

### Offered Title: A Tail's Tale

It was a dark and clear night in 240 BC. A Chinese astronomer found himself reporting on this celestial object he described as looking like a broom. For ten days he followed the bright broom star, as it moved along the star fields. Then it was gone from sight.

This Chinese astronomer's record is the first verified observation of what would become comet Halley. There certainly were earlier observations but either not documented or documented in a way rendering them unverifiable as Halley. But hey, 240 BC is pretty good.

This comet returns Every 74-79 years and is observed/studied...even feared.

Humans tend to create meaning for celestial events/objects. In earlier human history, this comet, dare I say all comets meant something bad was going to happen. Reality is, bad things happen somewhere all the time. Maybe there's an omen for every event. Its appearance in March 1066 was thought a bad omen in England, and wouldn't you know it, King Harold II died in the Battle of Hastings. Bad. But wait, William the Conqueror won and became King of England. Good. Guess it depends.

Comet Halley, officially named 1P/Halley, is a short-period (less than 200 years), peanut shaped comet, traveling pretty much within our solar system. Its highly elliptical orbit brings it somewhere between the orbits of Mercury and Venus and at its farthest just out to Pluto's, barely into the Kuiper Belt. It's named after astronomer Edmond Halley, who first determined its periodicity.

Like all comets, Halley is a big dirt and ice ball. Well, more like a big pile of rubble, held together loosely by gravity. Its nucleus measures around 15 kilometers in length, 8 kilometers wide and thick. That's pretty small. When it's on trajectory for close approach to the Sun (perihelion), it starts to sublimate, spewing gases and dust particles, as jets of material. As Halley gets closer to our Sun it spews more and more, forming the comet's coma or atmosphere. It's this atmosphere that makes comets visible to the naked eye, because it's huge! The coma can be over 100,000 kilometers across, way bigger than our Earth!

Halley's coma/atmosphere is composed of water, carbon monoxide, carbon dioxide, and dust particles, with trace amounts of ammonia, methane, and hydrocarbons. The gasses and vapors fluoresce, sunlight is absorbed then re-emitted at a different wavelength. Dust particles in Halley's coma scatter light, giving a diffuse reflection. Halley's solid components are mostly carbon/oxygen/nitrogen compounds mixed with silicates. Pretty common stuff.

What does this have to do with the Eta Aquariid meteor shower?

Much of the dust spewing from comet Halley forms its tail and leaves a trail of debris behind. Every May our Earth slams into part of Halley's dust trail and we experience a meteor shower. It's named Eta Aquariid because it appears to originate in the constellation Aquarius.

### What's in the Sky?

May 6; pre-dawn; east: Eta Aquariid meteor shower – bits of comet Halley