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Grand Canyon of Arizona



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The Grand Canyon
of Arizona





THE TITAN OF CHASMS

By C. A. HIGGINS



Its History

The Colorado is one of the great rivers of North America. Formed in Southern Utah by the confluence of the Green and Grand, it intersects the north-western corner of Arizona, and, becoming the eastern boundary of Nevada and California, flows southward until it reaches tide-water in the Gulf of California, Mexico. It drains a territory of 300,000 square miles, and, traced back to the

rise of its principal source, is 2,000 miles long. At three points, Needles, Parker and Yuma on the California boundary, it is crossed by a railroad. Elsewhere its course lies far from Caucasian settlements and far from the routes of common travel, in the heart of a vast region fenced on the one hand by arid plains or deep forests and on the other by formidable mountains.

The early Spanish explorers first reported it to the civilized world in 1540, two separate expeditions becoming acquainted with the river for a comparatively short distance above its mouth, and another, journeying from the Moki Pueblos northwestward across the desert, obtaining the first view of the Big Canyon, failing in every effort to descend the canyon wall, and spying the river only from afar.



The View East from Hopi Point



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Again, in 1776, a Spanish priest traveling southward through Utah struck off from the Virgin River to the southeast and found a practicable crossing at a point that still bears the name "Vado de los Padres."

For more than eighty years thereafter the Big Canyon remained unvisited except by the Indian, the Mormon herdsman, and the trapper, although the Sitgreaves expedition of 1851, journeying westward, struck the river about one hundred and fifty miles above Yuma, and Lieutenant Whipple in 1854 made a survey for a practicable railroad route along the thirty-fifth parallel, where the Santa Fe Pacific has since been constructed.

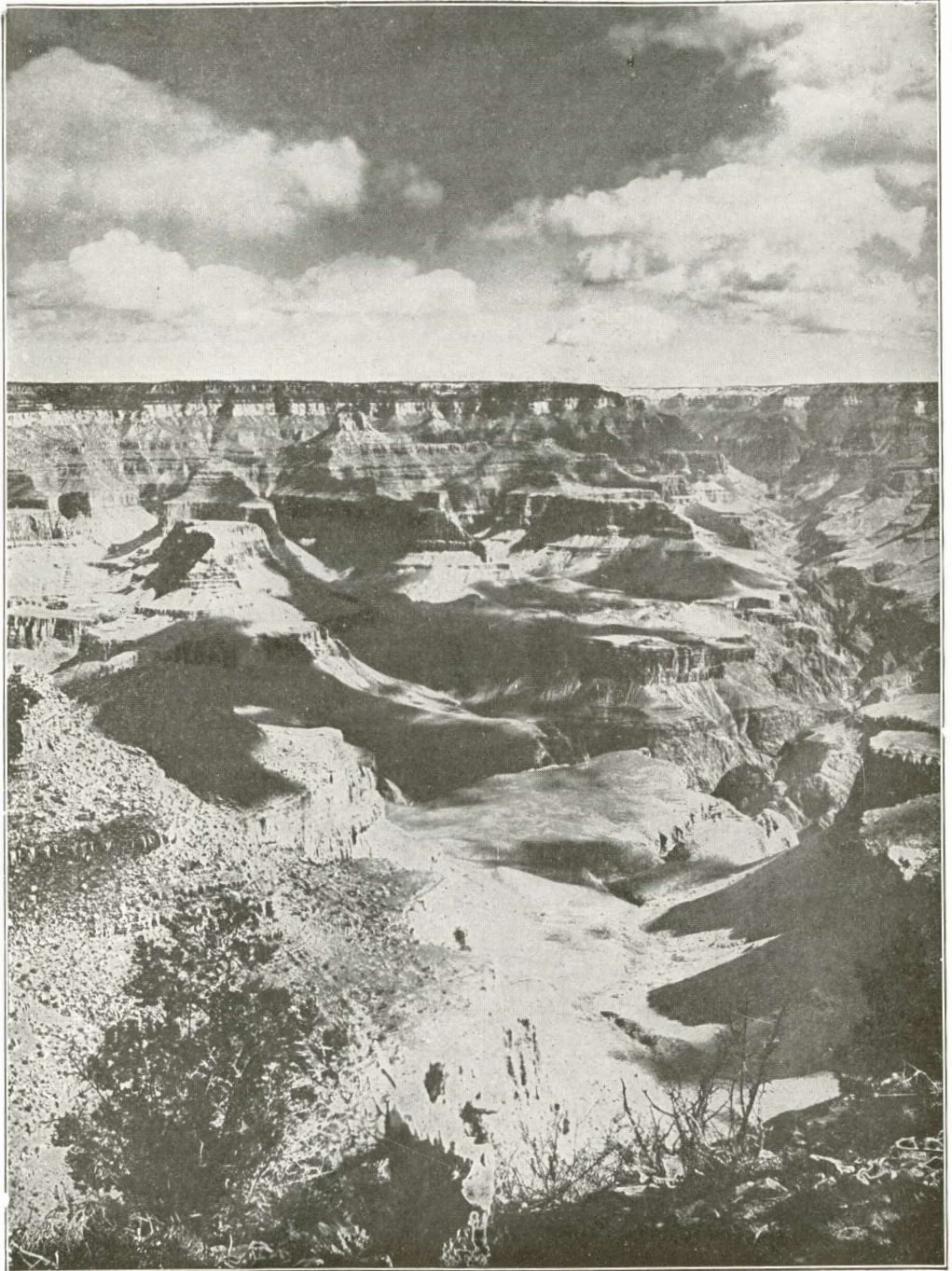
The establishment of military posts in New Mexico and Utah having made desirable the use of a water way for the cheap transportation of supplies, in 1857 the War Department dispatched an expedition in charge of Lieutenant Ives to explore the Colorado as far from its mouth as navigation should be found practicable. Ives ascended the river in a specially constructed steamboat to the head of Black Canyon, a few miles below the confluence of the Virgin River in Nevada, where further navigation became impossible; then, returning to the Needles, he set off across the country toward the northeast. He reached the Big Canyon at Diamond Creek and at Cataract Creek in the spring of 1858, and from the latter point made a wide southward detour around the San Francisco Peaks, thence northeastward to the Moki Pueblos, thence eastward to Fort Defiance, and so back to civilization.

That is the history of the explorations of the Colorado up to forty years ago. Its exact course was unknown for many hundred miles, even its origin being a matter of conjecture. It was difficult to approach within a distance of two or three miles from the channel, while descent to the river's edge could be hazarded only at wide intervals, inasmuch as it lay in an appalling fissure at the foot of seemingly impassable cliff terraces that led down from the bordering plateau; and to attempt its navigation was to court death. It was known in a general way that the entire channel between Nevada and Utah was of the same titanic character, reaching its culmination nearly midway in its course through Arizona.

In 1869 Major J. W. Powell undertook the exploration of the river with nine men and four boats, starting from Green River City, on the Green River, in Utah. The project met with the most urgent remonstrance from those who were best acquainted with the region, including the Indians, who maintained that boats could not possibly live in any one of a score of rapids and falls known to them, to say nothing of the vast unknown stretches in which at any moment a Niagara might be disclosed. It also was currently believed that for hundreds of miles the river disappeared wholly beneath the surface of the earth. Powell launched his flotilla on May 24th, and on August 30th landed at the mouth of the Virgin River, more than one thousand miles by the river channel from the place of starting, minus two boats and four men. One of the men had left the expedition by way of an Indian reservation agency before reaching Arizona, and three, after holding out against unprecedented terrors for many weeks, had finally become daunted, choosing to encounter the perils of an unknown desert rather than to brave any longer the frightful menaces of that Stygian torrent. These three, unfortunately making their appearance on the plateau at a time when a recent depredation was colorably chargeable upon them, were killed by Indians, their story of having come thus far down the river in boats being wholly discredited by their captors.

Powell's journal of the trip is a fascinating tale, written in a compact and modest style, which, in spite of its reticence, tells an epic story of purest heroism. It definitely established the scene of his exploration as the most wonderful geological and spectacular phenomenon known to mankind, and justified the name which had been bestowed upon it—THE GRAND CANYON—sublimest of gorges; Titan of chasms. Many scientists have since visited it, and, in the aggregate, a large number of unprofessional lovers of nature; but until a few years ago no adequate facilities were provided for the general sight-seer, and the world's most stupendous panorama was known principally through report, by reason of the discomforts and difficulties of the trip, which deterred all except the most indefatigable enthusiasts. Even its geographical location is the subject of widespread misapprehension.

Grand Canyon of Arizona



From the Head of Bright Angel Trail (6,800 feet above sea-level)

Photo by Kolb Bros.



Titan of Chasms

Its title has been pirated for application to relatively insignificant canyons in distant parts of the country, and thousands of tourists have been led to believe that they saw the Grand Canyon, when, in fact, they looked upon a totally different scene, between which and the real Grand Canyon there is no more comparison "than there is between the Alleghanies or Tro-sachs and the Himalayas."

There is but one Grand Canyon. Nowhere in the world has its like been found.

As Seen From the Rim

Stolid, indeed, is he who can front the awful scene and view its unearthly splendor of color and form without quaking knee or tremulous breath. An inferno, swathed in soft celestial fires; a whole chaotic under-world, just emptied of primeval floods and waiting for a new creative word; eluding all sense of perspective or dimension, outstretching the faculty of measurement, overlapping the confines of definite apprehension; a boding, terrible thing, unflinchingly real, yet spectral as a dream. The beholder is at first unimpressed by any detail; he is overwhelmed by the *ensemble* of a stupendous panorama, a thousand square miles in extent, that lies wholly beneath the eye, as if he stood upon a mountain peak instead of the level brink of a fearful chasm in the plateau, whose opposite shore is thirteen miles away. A labyrinth of huge architectural forms, endlessly varied in design, fretted with ornamental devices, festooned with lace-like webs formed of talus from the upper cliffs and painted with every color known to the palette in pure transparent tones of marvelous delicacy. Never was picture more harmonious, never flower more exquisitely beautiful. It flashes instant communication of all that architecture and painting and music for a thousand years have gropingly striven to express. It is the soul of Michael Angelo and of Beethoven.

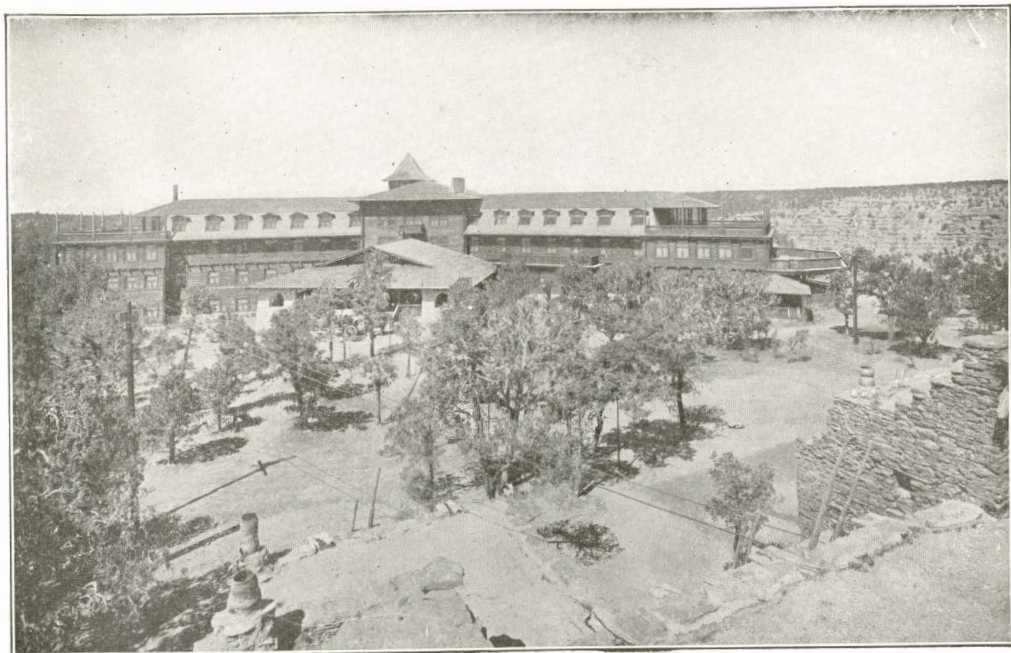
A canyon, truly, but not after the accepted type. An intricate system of canyons, rather, each subordinate to the river channel in the midst, which in its turn is subordinate to the whole effect. That river channel, the profoundest depth, and actually more than six thousand feet below the point of view, is in seeming a rather insignificant trench, attracting the eye

more by reason of its somber tone and mysterious suggestion than by any appreciable characteristic of a chasm. It is perhaps five miles distant in a straight line, and its uppermost rims are nearly four thousand feet beneath the observer, whose measuring capacity is entirely inadequate to the demand made by such magnitudes. One can not believe the distance to be more than a mile as the crow flies, before descending the wall or attempting some other form of actual measurement.

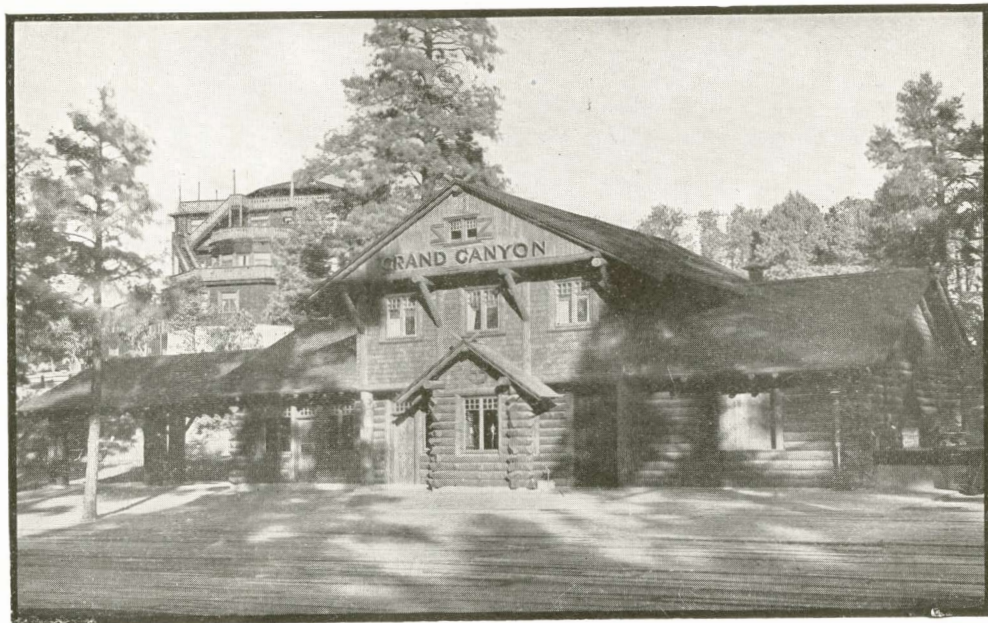
Mere brain knowledge counts for little against the illusion under which the organ of vision is here doomed to labor. Yonder cliff, darkening from white to gray, yellow, and brown as your glance descends, is taller than the Washington Monument. The Auditorium in Chicago would not cover one-half its perpendicular span. Yet it does not greatly impress you. You idly toss a pebble toward it, and are surprised to note how far the missile falls short. By and by you will learn that it is a good half mile distant, and when you go down the trail you will gain an abiding sense of its real proportions. Yet, relatively, it is an unimportant detail of the scene. Were Vulcan to cast it bodily into the chasm directly beneath your feet, it would pass for a boulder, if, indeed, it were discoverable to the unaided eye.

Yet the immediate chasm itself is only the first step of a long terrace that leads down to the innermost gorge and the river. Roll a heavy stone to the rim and let it go. It falls sheer the height of a church or the Eiffel tower, according to the point selected for such pastime, and explodes like a bomb on a projecting ledge. If, happily, any considerable fragments remain, they bound onward like elastic balls, leaping in wild parabola from point to point, snapping trees like straws; bursting, crashing, thundering down the declivities until they make a last plunge over the brink of a void; and then there comes languidly up the cliff sides a faint, distant roar, and your boulder that had withstood the buffets of centuries lies scattered as wide as Wycliffe's ashes, although the final fragment has lodged only a little way, so to speak, below the rim. Such performances are frequently given in these amphitheatres without human aid, by the mere undermining of the rain, or perhaps it is here that Sisyphus rehearses his

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El Tovar Hotel



Santa Fe Depot at Grand Canyon



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unending task. Often in the silence of night some tremendous fragment has been heard crashing from terrace to terrace with shocks like thunder peal.

The spectacle is so symmetrical, and so completely excludes the outside world and its accustomed standards, it is with difficulty one can acquire any notion of its immensity. Were it half as deep, half as broad, it would be no less bewildering, so utterly does it baffle human grasp.

The Trip to the River

Only by descending into the canyon may one arrive at anything like comprehension of its proportions, and the descent can not be too urgently commended to every visitor who is sufficiently robust to bear a reasonable amount of fatigue. There are four paths down the southern wall of the canyon in the granite gorge district—Bass', Bright Angel, Berry's, and Hance's trails. The following account of a descent of the old Hance trail will serve to indicate the nature of such an experience to-day, except that the trip may now be safely made with greater comfort, and on horseback all the way:

For the first two miles it is a sort of Jacob's ladder, zigzagging at an unrelenting pitch. At the end of two miles a comparatively gentle slope is reached, known as the blue limestone level, some 2,500 feet below the rim, that is to say—for such figures have to be impressed objectively upon the mind—five times the height of St. Peter's, the Pyramid of Cheops, or the Strasburg Cathedral; eight times the height of the Bartholdi Statue of Liberty; eleven times the height of Bunker Hill Monument. Looking back from this level the huge picturesque towers that border the rim shrink to pigmies and seem to crown a perpendicular wall, unattainably far in the sky. Yet less than one-half the descent has been made.

Overshadowed by sandstone of chocolate hue the way grows gloomy and foreboding, and the gorge narrows. The traveler stops a moment beneath a slanting cliff 500 feet high, where there is an Indian grave and pottery scattered about. A gigantic niche has been worn in the face of this cavernous cliff, which, in recognition of its fancied Egyptian character, was named the Temple of Sett by the painter, Thomas Moran.

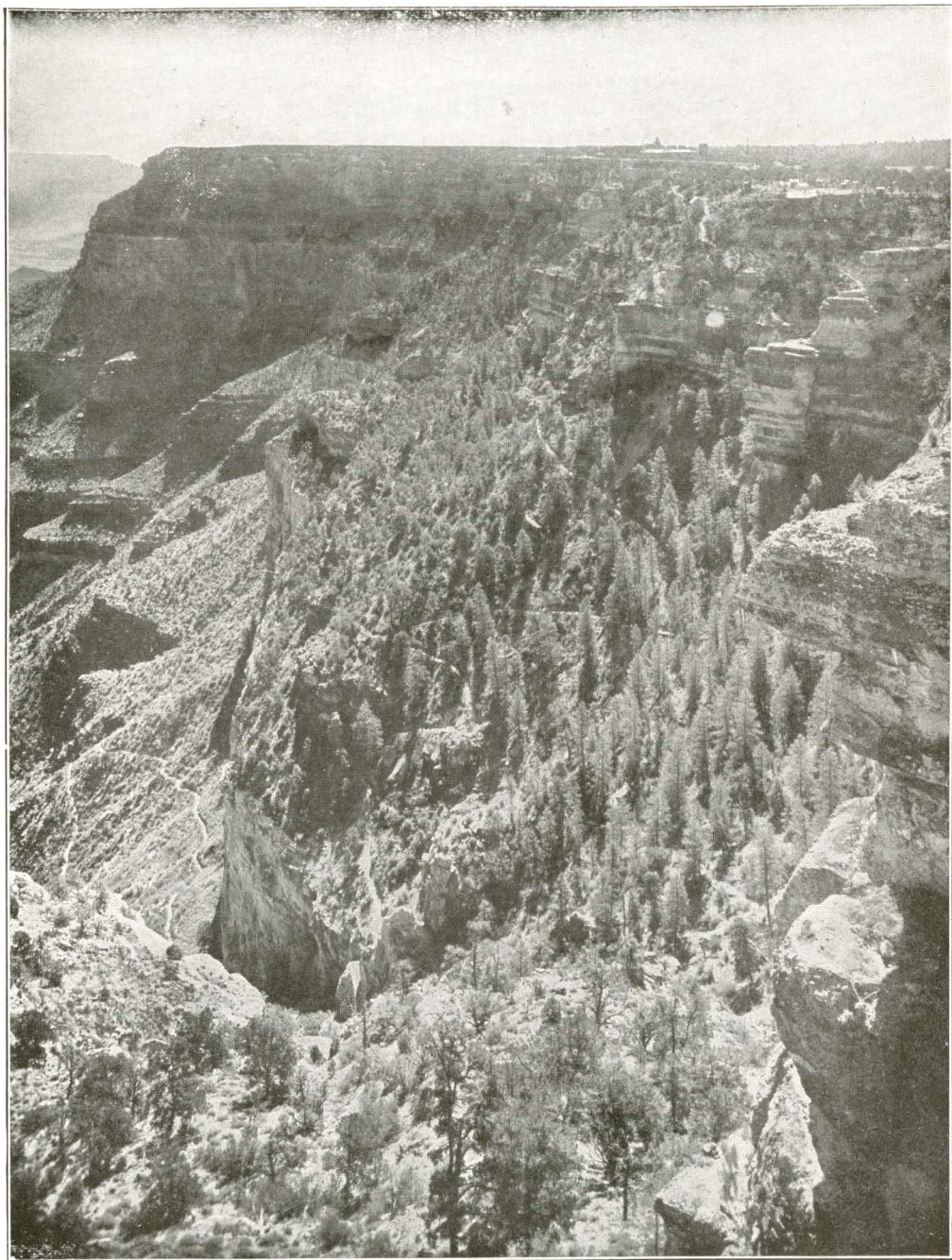
A little beyond this temple it becomes necessary to abandon the animals. The river is still a mile and a half distant. The way narrows now to a mere notch, where two wagons could barely pass, and the granite begins to tower gloomily overhead, for we have dropped below the sandstone and have entered the archæan—a frowning black rock, streaked, veined, and swirled with vivid red and white, smoothed and polished by the rivulet and beautiful as a mosaic. Obstacles are encountered in the form of steep, interposing crags, past which the brook has found a way, but over which the pedestrian must clamber. After these lesser difficulties come sheer descents, which at present are passed by the aid of ropes.

The last considerable drop is a 40-foot bit by the side of a pretty cascade, where there are just enough irregularities in the wall to give toe-hold. The narrowed cleft becomes exceedingly wayward in its course, turning abruptly to right and left, and working down into twilight depth. It is very still. At every turn one looks to see the embouchure upon the river, anticipating the sudden shock of the unintercepted roar of waters. When at last this is reached, over a final downward clamber, the traveler stands upon a sandy rift, confronted by nearly vertical walls many hundred feet high, at whose base a black torrent pitches in a giddy, onward slide, that gives him momentarily the sensation of slipping into an abyss.

With so little labor may one come to the Colorado River in the heart of its most tremendous channel, and gaze upon a sight that heretofore has had fewer witnesses than have the wilds of Africa. Dwarfed by such prodigious mountain shores, which rise immediately from the water at an angle that would deny footing to a mountain sheep, it is not easy to estimate confidently the width and volume of the river. Choked by the stubborn granite at this point, its width is probably between 250 and 300 feet, its velocity fifteen miles an hour, and its volume and turmoil equal to the Whirlpool Rapids of Niagara. Its rise in time of heavy rain is rapid and appalling, for the walls shed almost instantly all the water that falls upon them. Drift is lodged in the crevices thirty feet overhead.

For only a few hundred yards is the tortuous stream visible, but its effect upon the senses is

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Zigzag on Bright Angel Trail—Upper Section Photo. Putnam & Valentine.



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perhaps the greater for that reason. Issuing as from a mountain side, it slides with oily smoothness for a space and suddenly breaks into violent waves that comb back against the current and shoot unexpectedly here and there, while the volume sways, tide-like, from side to side, and long curling breakers form and hold their outline lengthwise of the shore, despite the seemingly irresistible velocity of the water. The river is laden with drift (huge tree trunks), which it tosses like chips in its terrible play.

Standing upon that shore one can barely credit Powell's achievement, in spite of its absolute authenticity. Never was a more magnificent self-reliance displayed than by the man who not only undertook the passage of Colorado River but won his way. And after viewing a fraction of the scene at close range, one can not hold it to the discredit of three of his companions that they abandoned the undertaking not far below this point. The fact that those who persisted got through alive, is hardly more astonishing than that any should have had the hardihood to persist. For it could not have been alone the privation, the infinite toil, the unending suspense in constant menace of death that assaulted their courage; these they had looked for; it was rather the unlifted gloom of those tartarean depths, the unspeakable horrors of an endless valley of the shadow of death, in which every step was irrevocable.

Returning to the spot where the animals were abandoned, camp is made for the night. Next morning the way is retraced. Not the most fervid pictures of a poet's fancy could transcend the glories then revealed in the depths of the canyon; inky shadows, pale gildings of lofty spires, golden splendors of sun beating full on façades of red and yellow, obscurations of distant peaks by veils of transient shower, glimpses of white towers, half drowned in purple haze, suffusions of rosy light blended in reflection from a hundred tinted walls. Caught up to exalted emotional heights the beholder becomes unmindful of fatigue. He mounts on wings. He drives the chariot of the sun.

Having returned to the plateau, it will be found that the descent into the canyon has bestowed a sense of intimacy that almost amounts to a mental grasp of the scene. The terrific deeps

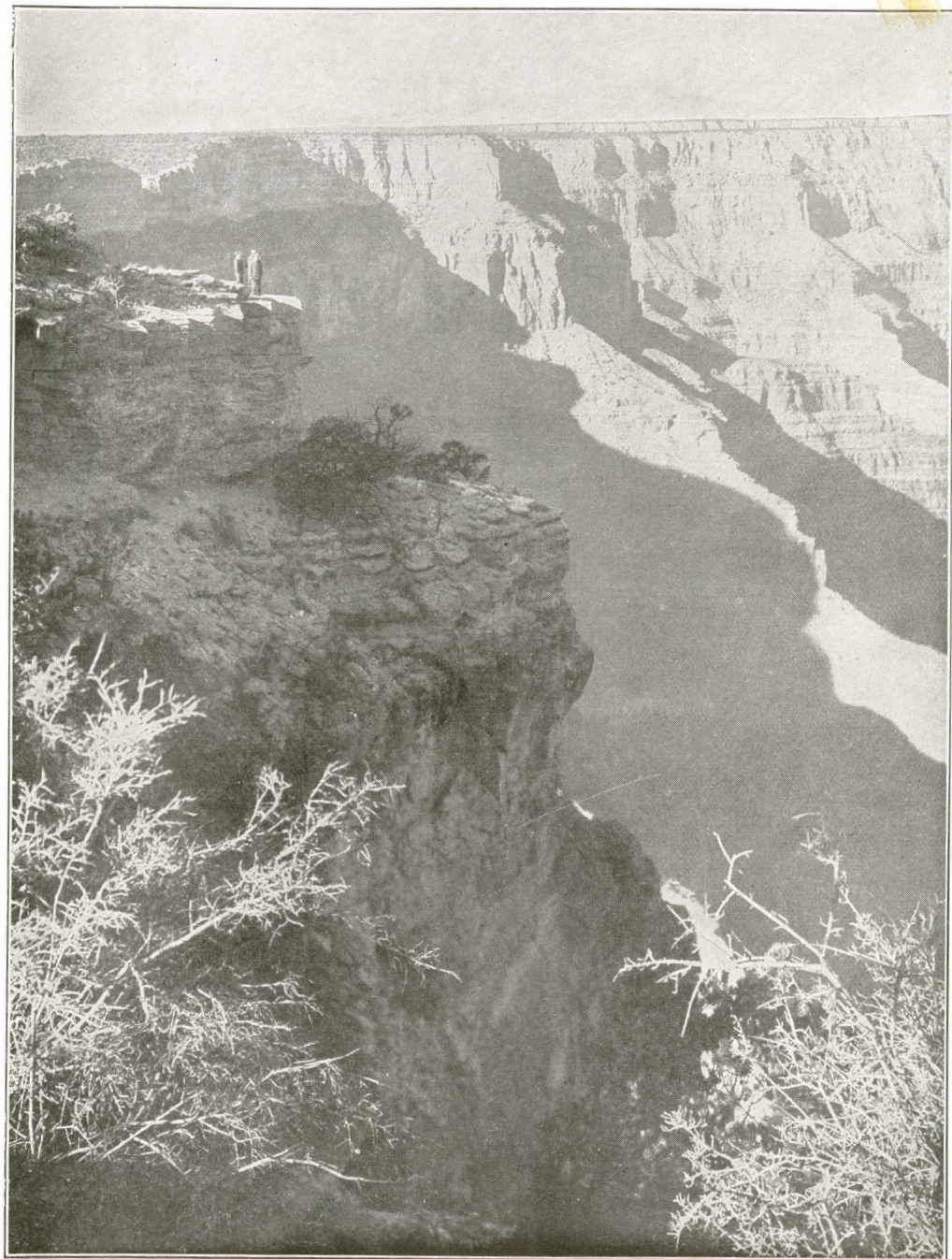
that part the walls of hundreds of castles and turrets of mountainous bulk may be approximately located in barely discernible pen-strokes of detail, and will be apprehended mainly through the memory of upward looks from the bottom, while towers and obstructions and yawning fissures that were deemed events of the trail, will be wholly indistinguishable, although they are known to lie somewhere flat beneath the eye. The comparative insignificance of what are termed grand sights in other parts of the world is now clearly revealed. Twenty Yosemite might lie unperceived anywhere below. Niagara, that Mecca of marvel seekers, would not here possess the dignity of a trout stream. Your companion, standing at a short distance on the verge, is an insect to the eye.

Still, such particulars can not long hold the attention, for the panorama is the real overmastering charm. It is never twice the same. Although you think you have spelt out every temple and peak and escarpment, as the angle of sunlight changes there begins a ghostly advance of colossal forms from the farther side, and what you had taken to be the ultimate wall is seen to be made up of still other isolated sculptures, revealed now for the first time by silhouetting shadows. The scene incessantly changes, flushing and fading, advancing into crystalline clearness, retiring into slumberous haze.

Should it chance to have rained heavily in the night, next morning the canyon is completely filled with fog. As the sun mounts, the curtain of mist suddenly breaks into cloud fleeces, and while you gaze these fleeces rise and dissipate, leaving the canyon bare. At once around the bases of the lowest cliffs white puffs begin to appear, creating a scene of unparalleled beauty as their dazzling cumuli swell and rise and their number multiplies, until once more they overflow the rim, and it is as if you stood on some land's end looking down upon a formless void. Then quickly comes the complete dissipation, and again the marshaling in the depths, the upward advance, the total suffusion and the speedy vanishing, repeated over and over until the warm walls have expelled their saturation.

Long may the visitor loiter upon the verge, powerless to shake loose from the charm, tirelessly

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The Terraces, from Sawtooth Mesa, on Hermit Rim Road Copyright, 1911, Fred Harvey

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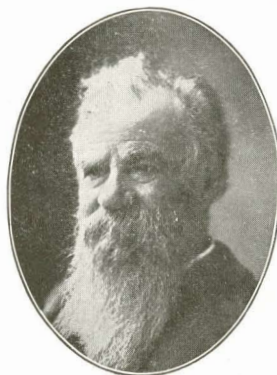
intent upon the silent transformations until the sun is low in the West. Then the canyon sinks into mysterious purple shadow, the far Shinumo Altar is tipped with a golden ray, and against a leaden horizon the long line of the Echo Cliffs reflects a soft brilliance of indescribable beauty,

a light that, elsewhere, surely never was on sea or land. Then darkness falls, and should there be a moon, the scene in part revives in silver light, a thousand spectral forms projected from inscrutable gloom; dreams of mountains, as in their sleep they brood on things eternal.

THE SCIENTIFIC EXPLORER

BY J. W. POWELL

Ives and Wheeler Expeditions



In the spring of 1858 Lieutenant Ives, of the engineer corps of the Army, ascended the Colorado River on a trip of exploration with a little steamer called the "Explorer;" he went as far as the lower end of the Black Canyon in the "Explorer." From there he went

through the Black Canyon in a rowboat to the mouth of Las Vegas Wash. Falling back down river about one hundred miles, Lieutenant Ives met a pack train which had followed him up the bank of the stream. Here he disembarked, and on the 24th of March started with a land party to explore the eastern bank of the river; making a long detour he ascended the plateau through which the Grand Canyon is cut, and in an adventurous journey he obtained views of the canyon along its lower course. On this trip J. S. Newberry was the geologist, and to him we are indebted for the first geological explanation of the canyon and the description of the high plateau through which it is formed. Doctor Newberry was not only an able geologist, but he was also a graphic writer, and his description of the canyon, as far as it was seen by him, is a classic in geology.

In 1871 Lieutenant Wheeler was sent out by the chief engineer of the Army. He explored the Grand Canyon from below. In the fall of that year he ascended the Colorado River from Fort Mojave and up through the Grand Canyon

as far as the mouth of Diamond Creek, which had previously been seen by Doctor Newberry in 1858. Mr. Gilbert was the geologist of this expedition, and his studies of the canyon region during this and subsequent years have added greatly to our knowledge of this land of wonders.

Powell's Several Trips

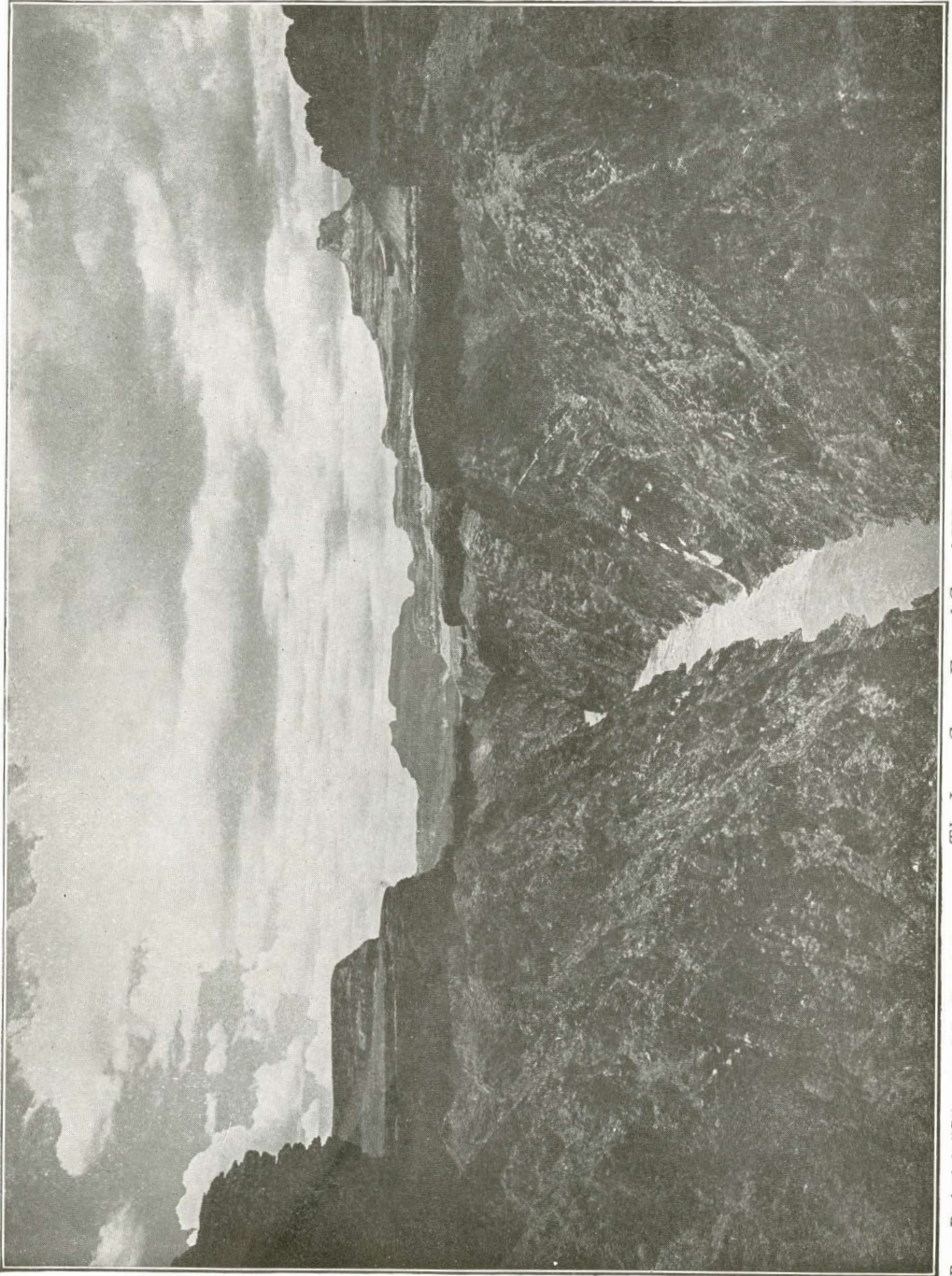
In 1869 I essayed to explore the Grand Canyon of the Colorado, together with the upper canyons of that stream and the great canyons of the lower portion of Green River. For this purpose I employed four rowboats and made the descent from what is now Green River station through the whole course of canyons to the mouth of the Rio Virgin, a distance of more than a thousand miles.

In the spring of 1870 I made an overland trip to the Grand Canyon and spent the summer in exploring ways down to the river from the north.

In the spring of 1871 I again started with three boats and descended the river to the Crossing of the Fathers. There I left the river and with a pack train spent the summer, fall, winter, and following spring exploring the country north of the river.

In the summer of 1872 I returned to the rowboats at Lee's Ferry and descended through Marble Canyon to the Grand Canyon of Arizona, and then through ninety miles of the Grand Canyon to the mouth of Kanab Wash, where the river journey was abandoned. Subsequent years were then given to exploration of the country adjacent to the Grand Canyon. On these trips Mr. Gilbert, the geologist, who had been with Lieutenant Wheeler, and Capt. C. E. Dutton, were my geological companions. On the second boat trip, and during all the subsequent

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Copyright, 1899, by H. G. Peabody.

From Peabody's "Glimpses of the Grand Canyon." *The Inner Gorge, Foot of Grand View Trail*



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years of exploration in this region, Prof. A. H. Thompson was my geographical companion, assisted by a number of topographical engineers.

In 1882 Mr. C. D. Walcott, as my assistant in the United States Geological Survey, went with me into the depths of the Grand Canyon. We descended from the summit of the Kaibab Plateau on the north by a trail which we built down a side canyon in a direction toward the mouth of the Little Colorado River. The descent was made in the fall, and a small party of men was left with Mr. Walcott in this region of stupendous depths to make a study of the geology of an important region of labyrinthian gorges. Here, with his party, he was shut up for the winter, for it was known when we left him that snows on the summit of the plateau would prevent his return to the upper region before the sun should melt them the next spring. Mr. Walcott is now the Director of the United States Geological Survey.

After this year I made no substantial additions to my geologic and scenic knowledge of the Grand Canyon, though I afterward studied the archaeology to the south and east throughout a wide region of ruined pueblos and cliff dwellings.

Since my first trip in boats many others have essayed to follow me, and year by year such expeditions have met with disaster; some hardy adventurers are buried on the banks of the Green, and the graves of others are scattered at intervals along the course of the Colorado.

In 1889 Mr. F. M. Brown lost his life. But finally a party of railroad engineers, led by Mr. R. B. Stanton, having already made a railroad survey as far as near the Crossing of the Fathers, started in December, 1889, at the head of Glen Canyon and made their way down the river as they extended the survey along its course through the Marble and Grand canyons, finally reaching the Gulf of California in the spring of 1890.*

* The fourth successful expedition was that of Charles S. Russell of Prescott, Ariz., and E. R. Monett of Goldfield, Nev.—both practical miners but with no experience as boatmen—who landed at Needles, Cal., early in February, 1908, in a small steel rowboat. They started at Green River, Utah, September 20, 1907, in three boats and with a companion, who left them at Hite, enroute, after one boat had been wrecked in Cataract Canyon. Their second skiff was demolished in the upper section of the Grand Canyon. They reached Bright Angel safely in the remaining boat, but were again wrecked January 8th in running a bad rapid below that point, and had to stop for temporary repairs.

Mr. Julius P. Stone, of Columbus, Ohio, accompanied by Nathaniel Galloway, S. S. Dubendorff, R. A. Cogswell and C. C. Sharp, left Green River Station, Wyo., September 12, 1909, in boats and reached Needles November 19. Their trip down the Colorado was eventful and thrilling. Many valuable photographs were taken en route.

Another expedition started from Green River, September 8, 1911, arrived El Tovar November 16, left El Tovar December 16, and reached Needles January 18, 1912. It consisted of two brothers, Emery C. Kolb and Ellsworth L. Kolb, who made the dangerous trip successfully in two staunch boats, the "Edith" and "Defiance".

Other adventurous travelers have visited portions of the Grand Canyon region, in the interest of popular science and the new literature created in the last decades of the nineteenth century.

The Plateau Region

The Grand Canyon of Arizona and the Marble Canyon constitute one great gorge carved by a mighty river through a high plateau. On the northeast and north a line of cliffs faces this plateau by a bold escarpment of rock. Climb these cliffs and you must ascend from 800 to 1,000 feet, but on their summit you will stand upon a plateau stretching away to the north. Now turn to face the south and you will overlook the cliff and what appears to be a valley below. From the foot of the cliff the country rises to the south to a great plateau through which the Marble and the Grand canyons are carved. The plateau terminates abruptly on the west by the Grand Wash Cliffs, which is a high escarpment caused by a "fault" (as the geologist calls it), that is, the strata of sandstone and limestone are broken off, and to the west of the fracture they are dropped down several thousand feet, so that standing upon the edge of the plateau above the Grand Wash Cliffs you may look off to the west over a vast region of desert from which low volcanic mountains rise that seem like purple mounds in sand-clad lands.

On the east the great plateau breaks down in a very irregular way into the valley of the Little Colorado, and where the railroad ascends the plateau from the east it passes over picturesque canyons that run down into the Little Colorado. On the south the plateau is merged into the great system of mountains that stand in Southern Arizona. Where the plateau ends and the mountains begin is not a well-defined line. The plateau through which the Grand Canyon is cut is a region of great scenic interest. Its surface is



from six to more than eight thousand feet above the level of the sea. The Grand Plateau is composed of many subsidiary plateaus, each one having its own peculiar and interesting feature.

The Kaibab Plateau, to the northeast of the Grand Canyon, is covered with a pine forest which is intercepted by a few meadows with here and there a pond or lakelet. It is the home for deer and bear.

To the west is the Shinumo Plateau in which the Shinumo Canyon is carved; and on the cliffs of this canyon and in the narrow valley along its course the Shinumo ruins are found—the relics of a prehistoric race.

To the west of the Shinumo Plateau is the Kanab Plateau, with ruins scattered over it, and on its northern border the beautiful Mormon town of Kanab is found, and the canyon of Kanab Creek separates the Shinumo Plateau from the Kanab Plateau. It begins as a shallow gorge and gradually increases in depth until it reaches the Colorado River itself, at a depth of more than four thousand feet below the surface. Vast amphitheatres are found in its walls and titanic pinnacles rise from its depths. One Christmas day I waded up this creek. It was one of the most delightful walks of my life, from a land of flowers to a land of snow.

To the west of the Kanab Plateau are the Uinkaret Mountains—an immense group of volcanic cones upon a plateau. Some of these cones stand very near the brink of the Grand Canyon and from one of them a flood of basalt was poured into the canyon itself. Not long ago geologically, but rather long when reckoned in years of human history, this flood of lava rolled down the canyon for more than *fifty miles*, filling it to the depth of *two or three hundred feet* and diverting the course of the river against one or the other of its banks. Many of the cones are of red cinder, while sometimes the lava is piled up into huge mountains which are covered with forest. To the west of the Uinkaret Mountains spreads the great Shiwits Plateau, crowned by Mount Dellenbough.

Past the south end of these plateaus runs the Colorado River; southward through Marble Canyon and in the Grand Canyon, then northward past the Kaibab Plateau and Shinumo Canyon, then southwestward past the Kanab

Plateau, Uinkaret Mountains to the southernmost point of the Shiwits Plateau, and then northward to the Grand Wash Cliffs. Its distance in this course is little more than 300 miles—but the 300 miles of river are set on every side with cliffs, buttes, towers, pinnacles, amphitheatres, caves, and terraces, exquisitely storm-carved and painted in an endless variety of colors.

The plateau to the south of the Grand Canyon, which we need not describe in parts, is largely covered with a gigantic forest. There are many volcanic mountains and many treeless valleys. In the high forest there are beautiful glades with little stretches of meadow which are spread in summer with a *parterre* of flowers of many colors. This upper region is the garden of the world. When I was first there bear, deer, antelope, and wild turkeys abounded, but now they are becoming scarce. Widely scattered throughout the plateau are small canyons, each one a few miles in length and a few hundred feet in depth. Throughout their course cliff-dweller ruins are found. In the highland glades and along the valley, pueblo ruins are widely scattered, but the strangest sights of all the things due to prehistoric man are the cave dwellings that are dug in the tops of cinder cones and the villages that were built in the caves of volcanic cliffs. If now I have succeeded in creating a picture of the plateau, I will attempt a brief description of the canyon.

Marble Canyon

Above the Paria the great river runs down a canyon which it has cut through one plateau. On its way it flows with comparative quiet through beautiful scenery, with glens that are vast amphitheatres which often overhang great springs and ponds of water deeply embosomed in the cliffs. From the southern escarpment of this plateau the great Colorado Plateau rises by a comparatively gentle acclivity, and Marble Canyon starts with walls but a few score feet in height until they reach an altitude of about 5,000 feet. On the way the channel is cut into beds of rock of lower geologic horizon, or greater geologic age. These rocks are sandstones and limestones. Some beds are very hard, others are soft and friable. The friable rocks wash out and the harder rocks remain



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projecting from the walls, so that every wall presents a set of stony shelves. These shelves rise along the wall toward the south as new shelves set in from below.

In addition to this shelving structure the walls are terraced and the cliffs of the canyon are set back one upon the other. Then these canyon walls are interrupted by side streams which themselves have carved lateral canyons, some small, others large, but all deep. In these side gorges the scenery is varied and picturesque; deep clefts are seen here and there as you descend the river—clefts furnished with little streams along which mosses and other plants grow. At low water the floor of the great canyon is more or less exposed, and where it flows over limestone rocks beautiful marbles are seen in many colors; saffron, pink, and blue prevail. Sometimes a façade or wall appears rising vertically from the water for thousands of feet. At last the canyon abruptly ends in a confusion of hills beyond which rise towering cliffs, and the group of hills are nestled in the bottom of a valley-like region which is surrounded by cliffs more than a mile in altitude.

The Grand Canyon

From here on for many miles the whole character of the canyon changes. First a dike appears; this is a wall of black basalt crossing the river; it is of lava thrust up from below through a huge crevice broken in the rock by earthquake agency. On the east the Little Colorado comes; here it is a river of salt water, and it derives its salt a few miles up the stream. The main Colorado flows along the eastern and southern wall. Climbing this for a few hundred feet you may look off toward the northwest and gaze at the cliffs of the Kaibab Plateau.

This is the point where we built a trail down a side canyon where Mr. Walcott was to make his winter residence and study of the region; it is very complicated and exhibits a vast series of unconformable rocks of high antiquity. These lower rocks are of many colors; in large part they are shales. The region, which appears to be composed of bright-colored hills washed naked by the rain, is, in fact, beset with a multitude of winding canyons with their own precipitous walls. It is a region of many canyons in the depths of the Grand Canyon itself.

In this beautiful region Mr. Walcott, reading the book of geology, lived in a summerland during all of a long winter while the cliffs above were covered with snow which prevented his egress to the world. His companions, three young Mormons longing for a higher degree of civilization, gazed wistfully at the snow-clad barriers by which they were inclosed. One was a draughtsman, another a herder of his stock, and the third his cook. They afterward told me that it was a long winter of homesickness, and that months dragged away as years, but Mr. Walcott himself had the great book of geology to read, and to him it was a winter of delight.

A half dozen miles below the basaltic wall the river enters a channel carved in 800 or 1,000 feet of dark gneiss of very hard rock. Here the channel is narrow and very swift and beset with rapids and falls. On the south and southwest the wall rises abruptly from the water to the summit of the plateau for about six thousand feet, but across the river on the north and west mountains of gneiss and quartzites appear, sometimes rising to the height of a thousand feet. These are mountains in the bottom of a canyon. The buttes and plateaus of the inter-canyon region are composed of shales, sandstones, and limestones, which give rise to vast architectural shelving and to pinnacles and towers of gigantic proportions, the whole embossed with a marvelously minute system of fretwork carved by the artistic clouds. Looking beyond these mountains, buttes, and plateaus, vistas of the walls of the great plateau are seen. From these walls project salients, and deep re-entrant angles appear.

The whole scene is forever reminding you of mighty architectural pinnacles and towers and balustrades and arches and columns with lattice work and delicate carving. All of these architectural features are made sublime by titanic painting in varied hues—pink, red, brown, lavender, blue, and black. In some lights the saffron prevails, in other lights vermillion, and yet in other lights the grays and blacks predominate. At times, and perhaps in rare seasons, clouds and cloudlets form in the canyon below and wander among the side canyons and float higher and higher until they are dissolved in the upper

Grand Canyon of Arizona



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Grand Canyon of

air, or perhaps they accumulate to hide great portions of the landscape. Then through rifts in the clouds vistas of Wonderland are seen. Such is that portion of the canyon around the great south bend of the Colorado River past the point of the Kaibab Plateau.

As Seen by the Geologist

In the last chapter of my book entitled "The Canyons of the Colorado," I have described the Grand Canyon in the following terms:

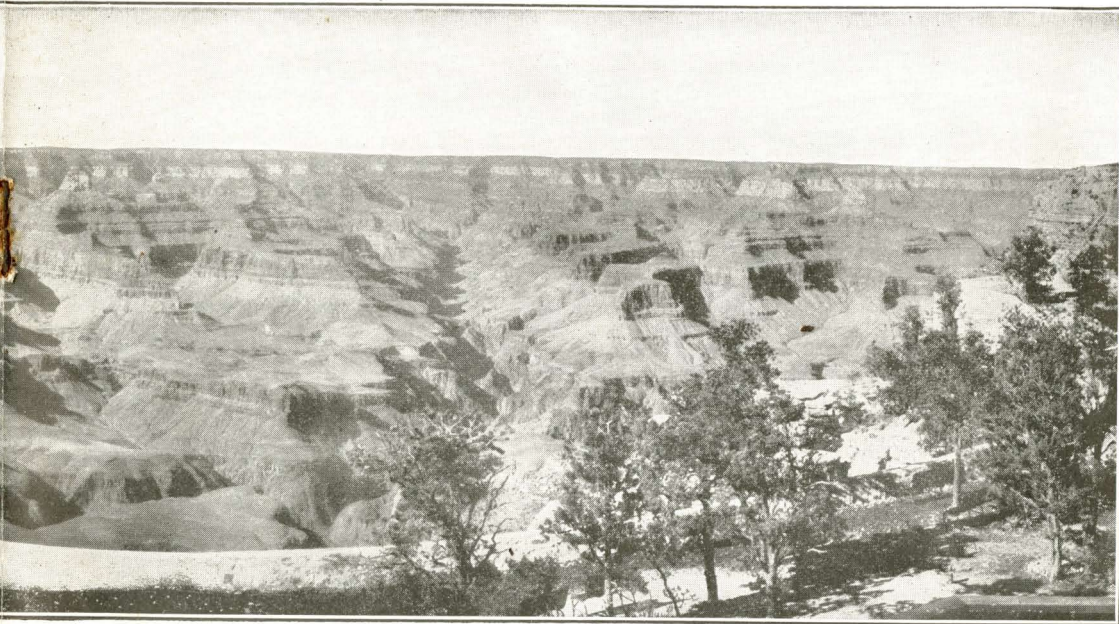
The Grand Canyon is a gorge 217 miles in length, through which flows a great river with many storm-born tributaries. It has a winding way, as rivers are wont to have. Its banks are vast structures of adamant, piled up in forms rarely seen in the mountains.

Down by the river the walls are composed of black gneiss, slates, and schists, all greatly implicated and traversed by dikes of granite. Let this formation be called the black gneiss. It is usually about eight hundred feet in thickness.

Then over the black gneiss are found 800 feet of quartzites, usually in very thin beds of many colors, but exceedingly hard, and ringing under the hammer like phonolite. These beds are dipping and unconformable with the rocks above. While they make but 800 feet of the wall or less they have a geologic thickness of 12,000 feet. Set up a row of books aslant; it is ten inches from the shelf to the top of the line of books, but there may be three feet of the books measured directly through the leaves. So these quartzites are aslant, and though of great geologic thickness they make but 800 feet of the wall. Your books may have many-colored bindings and differ greatly in their contents; so these quartzites vary greatly from place to place along the wall, and in many places they entirely disappear. Let us call this formation the variegated quartzite.

Above the quartzites there are 500 feet of sandstones. They are of a greenish hue, but are mottled with spots of brown and black by iron stains. They usually stand in a bold cliff,

Titan of Chasms



from El Tovar Hotel

Photo by Fred Harvey

weathered in alcoves. Let this formation be called the cliff sandstone.

Above the cliff sandstone there are 700 feet of bedded sandstones and limestones, which are massive sometimes, and sometimes broken into thin strata. These rocks are often weathered in deep alcoves. Let this formation be called the alcove sandstone.

Over the alcove sandstone there are 1,600 feet of limestone, in many places a beautiful marble, as in Marble Canyon. As it appears along the Grand Canyon it is always stained a brilliant red, for immediately over it there are thin seams of iron, and the storms have painted these limestones with pigments from above. Altogether this is the red-wall group. It is chiefly limestone. Let it be called the red-wall limestone.

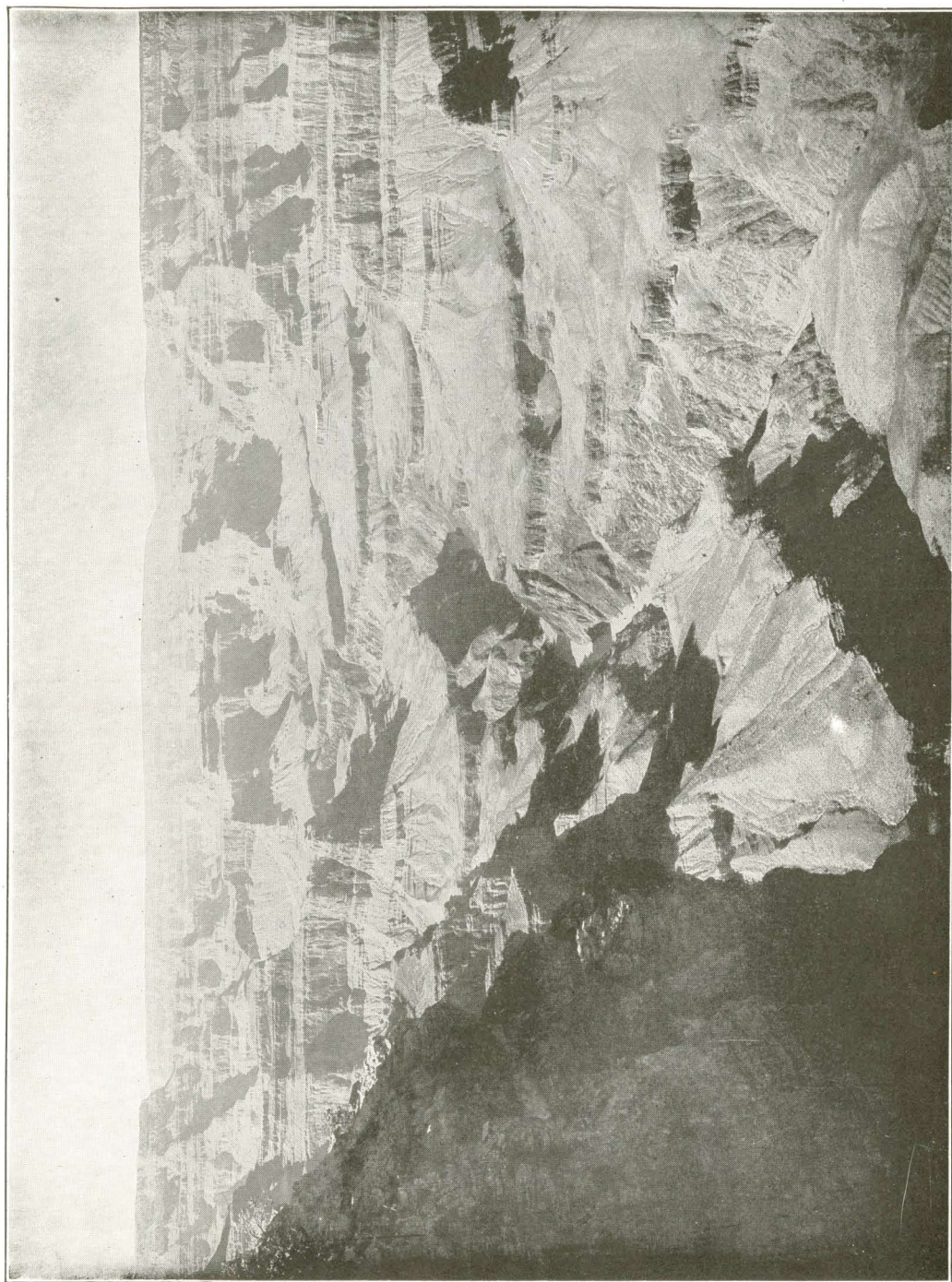
Above the red wall there are 800 feet of gray and bright red sandstone, alternating in beds that look like vast ribbons of landscape. Let it be called the banded sandstone.

And over all, at the top of the wall, is the Aubrey limestone, 1,000 feet in thickness. This

Aubrey has much gypsum in it, great beds of alabaster that are pure white in comparison with the great body of limestone below. In the same limestone there are enormous beds of chert, agates, and carnelians. This limestone is especially remarkable for its pinnacles and towers. Let it be called the tower limestone.

These are the elements with which the walls are constructed, from black buttress below to alabaster tower above. All of these elements weather in different forms and are painted in different colors, so that the wall presents a highly complex façade. A wall of homogeneous granite, like that in the Yosemite, is but a naked wall, whether it be 1,000 or 5,000 feet high. Hundreds and thousands of feet mean nothing to the eye when they stand in a meaningless front. A mountain covered by pure snow 10,000 feet high has but little more effect on the imagination than a mountain of snow 1,000 feet high—it is but more of the same thing—but a façade of seven systems of rock has its sublimity multiplied sevenfold.

Grand Canyon of Arizona



From Pima Point, on Hermit Kim Road

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Titan of Chasms

Consider next the horizontal elements of the Grand Canyon. The river meanders in great curves, which are themselves broken into curves of smaller magnitude. The streams that head far back in the plateau on either side come down in gorges and break the wall into sections. Each lateral canyon has a secondary system of laterals, and the secondary canyons are broken by tertiary canyons; so the crags are forever branching, like the limbs of an oak. That which has been described as a wall is such only in its grand effect. In detail it is a series of structures separated by a ramification of canyons, each having its own walls. Thus, in passing down the canyon it seems to be inclosed by walls, but oftener by salients—towering structures that stand between canyons that run back into the plateau. Sometimes gorges of the second or third order have met before reaching the brink of the Grand Canyon, and then great salients are cut off from the wall and stand out as buttes—huge pavilions in the architecture of the canyon. The scenic elements thus described are fused and combined in very different ways.

Its Length

We measured the length of the Grand Canyon by the length of the river running through it, but the running extent of wall can not be measured in this manner. In the black gneiss, which is at the bottom, the wall may stand above the river for a few hundred yards, or a mile or two; then to follow the foot of the wall you must pass into a lateral canyon for a long distance, perhaps miles, and then back again on the other side of the lateral canyon; then along by the river until another lateral canyon is reached, which must be headed in the black gneiss. So for a dozen miles of river through the gneiss there may be a hundred miles of wall on either side. Climbing to the summit of the black gneiss and following the wall in the variegated quartzite, it is found to be stretched out to a still greater length, for it is cut with more lateral gorges. In like manner there is yet greater length of the mottled (or alcove) sandstone wall, and the red wall is still farther stretched out in ever-branching gorges.

To make the distance for ten miles along the river by walking along the top of the red wall, it would be necessary to travel several hundred

miles. The length of the wall reaches its maximum in the banded sandstone, which is terraced more than any of the other formations. The tower limestone wall is less tortuous. To start at the head of the Grand Canyon on one of the terraces of the banded sandstone and follow it to the foot of the Grand Canyon, which by river is a distance of 217 miles, it would be necessary to travel many thousand miles by the winding way; that is, the banded wall is many thousand miles in length.

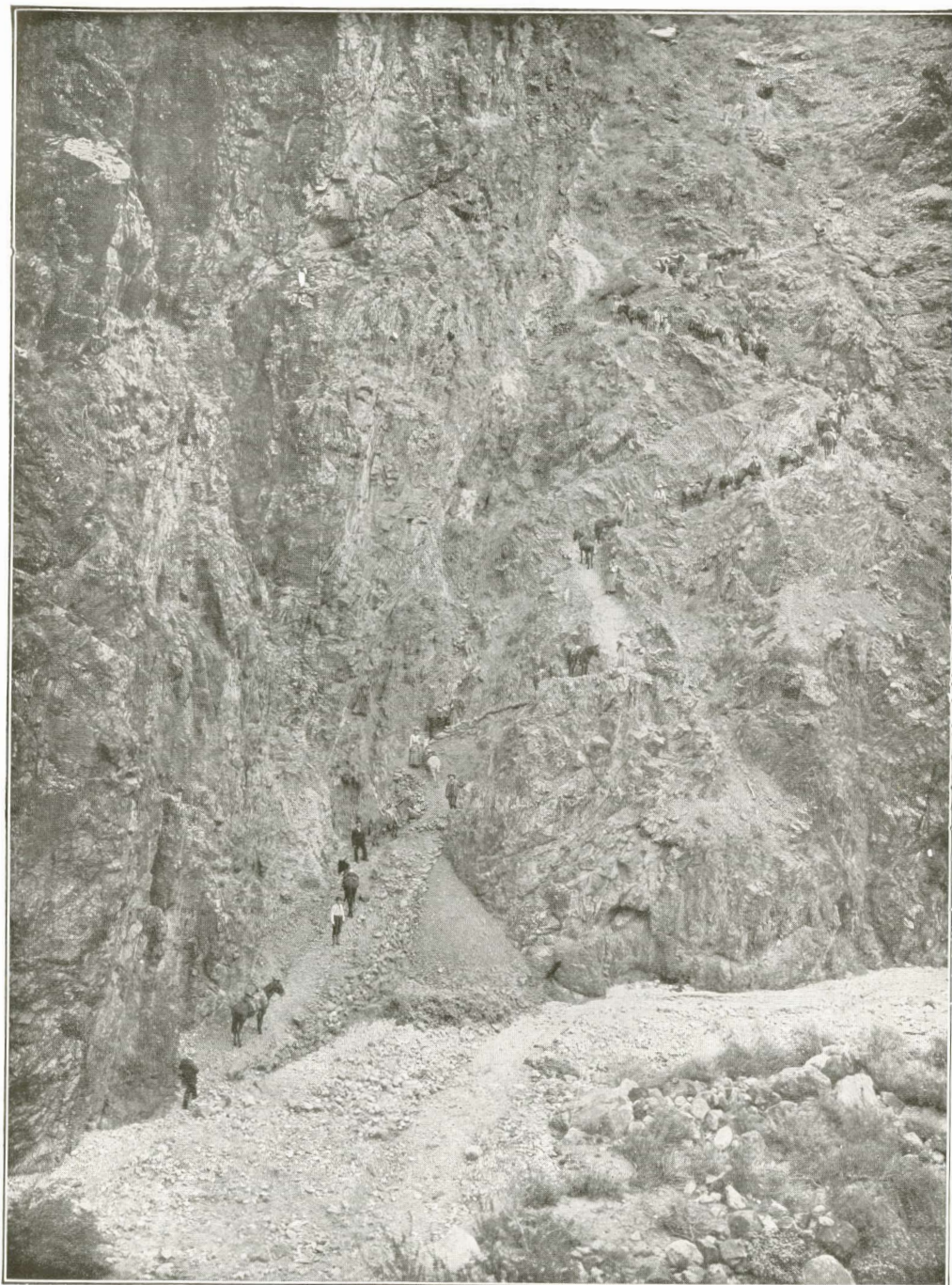
Traveling Down Stream

For eight or ten miles below the mouth of the Little Colorado, the river is in the variegated quartzites, and a wonderful fretwork of forms and colors, peculiar to this rock, stretches back for miles to a labyrinth of the red-wall cliff; then below, the black gneiss is entered and soon has reached an altitude of 800 feet and sometimes more than 1,000 feet, and upon this black gneiss all the other structures in their wonderful colors are lifted. These continue for about seventy miles, when the black gneiss below is lost, for the walls are dropped down by the West Kaibab Fault and the river flows in the quartzites.

Then for eighty miles the mottled (or alcove) sandstones are found in the river bed. The course of the canyon is a little south of west and is comparatively straight. At the top of the red-wall limestone there is a broad terrace, two or three miles in width, composed of hills of wonderful forms carved in the banded beds, and back of this is seen a cliff in the tower limestone. Along the lower course of this stretch the whole character of the canyon is changed by another set of complicating conditions. We have now reached a region of volcanic activity. After the canyons were cut nearly to their present depth, lavas poured out and volcanoes were built on the walls of the canyon, but not in the canyon itself, though at places rivers of molten rock rolled down the walls into the Colorado.

The canyon for the next eighty miles is a compound of that found where the river is in the black gneiss and that found where the dead volcanoes stand on the brink of the wall. In the first stretch, where the gneiss is at the foundation, we have a great bend to the south, and in the

Grand Canyon of Arizona



Corkscrew—Bright Angel Trail

Photo. Putnam & Valentine



Titan of Chasms

last stretch, where the gneiss is below and the dead volcanoes above, another great southern detour is found. These two great beds are separated by eighty miles of comparatively straight river.

Let us call this first great bend the Kaibab reach of the canyon, and the straight part the Kanab reach, for the Kanab Creek heads far off in the plateau to the north and joins the Colorado at the beginning of the middle stretch. The third great southern bend is the Shiwits stretch. Thus there are three distinct portions of the Grand Canyon: The Kaibab section, characterized more by its buttes and salients; the Kanab section, characterized by its comparatively straight walls with volcanoes on the brink, and the Shiwits section, which is broken into great terraces with gneiss at the bottom and volcanoes at the top.

The Work of Erosion

The erosion represented in the canyons, although vast, is but a small part of the great erosion of the region, for between the cliffs blocks have been carried away far superior in magnitude to those necessary to fill the canyons. Probably there is no portion of the whole region from which there have not been more than a thousand feet degraded, and there are districts from which more than 30,000 feet of rock have been carried away; altogether there is a district of country more than 200,000 square miles in extent, from which, on the average, more than 6,000 feet have been eroded. Consider a rock 200,000 square miles in extent and a mile in thickness, against which the clouds have hurled their storms, and beat it into sands, and the rills have carried the sands into the creeks, and the creeks have carried them into the rivers, and the Colorado has carried them into the sea.

We think of the mountains as forming clouds about their brows, but the clouds have formed the mountains. Great continental blocks are upheaved from beneath the sea by internal geologic forces that fashion the earth. Then the wandering clouds, the tempest-bearing clouds, the rainbow-decked clouds, with mighty power and with wonderful skill, carve out valleys and

canyons and fashion hills and cliffs and mountains. The clouds are the artists sublime.

Winter and Cloud Effects

In winter some of the characteristics of the Grand Canyon are emphasized. The black gneiss below, the variegated quartzite, and the green or alcove sandstone form the foundation for the mighty red wall. The banded sandstone entablature is crowned by the tower limestone. In winter this is covered with snow. Seen from below, these changing elements seem to graduate into the heavens, and no plane of demarcation between wall and blue firmament can be seen. The heavens constitute a portion of the façade and mount into a vast dome from wall to wall, spanning the Grand Canyon with empyrean blue. So the earth and the heavens are blended in one vast structure.

When the clouds play in the canyon, as they often do in the rainy season, another set of effects is produced. Clouds creep out of canyons and wind into other canyons. The heavens seem to be alive, not moving as move the heavens over a plain, in one direction with the wind, but following the multiplied courses of these gorges. In this manner the little clouds seem to be individualized, to have wills and souls of their own and to be going on diverse errands—a vast assemblage of self-willed clouds faring here and there, intent upon purposes hidden in their own breasts. In imagination the clouds belong to the sky, and when they are in the canyon the skies come down into the gorges and cling to the cliffs and lift them up to immeasurable heights, for the sky must still be far away. Thus they lend infinity to the walls.

You can not see the Grand Canyon in one view as if it were a changeless spectacle from which a curtain might be lifted, but to see it you have to toil from month to month through its labyrinths. It is a region more difficult to traverse than the Alps or the Himalayas, but if strength and courage are sufficient for the task, by a year's toil a concept of sublimity can be obtained never again to be equaled on the hither side of paradise.

Grand Canyon of Arizona



Hermit Rim Road, beyond Hopi Point

Copyright, 1911, Fred Harvey



Main Entrance, El Tovar Hotel

Photo. by Fred Harvey.

Titan of Chasms

THE GREATEST THING IN THE WORLD

BY CHARLES F. LUMMIS



"The greatest thing in the world." That is a large phrase and an overworked one, and hardened travelers do not take it lightly upon the tongue. Noticeably it is most glibly in use with those but lately, and for the first time, wandered beyond their native state or

county, and as every province has its own local brag of biggest things, the too credulous tourist will find a superlative everywhere. And superlatives are unsafe without wide horizons of comparison.

Yet in every sort there is, of course, somewhere "the biggest thing in the world" of its kind. It is a good word, when spoken in season and not abused in careless ignorance.

I believe there is and can be no dispute that the term applies literally to several things in the immediate region of the Grand Canyon of Arizona. As I have more than once written (and it never yet has been controverted), probably no other equal area on earth contains so many supreme marvels of so many kinds—so many astounding sights, so many masterpieces of Nature's handiwork, so vast and conclusive an encyclopedia of the world-building processes, so impressive monuments of prehistoric man, so many triumphs of man still in the tribal relation—as what I have called the Southwestern Wonderland. This includes a large part of New Mexico and Arizona, the area which geographically and ethnographically we may count as the Grand Canyon region. Let me mention a few wonders:

The largest and by far the most beautiful of all petrified forests, with several hundred square miles whose surface is carpeted with agate chips and dotted with agate trunks two to four feet in diameter; and just across one valley a buried "forest" whose huge silicified—not agatized—

logs show their ends under fifty feet of sandstone.

The largest natural bridge in the world—200 feet high, over 500 feet span, and over 600 feet wide, up and down stream, and with an orchard on its top and miles of stalactite caves under its abutments.

The largest variety and display of geologically recent volcanic action in North America; with 60-mile lava flows, 1,500-foot blankets of creamy tufa cut by scores of canyons; hundreds of craters and thousands of square miles of lava beds, basalt, and cinders, and so much "volcanic glass" (obsidian) that it was the chief tool of the prehistoric population.

The largest and the most impressive villages of cave-dwellings in the world, most of them already abandoned "when the world-seeking Genoese" sailed.

The peerless and many-storied cliff-dwellings—castles and forts and homes in the face of wild precipices or upon their tops—an aboriginal architecture as remarkable as any in any land.

The twenty-six strange communal town republics of the descendants of the "cliff-dwellers," the modern Pueblos; some in fertile valleys, some (like Acoma and Moki) perched on barren and dizzy cliff tops. The strange dances, rites, dress, and customs of this ancient people who had solved the problem of irrigation, six-story house building, and clean self-government, and even women's rights—long before Columbus was born.

The noblest Caucasian ruins in America, north of Mexico—the great stone and adobe churches reared by Franciscan missionaries, near three centuries ago, a thousand miles from the ocean, in the heart of the Southwest.

Some of the most notable tribes of savage nomads—like the Navajos, whose blankets and silver work are pre-eminent, and the Apaches, who, man for man, have been probably the most successful warriors in history.

All these, and a great deal more, make the Southwest a wonderland without a parallel. There are ruins as striking as the storied ones

Grand Canyon of Arizona



San Francisco Peaks, near Flagstaff

Photo G. L. Rose.



View from Head of Grand View Trail



Titan of Chasms

along the Rhine, and far more remarkable. There are peoples as picturesque as any in the Orient, and as romantic as the Aztecs and the Incas of whom we have learned such gilded fables, and there are natural wonders which have no peers whatever.

Of the Canyon, and Other Wonders

At the head of the list stands the Grand Canyon of the Colorado; whether it is the "greatest wonder of the world" depends a little on our definition of "wonder." Possibly it is no more wonderful than the fact that so tiny a fraction of the people who confess themselves the smartest in the world have ever seen it. As a people we dodder abroad to see scenery incomparably inferior.

But beyond peradventure it is the greatest chasm in the world, and the most superb. Enough globe-trotters have seen it to establish that fact. Many have come cynically prepared to be disappointed; to find it overdrawn and really not so stupendous as something else. It is, after all a hard test that so be-bragged a wonder must endure under the critical scrutiny of them that have seen the earth and the fullness thereof. But I never knew the most self-satisfied veteran traveler to be disappointed in the Grand Canyon, or to patronize it. On the contrary, this is the very class of men who can best comprehend it, and I have seen them fairly break down in its awful presence.

I do not know the Himalayas except by photograph and the testimony of men who have explored and climbed them, and who found the Grand Canyon an absolutely new experience. But I know the American continents pretty well, and have tramped their mountains, including the Andes—the next highest mountains in the world, after half a dozen of the Himalayas—and of all the famous quebradas of the Andes there is not one that would count 5 per cent on the Grand Canyon of the Colorado. For all their 25,000-foot peaks, their blue-white glaciers, imminent above the bald plateau, and green little bolsones ("pocket valleys") of Chile, Peru, Bolivia, and Ecuador; for all their tremendous active volcanoes, like Saugay and Cotopaxi; for all an earthquake activity beside which the "shake" at Charleston was mere paper-doll play; for

all the steepest gradients in the world (and Peru is the only place in the world where a river falls 17,000 feet in 100 miles)—in all that marvelous 3,000-mile procession of giantism there is not one canyon which any sane person would for an instant compare with that titanic gash that the Colorado has chiseled through a comparatively flat upland. Nor is there anything remotely approaching it in all the New World. So much I can say at first hand. As for the Old World, the explorer who shall find a gorge there one-half as great will win undying fame.

The quebrada of the Apu-Rimac is a marvel of the Andes, with its vertiginous depths and its suspension bridge of wild vines. The Grand Canyon of the Arkansas, in Colorado, is a noble little slit in the mountains. The Franconia and White Mountain notches in New Hampshire are beautiful. The Yosemite and the Yellowstone canyons surpass the world, each in its way. But if all of these were hung up on the opposite wall of the Grand Canyon from you, the chances are fifty to one that you could not tell t'other from which, nor any of them from the hundreds of other canyons which rib that vast vertebrate gorge. If the falls of Niagara were installed in the Grand Canyon between your visits and you knew it by the newspapers—next time you stood on that dizzy rimrock you would probably need good field-glasses and much patience before you could locate that cataract which in its place looks pretty big. If Mount Washington were plucked up bodily by the roots—not from where you see it, but from sea-level—and carefully set down in the Grand Canyon, you probably would not notice it next morning, unless its dull colors distinguished it in that innumerable congress of larger and painted giants.

All this, which is literally true, is a mere trifle of what might be said in trying to fix a standard of comparison for the Grand Canyon. But I fancy there is no standard adjustable to the human mind. You may compare all you will—eloquently and from wide experience, and at last all similes fail. The Grand Canyon is just the Grand Canyon, and that is all you can say. I never have seen anyone who was prepared for it. I never have seen anyone who could grasp it in a week's hard exploration; nor anyone, except some rare Philistine, who could even

Grand Canyon of Arizona



Trail Party Leaving El Tovar

Photo by Fred Harvey.



Trail Party Leaving Bright Angel

Titan of Chasms

think he had grasped it. I have seen people rave over it; better people struck dumb with it, even strong men who cried over it; but I have never yet seen the man or woman that *expected* it.

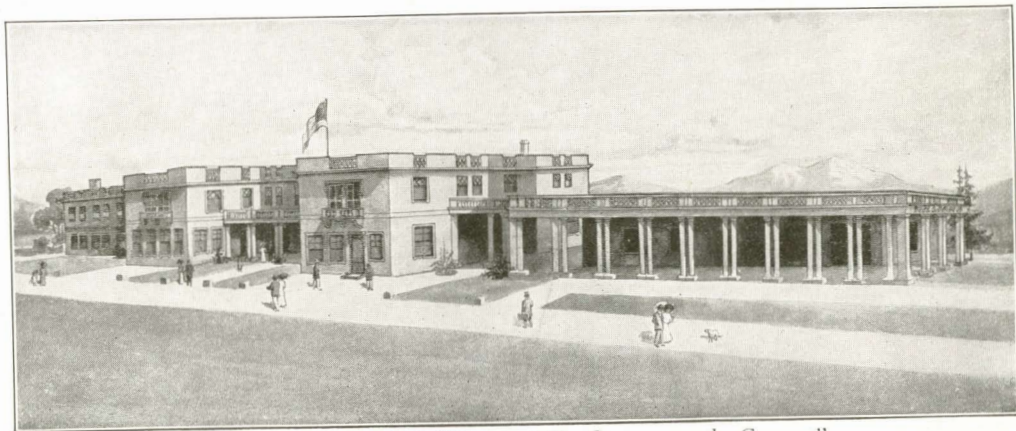
It adds seriously to the scientific wonder and the universal impressiveness of this unparalleled chasm that it is not in some stupendous mountain range, but in a vast, arid, lofty floor of nearly one hundred thousand square miles—as it were, a crack in the upper story of the continent. There is no preparation for it. Unless you had been told, you would no more dream that out yonder amid the pines the flat earth is slashed to its very bowels, than you would expect to find an iceberg in Broadway. With a very ordinary running jump from the spot where you get your first glimpse of the canyon you could go down 2,000 feet without touching. It is sudden as a well.

But it is no mere cleft. It is a terrific trough 6,000 to 7,000 feet deep, ten to twenty miles wide, hundreds of miles long, peopled with hundreds of peaks taller than any mountain east of the Rockies, yet not one of them with its head so high as your feet, and all ablaze with such color as no eastern or European landscape ever knew, even in the Alpen-glow. And as you sit upon the brink the divine scene-shifters give you a new canyon every hour. With each degree of the sun's course the great countersunk mountains we have been watching fade away, and new ones, as terrific, are carved by the westering shadows. It is like a dissection of the whole cosmogony. And the purple shadows,

the dazzling lights, the thunderstorms and snowstorms, the clouds and the rainbows that shift and drift in that vast subterranean arena below your feet! And amid those enchanted towers and castles which the vastness of the scale leads you to call "rocks," but which are in fact as big above the river-bed as the Rockies from Denver, and bigger than Mount Washington from Fabyan's or the Glen!

The Grand Canyon country is not only the hugest, but the most varied and instructive example on earth of one of the chief factors of earth-building—erosion. It is the mesa country—the Land of Tables. Nowhere else on the footstool is there such an example of deep-gnawing water or of water high-carving. The sandstone mesas of the Southwest, the terracing of canyon walls, the castellation, battlementing and cliff-making, the cutting down of a whole landscape except its precipitous islands of flat-topped rock, the thin lava table-cloths on tables 100 feet high—these are a few of the things which make the Southwest wonderful alike to the scientist and the mere sight-seer.

That the canyon is not "too hard" is perhaps sufficiently indicated by the fact that I have taken ladies and children and men in their seventies, when the easiest way to get there was by a seventy-mile stage ride, and that at six years old my little girl walked all the way from the rim to bottom of canyon and came back on a horse the same day, and was next morning ready to go on a long tramp along the rim.



Fray Marcos Hotel, Williams—"The Gateway to the Canyon"

Grand Canyon of Arizona



Hopi House, opposite El Tovar



Camp in Tusayan Forest, Grand Canyon

Copyright, 1911, Fred Harvey



INFORMATION FOR TOURISTS

Preliminary

There is only one way by which to directly reach the Grand Canyon of Arizona and that is via the Santa Fe (The Atchison, Topeka and Santa Fe Railway System).

There are two ways of reaching the Canyon from the Santa Fe—rail from Williams and private conveyance from Flagstaff.

The route from Flagstaff is not available in winter. The bulk of the travel is via Williams, sixty-four miles north, to El Tovar—open all the year.

Four Gateways

There are but four points from which an easy descent may be made of the south wall of the Grand Canyon in the vicinity of the granite gorge:

1. At Grand View, down Grand View Trail.
2. At El Tovar, down Bright Angel Trail.
3. At Hermit Basin, down Hermit Trail and Boucher Trail.
4. At Bass' Camp, down Bass' Trail.

While the Canyon is accessible over trails at other places outside of the district named (such as Lee's Ferry Trail, by wagon from Winslow; Moki Indian Trail, by way of Little Colorado Canyon; and Diamond Creek road to Colorado River from Peach Springs station), tourists take the El Tovar, Grand View, Hermit, and Bass' Camp routes, because of the superior facilities and views there offered.

It is near Grand View that Marble Canyon ends and the Grand Canyon proper begins. Northward, eighteen miles away, is the mouth of the Little Colorado Canyon. From Grand View the beginning of the granite gorge is seen.

El Tovar is approximately in the center, Hermit a little west of center, and Bass' Camp at the western end of the granite gorge. By wagonroad it is about thirteen miles from El Tovar east to Grand View, nine miles west to Hermit, and twenty-three miles west to Bass' Camp.

The Grand Canyon as seen from Grand View is ideally beautiful—a scene of wide outlooks and brilliant hues; at El Tovar, deep and impressive—a scene that awakens the profoundest emotions; at Hermit, a combination of cliffs, side canyons, gorge and river—a world of beauty on every hand; at Bass' Camp, the most varied—a scene of striking contrasts in form and color.

Each locality has its special charm. All should be visited, if time permits, as only by long observation can one gain even a superficial knowledge of what the Grand Canyon is.

The Ride from Williams

The Grand Canyon of Arizona may now be visited, either in summer or winter, with perfect comfort. The trip is entirely feasible any day in the year.

Leaving the Santa Fe transcontinental train at Williams, Ariz., passengers change in same depot to a local train of the Grand Canyon Railway, which leaves Williams twice a day, and arrives at destination after a three hours' run.

Williams is a busy town of 1,500 inhabitants, 378 miles west of Albuquerque, on the Santa Fe. Here are located large sawmills, a smelter, numerous well-stocked stores, and railway division buildings. A depot hotel, managed by Fred Harvey, and called Fray Marcos, provides adequate accommodations for Grand Canyon travelers who may stop over here between trains. It is one of the nicest of the Santa Fe inns.

Williams Mountain rises near the town to a height of 9,000 feet. On the summit of the mountain is buried the pioneer scout, Bill Williams. From his resting place there is a wide outlook.

The railway track to the Canyon has been relaid with heavier steel and ballasted with lava cinders, making a smooth roadbed. The snow-covered San Francisco Peaks are on the eastern horizon. Kendrick's, Sitgreaves, and Williams mountains are also visible. Red Butte, thirty miles distant, is a prominent local landmark. Before the terminus is reached the train climbs a long, high ridge and enters Tusayan Forest, which resembles a natural park.

Stop-overs are granted at Williams on railway and Pullman tickets on application to train and Pullman conductors. Baggage may be stored in the station at Williams or checked through to the Canyon. One of the main-line California trains—The California Limited—carries a through sleeper to the Canyon. There is also through-sleeper service between the Canyon and Los Angeles most of the year.

The ticket fare, Williams to Grand Canyon and return, is \$7.50.

While one ought to remain a week or two, a stop-over of about three days from the transcontinental trip will allow two days at the Canyon. One day should be devoted to a carriage ride part way along the Hermit Rim Road, also to Yavapai Point. The next day go down Bright Angel Trail. The third day take a trip to Grand View. Another day—making a four-days' stop-over in all—spent in short walks to near-by points, will enable visitors to get more satisfactory views of this stupendous wonder, if so inclined. Or, try Hermit Loop three-day camping trip, down one trail and up another.

Most persons make the mistake of trying to see the Canyon in too short a time. They rush in, rush around, and rush out. That's the wrong way. The right way is to take it leisurely. Spend one night down in the Canyon, which means two days instead of one for the trail trip. Devote a whole day to one of the "points" just quietly trying to absorb the panorama. Another day for another "point." Walk along Rim Trail, or ride in the woods. Set aside an hour or two every day for idle dreams on the hotel veranda. See all there is around El Tovar and then take in the other sections. You will never regret the extra time thus spent.

El Tovar

The most unique, most comfortable, and one of the costliest resort hotels in the Southwest has been built by the Santa Fe at the railway terminus not far from the head of Bright Angel Trail, at an elevation of 6,866 feet above sea-level.

It is named El Tovar, after Don Pedro de Tovar, a



Spanish conquistador whose name is linked with the discovery of the Grand Canyon by Coronado's soldiers in 1540.

It is under the general management of Fred Harvey.

It has cost more than a quarter of a million dollars.

El Tovar is a long, low, rambling structure, built of native boulders and pine logs. From north to south the width is 327 feet; from east to west, 218 feet. The height varies from three to four stories. There are more than a hundred sleeping-rooms, with accommodations for upwards of 250 guests.

The building is in complete harmony with the surroundings—on one side the mighty gorge, on the other the Tusayan Forest. Not a Waldorf-Astoria (admirable as that type is for a city), but a hotel that the traveler, seeking the best, will find wholly to his liking—a country clubhouse is the nearest type, but El Tovar is more than that.

From many of the rooms one gets a glimpse of the Grand Canyon and Tusayan Forest. Seven miles away by trail, and a mile measured straight downward, is the Colorado River, its tumult never reaching the upper stillness. The north rim is thirteen dizzy miles across.

At some period of the day the sun enters every part of the hotel. There are spacious sheltered and open verandas enabling guests to enjoy the sunshine and the invigorating mountain air. Everywhere a riot of color and beauty of form.

Some of the most attractive features are:

A solarium—just the place for a sun bath should the day happen to be chilly.

A music-room, which is artistically decorated and handsomely furnished.

A clubroom, where may be found billiard and pool-tables, shuffle-board, and other means of indoor enjoyment.

The rendezvous—similar to the lounging room of a country club—finished in logs with huge stone fireplaces, and decorated with trophies of the chase, is a pleasant spot where friends may meet informally.

Main dining-room, 38 by 89 feet, has log walls, a rough-board arched ceiling supported by great log trusses, and two stone fireplaces. On each side are private dining-rooms. The cuisine is Harvey's best; everybody who has traveled on the Santa Fe knows what Harvey quality is.

Many of the bedrooms are en suite with bath. Hot and cold water, steam heat and electric light are generously supplied. Among the minor comforts may be mentioned a telephone in each room, with direct office connection. El Tovar also has up-to-date culinary and laundry departments.

The protection against fire is very complete, the reserve supply of water in the tank being 150,000 gallons. The plant, furnishing heat, light, ice, power, and water, is far enough removed to be unobjectionable. The sewage is disposed of perfectly.

Pure milk and cream mainly come from the Harvey irrigated farm, near Del Rio, Arizona, between Ash Fork and Prescott.

Merely that guests may have absolutely pure water to drink, it is brought from a spring 90 miles distant, filtered three times, and aerated. This is only one of the many provisions for perfect service.

El Tovar not only has the advantage of being located in the midst of the world's grandest scenery, but it provides solid comfort, rest, and recreation every day in the year.

The climate here is cool in summer and generally mild in winter, with almost continual sunshine. The occasional midwinter snowstorms along the rim are usually of short duration. You reasonably may expect almost perfect weather the year 'round.

The hotel is conducted on the American plan. Rooms without bath cost from \$4.00 to \$6.00 a day each person, while rooms with bath cost \$6.00 to \$8.00 and upwards each person. Meals only, breakfast and luncheon \$1.00 each, dinner \$1.50. Livery may be hired at reasonable rates for drives along the rim; trail animals and guides are furnished for trips down the trail; and horseback rides may be taken.

The necessary expense for a stop-over of several days need not be very heavy. If one chooses to economize, there is opportunity to get cozy lodgings in cabin or tent at Bright Angel Camp, adjacent, for \$1.00 a night, each person, meals being furnished a la carte at Harvey cafe. The accommodations here are clean, and thoroughly comfortable.

Fifty yards from El Tovar is an exact reproduction of the curious stone adobe dwellings of the Hopi Indians, together with several Navaho hogans.

In the Hopi House are installed some of the prize-winning collections of Indian handiwork exhibited by Mr. Harvey at the St. Louis World's Fair. Here also live a small band of Hopis. Without exception these are the most primitive Indians in our country. Their ceremonies are hundreds of years old, the most famous being that of the snake dance. The men weave blankets and the women make pottery. Among the Navahos are blanket-weavers and silversmiths. Supais from Cataract Canyon frequently visit El Tovar.

El Tovar furnishes the crowning reason why you should visit the Grand Canyon.

Hermit Rim Road

The most unique scenic roadway in the world has been built by the Santa Fe from El Tovar westward to the head of Hermit Basin, a distance of about nine miles.

It is called Hermit Rim Road. It is like a city boulevard, wide, smooth and dustless. The first section of three miles is the old cinder road to Hopi Point, rebuilt to standard width of thirty feet, with a central driveway fourteen feet wide, of crushed stone and cinders, rolled hard. The new section, six miles long, is similarly built. It closely follows the rim from Hopi Point, by way of Mohave Point, to Pima Point, and thence along the east side of Hermit Basin to top of the new Hermit Trail.

No other roadway in the world is built along the brink of such a tremendous abyss—where in places there is a sheer drop of 2,000 feet within a rod of the rim. Yet you are as safe as in an easy chair at home.

The Hermit Rim Road trip is one which every Canyon visitor should take. In no other way can so much of the Canyon be seen in so short a time.

An attractive rest-house will be built at road end, convenient to Hermit Trail.

Among the many interesting places on this king of highways, may be mentioned the following: El Tovar Hill, Sierra Vista, Tusayan Hill, Maricopa Point, Hopi Point, Hopi Wall, The Abyss, Mohave Point, The Inferno, The



Titan of Chasms

Alligator, Canyon Lion, Vista Monumente, The Terraces, Cut-off, Vista Camino, Artists' View, Pinyon Arroyo, Juniper Hill, Pima Point, Cataract Breaks and Vista Del Rio.

Hermit Trail

A new pathway down the south wall of the Grand Canyon, named Hermit Trail, is being built by the Santa Fe from end of Hermit Rim Road to the Colorado River. It is not yet ready for regular trail service, although the trail itself has been finished to the plateau. Meanwhile, it is possible to take saddle horses with guide, from El Tovar, and go as far down as the plateau—a one-day round trip. Hermit Trail Loop camping trip, requiring three days, includes the rim road and three trails, viz., Hermit, Tonto and Bright Angel.

Hermit Trail is four feet wide, with a protecting wall on the outside. The descent is accomplished by a series of easy grades. This is the only trail with a southern exposure for the first thousand feet at top, thereby rendering it comparatively free from cold winds and snow. The lower section opens into the main Canyon along Hermit Creek, with an easy grade to the river. The scenery is varied and interesting.

Regular Trip Drives

Hopi Point—There are three "regular trip" drives, El Tovar to Hopi Point, three miles west, and back. The first starts at 7.00 a. m.; rate, \$1.50. The second leaves at 2.00 p. m.; rate, \$1.00. The third, for the sunset view, leaves at an hour timed to reach the point before sunset; rate, \$4.50.

Hermit Rim Road—This drive is nine miles west of El Tovar, (eighteen miles round trip)—twice in the forenoon and once in the afternoon. The first starts at 9.00 a. m., and reaches El Tovar returning at 12.30 noon; rate, \$3.00. The second starts at 10.00 a. m., and reaches El Tovar returning at 1.30 p. m.; rate, \$3.00. The third starts at 2.30 p. m., and reaches El Tovar returning at about 5.30 p. m.; rate, \$4.00, which includes sunset view. Stops are made enroute, for all three drives, at Hopi, Mohave and Pima Points.

Yavapai and Grandeur Points—This drive is three miles east of El Tovar; start 10.15 a. m.; rate, \$1.00.

Grand View—Leaving El Tovar at 10.00 a. m. Grand View Point, fourteen miles, is reached by noon. The ride is through the tallest pines of the Tusayan Forest. After lunch sufficient time is allowed for visiting the near-by outlooks. From here may be seen that section of the Canyon from Bright Angel Creek, west, to Marble Canyon, on the north, including the great bend of the Colorado. On the eastern wall are Moran, Zuni, Papago, Pinal, Navaho and Comanche (Desert View) points; and the mouth of the Little Colorado River. Still further beyond is the Painted Desert, and Navaho Mountain—the latter plainly seen, though one hundred and twenty miles away. The "rim trail" to Moran Point is very interesting.

Grand View Trail enters the Canyon near Grand View Point. Near by is Grand View Hotel, under management of Mr. Berry, who also cares for visitors at his ranch. This hotel is a large frame edifice, with log cabin annex.

About fifty guests can be accommodated here. The Grand View trip consumes one day; rate, \$4.00.

Dripping Springs (Boucher Trail)—This trip is made on horseback all the way, or carriage to rim and saddle horses down trail; ten miles west, start at 8.30 a. m.; rate, \$4.00 each for three or more persons; for less than three persons, \$5.00 extra for guide. Private parties of three or more persons, \$5.00 extra for guide. Boucher Trail goes down the west side of Hermit Basin, opposite the new Hermit Trail.

Private Conveyance Rates

Private conveyances may be hired for the following trips, on terms named:

Hermit Rim Road, forenoon, one to three persons, \$12.00; over three persons, \$4.00 each additional. Afternoon, \$14.00 and \$4.00 respectively.

Hopi Point or Yavapai Point; one to three persons, \$5.00; over three persons, \$1.50 each additional.

Hopi and Yavapai points (both), from one to three persons, \$10.00; over three persons, \$2.50 each additional.

Grand View; one to three persons, \$14.00; over three persons, \$4.00 each additional.

Down Bright Angel Trail

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

Those wishing to reach the river leave the main trail at Indian Garden and follow the downward course of Indian Garden and Pipe creeks. Another feature of this section of the trail is the "corkscrew," a spiral pathway up an almost perpendicular wall.

Leave El Tovar at 8.30 a. m. for the river trip; return to rim 5.30 p. m.; rate \$5.00 each for three or more persons; less than three persons, \$5.00 extra for guide. Leave El Tovar 10.30 a. m. for trip to plateau, five miles; rate \$4.00 each for three or more persons; less than three persons, \$5.00 extra for guide. To plateau and river same day; rate \$6.00 for each person and \$5.00 extra for guide for parties of one or more.

Horseback Trips

There are many trips possible here for those fond of horseback riding. Saddle horses are furnished at \$4.00 a day, or \$2.50 a half day. English, McLellan, Whiteman or Western stock saddles furnished as requested. Side saddles not provided. The rate for guides is \$5.00 a day or \$2.50 a half day. Horseback trips over any of the trails into the Canyon are only permitted when accompanied by guide. This is necessary to avoid risk in meeting trail parties and pack trains.

Camping Trips

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



Some of the many camping trips are; Hermit Trail Loop, Hermit Trail Overnight, Boucher Trail Loop, Cataract Canyon, Grand View Trail Loop, Hance-Moran-Zuni points, Desert View, Little Colorado River, Painted Desert and Hopiland.

The rates vary from \$10.00 to \$15.00 a day for one person; \$6.00 to \$8.00 a day, each additional person.

Such rates specially include services of guide and camp equipment; provisions are extra. Figures quoted are approximate only, varying with the different outings.

Hermit Creek Overnight Trip

A limited number now can be provided for on Hermit Trail trip, staying overnight at Hermit Plateau Camp.

Start from El Tovar or Bright Angel at 1.00 p. m., driving to head of trail and returning next day at 1.00 p. m. The round trip charges are: \$15.00 for one person, \$20.00 for two persons and \$10.00 for each additional person. Rates quoted include overnight accommodations, also supper and breakfast at camp on plateau.

Bass' Camp

At the western end of the granite gorge is Bass' Trail, an easy route down to the Colorado River and up the other side to Point Sublime and Powell's Plateau, the river being crossed by ferry. The magnificent panorama eastward from Havasupai Point takes in fifty miles of the Canyon, while westward is the unique, table-like formation which characterizes the lower reaches of the river. The views from both rims are pronounced by noted artists and explorers to be unequalled.

At Bass' Camp, near the head of this trail, is a frame cabin and several tents; meals are served by advance arrangement with Mr. Bass, the proprietor. Bass' Camp is reached by team from El Tovar, a distance of about twenty-four miles, and may be taken in on the way to Cataract Canyon.

Cataract Canyon

A visit should be made to the Havasupai Indian village in Cataract Canyon. Any bona fide tourist may procure an introductory letter from the railway agent at Grand Canyon. On presenting same to the United States Indian agent at Supai, permission will be granted to enter the reservation. This is a unique trip of about fifty miles, first by wagon, thirty-five miles, across a timbered plateau, then on horseback down precipitous Topocobya Trail, along the rocky floors of Topocobya and Cataract canyons, deep in the earth, to a place of gushing springs, green fields, and enchanting waterfalls. Here live the Havasupai Indians, one of the most interesting tribes in Arizona. The round trip from El Tovar is made in three days, at an expense of \$15.00 a day for one person, \$20.00 a day for two persons, and \$25.00 a day for three persons. Each additional member of party, \$5.00 a day. These rates include services of guide for parties of four or less, and expenses of guide and horse feed, but do not include expenses for board and lodging for members of party.

Flagstaff and Vicinity

The town itself is an interesting place of 2,000 inhabitants, situated in the heart of the San Francisco uplift, 6,900 feet above sea-level, and surrounded by a pine forest. Its hotels, business houses, lumber mills, and residences denote thrift. On a neighboring hill is Lowell Observatory, noted for its astonishing studies of the planet Mars.

Eight miles southwest from Flagstaff—reached by a pleasant drive along a level road through tall pines—is Walnut Canyon, a rent in the earth several hundred feet deep and three miles long, with steep terraced walls of limestone. Along the shelving terraces, under beetling projections of the strata, are scores of quaint cliff dwellings, the most famous group of its kind in this region. The larger abodes are divided into several compartments by cemented walls, many parts of which are still intact. It is believed that these cliff-dwellers of 800 years ago were of the same stock as the Pueblo Indians of to-day.

Nine miles from Flagstaff, and only half a mile from the old stage road to the Grand Canyon, upon the summit of an extinct crater, the remarkable ruins of the cave-dweller may be seen.

The magnificent San Francisco Peaks, visible from every part of the country within a radius of two hundred miles, lie just north of Flagstaff. There are three peaks which form one mountain. From Flagstaff a road has been constructed part way up Humphrey's Peak, whose summit is 12,750 feet above sea-level. It is a good mountain road, and the entire distance from Flagstaff is only about twelve miles. The trip to the summit and back is easily made in one day, from June to October.

Sunset Mountain is sixteen miles northeast of Flagstaff. It is an extinct volcanic cone of great age, rising a thousand feet above the surrounding country and tipped with reddish gold cinders. The crater, on top, is 200 feet deep and half a mile across. At the base of Sunset are immense lava beds and Black Crater.

There is also a first-class road from Flagstaff to the Grand Canyon at Grand View, seventy-five miles, open for travel in spring, summer, and fall—a two-days' trip each way by wagon. Supplies, camp outfits, and teams are procurable in Flagstaff; cost of team and driver about \$5.00 a day. A very enjoyable drive through pine forests and across green mesas, along the old stage route to the Canyon.

For further particulars correspond with Agent A., T. & S. F. Coast Lines, Flagstaff, Ariz.

What to Bring

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

Passenger Department
A., T. & S. F. Ry., CHICAGO

TITAN of CHASMS

Grand Canyon of Arizona

