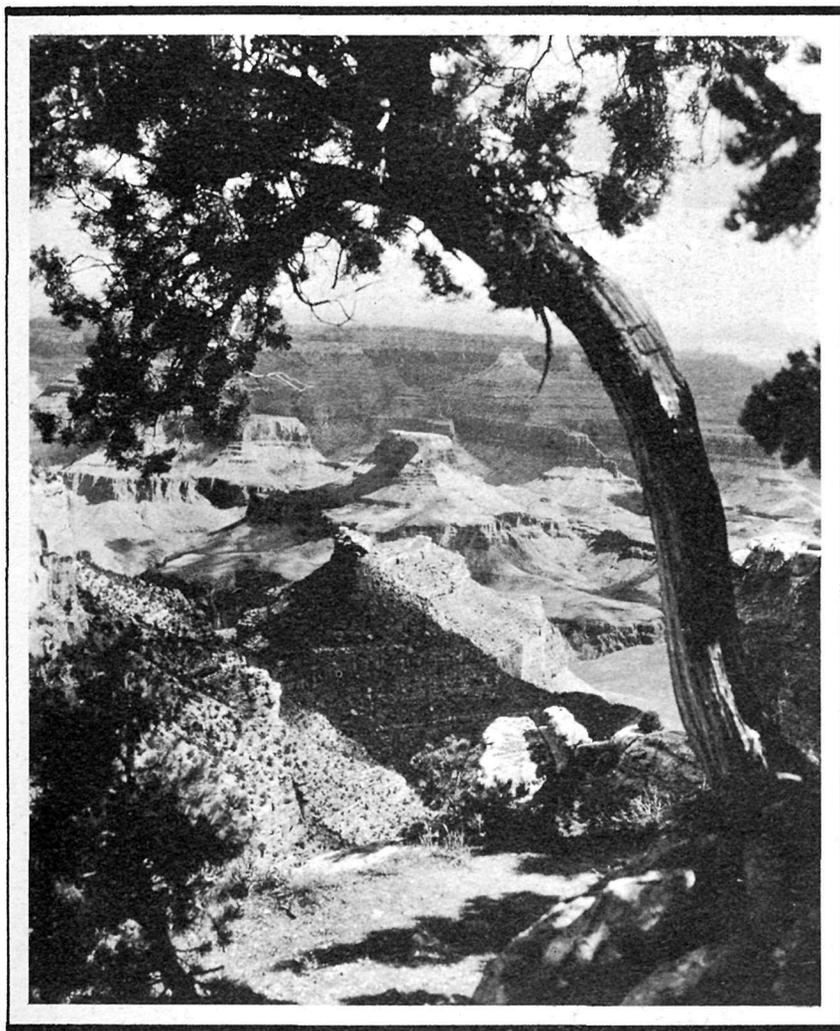


GRAND CANYON NATIONAL PARK

★ ARIZONA ★



UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

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

GRAND CANYON
NATIONAL PARK
ARIZONA



SOUTH RIM OPEN ALL YEAR
NORTH RIM OPEN JUNE 1 TO SEPTEMBER 24

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1934

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 campfires. 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.

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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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.
- 1869-71. 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, was officially opened to the public. This building was destroyed by fire on September 1, 1932.
- 1928. The Kaibab Trail was opened to the public on May 21.
- 1929. Marble Canyon Bridge, across the Colorado River, 7 miles downstream from Lee's Ferry, was built.

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 the 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 NATIONAL PARK

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

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

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. Adjacent to the park 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. Very little of the country back of the rim is included in the reservation. Additions have been recommended in order to 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, 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.

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, 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.

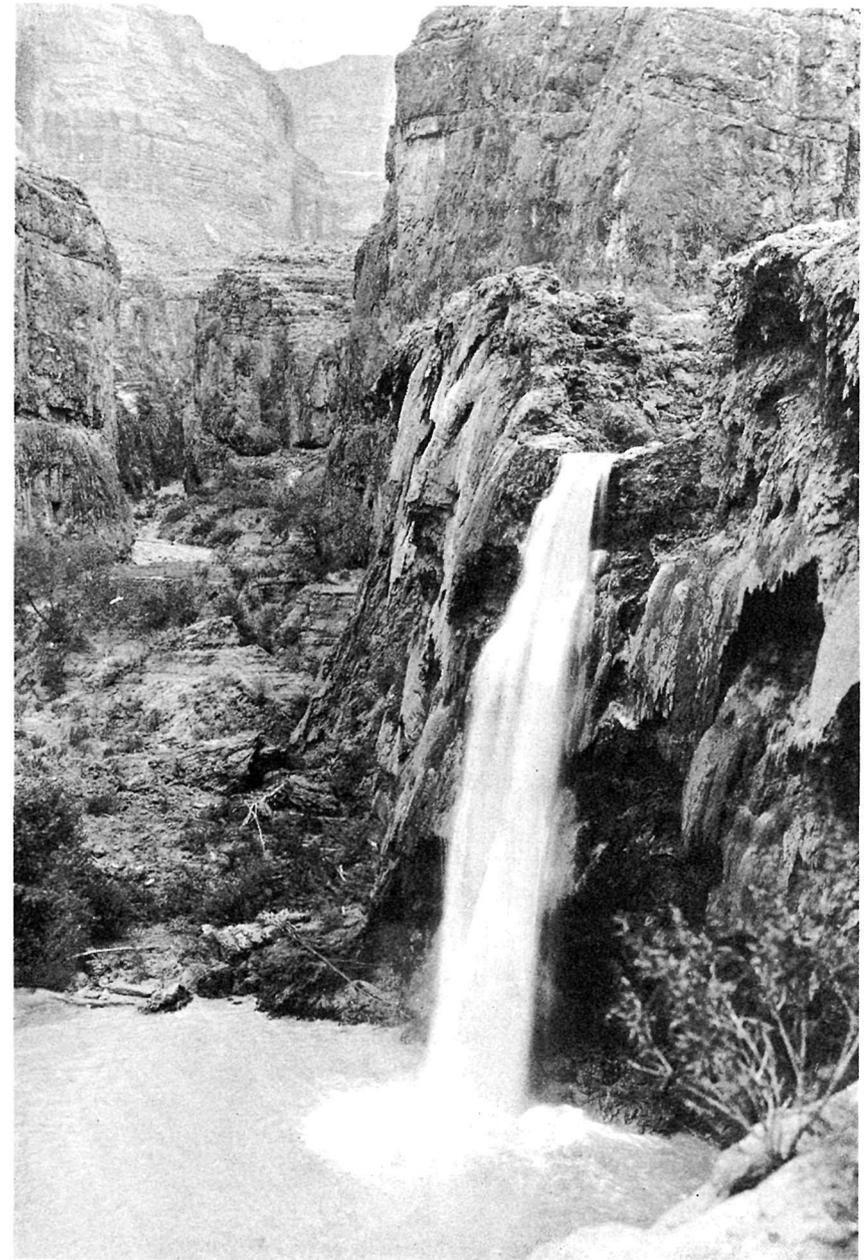
The rim of the Grand Canyon is one of the stillest places on earth, even when it is crowded with people.

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 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.



Havasu Canyon.

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 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.

GRAND CANYON RIM DRIVES

The drive along the south rim, covering nearly 70 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, great fireplace, and observation point.

The route eastward is over the new paved Desert View Road through the Tusayan National Forest and along the Canyon's Rim. Yavapai Observation Station, Yaki, Moran and Lipan Points, and the Indian Watchtower 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 two 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.

The north rim visitor may, in one day, make the trip by auto to Point Imperial, Farview, and Cape Royal over excellent oiled roads. An unimproved road also extends westward to Point Sublime. A canyon trip by muleback may be had in one day, going as far as Roaring Springs only. Two days are required for the round trip to the Colorado River from the north rim.

From Grand Canyon Lodge on the north rim regular trips by autobus may be made eastward over excellent roads to Point Imperial, Farview, Vista Encantada, and Cape Royal. Special trips may be arranged to Point Sublime over an unimproved road to V. T. Park and to other points of interest. 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 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.

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.

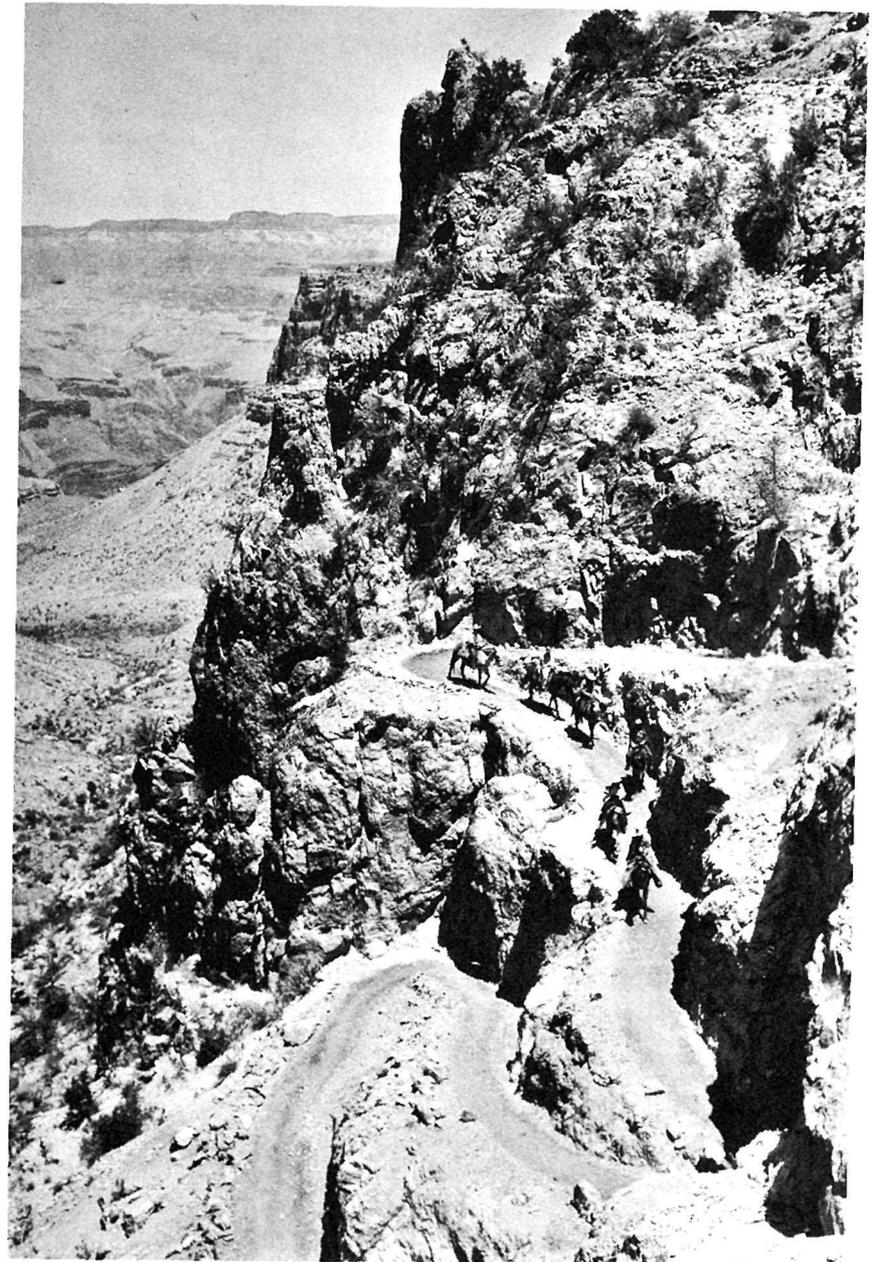
A similar footpath extends along the rim westward to Powell Memorial. The views from this footpath are very inspiring.

DESCENDING THE CANYON

There are two good trails from the south rim to the river. The one most frequently used starts near 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



Down Bright Angel Trail.

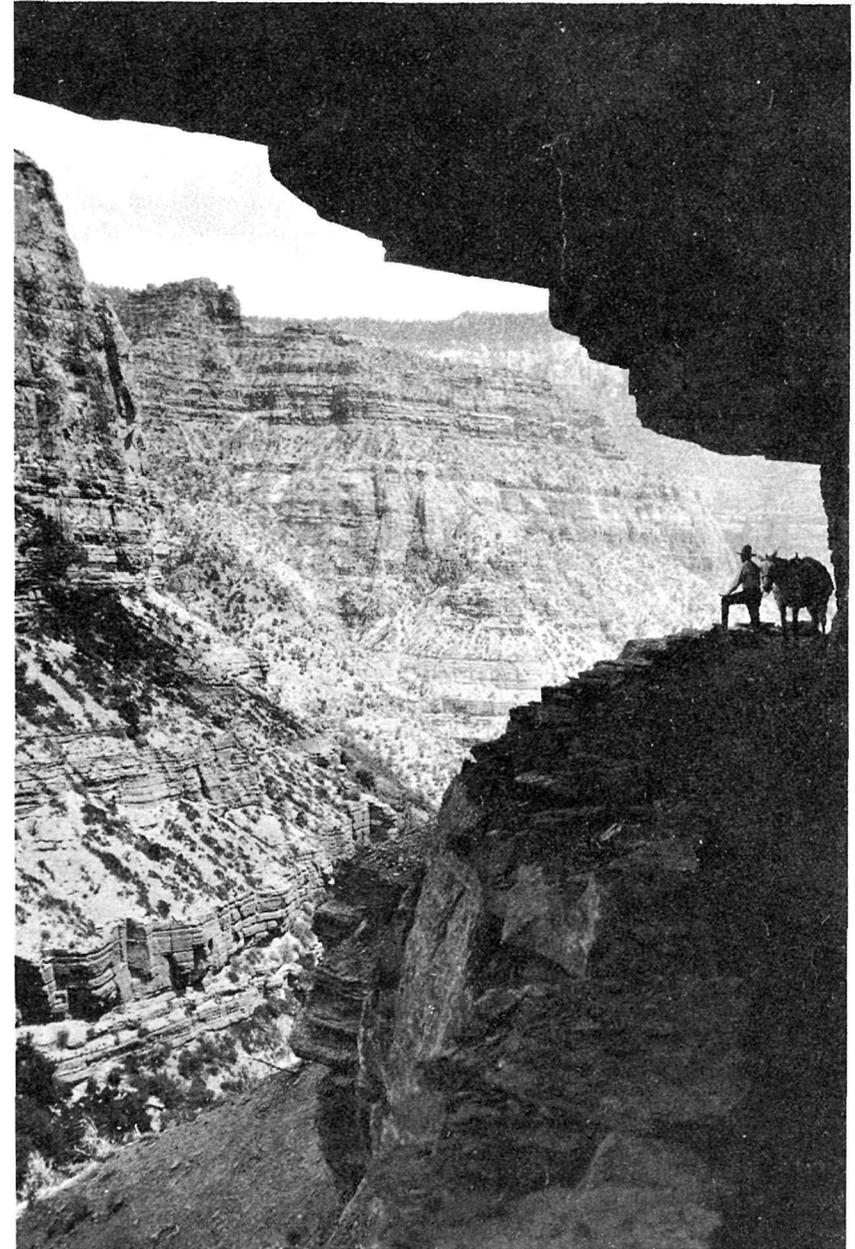
attempt it on foot, for the apparent distance as seen from the rim is misleading, and the climb back is most arduous at that elevation. The south rim of the canyon at park headquarters is 6,886 feet above sea level. Nearly every day one or more hikers, overconfident of their endurance, find the way up too arduous and have to be assisted by guides and mules sent down for them from the rim.

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 stretches out upon the Tonto Plateau and presently 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 Rim late in the afternoon.

THE 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 at Yaki Point, some $3\frac{1}{2}$ miles east of El Tovar, 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, where the descent on muleback begins.



On the way to the North Rim by the Kaibab Trail.

The downward journey, made by easy grades, unfolds an ever-changing panorama until the Tip-Off is reached, from which point the trip continues over Kaibab Trail across the Colorado River Suspension Bridge, arriving late in the afternoon at Phantom Ranch for dinner and overnight stop. The return journey is made over Yaki Trail or Bright Angel Trail arriving at the hotels on the Rim in the late 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 1½-inch steel cables, provided with a structural steel truss acting both as a stiffening member and as guard rails. It is further



Phantom Ranch at the bottom of the Canyon.

stiffened by two 1½-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 cottages surrounding central dining and recreation halls. It is an ideal place at which to spend a night or two in the canyon depths. 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.

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 25.6 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.

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 semidesert 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 former is a series of beautiful cascades, while the latter 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 red man 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 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 in 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. Forty miles northwest of the Grand Canyon is the village of Moencopi.

Interesting journeys of 1 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, Arizona. 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 settlers of many centuries ago, and myths and legends of an Indian occupancy lost in the past.



A Navajo belle.

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 which is located at the terminus of the south approach road, on the south side of the railroad tracks, southwest of the depot. 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 the park naturalist will conduct short trail trips along the canyon rim. He will explain all features relating to the natural history of the canyon. Full information regarding these trips may be had at the Park Information Office.

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

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. This stage leaves Williams at 6:10 p.m. and arrives at Grand Canyon at 7:40 p.m. On the return trip it leaves Grand Canyon at 9 a.m., arriving at Williams at 10:30 a.m. The fare 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.

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. Regular stage service is maintained from both these points to the Grand Canyon National Park.

Parties visiting the canyon from either of these Utah points can make an interesting trip covering Bryce Canyon National Park, Cedar Breaks, and Zion National Park.

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

A new road, built and maintained by the National Park Service, leaves the National Old Trails Highway, the main east and west highway through Arizona, at a point approximately 2½ 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.

Flagstaff.—It is 91 miles from Flagstaff to Grand Canyon via this new road. 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.

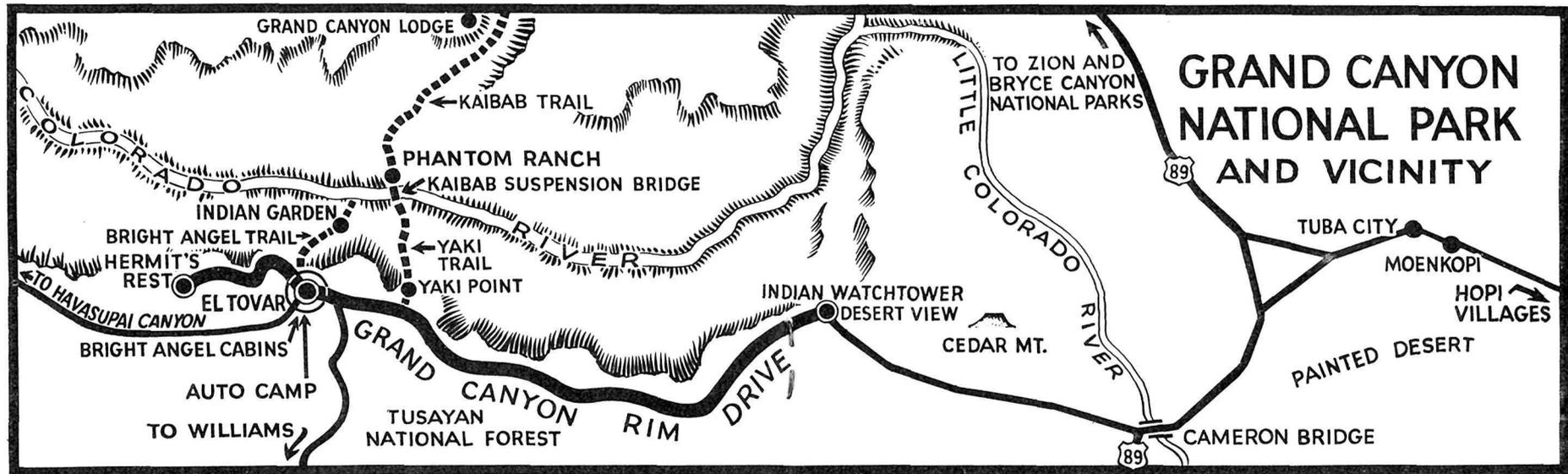
Williams.—Williams, 60 miles from Grand Canyon, is 36 miles west of Flagstaff on the main east and west highway through Arizona. It is the nearest shopping center, and its stores and garages carry a good stock of everything necessary to the automobile tourist.



Entrance to Grand Canyon National Park.

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. No supplies can be purchased between Williams and Grand Canyon, except at a point 5 miles south of Grand Canyon.

Navahopi Road.—A new road from Desert View to Cameron is under construction. Cameron is 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. Cam-



eron is 55 miles from Flagstaff and 147 miles from Grand Canyon via Flagstaff. The road between Flagstaff and Cameron is in good condition and passable the year around.

Auto roads to the north rim are uniformly good during the summer season, but they should not be attempted before about May 15 nor later than October 15. From Cedar City 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.

The trip by auto between the south and north rims may be made by either of two roads. One of these is via Williams and Kingman, Ariz., Needles, Calif., Las Vegas, Nev., St. George, Utah, and Fredonia, Ariz. Good roads are had practically the entire route and the distance 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. The shorter route is via Cameron, Navajo Bridge, House Rock Valley, and Jacobs Lake. The distance by this route is 311 miles via Flagstaff and 228 miles via the Navahopi Road and Cameron direct.

A splendid new road has also been built from House Rock Valley to Jacobs Lake and thence to the north rim. Between Cedar Ridge and House Rock Valley the route is a fair desert road, unimproved but entirely passable at all times during the travel season. 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 Lees Ferry.

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 had, as well as groceries and supplies. An ample supply of good water is available.

Those making the trip by auto between the north and south 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 Lees Ferry has much of interest to offer the tourist. Much 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.

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 1,000-foot-high north rim, it is closed to visitors from about October 15 to May 15.

If much hiking is done, stout, thick, hobnailed 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 HISTORY¹

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 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 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—büttes, mesas, terraces, and plateaus. The high plateau into which the river has cut its way is built up of layer upon layer or 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.²

ARCHITECTURAL FORMS DOMINATE

As the formations 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

¹ By L. F. Noble, geologist, U.S. Geological Survey.

² 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.

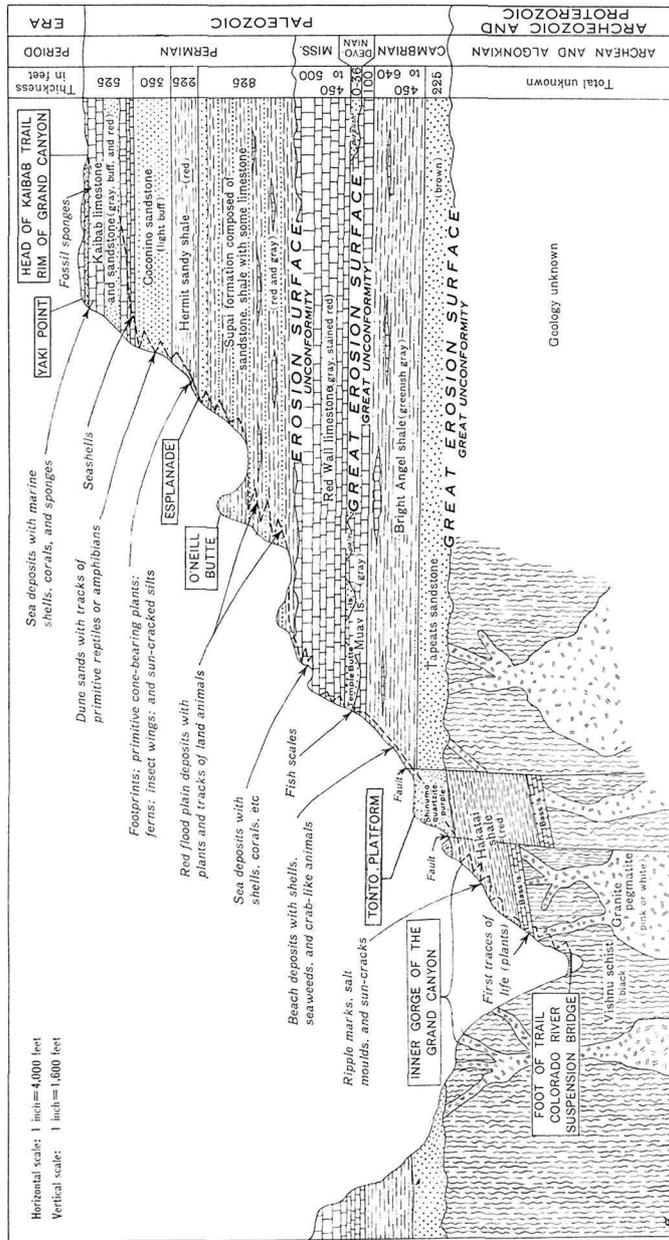


FIGURE 1.—A geologic cross section from a point on the south rim of the canyon to the suspension bridge in the inner gorge, showing the position, age, character, and thickness of the different rock formations. The section follows approximately the location of the Kaibab Trail, indicated by the dotted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

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 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 moisture 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 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 narrower, 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

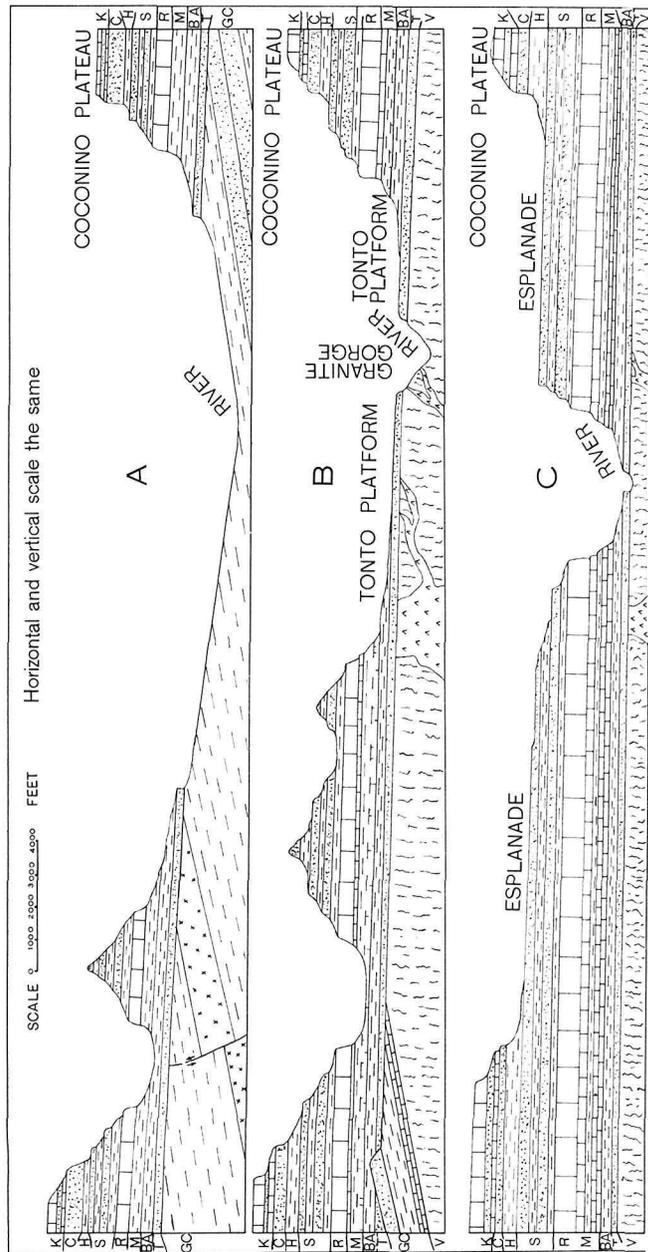


FIGURE 2.—Generalized sections across Grand Canyon, looking up Colorado River. *A*, in eastern Kaibab division, east of Desert View Camp; *B*, in central Kaibab division, near Hermit Trail; *C*, in western Kaibab division, west of Bass Camp. *K*, Kaibab limestone; *C*, Coconino sandstone; *H*, Hermit 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.

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 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 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 forma-

tions 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, 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 of Bright Angel Creek opposite El Tovar, 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 UNCOMFORMITIES

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 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 canyons. 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.

GUIDED TRIPS AND OTHER EDUCATIONAL FEATURES

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, the park naturalist gives a free campfire lecture on the geology, history, origin, and other interesting features of the Grand Canyon. Similar lectures are given in the afternoon at the Yavapai Point Observation Station. On a short nature-guide walk or auto caravan conducted daily by the park naturalist various interesting features of the geology of the canyon are pointed out, together with those pertaining to the flora and fauna of the region.

Naturalists are on duty on the north rim during the summer travel season. Nature walks, lectures, informal talks and discussions, and conducted auto caravans are features of the service rendered by the park's educational staff on the north rim. It is suggested that park visitors consult schedules posted at Grand Canyon Lodge and other concentration points in order that no feature of the service, for which no charge is made, shall be missed.

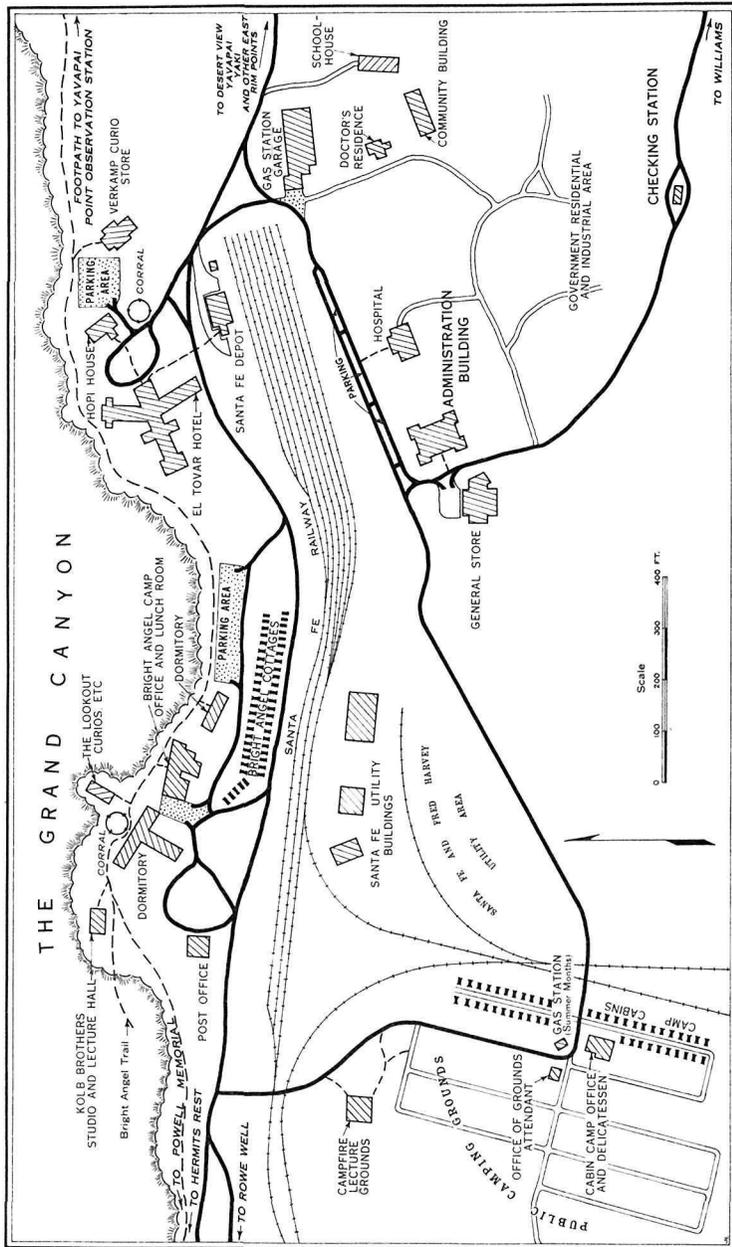
Every evening at 8 o'clock, in the music room at El Tovar Hotel, a lecture, illustrated with moving pictures and slides, is given on Grand Canyon National Park and the surrounding country. Admission to this lecture is free and all visitors to the park are invited to attend. A musical program is provided by a cowboy orchestra. This should not be confused with the illustrated lecture given daily by Kolb Bros., covering their trips down the Colorado River.

MOVING PICTURE SHOW

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.

YAVAPAI OBSERVATION STATION

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. Here may be found a model of the Grand Canyon, samples of the various formations which go to make up the canyon walls, specimens of the flora and fauna common to the Grand Canyon region, fossil remains of prehistoric plant and animal life, and complete maps and charts from which a better understanding may be had of the Grand Canyon and the forces of nature which formed it. A battery of high-power telescopes is also available. Each afternoon during the summer season there is given at this station by the park naturalist or by visiting geologists and other scientists of note a



Grand Canyon Village.

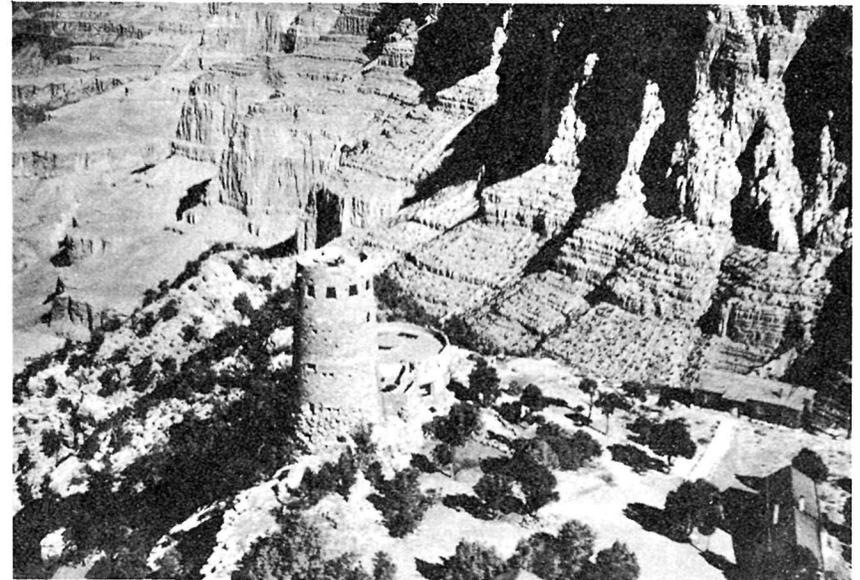
series of informal lectures on the origin, history, and animal and plant life of the Grand Canyon. Yavapai Point may be reached by auto road or by the paved footpath leading eastward along the rim from El Tovar Hotel.

WAYSIDE MUSEUM OF ARCHEOLOGY

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 which has recently been excavated.

INDIAN WATCHTOWER

At Desert View, 26 miles from El Tovar Hotel—on a high, rocky point overlooking the Painted Desert—stands the Indian Watchtower, a re-creation of the strange towers erected centuries ago by the native inhabitants of



Indian Watchtower at Desert View.

the Southwest. Ruins of these ancient towers are found today in the Grand Canyon region.

Built of native stones, on the brink of the canyon wall, the Indian Watchtower commands one of the most breath-taking of Grand Canyon views, as

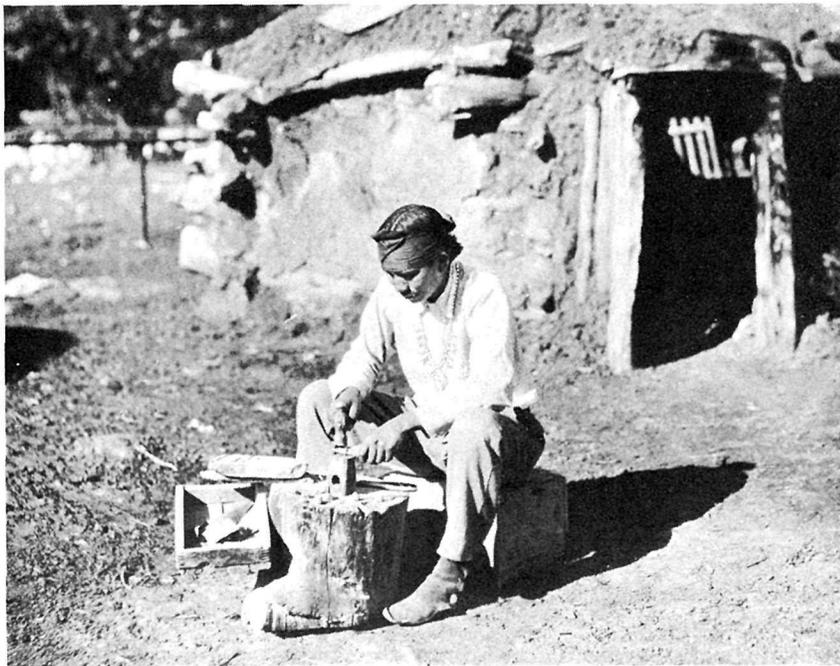
well as a startling panorama of the Painted Desert and the Tusayan National Forest. Through its telescopes the range of vision is extended far into the surrounding Indian country.

At the base of the tower is a low round kiva, a reproduction of the prehistoric Indian ceremonial chambers. The kiva, with its great windows overlooking the Grand Canyon and the Painted Desert, provides a comfortable and fascinating lounge room, while a stairway conducts visitors to the watchtower and to the limitless views to be seen from its top.

On the walls and ceilings of the tower and kiva are a number of actual specimens of Indian pictographs, as well as numerous symbolic paintings by the famous Hopi artist, Kabotie.

THE LOOKOUT

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



Navajo silversmith at work.



Scene in a Hopi Village.

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. 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 primitive of our Indians. Each evening at 5:45 these Hopis give, at the Hopi House, a series of Indian dances to which no admission is charged.

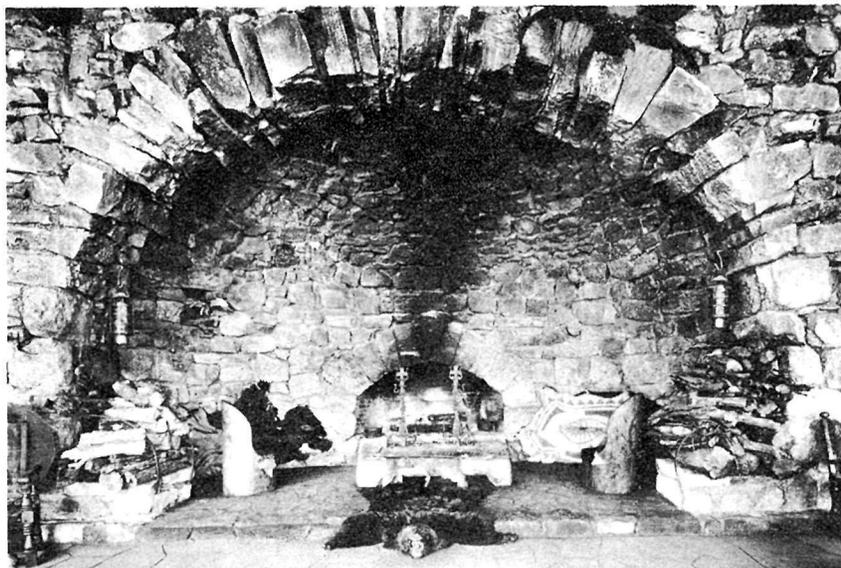
VERKAMP'S SOUVENIR SHOP

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

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.



Fireplace at Hermits Rest.

KOLB STUDIO AND CANYON LECTURE

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.

AIRPLANE SERVICE

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 is 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 near-by cities. Transcontinental airline connections may be made by arrangement at Winslow and Phoenix, Ariz.; Las Vegas, Nev.; and Salt Lake City, Utah.

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 is 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 of 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 the finished prints will be ready for delivery by 6 p.m.

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.



Lodges on the North Rim.

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.

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.

Kodak Finishing.—Films are developed and finished promptly. Leave your order with the attendant in the curio shop in the cafeteria building.

ACCOMMODATIONS AND EXPENSES

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 on both rims, but there are no conventional sports such as golf or tennis. The canyon absorbs all the attention. Stores, news stands, delicatessens, and automobile supply and repair shops take care of the average requirements of all comers.

SOUTH RIM

The El Tovar Hotel, near the head of Bright Angel Trail at an elevation of 6,886 feet, and the Bright Angel Cottages are operated by Fred Harvey, who also maintains motor stage facilities. The El Tovar is an attractive structure of native boulders and pine logs providing every modern comfort for its guests at rates as low as \$5.50 a day, including meals. The rates range, according to the accommodations desired, all the way to \$12 a day. Certain reductions are made for children.

Lodging at the Bright Angel Cottages costs from \$1.50 a day for 1 person to \$4 a day at the summer cabins for 4 persons. Meals are served at the cafe. Housekeeping cabins for from 1 to 3 persons cost from \$1 to \$1.50, with a 50-cent charge for each additional person. All necessary supplies are obtainable nearby at prices approved by the National Park Service.

Phantom Ranch, at the bottom of the Grand Canyon near the mouth of Bright Angel Creek, offers accommodations of tent cottages with meals at a central building at \$6 a day, including meals.

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 Hermits Rest in the morning and Desert View and the Indian Watchtower in the afternoon (nearly 70 miles along the rim of the Canyon), costs \$7. If you do not wish to take the entire trip, you may go to Hermits Rest, 16 miles, for \$3, and Desert View, 52 miles, for \$6. Another popular tour is the \$12 one-day trip, to the well-known but little seen Navajo and Hopi Indian Reservations by way of the famous suspension bridge over the 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. The trip to Bass Camp and Havasupai Point, 31 miles, costs \$10, including lunch, if there are four or more persons making the trip. These scheduled trips are all made by motor; automobiles may be chartered.

There are very few days in the year when you 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. Including lunch, the cost is \$6. Another spectacular trail trip is the one to Phantom Ranch over the new Yaki Point section of the Kaibab Trail, crossing the suspension bridge. This is a two-day trip and costs \$18 a person. 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 at the all-expense rate of \$28. 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 all-expense rate is \$30. The Dripping Spring trip is a pleasant one-day horseback outing costing \$6 per person. 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. For trips of 10 days or more, the rates vary according to the number in the party: For 1 person, \$27; 2 persons, \$20 each, and so on until the rate is \$11 each for a party of 7 or more. 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, 38 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 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 you can get within 18 miles by car, and make the rest of the way on horseback. A four-day pack trip for four persons costs \$76 each; five days, \$94 each. For a smaller party the rates increase proportionately. Rainbow Bridge is a national monument under the jurisdiction of the National Park Service.

Saddle Horses.—So many new bridle paths 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 for \$5; half day, \$3; 2 hours, \$1.50. Riding on the trails, including all of those into the canyon, is not permitted without guide service, but there is no charge for parties of three or more. Otherwise, the rate is \$5 a day for a guide and \$3 for a half day.

NORTH RIM

Lodge and housekeeping accommodations are furnished on the north rim by the Utah Parks Co. Some of the lodges are of the de luxe type with porches and baths, and the rates, European plan, range from \$6 for 1 person to \$10.50 for 3 persons. The standard lodges are \$2 a night for 1, and \$3 for 2 persons. Breakfast and luncheon are \$1 each, and dinner \$1.25.

Modern housekeeping cabins are available at \$2.25 a day for 1 or 2 persons, and \$2.75 when occupied by 3 or 4 persons. Older types of cabins accommodating three persons are available at \$1.50 a day. Tent cabins are even less expensive.

Special Trips.—Trail trips into the canyon from the north rim are under the management of Fred Harvey, and may be made from June 1 to October 1, only. The one-day trip to Roaring Springs from the north rim is \$5, with an extra charge for lunch. The all-expense two-day trip to Phantom Ranch is \$20.

EMERGENCY TRAIL SERVICE

Visitors who walk down the canyon trails from either the north or south rims may have saddle animals sent to meet them. From the south rim, animals sent to Indian Gardens or points above, cost \$4, with a guide fee of \$5; below Indian Gardens, \$5 for the animal and \$5 for the guide. On the Kaibab Trail to Mormon Flats and points above, \$7 for the animal and \$5 for the guide; below Mormon Flats, \$10 for the animal and \$5 for the guide. From the north rim to Roaring Springs and above, without special guide, \$5; with guide, \$10. Between Roaring Springs and Ribbon Falls, without guide, \$7; with special guide, \$12. Below the Falls and as far as Phantom Ranch, without guide, \$10; with guide, \$20.

PUBLIC CAMP GROUNDS

Camp grounds are maintained by the National Park Service at Grand Canyon village and Desert View on the south rim, 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.

GOVERNMENT PUBLICATIONS

Glimpses of Our National Parks. 66 pages, illustrated. National Park Service, Washington, D.C. Free.

Glimpses of Our National Monuments. Illustrated. National Park Service Washington, D.C. Free.

Recreational map. Shows 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. Clothbound; more than 300 carefully selected photographs of the national parks. Superintendent of Documents, Washington, D.C. \$1.

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 Grand Canyon. By Thomas Fulton Dawson. 67 pages. Superintendent of Documents, Washington, D.C. 10 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 1 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.

Booklets about the national parks listed below may be obtained free of charge from the National Park Service, Washington, D.C.:

- Acadia National Park, Maine.
- Carlsbad Caverns National Park, N.Mex.
- Crater Lake National Park, Oreg.
- General Grant National Park, Calif.
- Glacier National Park, Mont.
- Grand Teton National Park, Wyo.
- Great Smoky Mountains National Park, N.C.-Tenn.
- Hawaii National Park, Hawaii.
- Hot Springs National Park, Ark.
- Lassen Volcanic National Park, Calif.
- Mesa Verde National Park, Colo.
- Mount McKinley National Park, Alaska.
- Mount Rainier National Park, Wash.
- Rocky Mountain National Park, Colo.
- Sequoia National Park, Calif.
- Wind Cave National Park, S.Dak.
- Yellowstone National Park, Wyo.
- Yosemite National Park, Calif.
- Zion and Bryce Canyon National Parks, Utah.



