A comet’s spectacular appearance begins with a small, icy object orbiting the Sun.

For most of history, the seemingly random appearances of comets have been interpreted as bad omens from the heavens. However, as we learned to predict and understand comets, their visits became opportunities to enjoy their beauty and to study their structure. That structure starts in a tiny, icy nucleus just a few miles across and extends to two tails that can stretch for millions of miles across interplanetary space.

**Beyond the Moon (1577)**
Observing the Great Comet of 1577 helps to reinforce the Moon’s role as the closest and the only body in the solar system providing an unobstructed view of the night sky.

**Comets become predictable (1758)**
The comet featured in 1758 provided a hint at the predictability of comets, showing how closely their orbits are around the Sun.

**Sun-swept dust tail (1901)**
Comets are continually swept by the Sun, which can cause the dust tail to appear brighter and more pronounced than the ion tail.

**Wind-swept ion tail (1951)**
After the Sun’s continuous wind sweeps away the ion tail, the comet leaves behind a dust tail that can be observed in the night sky.

**Dirty snowball (1986)**
A comet appears to be a dirty snowball, a ball of ice and gas, which can be seen as the nucleus of the comet.

The Nature of Comets