



THE DEVIL'S CORKSCREW, GRAND CANYON.

THE DESCENT OF THE GRAND CANYON.

BY ROBERT ANDERSON.

IN a magazine devoted to mountain climbing, perhaps some apology is needed for a narrative of a descent—a descent simply from an elevated plateau to a river bed; a descent, too, not accomplished by walking, but performed seated more or less uncomfortably on the back of a mule. The dual proceeding is the very antithesis of mountaineering. But as every ascent necessarily involves a descent, a reversal of the process is not such a great departure from the customary routine. The mule may have to be counted out as altogether inconsistent with pedestrian effort; but, eliminating that humble though useful animal, there is nothing materially different between the operation of ascending to a specified height and then coming down again, and that of descending to a specified spot and then climbing up to where you started. The climb may be as arduous in the one case as in the other. In the instance about to be narrated the ascent (the mule is meanwhile ignored!) was one of 4,430 feet—134 feet higher than Ben Muich Dhui. An account of an ascent of that height, however accomplished, would be fairly within the scope of this magazine; but the present narrator may be pardoned if, in the circumstances about to be described, he lays more stress on the descent than on the ascent.

On the afternoon of the day after Christmas, 1910, accompanied by some friends, I set out from Denver for the Grand Canyon of the Colorado River, which, situated as it is in Arizona, is sometimes called the Grand Canyon of Arizona. The name, "Grand Canyon," is emphatically indicative of the supremacy of this particular canyon. It answers well also to the appellation of "Titan of Chasms," and it may be unhesitatingly conceded the distinction of being also "the scenic marvel of the entire world," and fully entitled to a number of other descriptive designations

of the ingenious and effusive type so readily manufactured in the States. We travelled by the Atchison, Topeka, and Santa Fe Railroad, the journey—one of 972 miles—occupying the greater part of two nights and two days, though the car for Grand Canyon is halted for the second night at a place named Williams. The route is down through Southern Colorado, across New Mexico from north-east to west, and westward through Arizona. An American writer has found in New Mexico a reminiscence of Algiers, there being “the same Oriental suggestion of intense colouring, of dazzling brilliancy of sky, of gleaming pearl, of floating clouds.” I do not dissent; but my own impression was rather of miles upon miles of somewhat monotonous and uninteresting scenery—a succession of plains noticeable only for their vastness and wildness. Exceedingly little cultivation met the eye, and the country seemed given up to ranching, large groups of cattle and horses being occasionally observable. As we approached the Arizona border, we entered a country where mountains afforded an agreeable relief, and for some hours we traversed a region not unlike Scottish moorlands fringed by high hills, only the moorland was on a larger scale—there was much more of it, so to speak—and it seemed even more desolate-looking and melancholy.

The Grand Canyon is reached by a branch line of 64 miles from Williams. The terminus appears as if located in the heart of the Coconino forest, through which the train makes its way for some time; but, ascending to the hotel located on a height above, you are unexpectedly confronted with a marvellous spectacle. The reader may form some conception of it by imagining himself to have reached the crest of an elevated tableland, in which a chasm of gigantic proportions suddenly reveals itself—a chasm of enormous width and depth, extending far in front, and stretching away on both sides of him; and by farther imagining this chasm lined by the strata of successive geological periods, and containing within its

extensive area rock formations of colossal size, fantastic shape, and wonderful colouring. Much, indeed, must be left to the imagination, for words are unavailing to convey an adequate idea of the physical features of this extraordinary phenomenon, and still less of the feelings which the sight of it arouses. One may ring the changes on "grand," "sublime," "awe-inspiring," and the other adjectives that are usually requisitioned to describe the indescribable, but to very little purpose, and it is doubtful if the most specific details furnish any material aid to a realisation of the wonders of the scene.

Standing on what is in reality the southern rim of the Grand Canyon, you look across to the wall of rock that forms the northern rim, and learn with some surprise—such is the effect of the rarefied atmosphere in this high altitude—that it is thirteen miles distant as the crow flies. In the intervening space you discern the lines of an inner gorge which you are informed encloses the channel of the Colorado River, though the river itself is not seen from this point. Running into it, apparently at right angles, is another gorge, indicative of the course of the Bright Angel creek—so named from the purity of the stream and its contrast with a neighbouring one, which had been called Dirty Devil river from the frank comment of one of the men who explored it. More or less detached from the main walls of the canyon are numerous masses of rock—mountains really (buttes they are termed); "pyramidal mountains of massive bulk," says a writer, "hewn from gaudiest rock-strata, that barely lift the cones and turrets of their crests to the level of the eye." Many of them, with massive summits or caps of limestone or sandstone have been designated temples, each receiving an individual name—Zoroaster Temple, Buddha Temple, Isis Temple, and so on. Others of these buttes have been eroded into exquisite semi-circular forms, and have the picturesque appearance of alcoves. And most striking feature of all perhaps, is the colouring of the rocks. Reds, browns, and chocolates are the prominent colours, due to the predominance of red sandstone and "red wall limestone"—this latter

a rich creamy limestone stained by the colour washed down by the rain from the overlying beds of red sandstone. Elsewhere, the limestone stands revealed in its buff colour, while gneiss and granite contribute dark grey to the colour scheme, which is farther enhanced by occasional bands of green where shrubs and even trees have gained a precarious foothold between the various strata.

The region of the Grand Canyon has been depicted as "one of the most wonderful of the world, not only for its unique and magnificent scenery, but also because it affords the most remarkable example known of the work of differential weathering and erosion by wind and water, and the exposure of geologic strata on an enormous scale." A canyon is simply a deep gorge or ravine between high precipitous cliffs, caused by a river cutting its way downward; and what gives the Grand Canyon its unique character is that the work of erosion has been carried on by the Colorado River—through long ages, of course—on a greater scale than by any other stream. This is due to very exceptional causes. The Colorado River is formed in Southern Utah by the confluence of the Green and Grand Rivers, which have their sources in the mountains of Wyoming and Colorado respectively. It then intersects the north-west corner of Arizona, and, becoming the eastern boundary of Nevada and California, flows southward, ultimately discharging into the Gulf of California. Some 2,000 miles long, it descends 10,000 feet in the course of its journey to the ocean, and the force obtained by this tremendous incline, added to the huge volume of water, gives the river an unexampled "planation" or grinding power. The extensive area drained by the river—estimated at 250,000 square miles—has in consequence been fashioned into multitudinous canyons, the tributaries of the river creating canyons of their own. These canyons culminate in the one termed Grand, which cuts through an extremely high plateau. It is 217 miles long—about as far as from New York to Boston somebody has pointed out; its sides range from 4,000 to 6,000 feet high; and its width fluctuates from 10 to 20 miles. The width of the river

varies from 50 feet to 500 or 900, and its depth in the canyon, while a few feet at some places, is unknown at others. The water rises in the Grand Canyon, on the melting of the snow in the distant mountains, from 40 to 100 feet, and it is conjectured that in the glacial epoch the rise was four times as great. As the river falls 2330 feet in the 283 miles embracing the Grand Canyon and the Marble Canyon (which adjoins it), and has at one point a fall of 210 feet in 10 miles, it is not difficult to comprehend how the canyon has been gradually "ground out." A scientist, indeed, has estimated that in the drainage basin of the Colorado there are fully 200,000 square miles that have been degraded on an average 6,000 feet.

One noticeable effect of the river's disintegrating action has been to reveal various strata of which the earth is formed in the order of their deposition, the canyon walls presenting "a facade of seven systems of rock." Crystalline rocks of early geologic age form the base, and on them are laid, generally in horizontal layers, quartzite beds and successive strata of sandstone and limestone, while lava intrusions and flows are also observable. Readers desirous of more detailed information about the geological features of the region may be referred to the article on the Grand Canyon in the "Encyclopædia Britannica," written by Professor Ralph Stockman Tarr, the Professor of Physical Geography in Cornell University. How the disintegrating process has been productive of scenic effect is thus described by the Professor—

"It is these different rock beds, with their various colours, and the differences in the effect of weathering upon them, that give the great variety and grandeur to the canyon scenery. There are towers and turrets, pinnacles and alcoves, cliffs, ledges, crags and moderate talus slopes, each with its characteristic colour and form according to the set of strata in which it lies. The main river has cleft the plateau in a huge gash; innumerable side gorges have cut it to right and left; and weathering has etched out the cliffs and crags and helped to paint it in the gaudy colour bands that stretch before the eye."

Gazing into the Grand Canyon, I felt a strong desire—not unnatural, I think—to get down into it and see it at close quarters, and particularly to see the river by whose agency it had been formed. There is a path or track—“trail” is the American phrase—from the rim of the canyon to the river bank; the Bright Angel trail it is called. The distance is seven miles, and you descend from an altitude of 6,866 feet to 2,436 feet, the latter being the height of the river here above sea-level. Such a distance is easily walkable both ways, of course; but I speedily came upon a notification—“A strong person, accustomed to mountain climbing, can make the round trip on foot in one day, by starting early enough; but the average traveller will soon discover that a horse is a necessity, especially for the upward climb.” The warning was a little ominous. We had, moreover, only one day at our disposal, so, to avoid all risks, my wife and I decided to join a party that was being arranged to make the descent on mules. Perhaps the novelty of this method of progression had something to do with our ready choice of it. The luxury of a mule, with luncheon thrown in, cost us 4 dollars apiece, and 75 cents additional was spent in the hire of overalls. Altogether, our party consisted of four ladies and five gentlemen, divided into two sections, each in charge of a guide; and after an enterprising artist had photographed the party, we set out to descend the Bright Angel trail at 8.30 on the morning of Thursday, December 29.

Doubtless hopes had been entertained of an enjoyable day in a novel country, amid scenery of striking grandeur—of a placid amble on muleback along a safe and well-made road—but they were speedily shattered. The first glance at the trail inspired but one feeling—that it was “fearsome”; no other word so completely expresses the sensation. The trail was seen to be a comparatively narrow track—little more than six feet wide, I should think—formed in zigzag fashion, with steep gradients and sharp corners, and generally running along or skirting projecting ridges. These ridges were a very trying test of one’s nerves. You looked down them, on either side, into what appeared an

abyss, so sheer was the declivity, and you were disquieted by contemplating what would certainly happen if your mule swerved from the path or stumbled. An assurance had been given beforehand that there was not the slightest danger—that fully 7,000 people had been conducted down the trail without the slightest accident occurring. But the assurance, so complacently accepted when arranging for the trip, did little to ease our trepidation when we were confronted with the actualities. Moreover, our apprehensions were augmented by the trail being covered with snow to a fair depth, there having been a slight snowstorm overnight. Altogether, the prospect at the start and for some time after rendered us all exceedingly uncomfortable—kept us in a continuous state of nervous dread. The only thing left us as a sort of mental ballast or comfort was confidence in one's mule. We had heard so much of the sagacity of this animal and of its caution and sure-footedness, that we plucked up courage; and as we began to notice how carefully it picked its way along, our fears were gradually dispelled. Reflection constrains me to say that the perils of the trail are more imaginary than real, but it took time to regain one's wonted equanimity.

I must frankly confess, besides, that the preponderating regard for one's personal safety rather interfered with appreciation of the many wonderful sights afforded by the trip down the trail. The more prominent of them appeal mostly to geologists, such as the layers of strata, faultings in the sandstone beds, and evidences of extraordinary convulsions of nature. But as even an ordinary person descends into the canyon, he cannot fail to be impressed by the rising walls behind him, and what John Burroughs has characterised as "the opulence of colour effects." One striking mass of red sandstone is designated "The Battleship" from its resemblance to a man-of-war; and from the summit of its "topmast," 5,867 feet high, waves the Stars and Stripes, but it is not always easy to discern the flag. After skirting "The Battleship," we reach a portion of the trail so steep that everybody has to dismount and walk down—Jacob's Ladder it is called; at its

head is one of the outstanding pinnacles of rock that form a conspicuous feature of the canyon scenery. Soon afterwards, the trail is comparatively level for some distance—very welcome to those of us unaccustomed to riding—and we reach a kind of plain known as the Indian Garden. Indians once lived here and did a little cultivation; there is a fringe of trees and shrubs, with some vegetation. Here, too, is the Half-Way House, where we halt for five minutes. Half the distance has been covered, and more than two-thirds of the descent; we are now 2,990 feet below the rim. From the Half-Way House there is an easy ride or walk to the edge of a plateau—The Angel Plateau—from which an excellent view of the river and of a number of the “temples” is obtained; and many people are content to ride out to the plateau edge and go no farther.

A suggestion that our party might do likewise was unanimously rejected with scorn. We had now got over our nervousness, and sensibly concluded that no greater dangers could confront us than those we had passed. Besides, we had—curiously enough—emerged from the snow-covered region, the day was bright and sunny, and our spirits were distinctly rising. Despite our optimistic assumption, however, we did have an exceedingly bad bit of trail in front of us. To get to the river we had to descend into Pipe Creek, where there is “a wild chaos of metamorphosed rocks—a veritable Pluto’s workshop, where the rocks are twisted, burned, and tortured out of all semblance to their original condition.” The trail winds its way down these forbidding-looking rocks with such sharp turns that this section of the route has earned the name of the Devil’s Corkscrew; here again we had to come off our mules and walk. Once in Pipe Creek, however, our troubles were over. We had simply to follow the windings of the creek, which we did leisurely; and as we were on the level, our release from all anxiety enabled us to apprehend something of the nature of the region we were traversing, the gigantic walls on each side of us bearing evident signs, streaked as they are with lava, of having been upheaved in some mighty cataclysm.

In no great time after getting into Pipe Creek we arrived at the river, reaching it just about noon. Here we dismounted and had luncheon, a more general intercourse taking place between the members of the party than had been possible during our long-continued procession in single file. It may be noted, by the way, that, on a comparison of the individual sensations experienced in the descent, there was a decided consensus of opinion that had we known precisely what was involved not one of us would have started; but a unanimous feeling also prevailed, all the dangers of the journey being past, that it was well worth making—what one who has frequently made it describes as “an exaltation vouchsafed only to those who have dared and done an unusual thing.” The river, after all, struck me as rather uninteresting. I suppose that is because one sees so much on the way to it that is vastly more impressive, and also because even at the water’s edge the eye is carried away to the superior attractions of the wonderful surroundings. Only a very small portion of the river is visible as it rolls out between the walls of a gorge, sweeps past a little sandy bay, and disappears again within another gorge. But all around are peaks, canyons, and ravines in profusion, a majestic range spreading away to the north, high above which soars Zoroaster Temple, resplendent in the brilliant sunshine.

The return journey was begun at 12.45, and may be rapidly dismissed as accomplished without incident, the rim of the canyon being reached at 5 p.m. It was simply a repetition of the descent, though of course, the progress was upward instead of downward. We had to walk up the Devil’s Corkscrew and Jacob’s Ladder, and had the five minutes’ halt again at the Half-Way House, where we were passed by a party returning from the Angel Plateau. As we toiled up the tortuous ascent we had many another halt to “breathe” the poor mules, and so had renewed opportunities of observing this most remarkable region. It is a region not easily describable within limited compass; nor is it possible, as already said, to convey an adequate idea of its many astounding

features. The scenic character of the Grand Canyon is one which truly beggars description. There seems a general tendency on the part of all who have tried to convey their impressions to others to regard the task as really impossible. And the author of "The Romance of the Colorado River," a most charming account of the exploration work carried out along the stream, has put this hesitant feeling felicitously when he remarks—"No amount of verbal or pictorial description can ever fully prepare the spectator for the sublime reality—the scene is so weird and lonely, and so incomprehensible in its novelty, that one feels that it could never have been viewed before. Even when one becomes familiar with the incomparable spectacle it never ceases to astonish. A recent writer has well said—'The sublimity of the Pyramids is endurable, but at the rim of the Grand Canyon we feel outdone.'"