

October 21/22, 2023

Dark Skies for the Orionids

HALLEY'S COMET MAY be one of the darkest objects in the solar system, but every October the Orionid meteor shower reveals the icy object's sparkly side. Coal-black dust jettisoned from Halley's nucleus forms a broad stream of debris that lies directly in Earth's orbital path. Beginning in early October, our planet plows through this trail of Halley dust, like a car driving through a rainstorm. But instead of raindrops splatting on the windshield, comet flakes pummel Earth's upper atmosphere, where they heat up and vaporize to produce fast, bright meteors.

The Orionids peak in the small hours of October 22nd, with 15 to 20 meteors visible per hour from a dark-sky location. They appear to radiate from a point in Orion's upraised club, a little more than 10° northeast of Betelgeuse. Although the radiant rises above the eastern horizon well before midnight, **the best views of the display will come between 2 a.m. and dawn** when Orion commands the sky — the higher the radiant, the less the horizon gets in the way. The first-quarter Moon sets shortly before midnight and won't disturb our view of Halley's luminiferous splinters.

Traveling at 238,000 kilometers per hour (148,000 miles per hour), Orionids often leave persistent trains in their wakes. A particle's swift flight ionizes both its surface and the nearby air, causing both to luminesce. The duration, brightness, and intensity of trains vary according to the size of meteoroid involved. A large one can leave a substantial amount of fine dust in its wake, which lingers long after the initial streak has faded. Upper atmospheric winds blowing at altitudes of around 100 km often distort these bright afterglows into twisty corkscrews and other shapes.

Earth enters the expansive swath of Halley's debris in early October and doesn't depart until the first week of November. That means the Orionid

► This composite photo shows Orionid meteors captured from October 19 to 23, 2020. Various emission nebulae are also visible, along with a foreground that includes five extinct volcanoes and skyglow from the city Prešov in the Slovak Republic.

peak is a broad one, so if clouds threaten on the 22nd, the morning before or after that date might be nearly as good. Although considered a medium-strength shower, the Orionids are exciting to watch because they're speedy and stream from a photogenic location. Use a wide-angle lens to record the display and be sure to include Orion in the picture. I use an intervalometer to continuously snap 30-second exposures with my camera set to ISO 1600 and the lens open to its maximum aperture.

To simply view the show, relax in a reclining lawn chair tilted back so your gaze is centered roughly between the zenith and the radiant. However, if light pollution is a problem, turn your chair to face the darkest part of your sky. No matter where you look the probability of seeing an Orionid



is about the same since the meteors fan out across the entire sky from the radiant. You'll likely also notice several "wrong-way" sporadic meteors. Telling the difference between these and shower members is easy — Orionid streaks point back to Orion.

If you'd like to contribute observations to help researchers better understand the evolution of the shower, check out the American Meteor Society's Visual Observing page at https://is.gd/ams_program. ***

