

Ivy Baldwin stood a mere 125 feet above the Eldorado Canyon floor instead of his usual 582 feet—his daughter had insisted on this safety precaution. But the height difference didn't matter. Either way, a fall into the rocky creek below would've killed him. He stepped calmly from a towering sandstone cliff onto a high wire, stretched over a void left by five million years of relentless river erosion. He was unencumbered by a safety harness or net. It was Baldwin's birthday, July 31st, 1948. He was 82.

In a striking display of the power of water, deep canyons slice through rock and scar the eastern edge of the Colorado Front Range. An especially spectacular example, Eldorado Canyon opened to tourism in 1905 as the "Coney Island of the West." It boasted the largest spring-fed swimming pool in the country, and Dwight and Mamie Eisenhower honeymooned in one of the resort's cabins. Chief among the attractions was Ivy Baldwin as he tiptoed between the towering canyon walls nearly 600 feet above the roaring creek.

Baldwin's high wire, which he crossed some 86 times between 1906 and 1948, stretched between the tops of two sheer rock faces that tower over the canyon floor. The iconic red rocks that anchored his tightrope are about three hundred million years old, deposited by rivers laden with sand and gravel. Those now-majestic rocks spent much of their lives buried until tectonic plate motion thrust them skyward while building the Rocky Mountains sixty-odd million years ago. However, had Ivy Baldwin balanced on his tightrope as recently as five million years ago, he would have stepped across a garden-variety creek unconfined by the spectacular canyon walls of today. Back then, his endeavor likely would have garnered considerably less fanfare than high wire walkers usually receive, even if modern humans had been around to watch (they would not have been; *Homo sapiens* arose about 200,000 years ago, perhaps four percent of the time it took to carve Eldorado Canyon).

The carving of Eldorado Canyon, Boulder Canyon, and the other spectacular gorges along the Colorado Front Range likely took no more than four million to five million years—a geologic blink of an eye. Geologists argue about the trigger for this "wave of erosion." The two competing theories suggest that either an increase in upward tectonic forces or abrupt climate change made the rivers more powerful. Regardless of the cause, we have a solid understanding of the physical mechanisms that actually carved the Front Range canyons.

Rivers erode rock by harnessing the power of water flowing under the force of gravity. Snowmelt, melting glacier ice, and Colorado's infamous summer thunderstorms send water coursing down from the high Rockies, carrying with it rock fragments. These fragments smash into the riverbed, shattering the bedrock and sweeping it away onto the plains downstream. When torrential floods rush down the river, the water can pull enormous blocks of rock weighing more than a truck from the riverbed and move them downstream. Geologists call these mechanisms abrasion and plucking, respectively. Rivers can abrade and pluck their way through solid rock at rates fast enough to ensure that Eldorado Canyon measurably deepened between Ivy Baldwin's first tightrope

crossing in 1906 and his last in 1948. Taking the depth of the canyon to be the height of Baldwin's tightrope over the canyon bottom—582 feet—and dividing by five million years of erosion yields an average long-term canyon deepening rate of 0.001 inches annually, or about the width of a human hair every year. This is within the range expected for mountain rivers, and gives five one-hundredths of an inch of deepening between Baldwin's first and last crossing—a small number by most standards, but large to geologists who measure changes to Earth's surface.

Baldwin's final crossing marked the end of routine high wire walks over Eldorado Canyon. The state of Colorado bought the canyon in 1978. It has since become a haven for rock climbers, hikers, kayakers (such powerful rivers generally host expert-level whitewater), and the occasional geology field trip. Park management discourages recreational high wire walking over the canyon, perhaps for good reason.

Fortunately, a recent exception allows us to celebrate both Baldwin's story and the geologic history of Eldorado Canyon itself. During a 2016 fundraiser to raise money for the park, local adrenaline enthusiast Taylor VanAllen re-created Baldwin's walk across the Canyon—this time employing a safety leash. VanAllen can rest easy knowing that he walked over an ever-so-slightly deeper chasm than Ivy Baldwin did nearly a century before him.