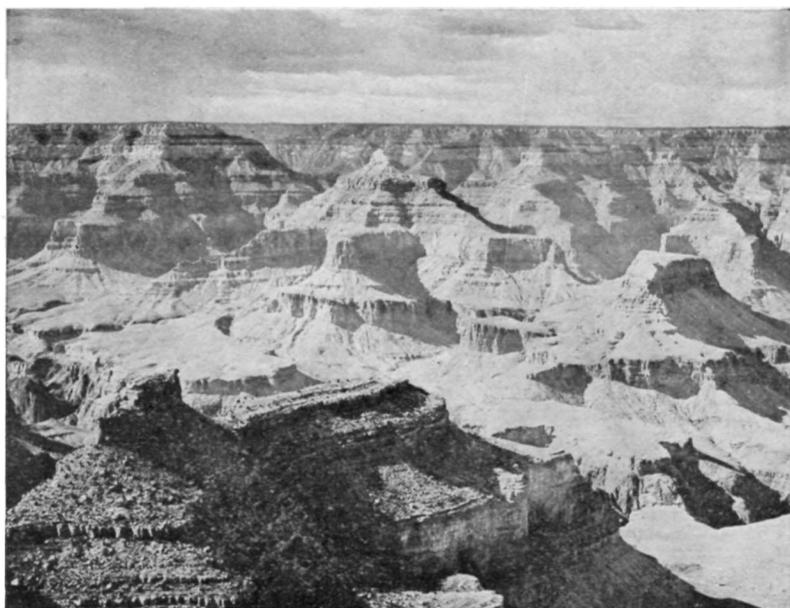
ROOT OF PETRIFIED TREE, 7 FEET IN DIAMETER

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