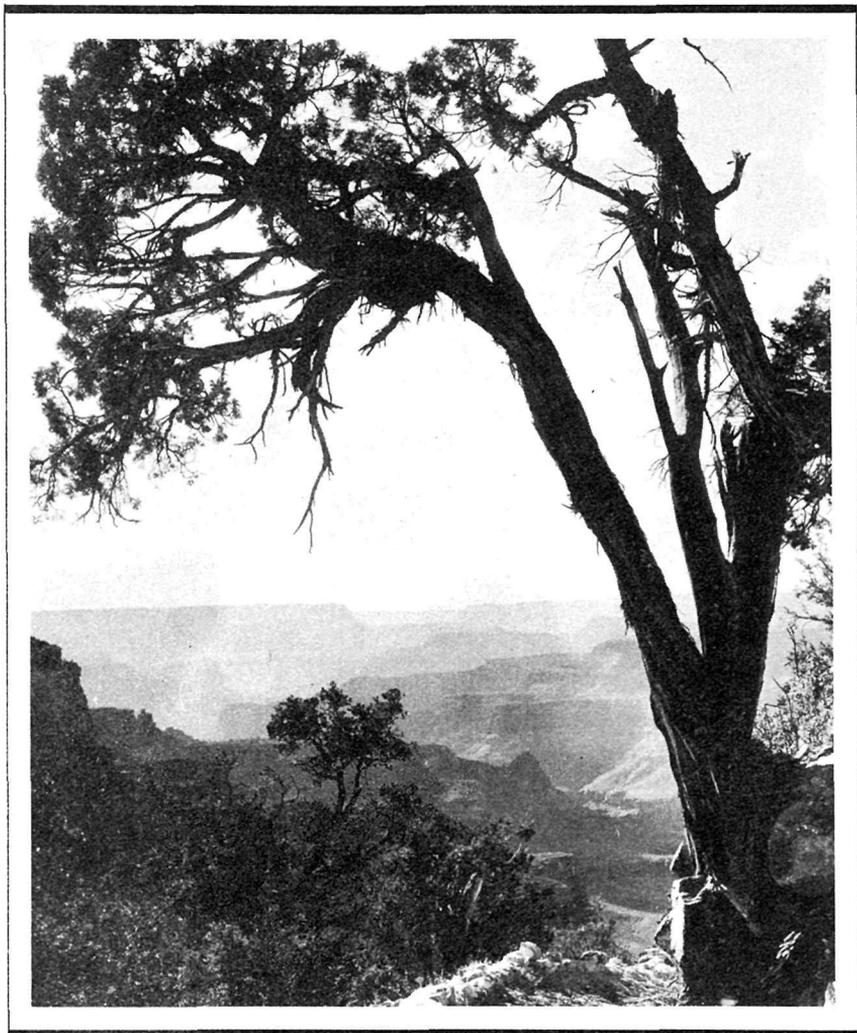


# GRAND CANYON NATIONAL PARK

★ A R I Z O N A ★



UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE

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UNITED STATES DEPARTMENT OF THE INTERIOR  
HAROLD L. ICKES, Secretary  
NATIONAL PARK SERVICE  
ARNO B. CAMMERER, Director

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GRAND CANYON  
NATIONAL PARK  
ARIZONA



SOUTH RIM OPEN ALL YEAR  
NORTH RIM OPEN MAY 30 TO SEPTEMBER 30, INCLUSIVE

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UNITED STATES  
GOVERNMENT PRINTING OFFICE  
WASHINGTON : 1935

## RULES AND REGULATIONS

The following summary of rules is intended as a guide for all park visitors. You are respectfully requested to facilitate the best in park administration by carefully observing the regulations. Complete regulations may be seen at the office of the Superintendent.

**Preservation of Natural Features.**—The first law of a national park is preservation. Disturbance, injury, or destruction in any way of natural features, including trees, flowers and other vegetation, rocks, and all wild life, is strictly prohibited.

**Camps.**—Camp or lunch only in designated areas. All rubbish that will burn should be disposed of in camp fires. Garbage cans are provided for noninflammable refuse. Wood and water are provided in all camp grounds.

**Fires.**—Fires are absolutely prohibited except in designated spots. Do not go out of sight of your camp, even for a few moments, without making sure that your fire is either out entirely or being watched.

**Dogs, Cats, or Other Domestic Animals.**—Such animals are prohibited on Government lands within the park except as allowed through permission of the Superintendent, secured from park rangers at entrances.

**Automobiles.**—The speed limit of 35 miles an hour is rigidly enforced. Park drives are wide and smoothly surfaced. It should always be remembered that each driver's own carefulness and responsibility to others is the greatest safety factor involved. The fee for an automobile permit is \$1.

**Trail Travel.**—Hikers and riders shall not make short cuts, but shall confine themselves to the trails at all times. Saddle animals have the right-of-way over pedestrians. The latter will take the outer side of the trail whenever possible, and shall stand quietly until animals have passed.

**Hunting.**—Hunting within the park boundaries is prohibited. No firearms are allowed except as provided for through permission of the Superintendent, secured from park rangers at entrances.

**Fishing.**—From June 1 to September 30, inclusive, fishing is allowed in certain park streams. A State of Arizona license is required.

**Park Rangers.**—Park rangers are public servants. They are here to answer your questions and otherwise help you in every possible way. Help them to better serve you by observing these regulations.

**Carelessness breeds destruction. Take no chances.**

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## A GRAND CANYON OUTING

### HOW TO GET THE MOST OUT OF IT

The Grand Canyon is more than a great spectacle. It is more than an interesting side trip. It is a fascinating region for an outing of several days—an ideal place to rest and play.

Of course, a single day spent in sightseeing at the canyon is decidedly worth while. But for the fullest enjoyment, one should go there as he would go to the mountains—for the whole exhilarating, inspiring, relaxing experience.

The Grand Canyon visitor may have as much activity or as much quiet and solitude as he desires.

There are many interesting motor, trail, horseback, and camping trips to take—trips requiring a few hours or several days.

But unless one's nature demands constant activity, he need not always be "on the go" in order to get the most out of his visit.

Amid such surroundings he will find that lounging about the hotel has its attractions and exploring along the rim footpaths an unexpected lure.

### HOW TO "SEE" THE GRAND CANYON

To be fully appreciated, the Grand Canyon should be seen from both top and bottom, and in its relation to the fascinating region which surrounds it. Therefore, visitors are urged to—

See it from various points on both rims

Explore the inner-canyon trails

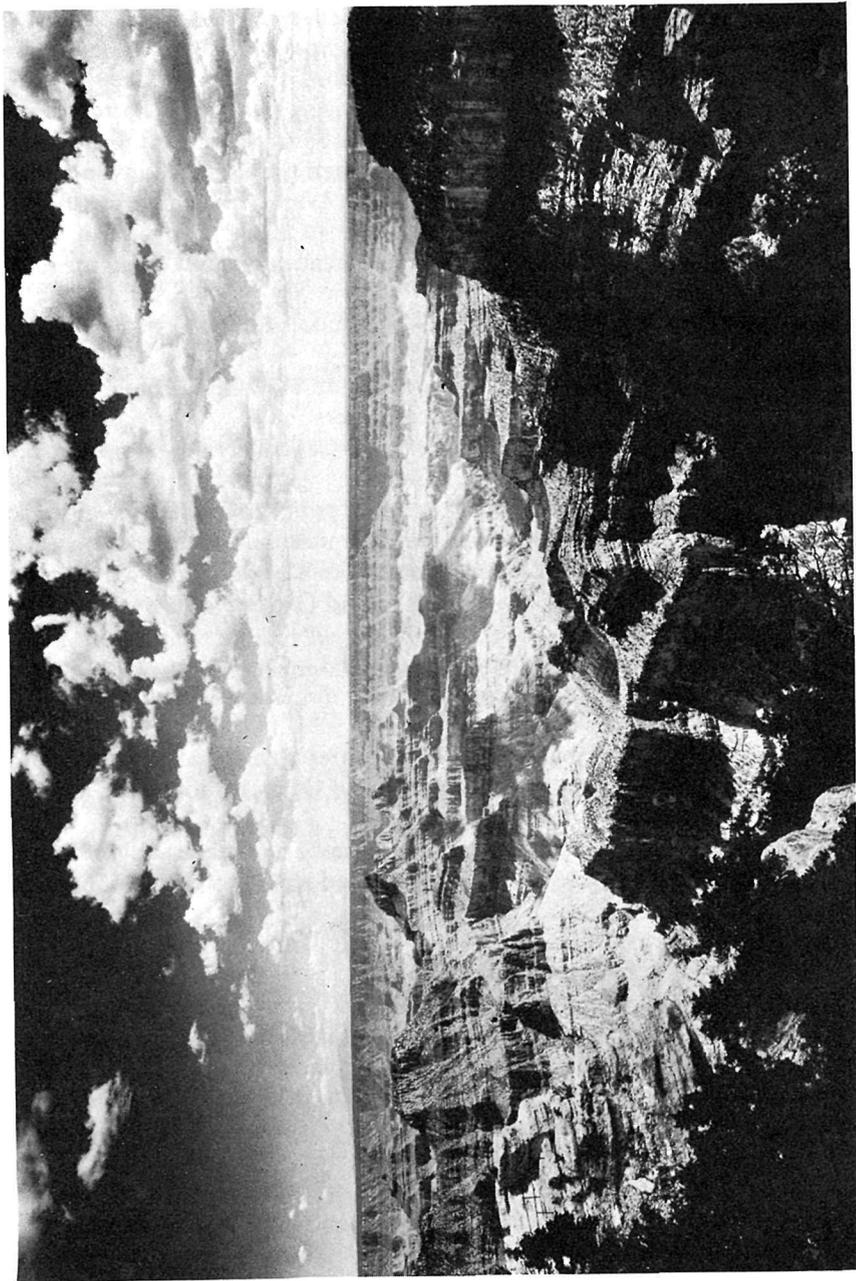
Fly over it

See the surrounding Indian country

The North Rim photographs in this booklet are by courtesy of the Union Pacific Railway, and the South Rim pictures by the Santa Fe Railway and Fred Harvey.

## GRAND CANYON HISTORY

1540. Don Lopez de Cardenas, with a party of 12 men, members of Coronado's expedition from Mexico, discovered the Grand Canyon.
1776. Father Garces and Father Escalante, Spanish padres, led exploring parties into the Grand Canyon region.
1826. First Americans visited the Grand Canyon. James O. Pattie, beaver trapper, and his father followed the South Rim from west to east.
1858. First Government exploring party visited the Grand Canyon region. Lieutenant Ives and party from the War Department traveled by steamboat up the Colorado River to Black Canyon (in which Boulder Dam is now being built), thence overland along the south side of Grand Canyon.
1869. Maj. J. W. Powell made the first successful boat trip down the Colorado River.
- 1890-91. The Bright Angel Trail, following an old Indian route, was constructed by a group of prospectors.
1892. Capt. John Hance built a cabin east of Grand View. It was the first house on the rim of Grand Canyon.
1897. Grand View Hotel opened. A stage using three changes of horses brought visitors from Flagstaff, 72 miles distant, in 12 hours.
1898. Bucky O'Neil, one of Colonel Roosevelt's Rough Riders, built a cabin at Rowe Well, 3 miles west of Grand Canyon village. The cabin still stands.
1900. The Bright Angel Hotel was established. One cabin and tents.
1901. September 18, first passenger train to the Grand Canyon.
1904. Hotel El Tovar was built.
- 1903-4. F. E. Matthes made the United States Geological Survey map of the Bright Angel section of Grand Canyon and named many of the temples and buttes.
1905. Uncle Jimmy Owens came into the Kaibab Forest as a lion hunter. In following years Uncle Jimmy killed several hundred lions along the North Rim.
1908. Theodore Roosevelt, as President of the United States, made Grand Canyon a national monument.
1919. Grand Canyon created a national park by act of Congress.
1921. The old Dave Rust aerial tram, across the Colorado River at the mouth of Bright Angel Creek, was replaced by a suspension bridge. This structure was later (1928) replaced by the present bridge.
1924. Fossil footprints were discovered in the Grand Canyon.
1924. Kaibab Trail from rim to rim was started.
1928. Grand Canyon Lodge, on North Rim, officially opened to the public.
1928. The Kaibab Trail was opened to the public on May 21.
1929. Navajo Bridge, across the Colorado River, 7 miles downstream from Lee's Ferry, was built.



*Clouds over the Grand Canyon as seen from Bright Angel Point on North Rim.*

## GRAND CANYON NATIONAL PARK

It seems a gigantic statement for even Nature to make, all in one mighty stone word. Wilderness so Godful, cosmic primeval, bestows a new sense of earth's beauty and size.

But the colors, the living, rejoicing colors, chanting, morning and evening, in chorus to heaven. Whose brush or pencil, however lovingly inspired, can give us these?

JOHN MUIR.

THE Grand Canyon National Park is in northern Arizona. Its 1,009 square miles enclose 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 105 miles. From rim to rim that portion of the canyon within the park varies from 4 to 18 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. Adjoining the park on the northwest is the Grand Canyon National Monument, which includes Toroweap Point, affording a very fine view of the inner gorge of the Colorado River.

The park boundaries hug the rims closely, including very little of the country back of the rims. Additions have been recommended in order to afford complete representation of the fauna and flora of the region. The northern rim is heavily forested with pine, fir, and spruce, interspersed with beautiful glades of quaking aspen. The southern rim carries a slender semiarid flowering vegetation of rich beauty and wide variety; and south and east of the railroad station lie about 50 square miles of fine yellow-pine forest.

### A MIGHTY SPECTACLE

The Grand Canyon is one of the world's greatest spectacles. It is impossible to compare it with the tremendous white spectacle of the Himalayas, 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 the most

spectacular 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.

Approaching by rail or road, the visitor comes upon it suddenly. Pushing through the woods from the motor camp ground, or climbing the stairs from the railroad station, one finds it at his 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 the Colorado River, 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 unimagined mysteries.

### THE FIRST VIEW

From the railroad station the south rim visitor ascends to El Tovar Hotel and a view of the canyon. From this point the temples loom up in contrast to the plateau at their feet, the plateau still being 1,200 feet above the river. The view from here is restricted by the extension of Grandeur Point and Maricopa Point on either side, cutting off the view of the great reaches of the canyon east and west. The result 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.

Those visiting the north rim gain their first idea of the sights in store for them from fleeting glimpses of Roaring Springs Canyon, a tributary of the Grand Canyon, as the approach road to Bright Angel Point and Grand Canyon Lodge skirts its rim on the last mile of the trip by motor car. From Bright Angel Point, or from the lounge room of the lodge, the full panorama of the Grand Canyon bursts into view as a sweeping vista across the Transept and the canyon of Bright Angel Creek.

Having studied either of these views for general outlines, 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 downward trails.

### SEEING THE CANYON FROM THE RIMS

#### SOUTH RIM

The drive along the south rim, covering nearly 35 miles of well-paved roads, gives one a series of incomparable views. It passes at times through interesting pine forests, only to emerge at short intervals upon breathtaking views of the canyon. From El Tovar Hotel, Bright Angel Camp, or the public auto camp, one may travel westward by motor bus or personal car. Powell, Hopi, Mohave, and Pima Points each furnish a superb view. At Hermit's Rest a striking cliff house offers an inviting place to stop, with its rustic lounges, a great fireplace, and observation point.

The route eastward is over the new paved Desert View Road through the forest and along the canyon's rim. Yavapai Observation Station, Yaki, Moran, and Lipan Points, the Wayside Museum of Archeology, and the Observation Tower at Desert View are the main points of interest on this trip.



*El Tovar Hotel on the South Rim.*

For visitors, without their own cars, the Harveycars each morning make the westward drive and each afternoon go to the eastward, stopping at the various points mentioned. Both the south rim drive and the descent into the canyon may be made in 2 days. Every day added to the schedule will give the visitor further novel experiences and glorious views, such as the Phantom Ranch trip, or to the north rim of the canyon, visiting Ribbon Falls and Roaring Springs en route, or the long motor trip over the Navahopi Road to Tuba City and Moenkopi.

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

The Yavapai footpath extends eastward along the rim to Grandeur and Yavapai Points. This footpath is constructed of asphaltic macadam and is so located as to give the best views of the canyon.

A similar footpath extends along the rim westward to Powell Memorial. The views from this footpath are very inspiring.

In addition to the roads and walks, well-graded bridle paths, following the rims and extending through the woods, offer enjoyment and ever-changing vistas to the equestrian. Saddle horses, with or without guides, are obtainable from Fred Harvey.

#### NORTH RIM

The north rim visitor may, in one day, make the trip by auto to Point Imperial, Farview, and Cape Royal over well-paved roads. From the main entrance road, near the checking station, an unimproved road extends westward a distance of 17 miles to Point Sublime. Although this road is not paved, it is well maintained and one of the most charming drives in the park, winding as it does through dense forests of pine, fir, spruce, and aspen and across open meadows carpeted with wild flowers to Point Sublime, considered by many as the most inspiring view of the Grand Canyon. For those who prefer "byways" to "highways" the Point Sublime trip has an especial appeal.

From Grand Canyon Lodge on the north rim regular trips by Utah Parks Co. auto busses are made to Cape Royal with stops at Point Imperial, Farview, Vista Encantada, and other points of interest. Special trips may also be arranged to Point Sublime, V. T. Park, and elsewhere as desired.

Point Imperial (elevation 8,801 feet) is the highest point on either rim of the canyon. From it and from other stopping places on this road may be had splendid views across Marble Canyon and the Little Colorado River Gorge over the shimmering Painted Desert.

A recently constructed footpath enables the hiker to make the walk along the rim of the Transept and Roaring Springs Canyon from the hotel to the public camp ground, Bright Angel Point, prehistoric cliff dwellings, and other points of interest.

Many miles of interesting bridlepaths extend along the north rim and through the heavily forested country back of the rim. These lead to Point Imperial, Point McKinnon, Uncle Jim Point, and even as far west as Powell Plateau. Saddle-horse trips requiring a half day, a full day, or longer are available under the management of the Utah Parks Co.

### SEEING THE CANYON FROM THE TRAILS

There are two good trails descending into the canyon, the Bright Angel and the Kaibab. The former is reached from the south rim only, while the latter crosses the canyon and is available from either rim. While these trails may be used by hikers as well as by parties on muleback, led by guides, it is a sad mistake for persons not in the soundest physical training and accustomed to unusual exertion at high altitudes to attempt the trips on foot. The apparent distance as seen from the rim is misleading, and the climb back is most strenuous, especially since the south rim of the canyon at park headquarters is 6,886 feet above sea level, and the head of the trail on the north rim is at an elevation of approximately 8,400 feet. Nearly every day one or more hikers, 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. Hikers should make inquiry at the park office before attempting the canyon trips on foot and in any event should supply themselves with food and water. Those intending to remain overnight at Phantom Ranch should telephone ahead for reservations.

Arrangements for the trips by muleback may be made at the hotels on either rim, or at the south rim camp ground. Saddle-mule trips into the canyon, from both rims, are under the management of Fred Harvey.

### BRIGHT ANGEL TRAIL

The descent is an experience of great charm. The trail is well built and kept in good condition. As soon as the traveler becomes partially accustomed to the rather uncommon experience of riding a mule downhill, he begins to take note of the various rock formations and to enjoy a close examination of the strata which form the canyon walls. Just under the rim the trail passes through a fine stand of Douglas fir, and from this down to the desert growth of the green floor the traveler will also pass in review a succession of plant growth equivalent to several climatic zones,

and representing floral changes such as may be seen ordinarily only by traversing many hundreds of miles of level country. The old Bright Angel Trail has been completely rebuilt by the National Park Service in accordance with the highest engineering standards. Many of the sharp zigzags have been eliminated, grades have been greatly reduced, and a heavy rock guard wall has been placed along the outer edge of the trail. Even the most timid now should feel no hesitancy in taking this scenic trip. 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 near relative, the burro.

The trip to the river and back may be made in one day. About half-way down, a brief stop is made at Indian Gardens, after which the trail heads downward into the Granite Gorge leading to the rocky banks of the Colorado River, where a stop is made for rest and luncheon. The return journey is made in easy stages, reaching the hotels on the south rim late in the afternoon.

### KAIBAB TRAIL

Even more spectacular from a scenic standpoint is the new Kaibab Trail, the only one crossing the canyon. It is uniformly broad, has no excessive grades, is well drained, and well maintained. Starting from the south rim at Yaki Point, some 3½ miles east of Grand Canyon Village, the Kaibab Trail is built near the top of a spur jutting into the canyon, and it therefore affords an unobstructed view both up and down the Grand Canyon, from where the descent on muleback begins.

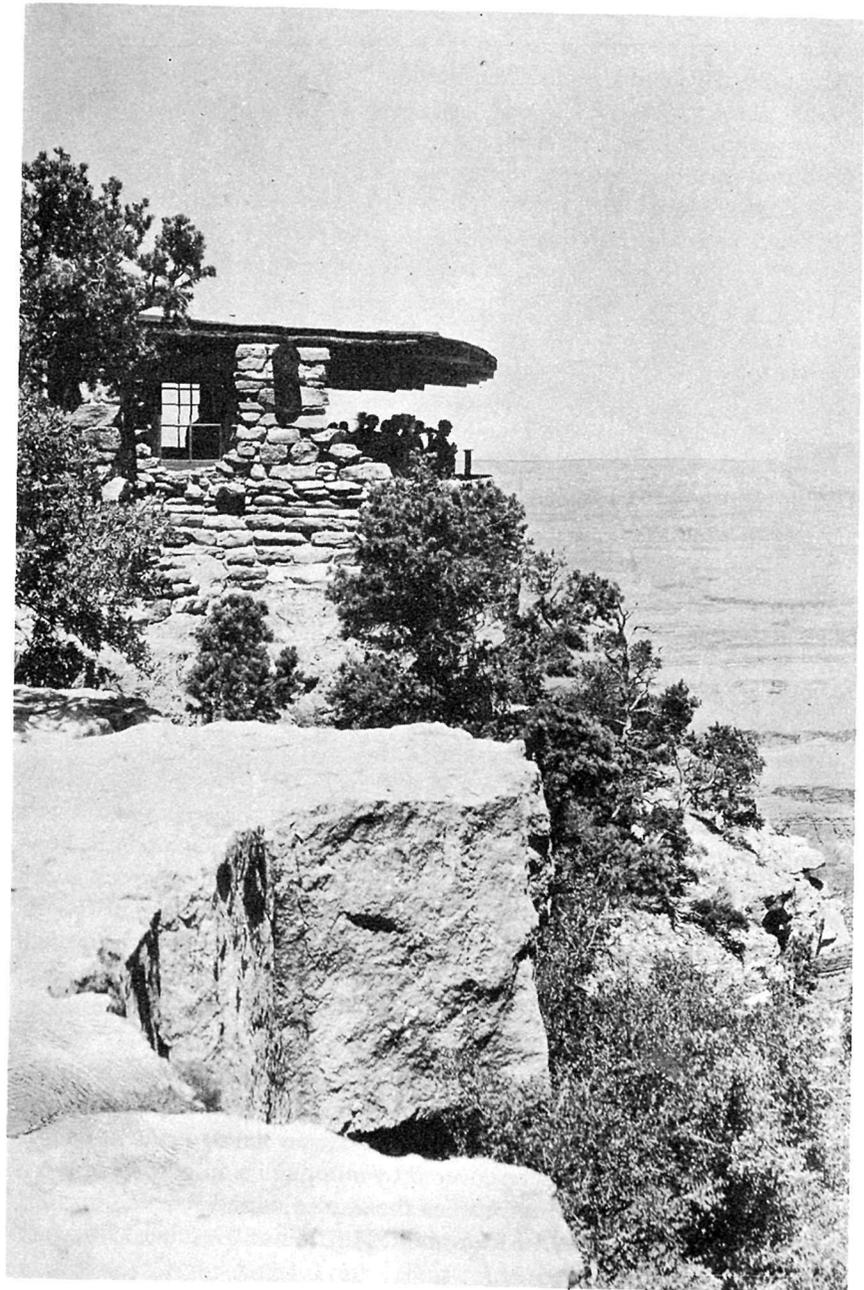
The downward journey, made by easy grades, unfolds an ever-changing panorama until the Tip-Off is reached, from which point the trip continues across the Colorado River Suspension Bridge, with the trailriders arriving late in the afternoon at Phantom Ranch for dinner and overnight stop. The return journey to the south rim is made over the same route via the Kaibab Trail, or by way of the new River Trail and the Bright Angel Trail, arriving in the late afternoon of the second day. The traveler may continue northward from Phantom Ranch up Bright Angel Creek Canyon over the Kaibab Trail to the north rim, arriving there in the afternoon of the second day. Along this trail there are in place and accessible to the tourist several very interesting displays of prehistoric animal tracks and fossil ferns.



*Suspension bridge over the Colorado.*

The trail crosses the Colorado River by means of the Kaibab Suspension Bridge. This is a thoroughly modern structure, built by the National Park Service, and completed in the summer of 1928. The bridge is 440 feet long, supported from eight  $1\frac{1}{2}$ -inch steel cables, provided with a structural steel truss acting both as a stiffening member and as guard rails. It is further stiffened by two  $1\frac{1}{2}$ -inch wind cables, and, unlike the old "swinging bridge" which it replaces, the new bridge is free from sway or vibration even when loaded to capacity with a full string of saddle or pack animals. The south approach to the new bridge is through a tunnel 105 feet long, cut from the solid granite walls of which the inner gorge is formed.

About three quarters of a mile beyond the Kaibab Bridge is Phantom Ranch, nestling among the towering crags of Bright Angel Canyon—nearly a vertical mile below the rim—with its group of rustic stone and wood



*Yavapai Station.*

cottages surrounding central dining and recreation halls. It is an ideal place at which to spend a night or two in the canyon depths.

At Phantom Ranch a newly completed swimming pool adds much to the pleasure of the visitor. No charge is made for the use of the pool. Bathing suits are obtainable at a reasonable rental.

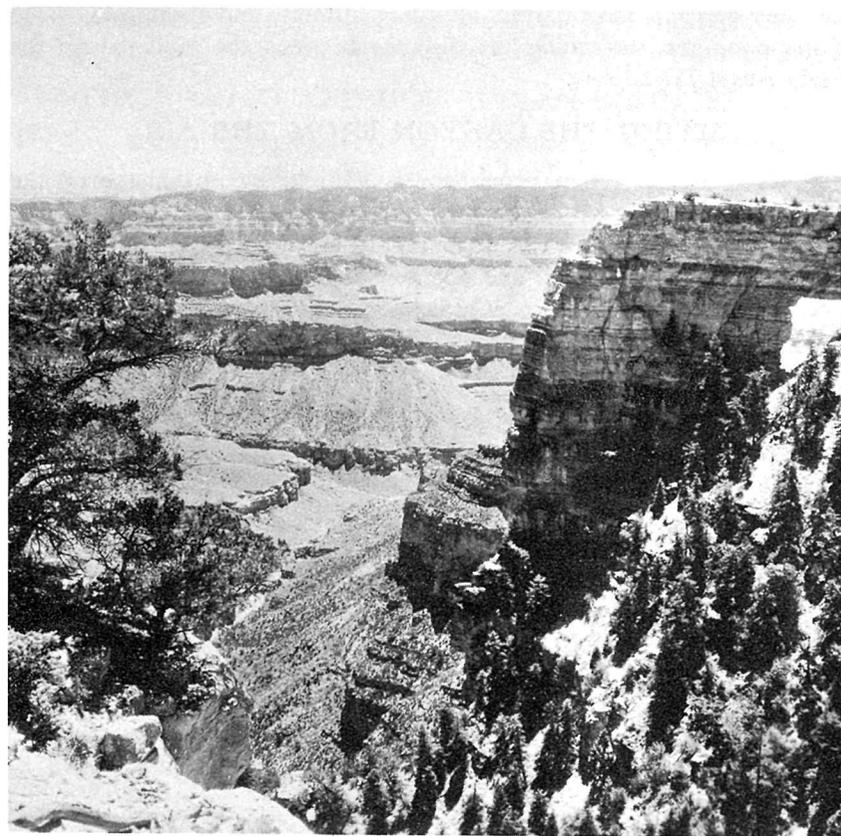
The trail continues through the spectacular Box Canyon of Bright Angel Creek, following for a distance of 8 miles the waters of this large and beautifully clear mountain stream, which was gratefully so named by Major Powell in 1869, in contrast to an unusually muddy creek found farther up the Colorado River and called by him the "Dirty Devil." Five and a half miles above Phantom Ranch on this trail is Ribbon Falls.

At the mouth of Manzanita Creek the trail leaves Bright Angel Canyon and starts its long climb to the north rim by way of Roaring Springs Canyon and over grades averaging not more than 15 percent. From this section may be seen one of the most beautiful sights in the entire Grand Canyon, the spectacular springs which gush forth with a loud roaring sound from beneath the Redwall limestone and cascade in three large main streams down an oak-covered mountain side to the bottom of the canyon, 40 feet below.

From Grand Canyon Lodge on the north rim, the head of the trail is 2 miles distant and is located alongside the north entrance road. The north rim visitor may leave by muleback in the morning, arriving at Phantom Ranch that evening and returning to the north rim, or continuing on to the south rim by the afternoon of the second day.

The construction of the Kaibab Trail through the Redwall limestone is both daring and ingenious. Here, with drill and powder the trail was hewn from the solid rock cliff in half tunnel sections. At such points, however, the trail is sufficiently wide, and it is provided with a heavy rock guard wall of such proportions that the traveler has no feeling of insecurity. At one point in the red sandstone of the Supai formation the trail passes through a full tunnel some 38 feet long. Above this it climbs through oak brush, pine, fir, and finally quaking aspen to top out on Bright Angel Point at an elevation of 8,350 feet.

This trail shortens the travel distance between El Tovar on the south rim and Grand Canyon Lodge on the north rim to about 26 miles, of which approximately 20.6 miles is made by trail between the two rims. The remainder of the distance may be covered by automobile on both rims. It is open for travel the year round between the south rim and Roaring Springs, and from there to the north rim from about May 15 until October 15, according to weather conditions.



*Angels Window—North Rim of Grand Canyon.*

#### INNER CANYON TRAILS

A recently completed trail starting at Phantom Ranch climbs the wall of the inner gorge to the Tonto Platform and extends eastward to Clear Creek, affording excellent canyon views and making accessible the canyon of Clear Creek. Here, as well as in Bright Angel Creek, excellent trout fishing is to be had. Many interesting prehistoric Indian ruins are to be found in Clear Creek, and overnight camping trips by pack mule from Phantom Ranch to Clear Creek via this new trail afford the park visitor an interesting and unusual outing.

Another new trail is the River Trail which extends from the south end of the Kaibab Suspension Bridge directly down the Colorado River to the foot of the Bright Angel Trail. This route, carved in the sheer walls of

the inner gorge, is most daring, affording intimate and spectacular views of the river and shortening the distance between the Kaibab and the Bright Angel Trails.

### SEEING THE CANYON FROM THE AIR

A never-to-be-forgotten experience is a flight by airplane over the Grand Canyon.

Grand Canyon Airlines (Inc.), maintains an airport approximately 18 miles from El Tovar Hotel, and operates daily scenic flights over Grand Canyon and to various points of interest in the vicinity of the park, using modern cabin-passenger planes, both tri-motor and single-motor. The daily scenic flight over the canyon from either rim, lasting about 35 minutes, covers approximately 60 miles. Hangar space and service for visiting planes are available. The north rim airport is about 18 miles from Grand Canyon Lodge, but no hangar space is available. Flight tickets are sold at hotels on either rim. Chartered trips are available to Rainbow Bridge, Monument Valley, Betatakin, the Hopi Villages, Navajo Country, Boulder Dam, and various surrounding points of interest; also to the Pacific coast and nearby cities. Transcontinental airline connections may be made by arrangement at Winslow and Phoenix, Ariz., Las Vegas, Nev., and Salt Lake City, Utah.

### HAVASU CANYON

The Havasu Canyon, in the far western end of the national park, is rarely visited. The trail down into the canyon begins at the end of a long semi-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 charm for those who do not object to a little hardship.

Below the reservation the canyon breaks into a series of waterfalls, three of which are unusual in kind and beauty. These are the Navajo, Havasu, and Mooney Falls. The first is a series of beautiful cascades, while the last two drop over lofty shelves which are plastered on back and sides by richly carved festoons of lime travertine. Bright green cottonwoods, cactus,

and other desert vegetation enliven the scene, which is entirely different from anything encountered elsewhere in the Grand Canyon National Park.

### THE NAVAJO AND HOPI INDIAN COUNTRY

The Grand Canyon region is one of the few areas where the American Indian still lives in his native state, primitive but happy, unchanged by the white man's civilization.

The tribes inhabiting this region are the Havasupai, the Navajo, and the Hopi. The Havasupai live in the Havasu Canyon in the depth of the



*Scene in a Hopi village.*

Grand Canyon. The Navajo is a nomad, a shepherd with the whole of the Navajo Reservation for his home. The Hopi Indians belong to the Pueblo group, living on three high mesas north of the Painted Desert country. On the easternmost tableland, called the First Mesa, are the villages of Hano, Sichomovi, and Walapai. On the Second Mesa are Mishnonghovi, Shipaulovi, and Shumopavi. The westernmost, or Third Mesa includes the old village of Oraibi and the more modern communities of Hotevilla and Bacabi. Eighty miles northeast of Grand Canyon is the village of Moenkopi.

Interesting journeys of one day or several days' duration may be made by private automobile or chartered car into this fascinating region, as well as

to the Petrified Forest, Rainbow Natural Bridge, Montezuma Castle, and other scenic attractions in the surrounding country. For information concerning trips by chartered Harveycars, inquire at transportation desk, in El Tovar Hotel or Bright Angel Camp, or write Fred Harvey, Transportation Department, Grand Canyon, Ariz. These trips into a colorful country of rare climate permit a break in a transcontinental journey that adds much to one's store of memories. The region is filled with the lore of American pioneers, Spanish explorers of many centuries ago, and myths and legends of an Indian occupancy lost in the past.

#### ADMINISTRATION

Grand Canyon National Park is under the jurisdiction of the Director, National Park Service, Department of the Interior, Washington, D. C. The headquarters development is located on the south rim. The address of the park superintendent, Miner R. Tillotson, is Grand Canyon, Ariz. Information, maps, and pamphlets may be obtained at the park office, where visitors are cordially welcomed. The office of the superintendent is at the terminus of the south approach road, south of the railroad tracks, southwest of the depot.

Mail for visitors to the north rim should be addressed to Kaibab Forest, Ariz., with "Grand Canyon Lodge" added in the case of hotel visitors.

A free information bureau is maintained on the south rim by the National Park Service in the Administration Building. Park visitors are welcome and are advised to apply to the ranger in charge of this bureau for official information of any kind, also for lost and found articles.

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

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

During the summer, members of the naturalist staff conduct short trail trips along the canyon rim, explaining all features relating to the natural history of the canyon. Full information regarding these trips may be had at the Park Information Office.

Similar information service, etc., is available to the north rim visitor at the north entrance checking station, at the Bright Angel Point ranger station, and through the ranger on duty at Grand Canyon Lodge. Trail trips from the north rim start at Grand Canyon Lodge and are made regularly during the season under the guidance of a ranger-naturalist.

#### HOW TO REACH THE PARK

##### BY RAIL TO THE SOUTH RIM

The Grand Canyon National Park is directly reached by a branch line of the Atchison, Topeka & Santa Fe Railway extending 64 miles northward from Williams, Ariz. On certain trains, through standard Pullman cars are operated to and from Grand Canyon station. Passengers using other trains and stopping over at Williams will find excellent accommodations at the Fray Marcos, station hotel. A Fred Harvey motor-stage service is also operated between Williams and Grand Canyon for the benefit of passengers on main-line trains which do not connect with the train to Grand Canyon. Consult current Santa Fe time-tables for exact time of arrival and departure of trains, also for schedule of motor-stage service. The fare by motor-stage is \$4.56 each way, exactly the same as railroad fare, and those holding through tickets to Grand Canyon by rail may, upon application to the Santa Fe agent at Williams, exchange their railroad coupon for a bus ticket at no additional cost.

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.

##### BY RAIL TO THE NORTH RIM

The Union Pacific delivers travelers for the north rim at Cedar City, Utah, and the Denver & Rio Grande Western, at Marysvale. The former is approximately 190 miles from the Grand Canyon, and the latter approximately 207 miles.

Railroad passengers for Grand Canyon coming by Union Pacific leave the train at Cedar City, Utah, and make the trip to the park in comfortable busses, visiting en route Zion National Park, Zion-Mount Carmel Highway, Prismatic Plains, and the Kaibab National Forest, with its rare white-tail squirrel and numerous deer. On the return trip from Grand Canyon to Cedar City, Bryce Canyon National Park, Cedar Breaks National Monument, and Cedar Canyon may be visited.

If parties desire, they can make the trip from the north, take in all these features, cross the canyon, and continue their journey on the Santa Fe Railway. 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.

**BY AUTOMOBILE TO THE SOUTH RIM**

A new road, built by the National Park Service and maintained by the Arizona State Highway Department, leaves the National Old Trails Highway, the main east and west highway through Arizona, at a point approximately 2 miles east of Williams. This road is oiled or paved the entire distance from the National Old Trails Highway to park headquarters, 57.5 miles. It is open the year around. (See map facing p. 42.)



*Entrance to South Rim of Grand Canyon National Park.*

**Flagstaff.**—It is 91 miles from Flagstaff to Grand Canyon via a road paved or oiled for the entire distance. 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 12,794 feet above sea level.

**Williams.**—Williams, 60 miles from Grand Canyon, is 36 miles west of Flagstaff on the main east and west highway through Arizona. It is the nearest shopping center, and its stores and garages carry a good stock of everything necessary to the automobile tourist.

The route from Williams passes near Bill Williams Mountain (elevation 9,264 feet), which has seven distinct crests, Red Lake, Howard Lake, and Red Butte, running along the line of the Grand Canyon Railway.

**Navahopi Road.**—A new road, 31.5 miles in length and paved or oiled for its entire length, has been constructed by the National Park Service from Desert View to connect with United States Highway No. 89 at a point 1.5 miles south of Cameron, an Indian trading post on the Painted Desert. At this point there is a suspension bridge over the Little Colorado River on the road to Tuba City and the Navajo Bridge. Here, too, may be had hotel accommodations, as well as gasoline, oil, and general supplies. Cameron is 55 miles from Flagstaff via United States Highway Nos. 89 and 66, and 58 miles from Grand Canyon via the new Navahopi Road. The roads from Cameron to Grand Canyon and to Flagstaff are in good condition and open the entire year.

**BY AUTOMOBILE TO THE NORTH RIM**

Auto roads to the north rim are uniformly good during the summer season, but they should not be attempted before about May 15 or later than October 15. From Cedar City, on United States Highway 91, there is a splendid road as far as Zion National Park. From Zion a new road, remarkable for its scenic and engineering features, extends via Pine Creek to Mount Carmel. This road, carved from the walls of Zion Canyon, passes through more than a mile of tunnels and offers most spectacular views from its many galleries. At Mount Carmel connection is made with the main highway (US 89) extending northward toward Bryce Canyon National Park and southward via Kanab and Fredonia to the north rim of the Grand Canyon and to the Navajo Bridge.

A good road leads from Cedar City over Cedar Mountain, via Cedar Breaks, to Cedar Junction, from which point the road forks, the branch to the north leading to Bryce Canyon National Park (41 miles distant) and the south branch to the north rim (125 miles), via Kanab, Utah, and Fredonia, Ariz. Supplies and hotel and garage facilities are obtainable at Cedar City, Kanab, and Fredonia, as well as at a number of small southern Utah towns between Kanab and Bryce Canyon. Gas and oil may be had at Jacobs Lake, 45 miles north of Grand Canyon Lodge.

**BY AUTOMOBILE BETWEEN THE SOUTH AND NORTH RIMS**

The trip by auto between the south and north rims may be made by either of two roads. By far the shorter and easier route is via the Navahopi Road to Cameron, thence over United States Highway 89 by way of the Navajo

Bridge and Houserock Valley to Jacobs Lake, thence south through the Kaibab National Forest to Grand Canyon Lodge. This road is paved or oiled from Grand Canyon Village on the south rim to United States Highway 89 near Cameron, and also from the park boundary on the north rim to the lodge. From near Cameron the road is newly graded and graveled for the entire distance except for a 12-mile stretch just north of Cedar Ridge. Even that section is well maintained and passable throughout the year. The distance from El Tovar Hotel on the south rim to Grand Canyon Lodge on the north rim is approximately 215 miles by this route. Gasoline, oil, and food are obtainable at a number of points en route, such as Cameron, The Gap, Cedar Ridge, Navajo Bridge, and Jacobs Lake. Meals and lodging are also obtainable at Cameron, The Gap, and the Navajo Bridge.

At the west end of the Navajo Bridge excellent accommodations are available at the Marble Canyon Lodge. Gasoline and oils also are obtainable. In connection with the lodge there is a trading post where native Navajo Indian rugs and jewelry may be bought, as well as groceries and supplies. An ample supply of good water is available.

Those making the trip by auto between the south and north rims via the Navajo Bridge will find Marble Canyon Lodge a first-class point at which to break the trip by an overnight stop.

The trip by way of the Navajo Bridge has much of interest to offer the tourist. A considerable portion of the route lies on the Painted Desert, which has a charm and fascination all its own. This is also within the Western Navajo Indian Reservation, and the Indians to be seen either following their flocks along the road or gathered at the several trading posts en route are always objects of much interest.

For those interested in the engineering features, the trip is worth while to see the Navajo Bridge alone. This is a structural steel-deck arch of the 3-hinged type, built by the State of Arizona in cooperation with the Federal Government and completed in the fall of 1928. The total length of the bridge is 833 feet, and the main span is 618 feet from center to center of end pins. The distance from the roadway to mean low water is some 467 feet, making this one of the highest highway bridges in the world.

The longer route between the rims is via Williams and Kingman, Ariz., Needles, Calif., Las Vegas, Nev., St. George, and Zion National Park, Utah, and Fredonia, Ariz. Good roads are available for the entire distance, which is approximately 682 miles. From this route a visit may be made to Boulder City and Boulder Dam, now under construction, by a side trip of only 11 miles.

#### BY AIRPLANE

Fast transcontinental airplane service is furnished to Winslow, Ariz., by the T. W. A., Inc. From Winslow a trip to the south rim may be made by automobile in a half day. For persons of limited time, this service offers an excellent opportunity to visit the park.

#### CLIMATE AND CLOTHES

During the winter snow falls in the pine forest along the rim, but though the upper portions may be snow-covered, the trails into the canyon are open and safe, for more moderate weather prevails there.

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

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

It should be borne in mind that on account of heavy snows on the 8,300-foot-high north rim, it is closed to visitors from about October 15 to May 15.

If much hiking is done, stout, thick shoes should be provided. Women will find that short walking skirts, knickers, or riding breeches are a convenience; riding breeches 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 breeches, divided skirts, and straw hats may be rented at El Tovar Hotel or Grand Canyon Lodge.

#### ORIGIN AND GEOLOGIC HISTORY<sup>1</sup>

The Grand Canyon is the deepest, widest, and wildest of a long series of canyons through which the Colorado River flows for 500 miles across a region of high tablelands, known as "the plateau province" or the Colorado Plateaus. These canyons are unusually steep sided and especially 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

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

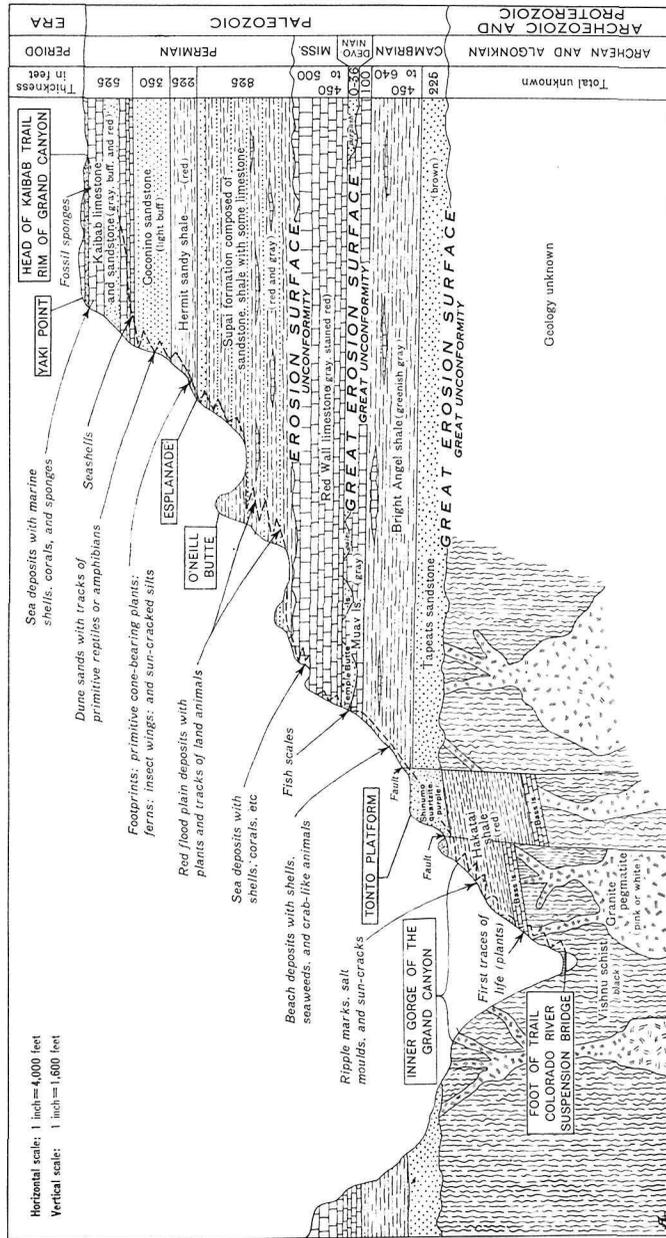


FIGURE 1.—A geologic cross section from a point on the south rim of the canyon to the suspension bridge in the inner gorge, showing the position, age, character, and thickness of the different rock formations. The section follows approximately the location of the Kaibab Trail, indicated by the dotted line.

Grand Canyon is the world's most spectacular illustration of erosion—of the combined action of running water, rain, wind, and the various atmospheric agencies that attack the rock and sculpture them into the forms that give character to a landscape.

### PECULIAR TYPE OF LAND SCULPTURE

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

### ARCHITECTURAL FORMS DOMINATE

As the formations forming the upper canyon walls lie in orderly horizontal layers, like beds of masonry, they have been carved into definite architectural forms, which are everywhere comparable 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 and cutting headward of branch canyons or ravines and stand as solitary outliers capped by remnants of a hard bed

<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.



“lower plateau”, is widest in the region about and east of Bright Angel Trail, 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. Most of the beds of rock seen in the canyon were laid down in water as layers of sand, mud, and limy ooze. Some, however, consist of dune sand drifted in a desert landscape. In time all were hardened into rock by the great weight of the layers above them, the lime and silica that they contained cementing their particles together. Rocks of this kind are called sedimentary rocks by geologists, and as they were laid down in beds 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 animal 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 semiarid, low-lying land or on delta plains by shifting streams; and one formation, the Coconino sandstone, is supposed by many geologists to be sand dunes. 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 immense numbers of the modes 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 early forms of amphibia and reptiles, occur in the Hermit and Coconino sandstone. 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 IN 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”, which would more appropriately be called the Vishnu Gorge, for it is not a gorge in granite. 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. These Archean rocks have been named the Vishnu schist. They are perhaps over fifteen hundred millions of years in age. They contain no traces of life.

The rocks of the younger of these two systems, the Algonkian or Proterozoic, are intermediate in age between the Archean and the Paleozoic 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 remain. Small masses are exposed near the mouth and along the walls of Bright Angel Canyon, on Crystal Creek, on Shinumo Creek, and along the 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. No animal fossils have been found in the Algonkian rocks, but reefs of limestone built up by algae are seen in the Unkar, at the base of the series.

#### 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 great thickness, 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 18 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 nature and composition of these walls of the inner gorge show that they are types formed at great depths—say 4 or 5 miles. We may conclude, therefore, that the Vishnu schists were folded and uplifted to form mountains probably as much as 20,000 feet high, and that these mountains were worn down in the course of time to a low plain before the strata lying in the schists were deposited.

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. Measured by the rate of atomic decomposition of the radioactive minerals—probably our most accurate method—the time covered by these strata, whose aggregate thickness exceeds 15,000 feet, was around 600 millions of years, a long time even in the geologic sense of the word. It spans the long ages during which life was evolved from the primitive marine shellfish to the apelike predecessor of man. Yet, as noted above, it was short in comparison with the time consumed by the succession of events recorded before the Paleozoic strata were laid down.

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, 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 today, 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 corresponding name of each plateau has been given to that section of the canyon which 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, many of which extend into or across the Grand Canyon. Frequently, visitors who notice these faults ask whether the canyon does not owe its origin, or at least its course, to a great fault. This appears not to be the case. The present course of the river dates in general from a time when the region was a lowland and the river was flowing in comparatively soft beds, such as loosely consolidated sands and shales. Contemporarily with the uplift of the region the river cut its way downward through these softer beds and eventually wore its way into the harder beds where we now find it. The softer beds which were once present above the Kaibab limestone have been removed by erosion from the area immediately adjacent to the canyon. Faulting, however, assisted by the alternating sequence of hard and soft formations has been an important factor in the development of the sheer walls and boxlike canyon. Faults have guided the course of many tributary gorges in the Grand Canyon and have locally influenced the course of the Colorado River. 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. Another illustration is seen in Roaring Spring Gulch, where faulting and crushing have made possible the way of the Kaibab Trail across the Redwall limestone.

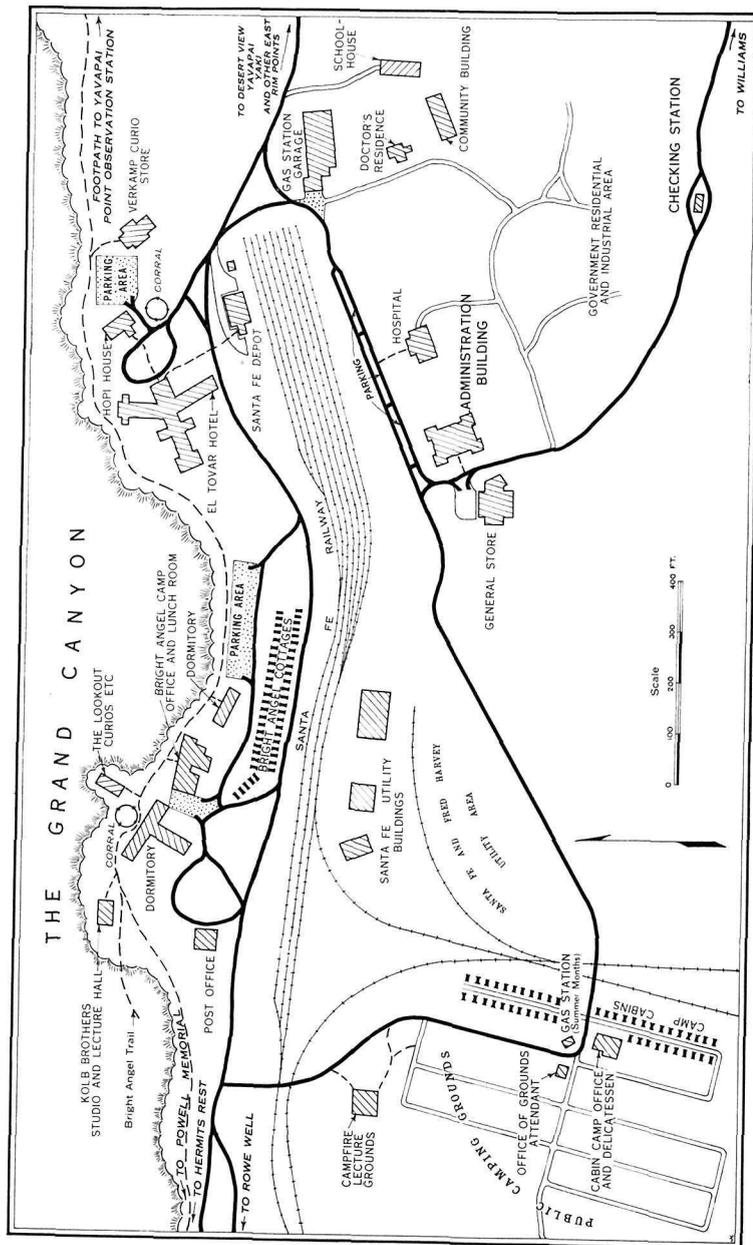
#### WORK OF MAKING THE CANYON

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 today 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 today 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.

#### FEATURES OF INTEREST

##### GUIDED TRIPS

The National Park Service maintains a free guide and lecture service on both rims. On the south rim each evening at 8:30 o'clock during the summer travel season, in the north end of the public camp ground, a member of the naturalist staff gives a free camp-fire talk on some subject of natural history, such as the geology or wildlife of the park, or on the history or Indians of the region. A similar talk is given on the north rim during the season there. The north-rim camp-fire talk is given in a small natural arena near the cafeteria in the public camp ground.



Grand Canyon Village (South Rim).

During the course of an auto caravan, conducted daily during the summer season on both the north and the south rims, various interesting features of the geology of the canyon are pointed out, together with those pertaining to the flora and fauna of the region.

Each morning from the North Rim Lodge a nature walk is conducted by a member of the park naturalist staff to Bright Angel Point.

It is suggested that park visitors consult schedules posted at the Information Office, Grand Canyon Lodge, and elsewhere throughout the park in order that full information may be had as to the exact time and place of these and other features offered by the National Park Service educational staff without charge.

### YAVAPAI OBSERVATION STATION

(South Rim)

At Yavapai Point, 1½ miles east of El Tovar, the National Park Service maintains an observation station and trail-side museum, admission to which is free. At this station the story of Grand Canyon, its origin and the history of the earth as recorded in its walls, is told by means of fixed telescopes, specimens, relief models, charts, and photographs. The building is open every day throughout the year, with a naturalist in charge. Short talks on the history of the canyon are given here daily. Yavapai Point may be reached by auto road or by the paved footpath leading eastward 1½ miles from Grand Canyon Village.

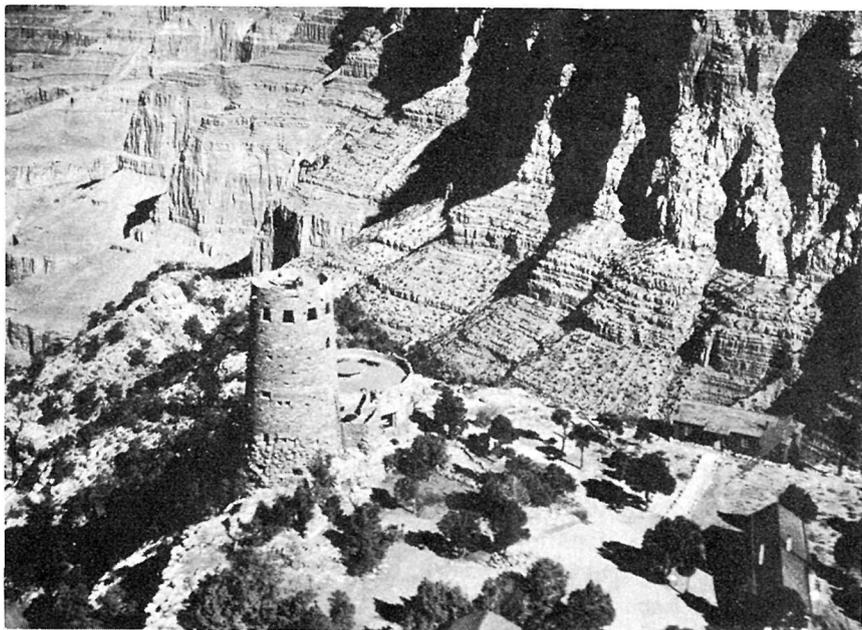
### WAYSIDE MUSEUM OF ARCHEOLOGY

(South Rim)

Twenty miles east of Grand Canyon Village, on a short spur leading off the Desert View Drive, is the Wayside Museum of Archeology. This station is open to the public daily throughout the summer, and a trained naturalist is in constant attendance. The exhibits show stages in the development of early man, especially in relation to pueblo history in the Southwest. The building is located near the Tusayan Ruin—a small prehistoric pueblo.

### DESERT VIEW OBSERVATION TOWER

Twenty-six miles east of El Tovar Hotel, on a high, rocky point overlooking the Painted Desert, stands the Desert View Observation Tower. It was built in 1930 of native stone in adaptation of southwestern Indian architecture. Standing on the brink of the canyon, it commands one of the



*Desert View Observation Tower.*

most breath-taking of Grand Canyon views and presents a startling panorama of the Painted Desert and the Kaibab National Forest. Through its telescopes the range of vision is extended far into the adjacent Indian country.

At the base of the tower is a low round chamber, which, with its great windows overlooking the Grand Canyon and the Painted Desert, provides a comfortable and fascinating lounge room. A stairway conducts visitors to the tower and to the limitless views to be seen from its top.

On the walls and ceilings of the tower, and in various parts of the lower chamber are many specimens of Indian petroglyphs, as well as numerous symbolic paintings by the famous Hopi artist, Kabotie.

#### THE LOOKOUT

(South Rim)

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. The reception room has spacious windows, a fireplace, Navajo rugs, and easy chairs; it is electric lighted and steam heated. Canyon photos are for sale.

#### HOPI HOUSE

(South Rim)

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. Canyon souvenirs, Navajo rugs and jewelry, basketry, and other examples of Indian handicraft may be purchased. Here also live a small band of Hopis, who are among the more highly developed of our Indians. Here, also, each evening upon the return of visitors from the Desert View Drive these Hopis give a series of Indian dances to which no admission is charged.



*Navajo silversmith at work.*

#### VERKAMP'S SOUVENIR SHOP

(South Rim)

Verkamp's is on the rim of the canyon, just east of the Hopi House. In this shop may be seen one of the largest and best paintings of the Grand Canyon, as well as other works of the late Louis Akin.

This store 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. A powerful binocular telescope has been installed on a wall in front of this store for the free use of visitors.

#### HERMITS REST

(South Rim)

At the western terminus of the Rim Road, 8 miles from El Tovar, there is a striking cliff house built into the canyon wall. Designed simply as a shelter and lookout, Hermits Rest—with its rustic lounge, its huge fireplace, and observation porch—has become an attraction in itself, and is considered one of America's best examples of hidden architecture.

**KOLB STUDIO AND CANYON LECTURE**

(South Rim)

Kolb Bros.' studio is at the head of Bright Angel Trail. The Kolb Bros. give each morning at 11:30, in a spacious and well-ventilated new auditorium, an interesting lecture, illustrated with motion pictures and slides, describing their boat trips through the canyons of the Green and Colorado Rivers. Two such trips were made, the first in 1911 and the second with the United States Geological Survey party in 1923. Pictures of both trips are shown; admission, 40 cents. Afternoon and evening lectures also are given when there is sufficient demand for this service.

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.

**HOTEL EVENING ENTERTAINMENTS**

Every evening following the dinner hour, in the music room at El Tovar Hotel, a lecture, illustrated with moving pictures and slides, is given on Grand Canyon National Park and the surrounding country. Admission to this lecture is free and all visitors to the park are invited to attend. A musical program is provided by a cowboy orchestra. This should not be confused with the illustrated lecture given daily by Kolb Bros., covering their trips down to Colorado River.

Every evening at 8:45 in the Utah Parks Co. North Rim central lodge a program, consisting of musical numbers, skits, etc., is given by the college boys and girls employed at the hotel. During this program a short informational talk is given by a member of the park naturalist staff on some natural feature of Grand Canyon National Park or the surrounding country. After the program dancing is enjoyed every evening, except Sunday, with music furnished by an orchestra of college boys. Admission to this program and dance is free.

**MOVING PICTURE SHOW**

(South Rim)

On Sunday and Wednesday evenings, motion pictures are shown in the Community House. Programs comprise recent releases of feature films, selected short subjects, newsreels, etc. Moderate admission charge.

**CONVENIENCES**

**SOUTH RIM**

**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. Gasoline is sold at prices prevailing on Highway 66.

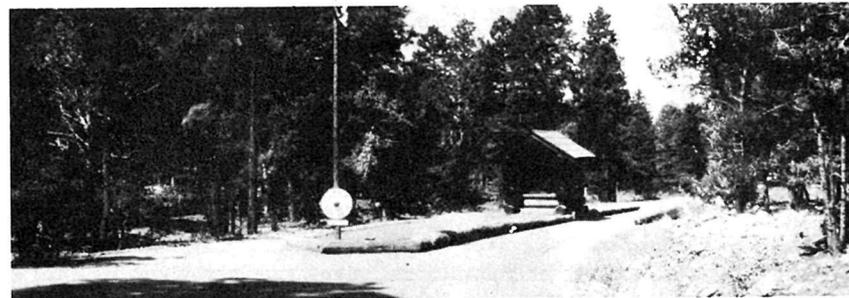
**Groceries and Supplies.**—The Babbitt Brothers Trading Co. operates a general store at Grand Canyon carrying a full line of groceries, meats, fresh fruits and vegetables, hardware, dry goods, outing apparel, and other travelers' necessities.

**Postal and Telegraph Offices.**—The post office is located near the Hermit Rim Road, about 400 yards west of the railroad depot. It is open from 8 a. m. to 6 p. m. The Western Union office in the railroad station is open from 6:30 a. m. to noon, 1 to 5 p. m., and 6 to 10:30 p. m.

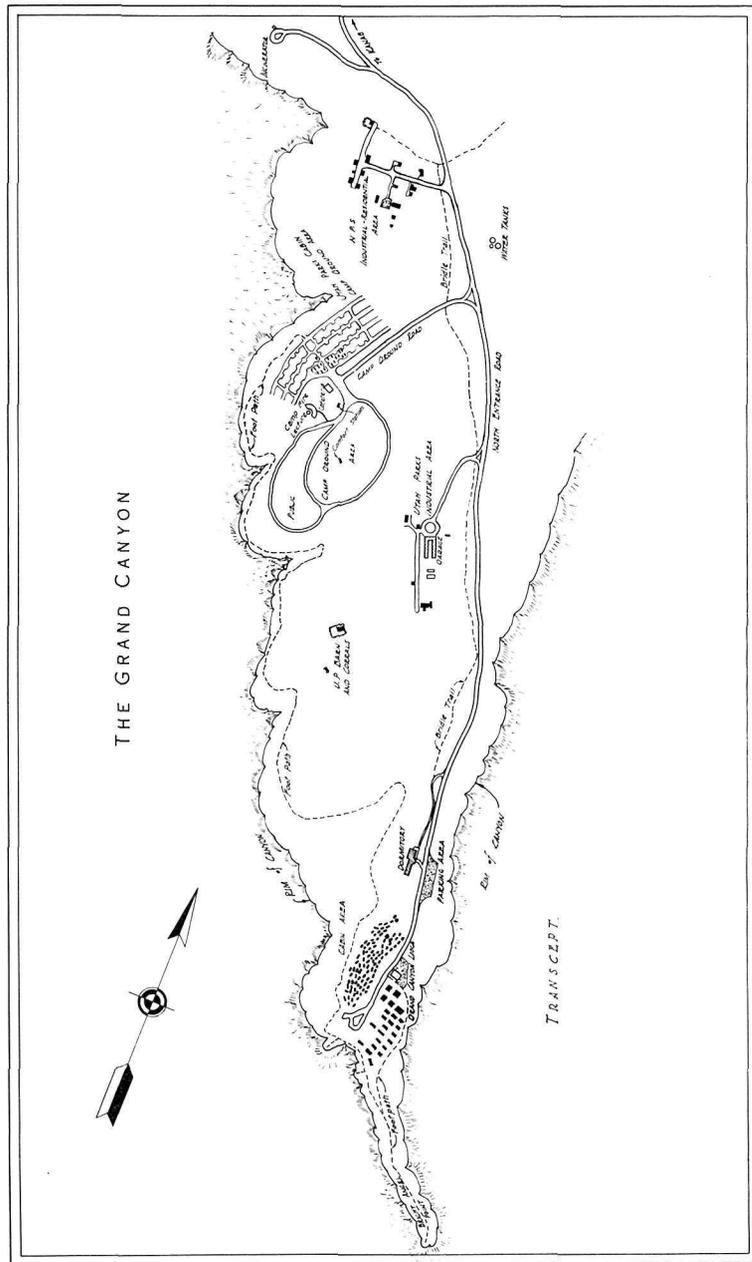
**Telephone.**—There is telephone connection between El Tovar Hotel, National Park Service office, ranger stations, Phantom Ranch, Havasupai Indian Agency, Desert View, and the north rim. Complete telephone service, both local and long distance, to all points is had through the commercial exchange of the Mountain States Telephone & Telegraph Co., located in the office of the park superintendent.

**Medical Service.**—The National Park Service maintains a modern hospital near the administration building. A competent, experienced physician and an experienced and well-qualified trained nurse are continuously on duty. The doctor's office is in the hospital, phone 14; residence, phone 35.

**Kodak Finishing.**—The services of a first-class photographer are available for developing and finishing kodak films and prints. Exposed film left at the Lookout or at El Tovar news stand before 12:30 p. m. will be developed promptly and finished prints will be ready for delivery by 6 p. m.



*Checking station—South Rim entrance.*



North Rim of Grand Canyon.

### NORTH RIM

**General Supplies.**—At the cafeteria building in the camp ground groceries, meats, milk, eggs, and general campers' supplies are for sale. Indian handicraft, including fine Navajo rugs and jewelry, may also be obtained.

**Postal and Telegraph Offices.**—A post office is maintained from June 1 to October 1. The address is Kaibab Forest, Ariz. A Western Union office is open during the season, and the telegraphic address is North Rim, Grand Canyon, Ariz.

**Telephone.**—There is telephone connection between Grand Canyon Lodge and south rim headquarters, also to various points throughout the park and to all of the de luxe sleeping lodges. Local and long-distance connections are made through the switchboard located in the office of the main lodge. Long-distance communication may be had with any point served by commercial telephone lines.

**Curio and News Service.**—Adjacent to the recreation room and office in the main lodge is a curio store which carries a full line of Navajo rugs and jewelry, Indian basketry and pottery, as well as travelers' needs, photographs, post cards, magazines, etc., and soda-fountain service is available. In this shop a Navajo silversmith will be found engaged in the hand manufacture of native jewelry.

**Medical Service.**—An experienced doctor and nurse are on duty at the Grand Canyon Lodge throughout the season.

**Automobile Supplies.**—A first-class garage is maintained by the Utah Parks Co. where auto storage, repairs, tires, batteries, gasoline, oils, etc., are available.

**Kodak Finishing.**—Films are developed and finished promptly. Orders may be left with the attendant in the curio shop in the main lodge building or at the cafeteria. Films left by 8 p. m. will be developed and printed ready for delivery by 7 o'clock the following morning.

### ACCOMMODATIONS AND EXPENSES <sup>3</sup>

Living at Grand Canyon National Park is pleasant and comfortable, both on the south and north rims. The hotel, lodges, cabins, and free public camp grounds all have an atmosphere of unusual charm because of their unique setting. Horseback riding and hiking are popular, but there are no conventional sports such as golf or tennis. The canyon absorbs all

<sup>3</sup> Detailed schedules of authorized rates for all services and accommodations as officially approved by the National Park Service are on file in the office of the park superintendent, at the various checking stations, and at information offices. There they are subject to inspection, or copies are obtainable.

the attention. Stores, news stands, delicatessens, and automobile supply and repair shops take care of the average requirements of all comers.

#### SOUTH RIM

**El Tovar Hotel.**—Situated on an unparalleled site on the rim of the canyon, El Tovar is one of the most famous resort hotels in the Southwest. It is a long, low structure of native boulders and pine logs, with more than 80 guest rooms, most of which have private bath. El Tovar is operated both on the American and the European plan.

**Bright Angel Lodge and Cabins.**—Modern, comfortable, and attractive accommodations are provided at a wide price range, at Bright Angel Lodge, situated on the canyon rim near the head of Bright Angel Trail. The central lodge provides meal service at popular prices, together with lounge and entertainment facilities. Rooms are in adjoining guest houses and attractive cabins. European plan.

**Auto-Camp Cabins in Public Camp Ground.**—In Grand Canyon Village there is a modern motor camp, consisting of a lodge and delicatessen, together with a large number of furnished housekeeping cabins. Bedding and linen may be rented at the camp lodge. Rates, which are reasonable, include fuel, water, and electric lights. Public bath, toilet, and laundry facilities are available.

**Phantom Ranch.**—Picturesquely located at the very bottom of the Grand Canyon, a vertical mile below the rim, Phantom Ranch consists of a group of rustic cabins with a central lodge and dining room, providing every modern comfort for a brief or extended stay in the depths of the chasm. Near the central lodge are a recreation hall and swimming pool. Phantom Ranch is operated on the American plan.

**Special Trips.**—There are certain special trips that every Grand Canyon visitor wants to make if he can possibly allow the time. The Grand Canyon Rim Drive to Hermit's Rest in the morning and Desert View and the Desert View Observation Tower in the afternoon (nearly 70 miles along the rim of the Canyon) is especially popular. These may be taken singly or as a combination trip. Another popular tour is to the well-known, but little seen, Navajo and Hopi Indian Reservations by way of the suspension bridge over the Little Colorado River and through the Painted Desert country. Glimpses of Indian life at Tuba City, where there are Navajos, and the Hopi village of Moenkopi are very interesting. Trips to Bass Camp and Havasupai Point, west of El Tovar, may be arranged. These scheduled trips are all made by motor; automobiles may be chartered.

There are very few days in the year when one cannot make the Bright Angel trip on the back of a surefooted mule, a distance of more than 6

miles from the El Tovar Hotel to the Colorado River. Another spectacular trail trip is the one to Phantom Ranch over the Kaibab Trail, crossing the suspension bridge. A three-day outing, spending two nights at Phantom Ranch and visiting Ribbon Falls, a crystal waterfall over a natural rock altar in a woodland amphitheater, and Roaring Springs, a series of beautiful cascades, is scheduled. In two days you may cross the Grand Canyon from one rim to the other, spending the night at Phantom Ranch and lunching at Ribbon Falls. The Dripping Spring trip is a pleasant one-day horseback outing. The route is by Hermit Rim Road and Hermit Basin to Dripping Spring, returning through the forest.

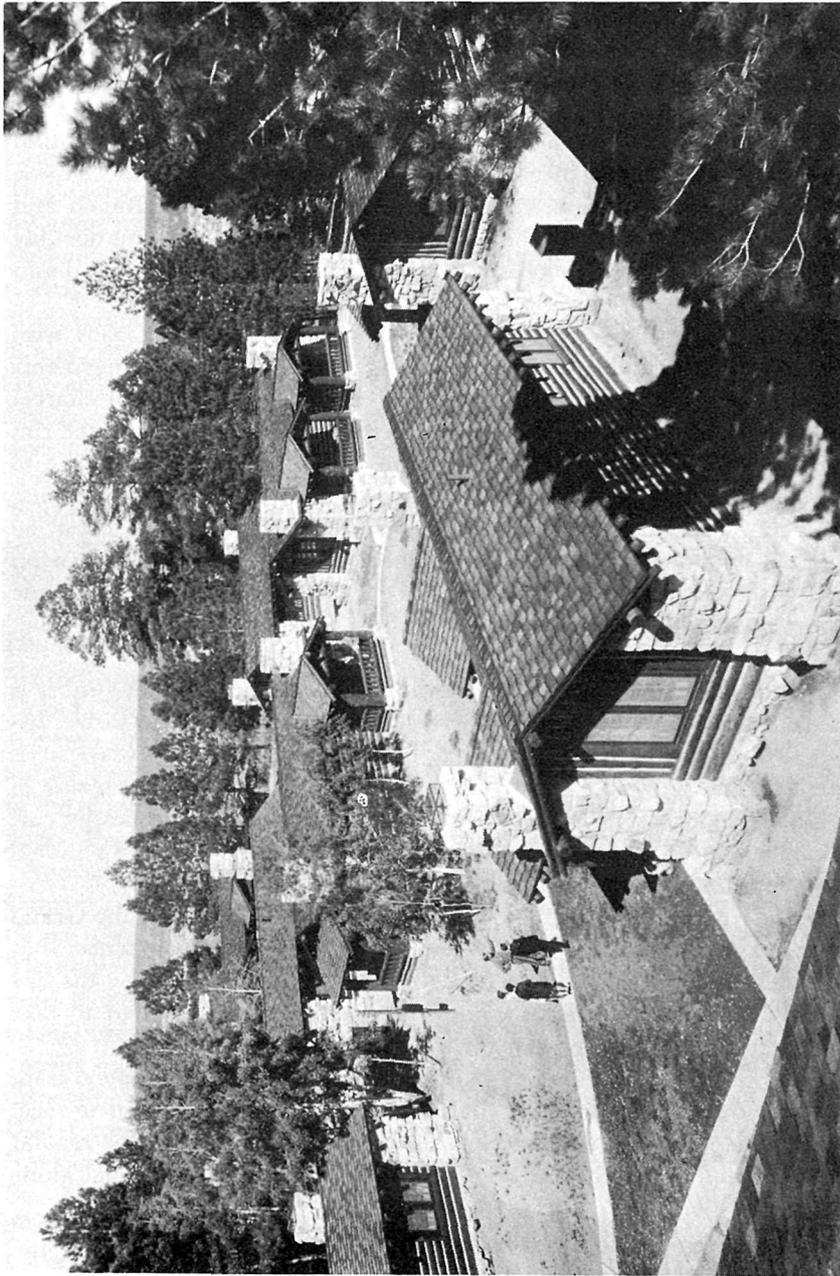
**Pack Trips.**—There are many opportunities for interesting pack trips into the canyon and surrounding country, and special arrangements may be made for any type of trip. Experienced guides are in charge. On account of weather conditions, trail trips into the canyon and the rim country are usually practical from April to October; from October to April they are confined to the inner canyon. The most popular camping trip is to Havasu Canyon and Havasupai Village, a journey of about 50 miles, 36 by automobile and the remainder on horseback, to the canyon home of the Havasupai Indians, who live deep in the earth in a picturesque setting of waterfalls and grottos. Havasupai means "people of the blue-green water."

Another unusual scenic trip now available to Grand Canyon visitors is that to Rainbow Bridge, the most remarkable natural bridge so far discovered. Although its existence has been known for many years, it is estimated that only about 600 white persons have ever seen it because of the difficult journey involved. Now one can get within 15 miles by car, and make the rest of the trip on horseback. Rainbow Bridge is a national monument under the jurisdiction of the National Park Service.

**Saddle Horses.**—So many new bridlepaths along the rim of the Grand Canyon and through the pine forests have been recently opened that horseback riding is a favorite pastime. Horses may be rented by the day or half day, with or without guides. Parties are not permitted to take trips by muleback into the canyon without guides.

**Emergency Trail Service.**—Visitors who walk down the canyon trails from either the north or south rims may have saddle mules sent to meet them. The charge for such service is necessarily greater than the regular scheduled muleback trips into the canyon, since it involves special guide service.

NOTE.—All of the above described services and accommodations are under the management of Fred Harvey.



*Lodges on the North Rim.*

**Airplane Service.**—Tickets for the scenic flights over the canyon may be secured at the hotels or lodges on either rim, where arrangements may also be made for special trips by air. Airplane service is under the management of Grand Canyon Airlines, Inc.

#### NORTH RIM

It should be borne in mind that accommodations on the north rim are available from May 30 to October 1 only. There all services are under the management of the Utah Parks Co., except the trips by muleback into the canyon, which are under the management of Fred Harvey.

**Grand Canyon Lodge.**—This is the main north rim hotel unit. Situated as it is on Bright Angel Point, a long arm extending out into the Grand Canyon, between two side canyons known as Bright Angel Creek Canyon and The Transept, it commands superb scenic views. Although the original building was destroyed by fire in the fall of 1932, surrounding sleeping cabins were not damaged, nor has this made any interruption in service. Pending reconstruction of the main building, office, lounge, entertainment, curio store services, etc., are provided in a commodious temporary structure. Meals are served in a large rustic building only a few hundred feet north of the main unit, with free bus service provided for guests between dining room and lounge building. Many of the sleeping cabins are of the de luxe type, with bath, fireplace, and porch. The comfortable standard cabins of two rooms each are log structures, attractive and convenient.

**Auto-Camp Cabins and Cafeteria.**—In the public camp ground, 1 mile north of the main lodge, there is a modern auto camp consisting of a main building in which cafeteria service is provided, with meals at very reasonable rates, and where groceries, meats, fresh milk, and vegetables and campers' supplies of all kinds are obtainable. Surrounding this are a number of modern housekeeping cabins. The rates for these, which are reasonable and vary with the type and class of cabin, include fuel, water, and electric lights. Toilet conveniences are readily accessible. Bath and laundry facilities are also available. A moderate additional charge is made for equipping these housekeeping cabins with blankets and bed linen.

**Auto-Bus Trips.**—Regularly scheduled trips by motor bus are made from Grand Canyon Lodge over a paved road to Point Imperial and Cape Royal with stops at Farview, Vista Encantada, and other points of interest along the canyon rim. Trips are also available to Point Sublime. Special trips may be arranged to the surrounding Indian country or elsewhere as desired. Automobiles may also be chartered.

**Saddle-Horse Trips.**—Horseback riding is particularly enjoyable on the north rim, where many miles of bridlepths have been constructed by the

National Park Service through the dense forests of pine, fir, and spruce. One-day escorted trips are made to Point Imperial or Point McKinnon. Shorter trips, with or without guides, may be made to Uncle Jim Point, and special trips by saddle horse may be made as desired.

**Canyon Trail Trips.**—Trail trips into the canyon by muleback are under the management of Fred Harvey. A most popular 1-day trip is that down the Kaibab Trail to Roaring Springs and Bright Angel Creek. Overnight trips are also made to Phantom Ranch or to the south rim.

#### PUBLIC CAMP GROUNDS

Camp grounds are maintained by the National Park Service at Grand Canyon Village and Desert View on the south rim and at Bright Angel Point, and Cape Royal on the north rim. Motorists bringing their own equipment may make free use of these grounds, which are equipped with cooking fireplaces, tables, benches, water, and sanitary facilities. Water is obtained with difficulty in this desert country, and visitors are requested to conserve it as much as possible. Camping is restricted to established grounds.

#### GOVERNMENT PUBLICATIONS

**Glimpses of Our National Parks.** 92 pages, illustrated. National Park Service, Washington, D. C. Free.

**Recreational Map.** Show both Federal and State reservations, with recreational opportunities throughout the United States. Brief descriptions of principal ones. National Park Service, Washington, D. C. Free.

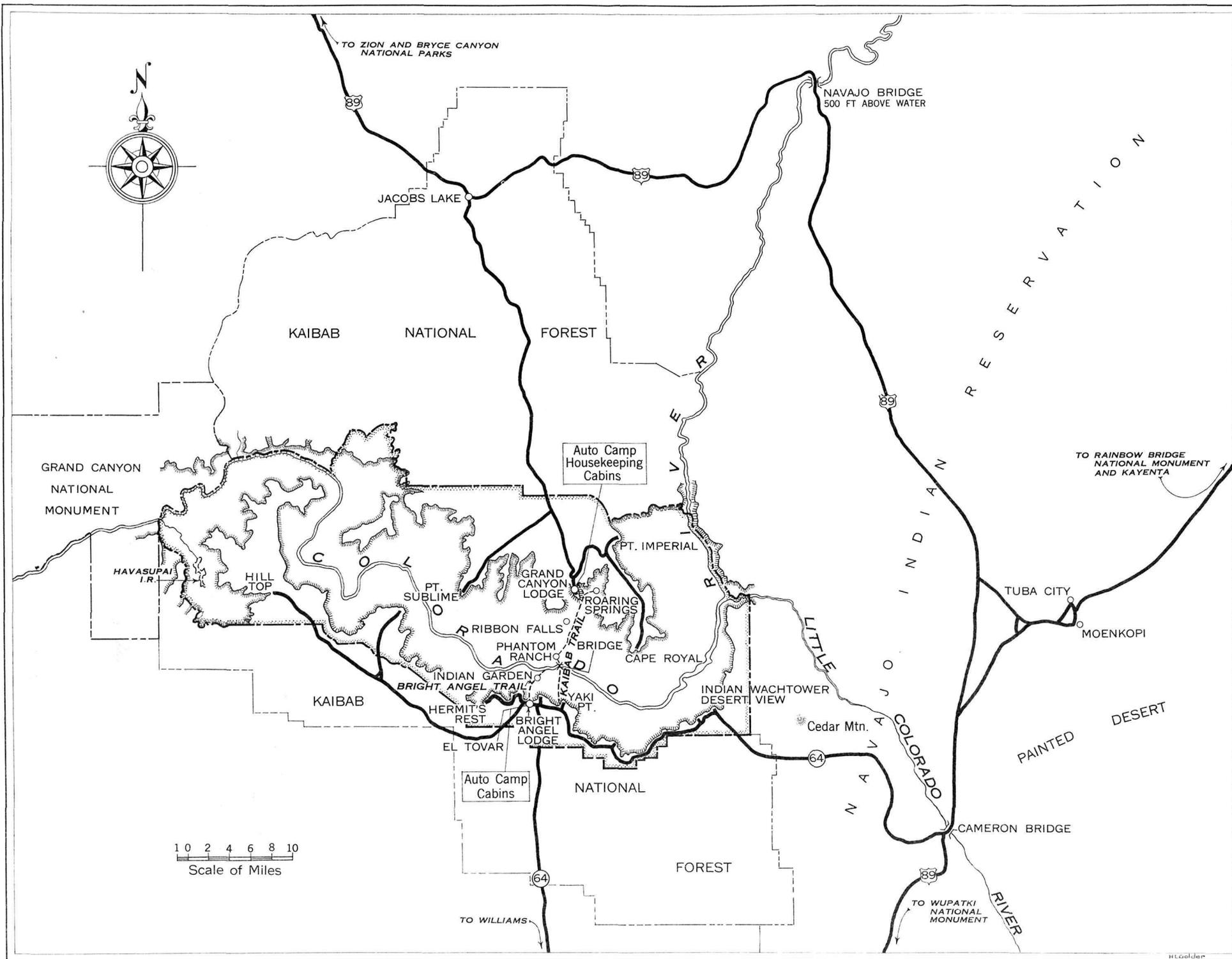
**National Parks Portfolio.** By Robert Sterling Yard. Cloth-bound; more than 300 carefully selected photographs of the national parks. Superintendent of Documents, Washington, D. C. \$1.50.

**Fauna of the National Parks.** By G. M. Wright, J. S. Dixon, and B. H. Thompson. Survey of wildlife conditions in the national parks. 157 pages, illustrated. Superintendent of Documents, Washington, D. C. 20 cents.

**The Shinumo Quadrangle, Grand Canyon District, Arizona.** By L. F. Noble. U. S. Geological Survey Bulletin. 100 pages, illustrated. Superintendent of Documents, Washington, D. C. 20 cents.

**Bright Angel Map.** 26 by 20½ inches, scale 1 mile to 1½ inches, with geological description of the Grand Canyon. Geological Survey, Washington, D. C. 10 cents.

**Topographic Map,** east half of the Grand Canyon National Park, combining on one sheet the Vishnu and Bright Angel quadrangles, 41 by 45½ inches. Geological Survey, Washington, D. C., 25 cents. Similar map for west half of park. 25 cents.



GRAND CANYON NATIONAL PARK, SHOWING APPROACH ROADS

H. L. Golder



