

*Many fascinating objects are invisible to the unaided eye.*

## **How can you find those celestial treasures?**

### **Familiarize yourself with the All-Sky Maps**

1. There are six general all-sky maps in the guide. Choose the one that applies to the current time of year.
2. Find north, then face south. Hold the map over your head. The stars on the map will match those in the sky. The stars charted are those found in the sky from a suburban setting.
3. Distances and sizes across the sky can be deceiving. Remember, the distance from the zenith (i.e., straight up) to the horizon on the map corresponds to same positions in the sky.
4. Find star patterns that you already know, such as the Big Dipper or Orion. Then, triangulate to the brighter stars that you don't know.

### **A Celestial Sampling**

This telescope can view the bright planets, and the brighter star clusters and nebulae. The problem is finding them, particularly the dim star clusters, among the many stars in the heavens. Instructions are included in this guide detailing how to locate a number of interesting deep sky objects. These objects are plotted on the detailed maps that accompany the six bi-monthly all-sky maps.

### **Finding the Bright Planets**

**The planets are not represented on the maps** because they always move, some slowly, others more quickly, across the celestial dome. However, they always appear somewhere near the ecliptic, which represents the annual path of the sun across the sky. Planets shine with a steady light, while stars normally twinkle.

Please refer to the *Planetary Positions* chart for their monthly locations in the sky. Also, two additional sections, *The ABCs of Stargazing* and *Is that a planet or a star?*, give help in locating planets and other sky objects.

**Mercury** is visible only for ten days or so out of every three months because it orbits so closely around the sun. Therefore, it is never located far from it, appearing in twilight skies. Mercury is always found low above either the western horizon after sunset or the eastern horizon before sunrise. Mercury, the smallest planet, appears very small in this scope and is not an impressive target. Therefore, it is not included in the *Planetary*

*Positions* section. (Strangely, Mercury is the planet most often closest to Earth, being the nearest about 50% of the time.)

**Venus** is brilliant and is easy to spot when it is not near the sun. It lies either in the west after sunset or in the east before sunrise. Like our moon, it shows phases. When the Venus approaches the Earth, it appears in this telescope as a small, but very bright crescent, sometimes giving a lot of glare. Consider using the moon port when viewing it, or, as odd as it may sound, wear sunglasses. (For its sky location, see the Planetary Chart in this guide.) (While it can come closer than any other planet, it is the closest planet about 35% of the time.)

Except when it lies close to the Earth, **Mars** appears a little larger than a dot in this telescope. Every two years, however, Earth passes near the Red Planet and Mars shines brightly in our evening sky. During this period, it shows a noticeable, but **very small** disk through the telescope. During moments of steady seeing, surface markings and the white polar caps can be glimpsed. (For its sky location, see the Planetary Chart in this guide.) (It may be the most famous of the planets, but it comes closest to Earth only about 15% of the time.)

When **Jupiter** does not lie close to the sun, it is easily visible and is rewarding to view. Jupiter shows a small, slightly flattened disk with noticeable atmospheric bands. It sports up to four starlike moons — the Galilean moons of Io, Europa, Ganymede, and Callisto — lying in a row on either side of the planet. Watch their positions change nightly or even hourly. (For its sky location, see the Planetary Chart in this guide.) (Jupiter is never the closest planet to Earth.)

**Saturn** lies twice as far from Earth as Jupiter and is accordingly smaller and dimmer. This scope reveals its famous ring system and its large moon, Titan. Beware, the Ringed Planet is tiny, but well worth the effort to find it. (For its sky location, see the Planetary Chart in this guide.)



Venus, when it is in its crescent phase



Mars, when it is at its closest to Earth



Jupiter



Saturn

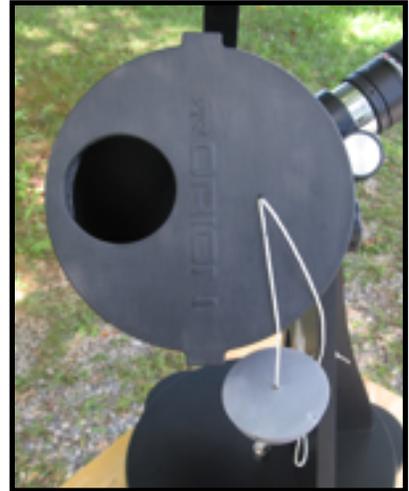
### Comparative apparent sizes of the planets

## Lunar Observing

This telescope gives incredible views of the Moon. You will see craters of all sizes, mountains and plains.

You will quickly find that when the moon shows a phase past first quarter (or a “D” shaped moon), it is very bright. Reduce the glaring light by placing the end cap on the front end of the main telescope tube and remove the 2 inch port cover. This will allow 80% less light to enter the telescope, making the moon appear at a more comfortable viewing brightness. It doesn’t affect the magnification.

The 2 inch port can also be used when observing Venus, as its light is much more intense than the Moon’s.



## Suggested references

- “NightWatch,” by Terence Dickinson
- “Turn Left at Orion,” by Guy Consolmagno and Dan Davis
- “Season Star Charts,” by Hubbard Scientific
- “365 Starry Nights,” by Chet Raymo
- “Stars and Planets,” by Jay M. Pasachoff