

Karnak Ridge: a geologic marvel

© 2009 Clarence D. Basso • 2545 Carville Drive • Reno, NV 89512
775-356-0264 • BassoClrnc@aol.com



This engraving was made from a Timothy O'Sullivan photograph of the phenomenon on Karnak Ridge.

It has been compared to the Giant's Causeway in Ireland and Sampson's Ribs in Edinburgh. It is columnar basaltic lava and no where is it more spectacular than on Karnak Ridge near the old mining camp of Jessup, about 30 miles west of Lovelock off Interstate 80.

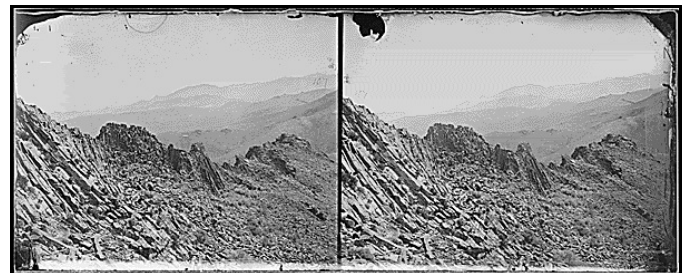
The magnificence of Karnak Ridge was first documented in 1867 by geologist Arnold Hague and American landscape photographer Timothy O'Sullivan, members of a corps of scientists and support personnel charged by Congress with conducting an inventory of the mineral wealth and other natural resources along the fortieth parallel of latitude between the Sierra Nevada mountains and the high plateau of Colorado. In word and image, the phenomenon of columnar basalt on Karnak Ridge was shared with world in 1877 with the publication of *Descriptive Geology*, one of seven massive volumes recording the discoveries of the Geological Exploration of the Fortieth Parallel, the official name of the survey that was headed by famous geologist Clarence King. The term "King Survey" has evolved into the common name of the expedition.

Hague's enthusiasm for what he saw on that ridge was profuse. He remarked in his official report, "...it is doubtful if there is any place in the world where they are developed on a grander scale than in the Montezuma Range [now known as the Trinity Range], certainly not in Nevada, where rhyolitic modes of occurrence are so richly displayed."

He continued, “...there occurs a rough broken country, out of which rise a series of high eruptive ridges, exhibiting a variety of rhyolitic forms. The highest and by far the most interesting part of this region is an exceedingly sharp broken ridge trending approximately north and south, and rising about 1,500 feet above the surrounding hills, and 3,000 feet above the Humboldt Valley, to which the name of Karnak has been given, from its resemblance to ruins. Along the crest of this ridge, the rhyolite forms a series of clusters of prismatic columns of all sizes, from three feet down to an inch in diameter. They show from three to seven sides, most frequently five, but in many cases the fifth side will be much longer than the other four, with a slightly curving outline and a tendency to develop a sixth side. The four-sided figure would seem to be the least common. Usually they stand in an approximately vertical position, that is, above an angle of sixty degrees, and are frequently diagonal to the beds in which they are developed, and, as might be expected, the steepest columns are, in general, near the crest where the slope of the ridge is greatest. The tendency to columnar structure shows itself in various degrees of perfection from the symmetrical prism to a single set of parallel planes diagonal to the bedding of the rock. The most perfect prismatic forms are found near the summit, becoming less and less sharply developed farther down the slopes. As these columns readily break away and tumble down, the mountain-slope presents a huge debris pile of shattered prisms of all lengths and sizes.”

Locally referred to as the Devil’s Post Pile, the spectacle is a remnant of Nevada’s volcanic past. During successive waves of volcanism millions of years ago, lava flooded onto the landscape and portions cooled relatively rapidly causing contraction fractures, similar to crack patterns that form in drying mud. The lava cooled in the vertical dimension without fracturing, and because multi-side shapes fit together efficiently without vacant space (a tessellation), pentagonal, hexagonal and, to a lesser extent, octagonal stress fractures formed and a columnar geologic structure resulted.

Following is a gallery of images of Karnak Ridge by O’Sullivan, chief photographer with the King Survey, 1867-1869 and 1872. He employed two sizes of stereoscope camera and several full plate cameras that accepted four-by-ten-inch plates. These images have been digitally translated from rare albumen prints in the National Archives.



O’Sullivan used perspective to document the geologic drama of Karnak Ridge (clockwise from top left: classic view of the Ridge from which the engraving was made; stereo view; rare view of the columnar basalt shows its resemblance to the Devil’s Causeway — note the full plate camera in the middle foreground).

Recent images record unnaturally altered states on Karnak Ridge; columnar basalt, scared by souvenir hunters, now overlook a borrow pit as industrial debris accumulates nearby.



Bibliographic Essay

Karnak Ridge's geology has been the subject of numerous publications, traditional and electronic, since Hague's 1877 *Descriptive Geology* (Washington: Government Printing Office, p.761-762), but it remains the most informative. Several others, however, do contribute to the subject, if not in depth, then for their condensed photographic documentation of the declining condition of the basaltic columns within a twelve-year span.

Nell Murbarger's "Rock Hunting Along Pioneer Trails in the Trinities" (*The Desert Magazine*, July 1955, p.19) is noteworthy for its photographic record of a singular pristine outcrop of columns; see another image from the Nell Murbarger collection in Stan Paher's 2009 *Nevada Ghost Towns & Desert Atlas* (Las Vegas: Nevada Publications, p.28). Contrast the condition of the columns in these images with that in a 1967 image of the same outcropping in Dave Basso's 1990 *Exploring the Western Nevada Desert* (Sparks, Nevada: Falcon Hill Press, p.18).