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Eta Aquariid Shower Hints at Halley's Return

Fragments from a famous comet streak across the predawn sky this month.

On December 9, 2023, Halley's Comet reached the end of its tether when it arrived at the most distant point in its approximately 76-year-long journey around the Sun. That day the iconic comet slowed just beyond the orbit of Neptune, a frigid 5.3 billion kilometers (3.3 billion miles) from its

home star. Since then, the icy traveler has been making slow but steady progress in a 38-year-long return journey that will see it visit the inner solar system once again in 2061.

As the comet coasts sunward, its pebbly progeny, the Eta Aquariid meteor shower, is set to deliver its annual pelt-

ing of Earth from late April through late May, with a **predicted peak occurring on May 5th at 5 p.m. EDT**. However, the shower has a broad maximum, making both the mornings of the 5th and 6th perfect for meteor watching. Fortunately, the Moon will be a thin, waning crescent (10% illuminated on the 5th



▲ Eliot Herman caught a short-trailed Eta Aquariid meteor as it blazed directly below the shower radiant in the Water Jar, an asterism of four stars in the constellation of Aquarius, on May 5, 2020. This year the shower is at its best before dawn on May 5th and 6th under nearly ideal circumstances.

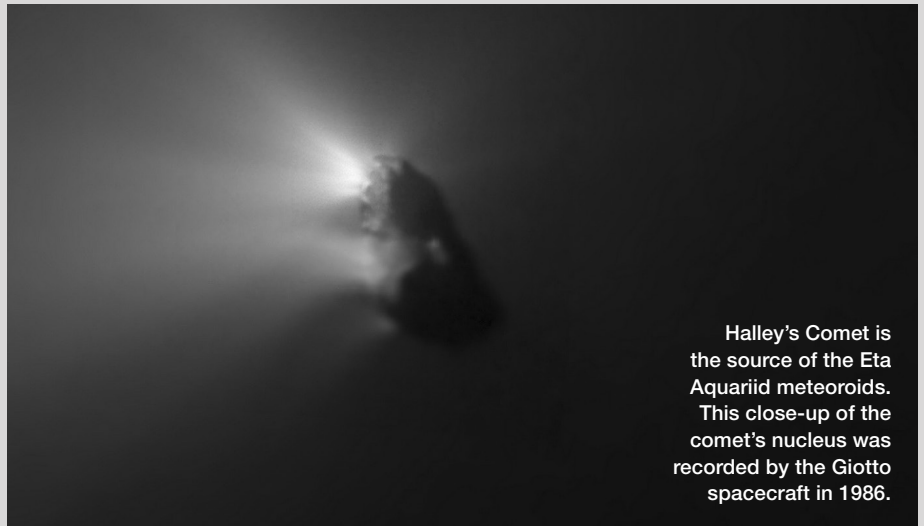
and 4% on the 6th). Instead of diminishing the shower, it will add a pastel touch of wonder as it rises in the east in the growing light of dawn.

Earth crosses Halley's path twice each year, first in early May when our planet wades through debris left behind in the comet's outbound journey, and a second time in mid-October during the Orionid shower, when we encounter the comet's inbound discards. Given the southerly location of the radiant just below the propeller-shaped Water Jar asterism of Aquarius, observers at tropical and southern latitudes get the best view, with up to 50 meteors per hour visible from a dark-sky location. That makes the Aquariids one of strongest showers of the year.

From mid-northern latitudes you can enjoy the show at a reduced rate of around 15 to 20 meteors per hour. The radiant rises a little before 3 a.m. local daylight time for the central U.S., with twilight nipping at the darkness a bit more than one hour later. I suggest starting right around 3 a.m., when you might spot some *earthgrazers* — meteors that barely skim Earth's upper atmosphere and take many seconds to cross the sky. Dust and rock dribbled from the comet come in hot, with speeds of 66 km/s (almost 150,000 mph) — nearly as swift as the Leonids — and produce long-lasting streaks of ionized air and meteoric particles called *trains*.

As the radiant climbs higher in the southeastern morning sky, face southwest or north for the best view, and continue to watch into twilight. As long as stars of 3rd magnitude or fainter remain visible, the show's not over. Meteors near the radiant make short streaks that seem to be aimed directly at you. Averting your gaze so you view the radiant at the periphery of your vision helps bring into view dramatic, long-trained, "side-swiper" meteors.

If you have a tripod and a camera capable of long exposures, use them to pocket a meteor or two as you relax in a deck chair and enjoy the intermittent spectacle. Simply attach your camera to a tripod and use a wide-angle lens set to its greatest opening to allow the



Halley's Comet is the source of the Eta Aquariid meteoroids. This close-up of the comet's nucleus was recorded by the Giotto spacecraft in 1986.

maximum amount of light to reach the camera's sensor. F/stop values of $f/3.5$, 2.8 , and lower work best. Set the ISO between 1600 and 2500 and try an exposure of 20- to 30-seconds' duration, the length depending on how dark your sky is. After composing the picture, manually focus on a bright star using the camera's live-view function, and you're ready to begin.

A couple of photographic accessories will make things go more smoothly. I recommend equipping your camera

with an *intervalometer* to automatically handle the picture-taking duties. And if dew poses a problem, you may have to use an "anti-dew" lens warmer. There are various makes to choose from, and they generally consist of a cloth strap embedded with a heating element that wraps around the front of the lens. These simple devices really work.

With your camera all set, all you have to do is recline comfortably and enjoy the show courtesy of that most famous of comets.

