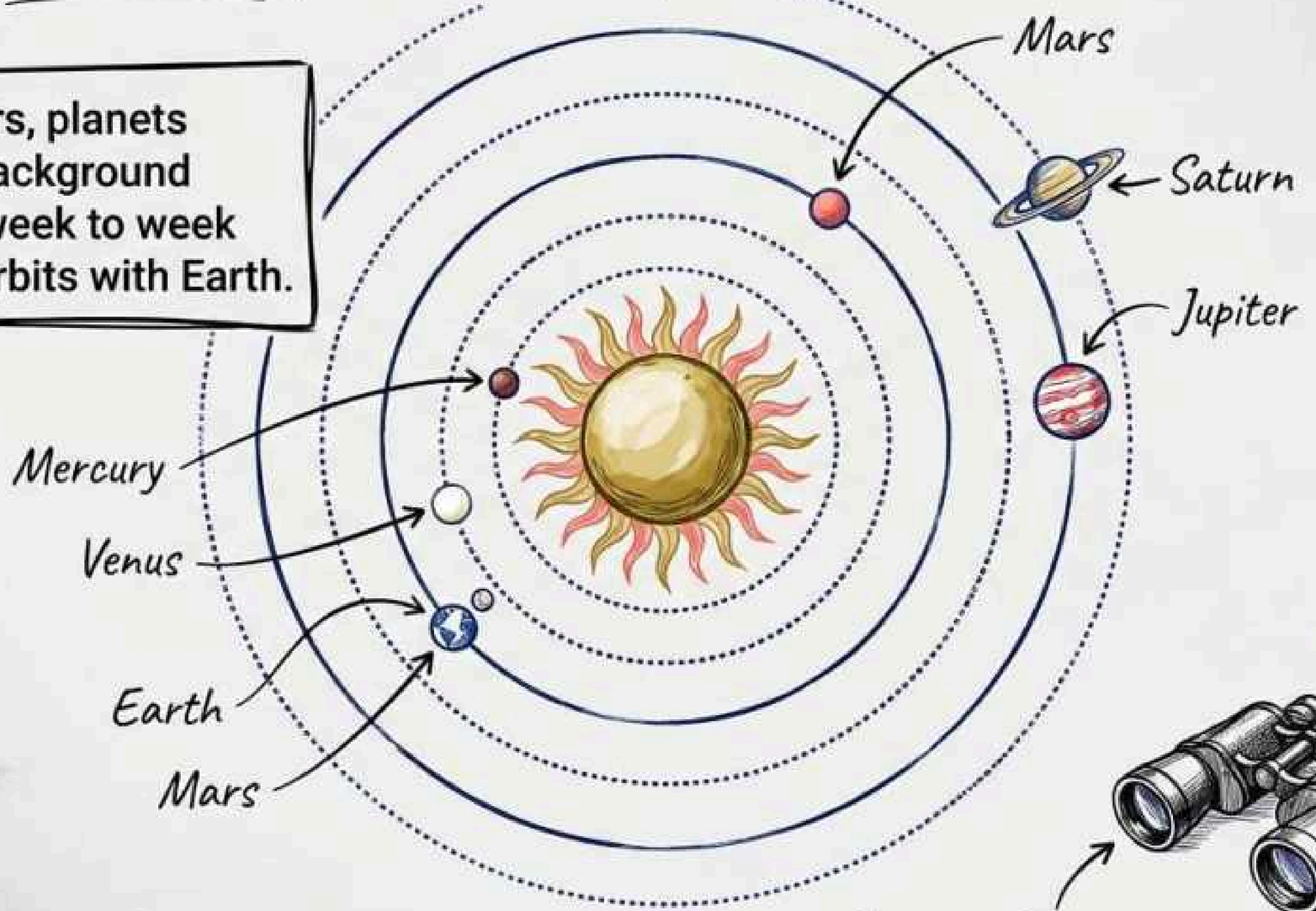
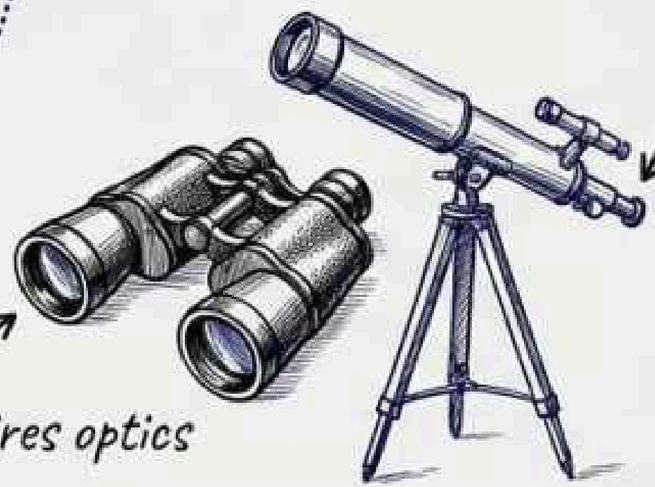
Planet = Wanderer (from Greek)

¶ 5.1

Unlike fixed stars, planets move against background constellations week to week due to shared orbits with Earth.



Uranus: Barely visible from dark sites

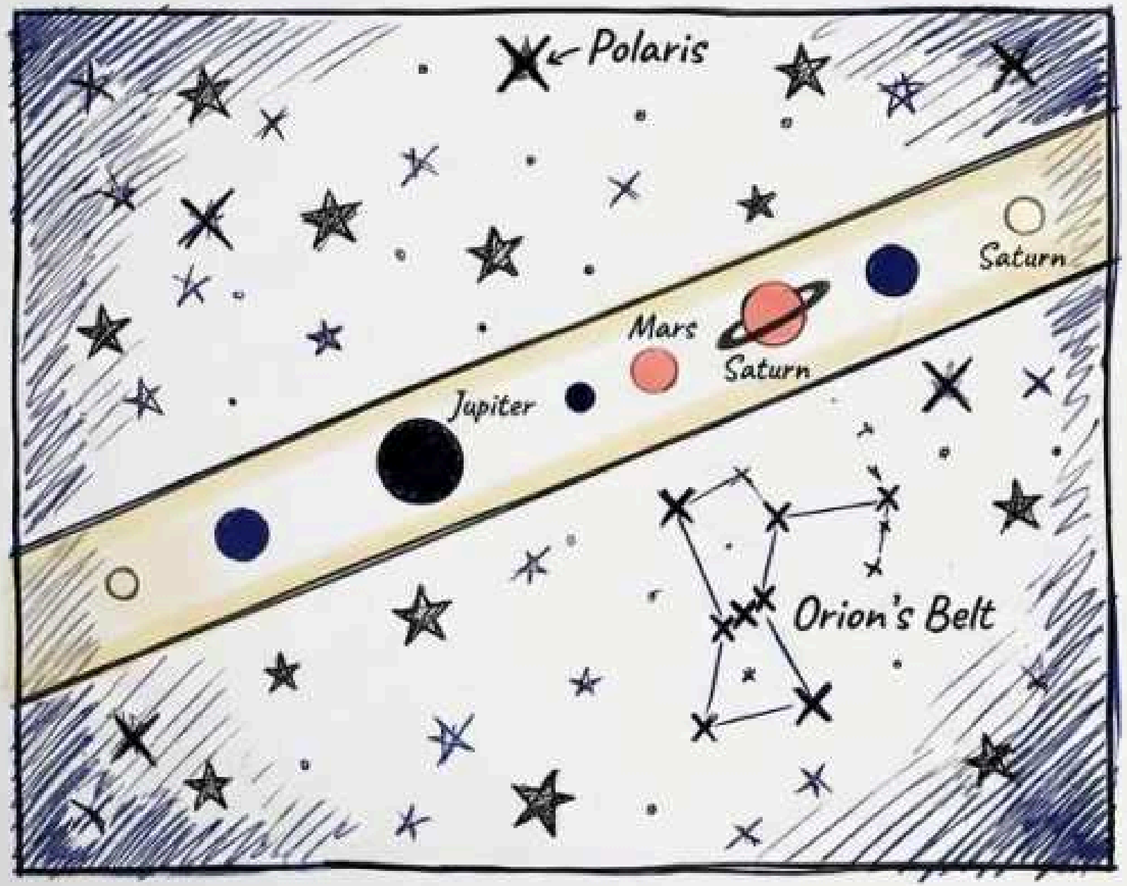


Neptune: Requires optics

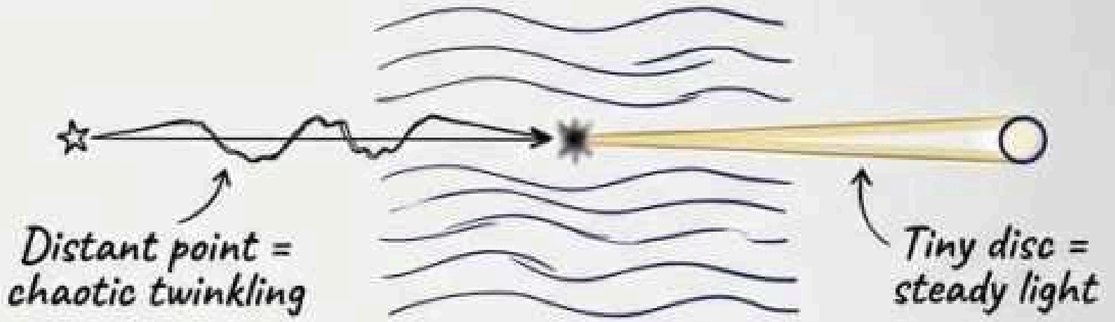
The Planet vs. Star Diagnostic

¶ 5.2

1. Look along the Ecliptic (the highway of the Sun, Moon, and planets).



2. The Twinkle Test

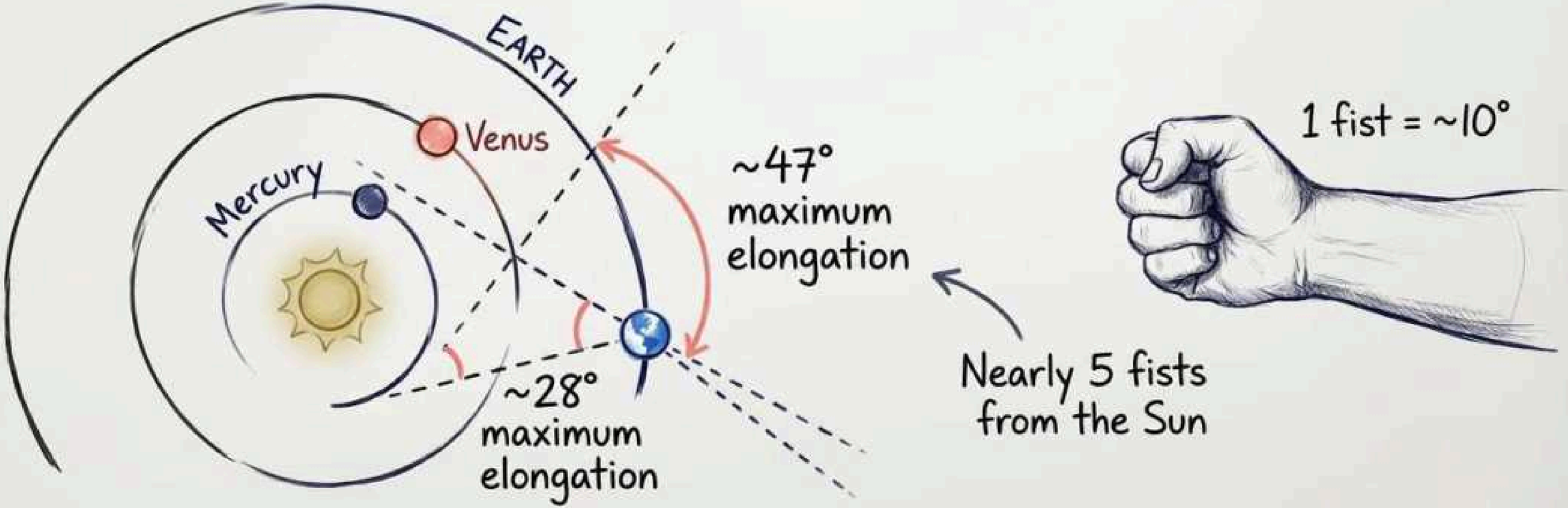


Rule exception: Anything low on the horizon twinkles.

3. Not on the map? Probably a planet.



The Inner Orbits: Morning & Evening Stars

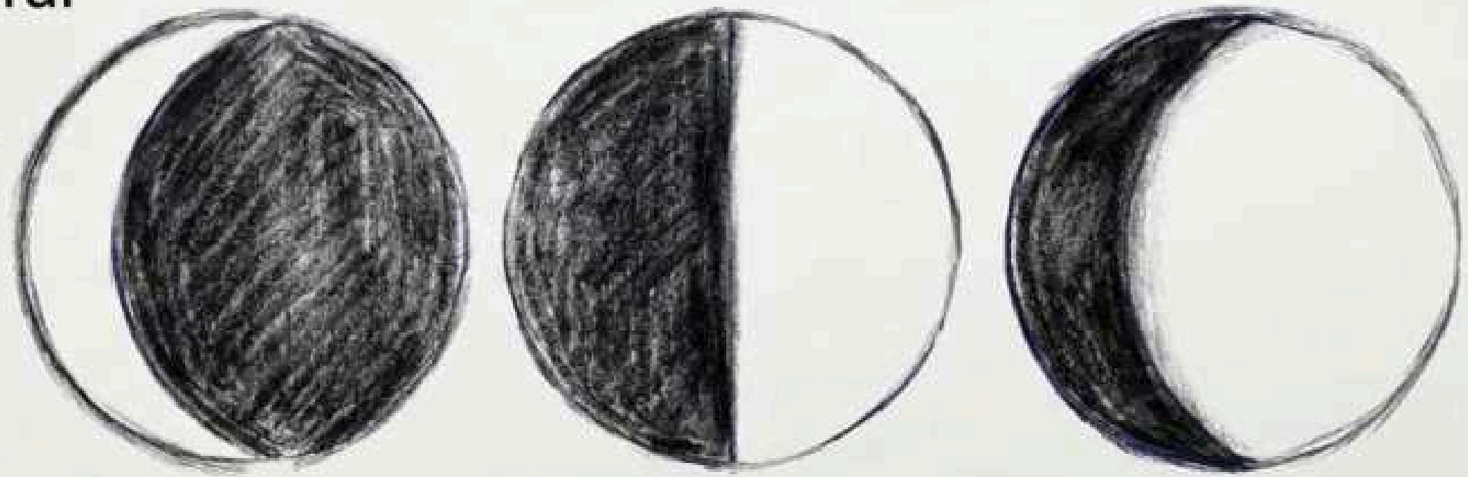


Because they orbit inside Earth's path, they are always near the Sun.
Seen only in the West (after sunset) or East (before sunrise). Never seen at midnight.

Venus: The Brightest Object

- Brightest natural object in the night sky after the Moon.

- Far brighter than any star.



☑ Brilliant white point

☑ Unmoving

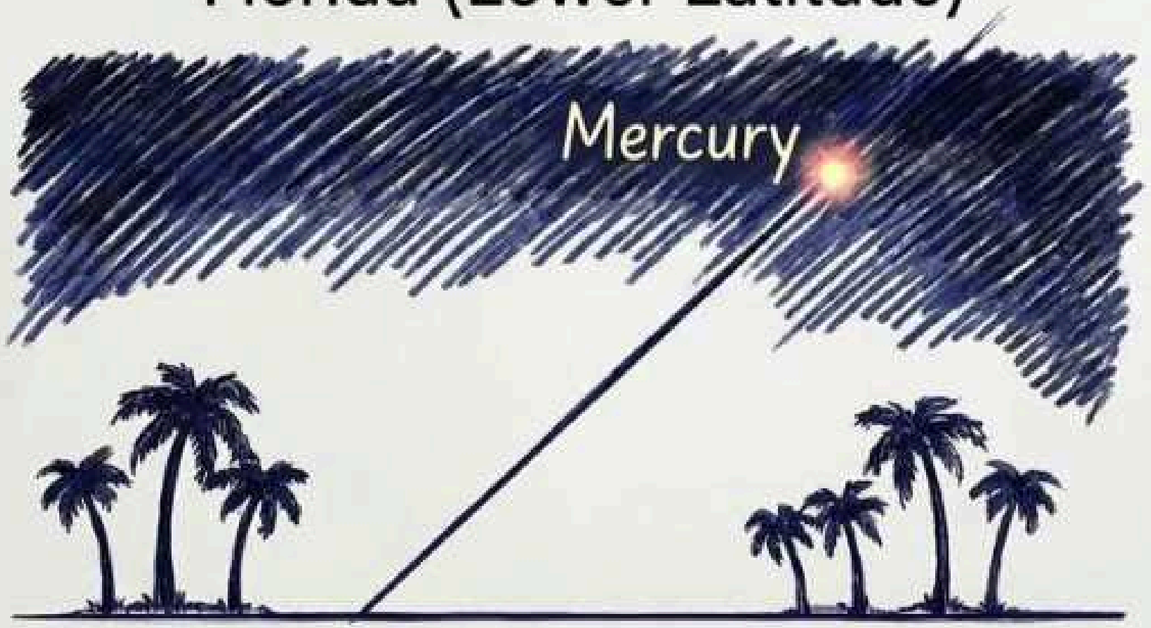
☑ Non-flashing

(Frequently mistaken for aircraft or UFOs).

Phases discovered by Galileo in 1610 using a small telescope, proving it orbits the the Sun.

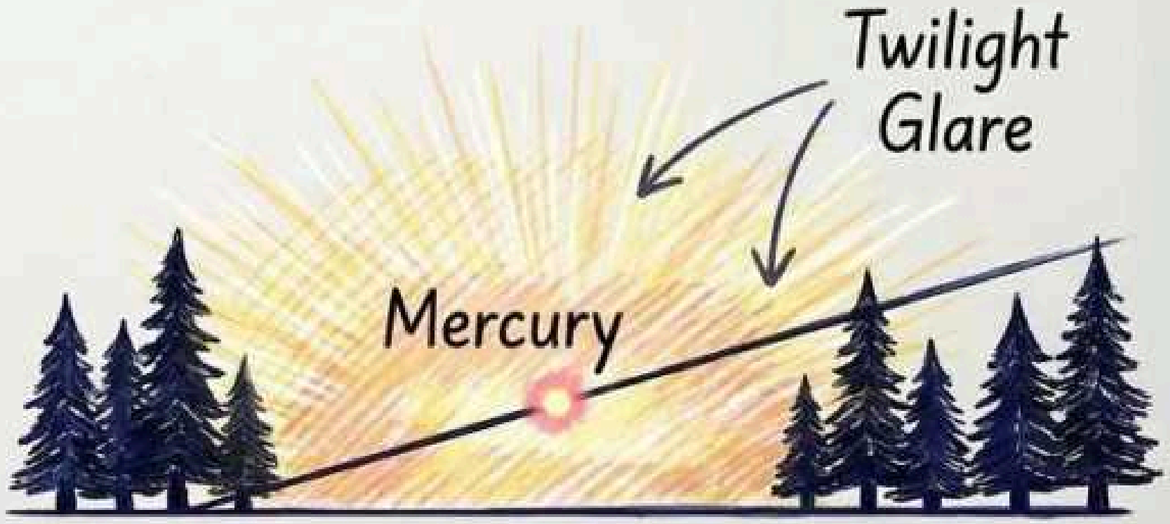
Catching Mercury: The Latitude Effect

Florida (Lower Latitude)



Florida (Lower Latitude)

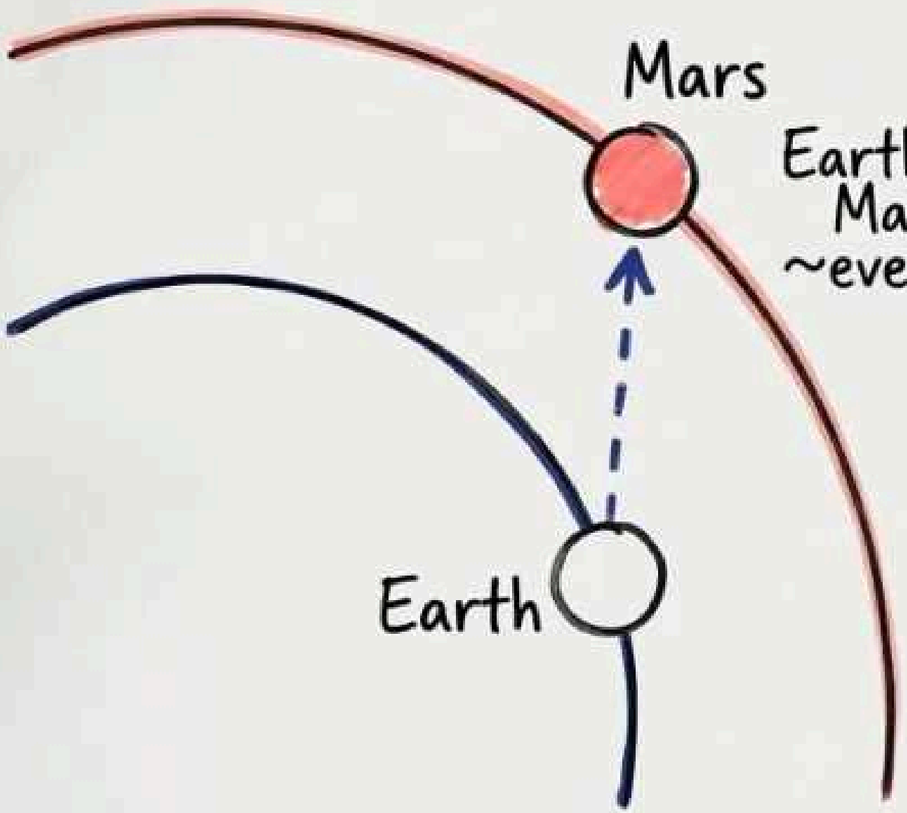
Seattle (Higher Latitude)



Seattle (Higher Latitude)

Hard to catch: Appears low in twilight for only a week or two at a time. Look for a pinkish or yellowish point.

Mars: The Red Wanderer



Brightness Variations

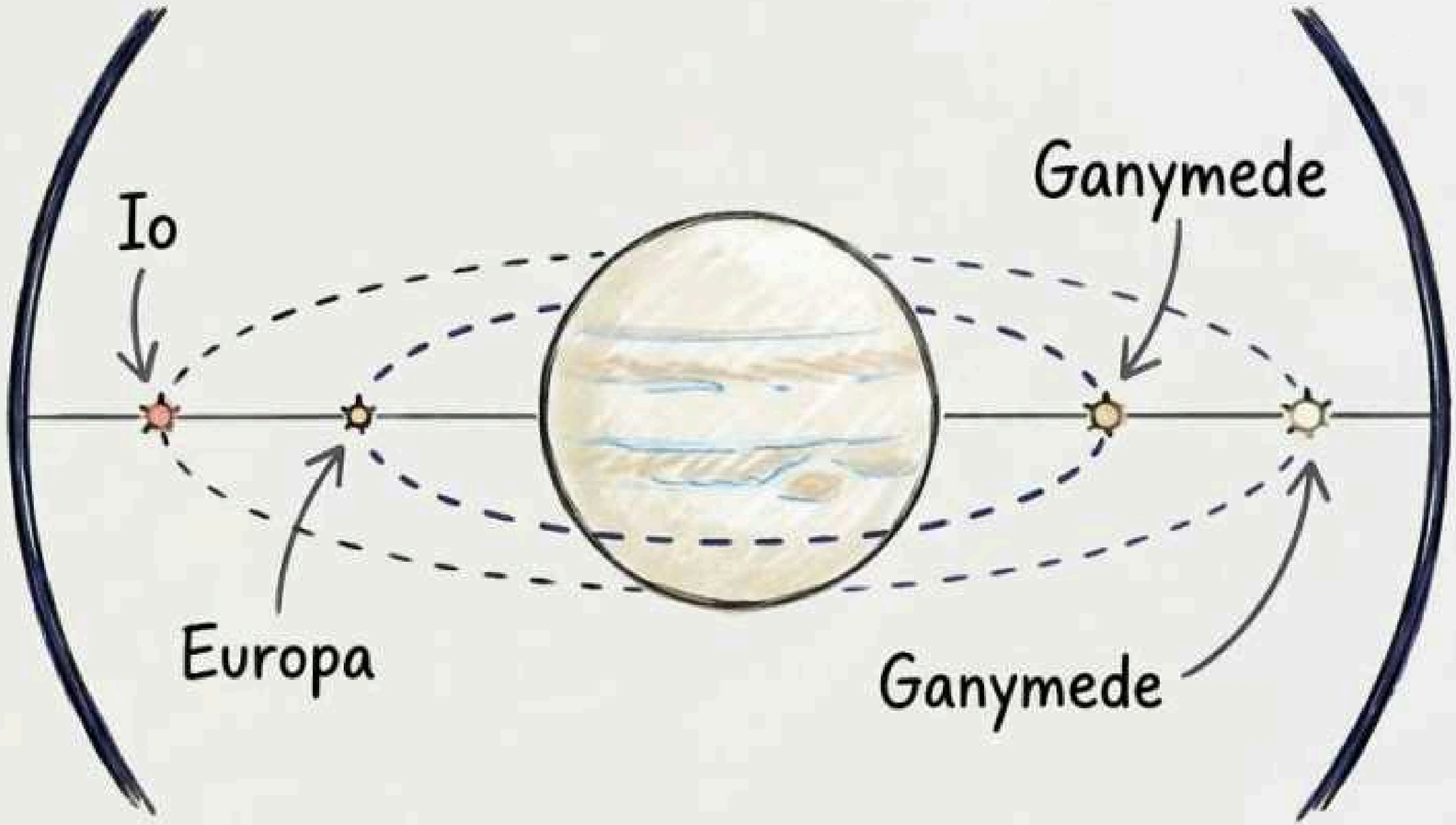
Close Pass 	Outshines almost any star.
Normal Orbit 	Modest reddish point, easily confused with stars like Antares or Aldebaran.



Distinctive salmon or orange-red color. Can appear anywhere along the ecliptic, at any time of night.

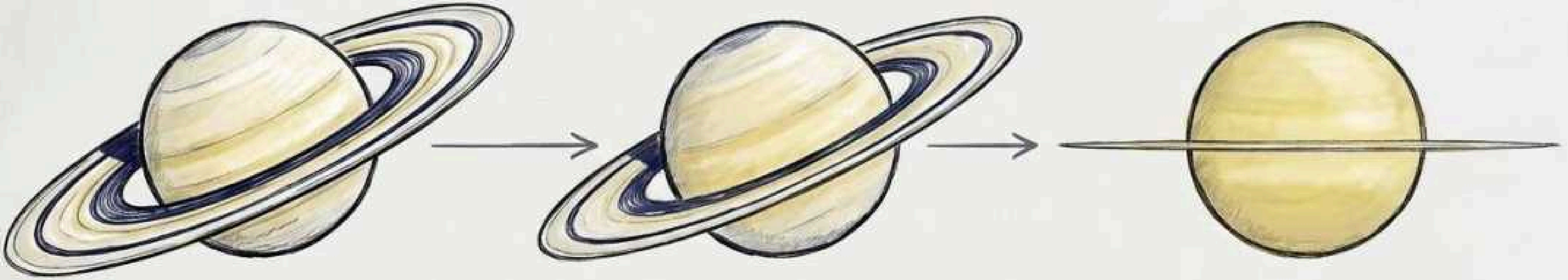
Jupiter & The Galilean Moons

- Usually the second brightest planet; outshines every star.
- Brilliant, steady light.
- Moves slowly: Spends ~1 year in each zodiac constellation.



Moons change position from night to night as they orbit (Discovered by Galileo, 1610).

Saturn & The 15-Year Tilt Cycle



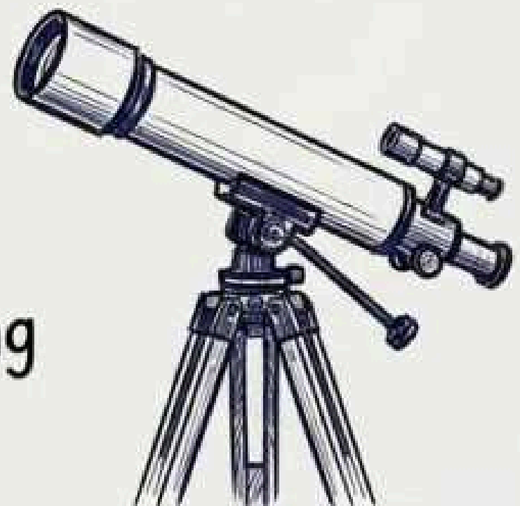
Rings wide open

Rings partially tilted

Edge-on and nearly vanished in 2025

Observational Profile:

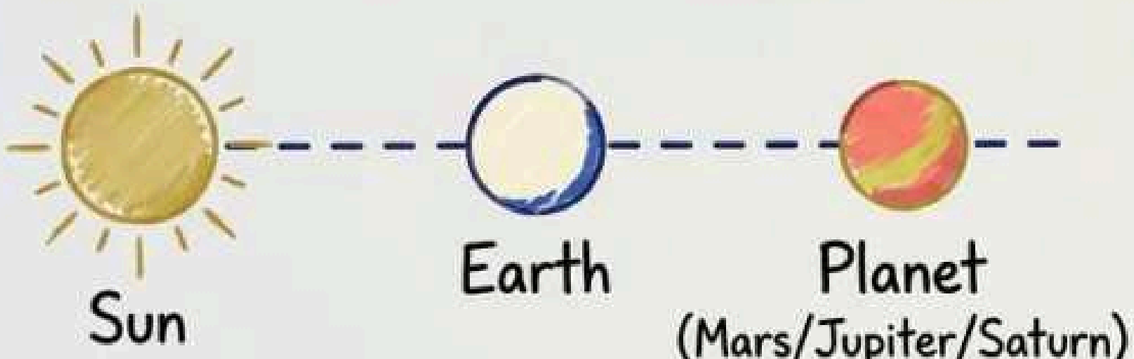
- Steady yellowish point, matches the brightness of brighter stars.
- Pace: Slowest naked-eye planet, spending ~2.5 years per zodiac constellation.



Rings require a small telescope at 25x magnification or more.

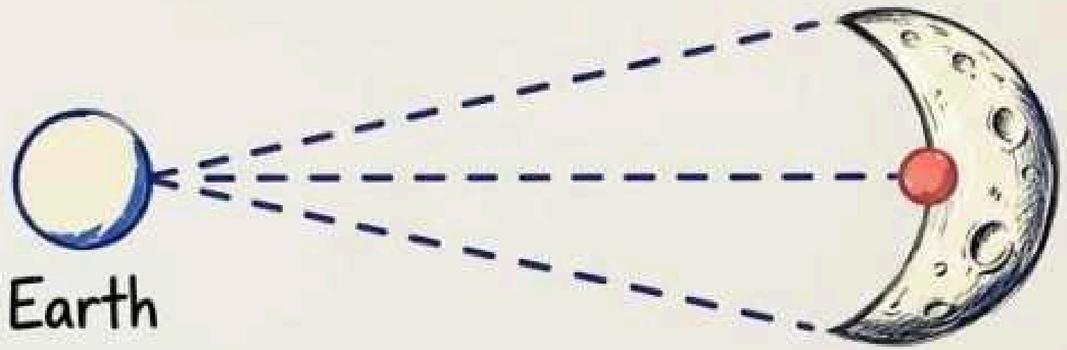
Celestial Mechanics: Vocabulary of the Sky

Model A: Opposition



Opposite the Sun in our sky.
Rises at sunset, visible all night.
Planet is at its closest and brightest.

Model B: Conjunction



Two objects appear close together in the sky. (e.g., Venus and Jupiter, or a planet + crescent Moon).
Easy to photograph with a phone.

Synthesis & Next Steps

Identify the Planets Checklist

- ☐ Check an app or monthly sky guide for what is up.
- ☐ Look strictly along the ecliptic band.
- ☐ Find the steady light (discard chaotic twinklers).
- ☐ Observe the color profile and brightness.

Coming Up Next

→ Comparing Florida vs. Seattle skies directly.

→ Adding the Moon, Meteors, Satellites, and Aurora.