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## California Surprise

### A California Observation of the 1833 Leonid Meteor Storm

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The most recent reassessments of last year's Leonid meteor activity have persuaded pilgrims seeking the legendary Leonid storm to expect a true meteoric spectacle on its usual 33-year beat sometime between 16 and 18 November. Serious money is on the eastern Atlantic Ocean and western Europe for the most intense celestial pyrotechnics, but these projections still depend on a lot of guesswork.

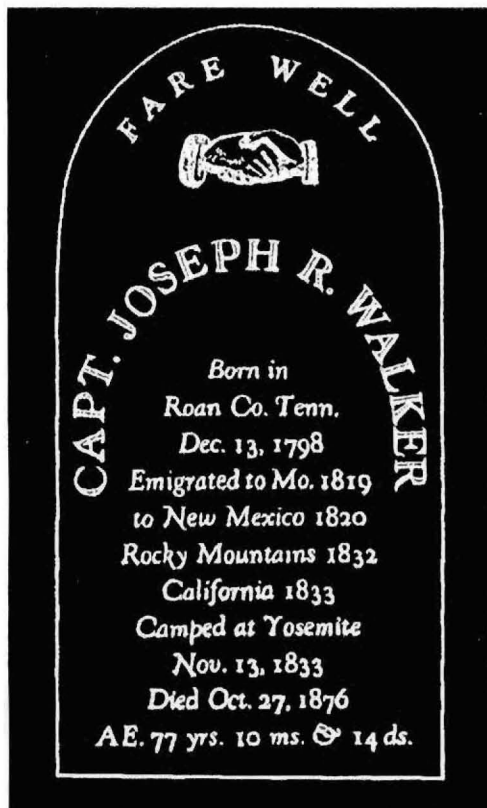
No Leonids are as legendary as the 1833 firefall, which was seen and documented over much of the territory east of the Mississippi. Because reports from the Far West are not well known, most modern accounts conclude the event was geographically restricted. Here, however, a pair of professors at Southwest Texas State University demonstrate the fallacy of common knowledge and provide a previously unrecognized account of California fireworks.

In the early morning hours of November 17 and 18, 1999, observers all over the world will be gazing expectantly towards the heavens to see whether the Leonid shower will produce a meteor storm. Many people have attempted to predict what may occur this year by looking back at the previous Leonid meteor storms in 1799, 1833, 1866, and 1966.

The purpose of this note is to address a popular misunderstanding about the 1833 storm. Citing contemporary accounts, most of the recent

articles and books seem to imply that the 1833 Leonid storm was seen only in the eastern United States. Of course, the vast majority of the U.S. population, and almost all of the newspapers, were indeed east of the Mississippi River. According to these eyewitness reports, the meteor activity was very strong on November 13 at 5:00 a.m., local time, on the East Coast, with the radiant in the Sickle of Leo standing more than 60 degrees above the horizon.

But there is a good reason why the meteors



*Captain Joseph R. Walker not only saw and described the 1833 Leonid meteor storm, he also led the first European American party into the Yosemite Valley, California's quintessential natural wonder. Captain Walker's Yosemite exploration was acknowledged on his tombstone. He was buried in Alhambra Cemetery in Martinez, California, and he had directed that the inscription include the date—"Nov. 13, 1833"—on which they had seen the meteors and on which they also reached Pacific waters at "the extreme end of the great west." (illustration courtesy Drs. Donald W. Olson and Russell L. Doescher)*

must have been visible throughout all of North America, wherever the skies were clear. Modern planetarium programs allow us to place an observer on the West Coast on November 13, 1833, at 2:00 a.m., local time, and to demonstrate that the radiant would have been lower in the sky, but still more than 20 degrees above the horizon.

By searching libraries and archives, we indeed

located several accounts which prove that observations of the 1833 Leonid meteor storm were not confined to the eastern United States—the display was seen across North America.

The shower on November 13, 1833, was witnessed near Mexico City, in the town of San Martin Tescmelucan. According to a newspaper account published the next day, the residents saw a "spectacle of the fiery meteors or fires in the air which began about one o'clock at night and ended at quarter to five in the morning." As the shower progressed, the "illumination extended throughout the four cardinal directions, the lights appeared larger, and they left the places where they passed illuminated like the tails of comets."<sup>1</sup>

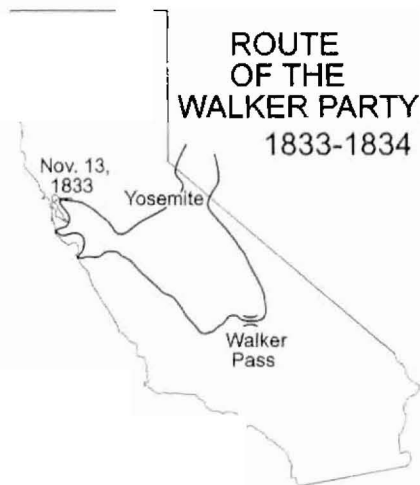
British astronomer Joseph Baxendell was aboard the ship *Mary Scott* in the Pacific Ocean on the morning of November 13, 1833. He "observed the shower from the west coast of Mexico" and judged that "the number of meteors seen at once often equalled the apparent number of the fixed stars seen at a glance."<sup>2</sup> After viewing the 1866 Leonids in England, Baxendell rated the display "far inferior" to the 1833 storm "both in the number of meteors seen and in the brilliancy of the larger ones."<sup>3</sup>

### The Walker Party

We also found a report from as far west as California—moreover, this observation has added interest because it comes from the journals of a famed exploring party.

Captain Joseph R. Walker led a group of about 60 fur trappers and mountain men, who crossed through what is now Utah and Nevada in 1833 and were bent on exploring all the way to the Pacific Ocean.<sup>4</sup> Zenas Leonard, the clerk of the party, kept a journal of their travels.<sup>5</sup> As the men crossed the Sierra Nevada, they became the first European Americans to enter the region that is now Yosemite National Park.<sup>6</sup> The first published description of the waterfalls in the Yosemite Valley comes from Leonard's journal, describing the scene in October, 1833, as the mountain men passed along the north rim of the valley:

**...we began to encounter many small streams which would shoot from under these high snow-banks, and after running a short distance in deep chasms which they have through the ages cut in the rocks, precipitate themselves from one lofty precipice to another, until they are exhausted in rain below. Some of these precipices appeared to us to be more than a mile high.<sup>7</sup>**



*The Walker party passed through Yosemite in October, 1833, and continued west through central California toward San Francisco Bay. As they neared the coast, these mountain men witnessed the great Leonid meteor storm, on the night of 12-13 November 1833. (illustration courtesy Drs. Donald W. Olson and Russell L. Doescher)*

Leonard's narrative also includes the first description of the park's giant sequoias (*Sequoia gigantea*), at a time when the species was still unknown to botanists:

**In the last two days traveling we have found some trees of the red-wood species, incredibly large—some of which would measure from sixteen to eighteen fathom round the trunk...<sup>8</sup>**

This passage suggests that the Walker party passed through either the Tuolumne Grove or the Merced Grove, or possibly both, near the Big Oak Flat entrance to the park. After leaving the Yosemite region, the explorers descended into the central valley of California and followed the San Joaquin River to the north. On the evening of November 12, 1833, the Walker party made a camp a short distance to the northeast of San Francisco Bay:

**On the night of the 12<sup>th</sup> our men were again thrown into great consternation by the singular appearance of the heavens.**



*Walker Pass links California's Mojave Desert with the eastern foothills of the San Joaquin Valley near Bakersfield. California Highway 178 now memorializes the route first followed by Captain Joseph R. Walker with a Historical Monument at the summit of the pass that now bears his name. This view, southeast toward Owens Peak, from a location below the pass and north of Highway 178, illustrates the terrain the Walker party had to negotiate to reach San Francisco Bay. (photograph E.C. Krupp)*

Soon after dark the air appeared to be completely thickened with meteors falling towards the earth, some of which would explode in the air and others would be dashed to pieces on the ground, frightening our horses so much that it required the most active vigilance of the whole company to keep them together. This was altogether a mystery to some of the men who probably had never before seen or heard of anything of the kind, but after an explanation from Captain Walker, they were satisfied that no danger need be apprehended from the falling of the stars, as they were termed.

After traveling a few miles the next morning we arrived at the head of tide water... we arrived at the bay, where it mingles its water with the briney ocean.<sup>9</sup>

Captain Walker himself later recalled for a newspaper reporter:

...the night of the extraordinary spectacle in the heavens of the "shooting stars"...he was roused from his sleep in the dark of the early morning, by the comrade who shared his blankets, to look at what the terrified trapper exclaimed was "the damndest shooting-match that ever was seen!"<sup>10</sup>

November 13, 1833, was a memorable day for the Walker party—beginning with a spectacular meteor storm and ending with the knowledge that they would soon stand "upon the extreme end of the great west."<sup>11</sup> The Walker party wintered in California and returned eastward in 1834, crossing the Sierra Nevada at a location known to this day as Walker Pass.

### Acknowledgements

The authors are grateful for research

assistance from Ron Brashear, Mike Ryan, Larry Shepley, and Margaret Vaverek.

### Notes

1. Translation by the authors from Mexico City *El Telégrafo*, November 14, 1833.
2. J. Norman Lockyer, *The Meteoritic Hypothesis*. London and New York: Macmillan and Co., 1890, p. 114.
3. Joseph Baxendell, "Observations of the Meteoric Shower of November 13-14, 1866," *Proceedings of the Literary and Philosophical Society of Manchester*, Vol. 6, 1867, pp. 31-34.
4. Bill Gilbert, *Westering Man, The Life of Joseph Walker*. New York: Atheneum, 1983, pp. 119-152.
5. Zenas Leonard, *Narrative of the Adventures of Zenas Leonard*. Clearfield, Pennsylvania: D.W. Moore, 1839; reprinted as *Adventures of Zenas Leonard, Fur Trader*, edited by John C. Ewers. Norman: University of Oklahoma Press, 1959.
6. F.P. Farquhar, "Walker's Discovery of Yosemite," *Sierra Club Bulletin*, Vol. 27, No. 4, August, 1942, pp. 35-49.
7. *Adventures of Zenas Leonard* (1959), p. 79.
8. *Adventures of Zenas Leonard* (1959), p. 83.
9. *Adventures of Zenas Leonard* (1959), p. 90.
10. Santa Rosa (California) *Daily Democrat*, November 20, 1876; James O'Meara, "Captain Joseph R. Walker," *The Californian, A Western Monthly Magazine*, December, 1881, pp. 469-475.
11. *Adventures of Zenas Leonard* (1959), P. 89.