

# The Basics for a Night of Visual Observing



Peterborough Astronomical Association  
Novice Astronomy Class

March 7, 2025

Brett Hardy

## Location, Location, Location

### Where to Observe ?

- Convenience & Safety
  - backyard
  - have an observing buddy
- Light Pollution
  - local green space out of town
  - scout potential sited during daylight
  - Harold Town Conservation Area
- PAA Organized Events
  - Members' Nights
  - Dance Nature Preserve
  - Public Outreach
- PAA Dome



Cedar Knoll Observatory  
Image courtesy: Rick Stankiewicz

## Plan for Success

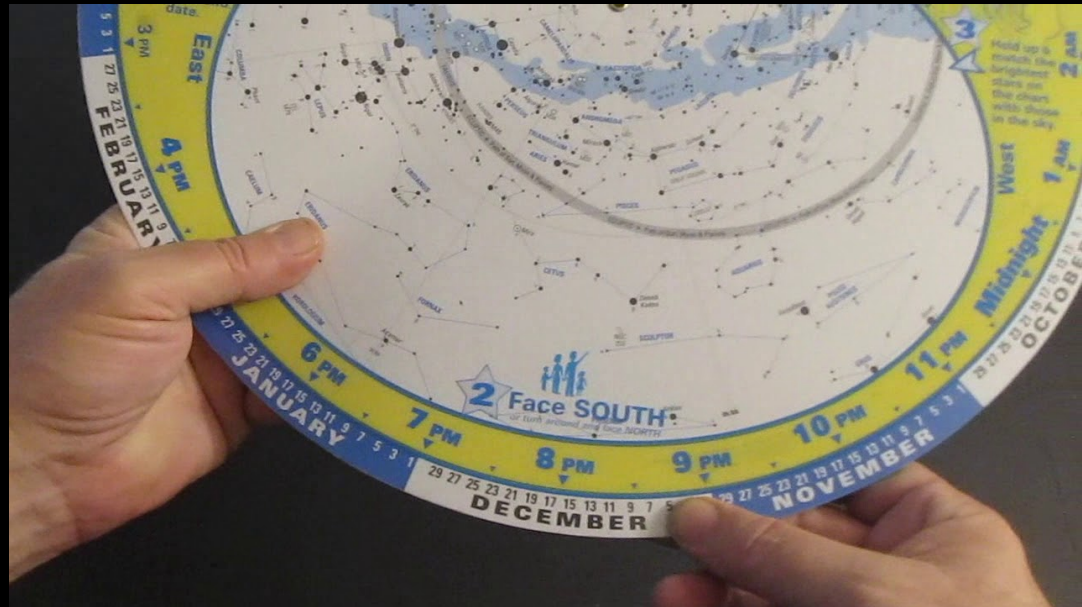
- Dress appropriately
- Have a goal and observing list
- Allow your eyes to dark adapt
- Protect night vision
  - avoid white lights
  - utilize a red light for reading charts, etc.
- Sketch and make notes

## Relax

- lounge chair
- hot/cold beverages
- blanket

## Things to Bring

- Observing list
- Planisphere & sky chart
- Red light
- Insect repellent/Thermacell
- lounge chair & blanket
- Snacks, hot or cold beverages
- Binoculars
- Tripod





## Binoculars

- Ideal starter instrument
- Use what you already have
- Eyes ~  $120^\circ$
- Binoculars ~  $6^\circ$  and less

## Benefits of Binoculars

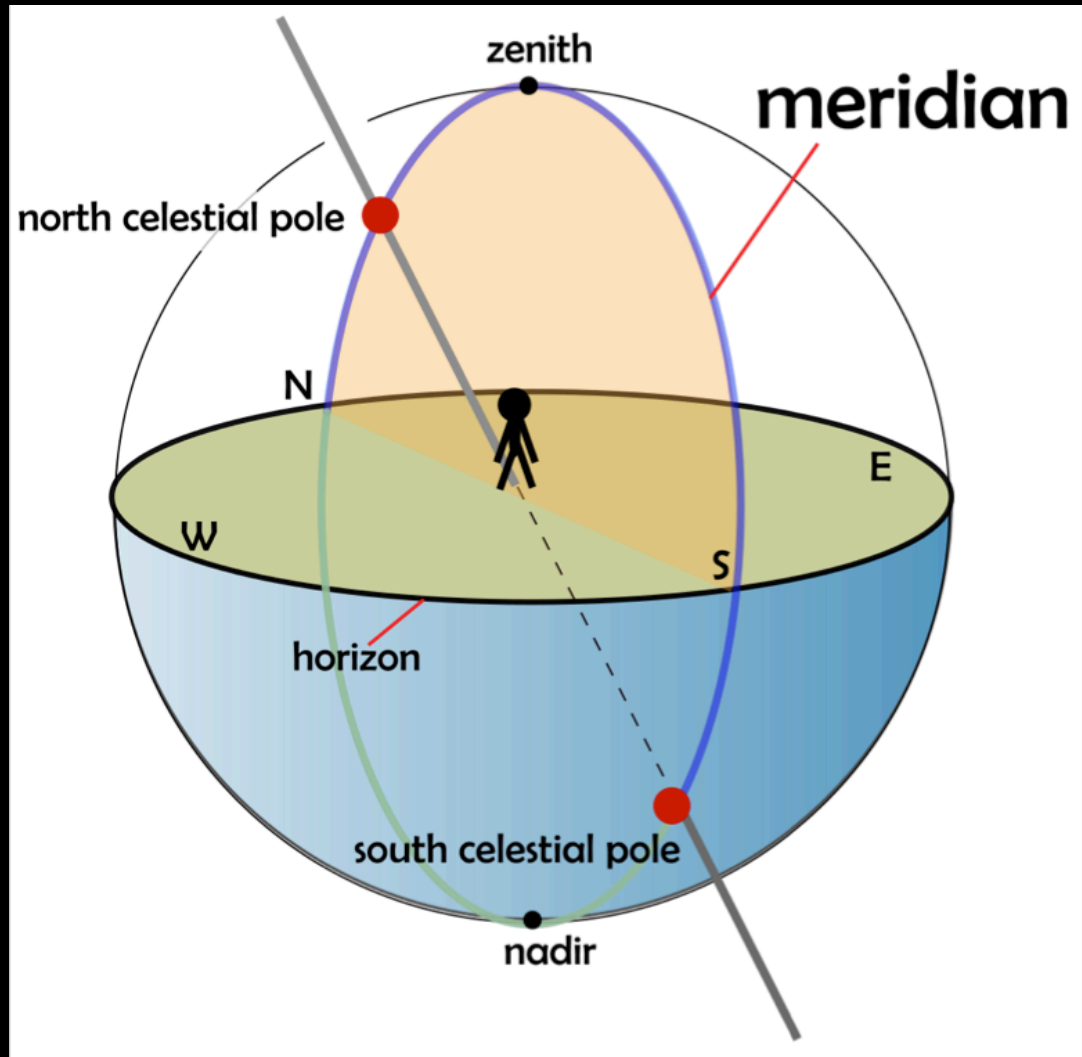
- Simple to use
- Images are right side up
- Large field of view
- Inexpensive first instrument
- Two eyes are better than one
- Highly portable
- Short duration viewing





## Celestial Sphere

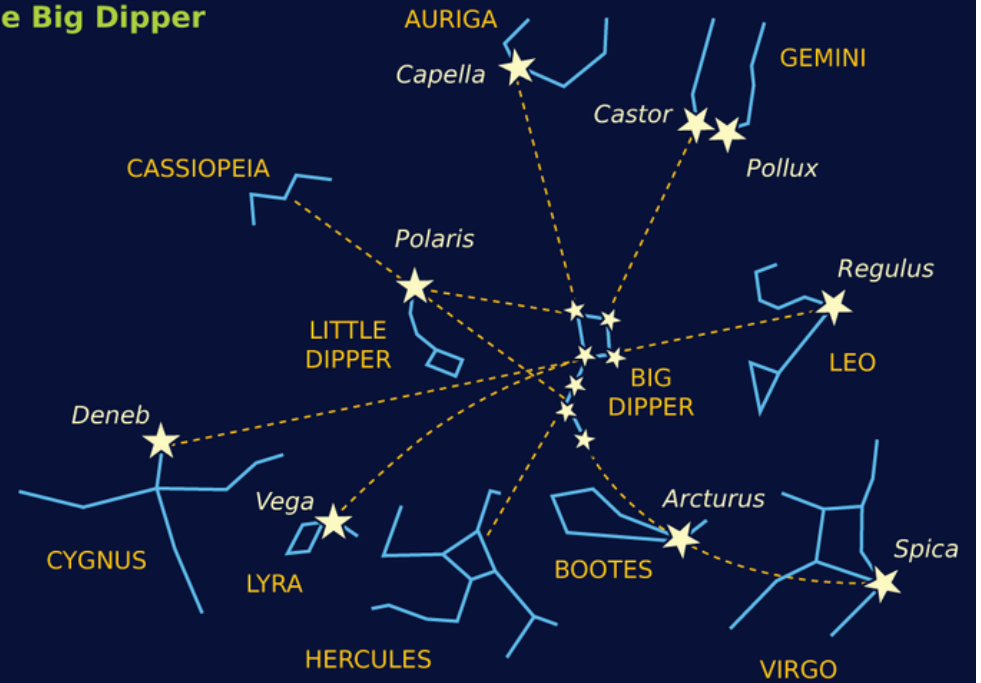
- Cardinal directions
- Meridian
- North Celestial Pole
  - Polaris (North Star)
- Zenith
- Horizon



## Constellations as Pointers



## Navigating with the Big Dipper

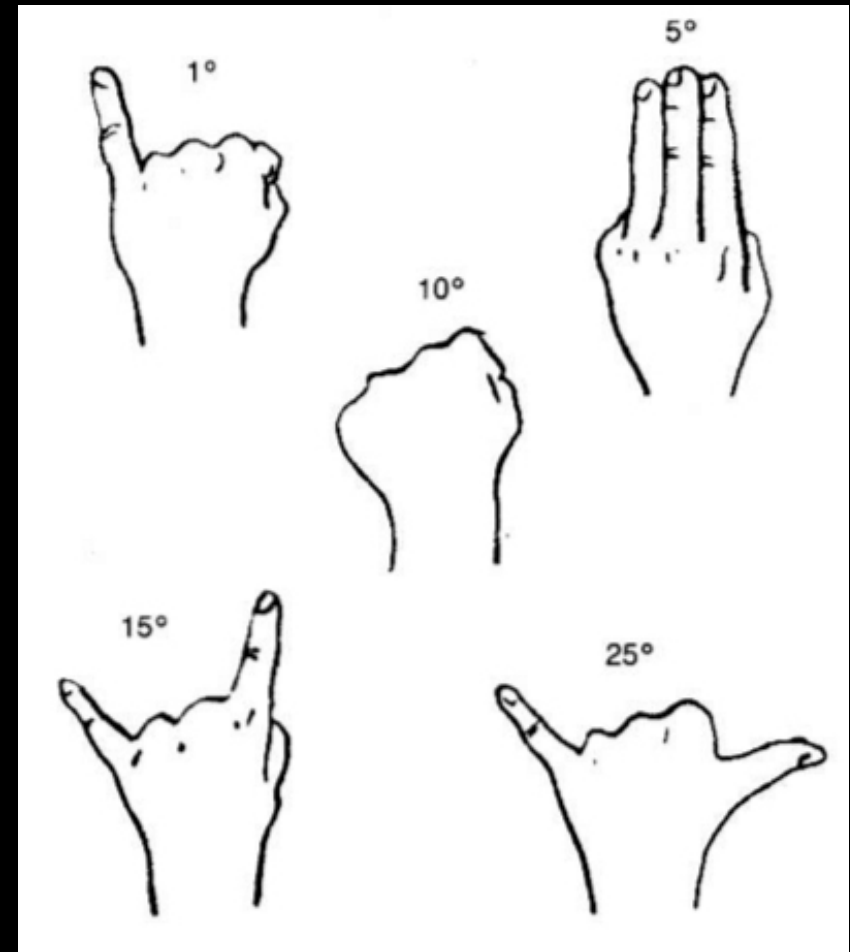
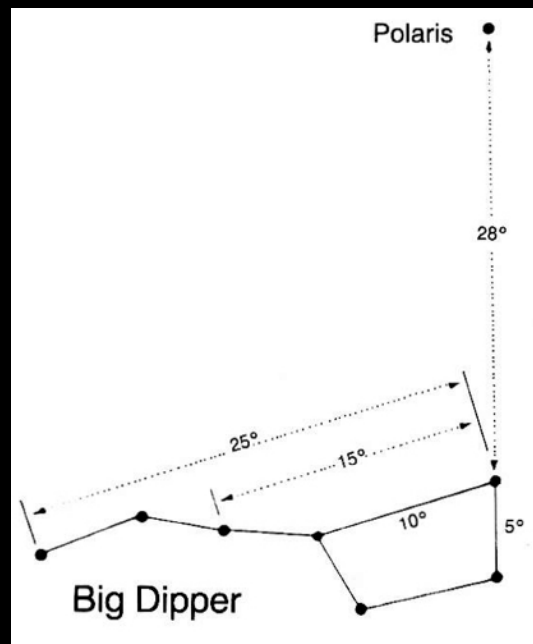


Simulation Curriculum Corp

Astro Bob

## Navigating the Night Sky

- Distance measured in degrees
- Azimuth is direction in degrees
  - North =  $0^\circ$
  - East =  $90^\circ$
  - South =  $180^\circ$
  - West =  $270^\circ$
- Altitude is height above the horizon in degrees
- $1^\circ = 60'$
- Moon =  $1/2^\circ = 30'$
- Polaris (North Star) = observer's latitude:  $44^\circ$  above north horizon



Terrance Dickinson: Night Watch

Terrance Dickinson: Night Watch



- Sky Maps
  - [skymaps.com/downloads.html](http://skymaps.com/downloads.html)

**STARGAZING BOOKS & GEAR**

Not sure where to start. Here are some recommended books, binoculars and telescopes for new stargazers.

• **5th Edition •**  
**BEST SELLER**



**[Nightwatch: A Practical Guide to Viewing the Universe](#)**

Best first Astronomy book for newcomers. All time best seller in this category. Includes a set of updated star charts.

[More Info](#)  
[Buy at Amazon](#)

★★★★★

**[1600+ Customer Reviews](#)**  
(Previous Edition)

• **4th Edition •**

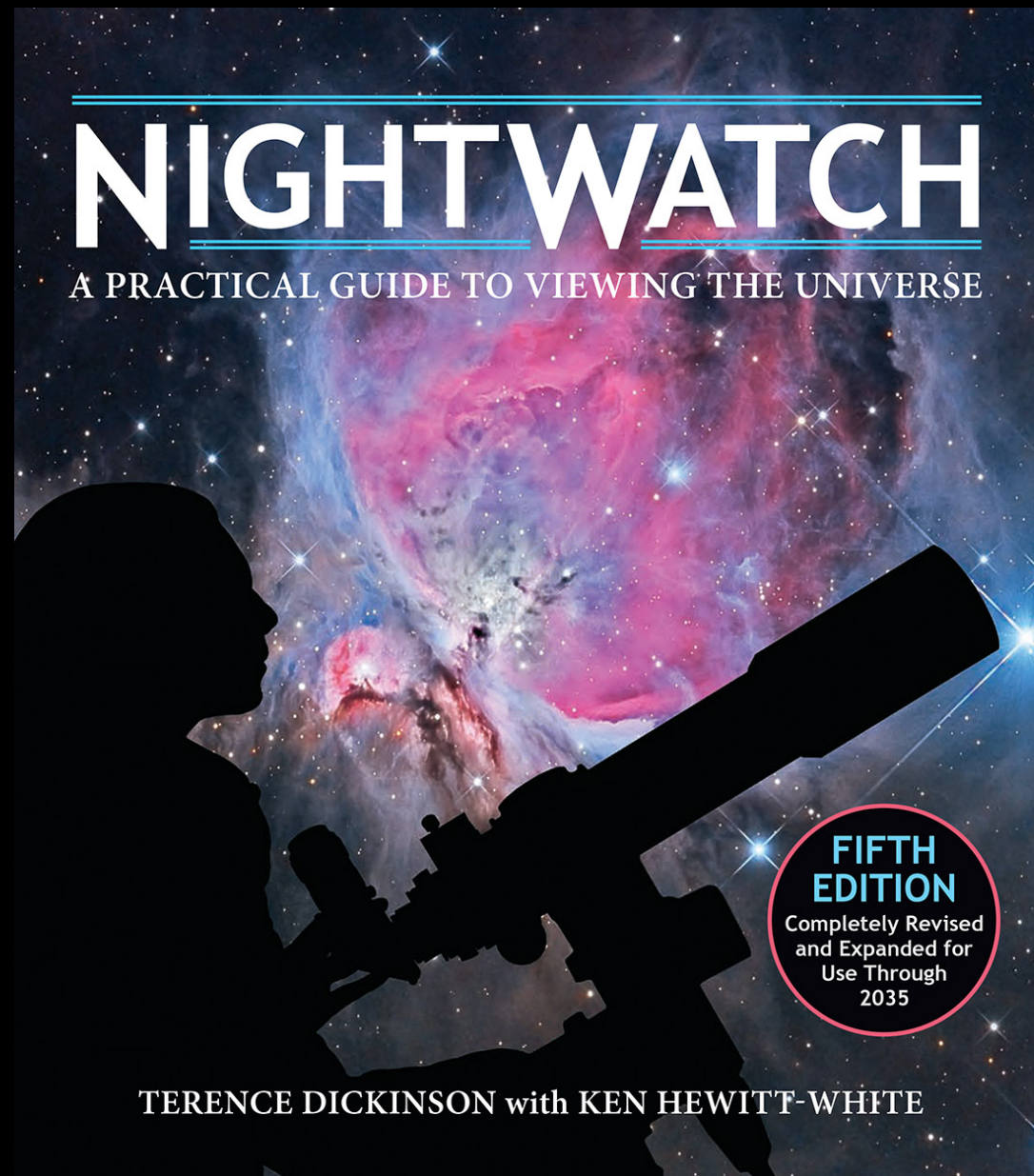


**[The Backyard Astronomer's Guide](#)**

A detailed and very well illustrated guide for beginners and more experienced amateur astronomers. Covers many topics from getting started, different types of equipment, observing, and astrophotography.

## Print Resources

- NightWatch: A Practical Guide to Viewing the Universe
- Terence Dickinson & Ken Hewitt-White
- Spiral bound
- Firefly Books
- ISBN: 978-0228104391
- \$38.96





## Print Resources

- Turn Left At Orion
- Guy Consolmagno & Dan M. Davis
- Hard cover or spiral bound
- Cambridge University Press
- ISBN: 978-0521781909
- \$34.97






## Print Resources

- Sky & Telescope
- Astronomy Magazine

[NEWS](#) [OBSERVING](#) [TOOLS](#) **SKY & TELESCOPE**  
THE ESSENTIAL GUIDE TO ASTRONOMY [CLUBS & EVENTS](#) [TOURS](#) [SUBSCRIBE](#)

---

ASTRONOMY & OBSERVING NEWS




**Looking Southwest, high in the sky**

**CELESTIAL NEWS & EVENTS** [🔗](#)

**This Week's Sky at a Glance, February 28 – March 9**


BY: ALAN MACROBERT | FEBRUARY 28, 2025

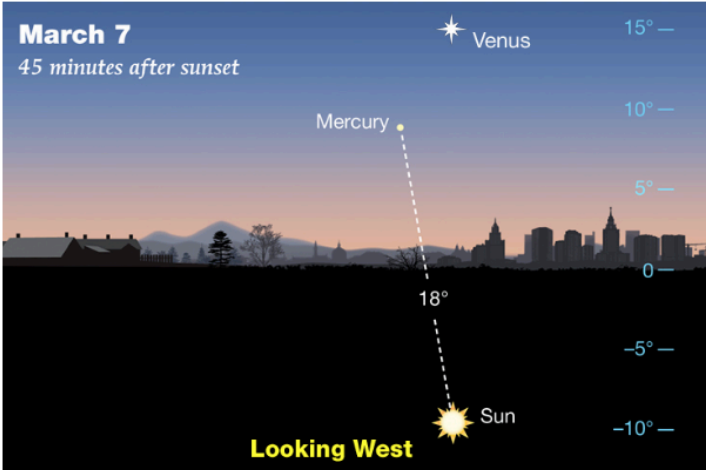


**ASTRONOMY & OBSERVING NEWS** [🔗](#)

**Asteroid Won't Hit Earth, But Might Hit Moon — a Potential Science Bonanza**

BY: DAVID L. CHANDLER | FEBRUARY 28, 2025





**March 7**  
45 minutes after sunset

**Looking West**

**OBSERVING** [🔗](#)

## MARCH PODCAST: PLANETS, STARS, AND ECLIPSES!

BY: J. KELLY BEATTY | MARCH 1, 2025

This month we'll mark two seasonal transitions, watch eclipses of the Moon and Sun, track down the elusive planet Mercury, and trace out the Winter Hexagon. So grab your curiosity, and come along on this month's Sky Tour.

[CONTINUE READING](#)

**EYE ON T CORONAE BOREALIS**

Find out if the "Blaze Star" is about to blow:

- ✦ [Latest AAVSO data](#) [🔗](#)
- ✦ [What to look for](#)

**ASTRONOMY & OBSERVING NEWS** [🔗](#)

**Second Intuitive Machines Mission Heads to the Moon**

BY: DAVID DICKINSON | FEBRUARY 27, 2025

**ASTRONOMY & OBSERVING NEWS** [🔗](#)

**Why Is Mars Red?**

BY: JEFF HECHT | FEBRUARY 26, 2025

**ASTRONOMY & OBSERVING NEWS** [🔗](#)

**Record-breaking Ghost-like Particle Found in the Mediterranean Sea**

BY: COLIN STUART | FEBRUARY 25, 2025

**ASTRONOMY & OBSERVING NEWS** [🔗](#)

**Window into Hot Jupiter Reveals Multilayered Winds**

BY: MONICA YOUNG | FEBRUARY 24, 2025

**CELESTIAL NEWS & EVENTS** [🔗](#)

**This Week's Sky at a Glance, February 21 – March 2**

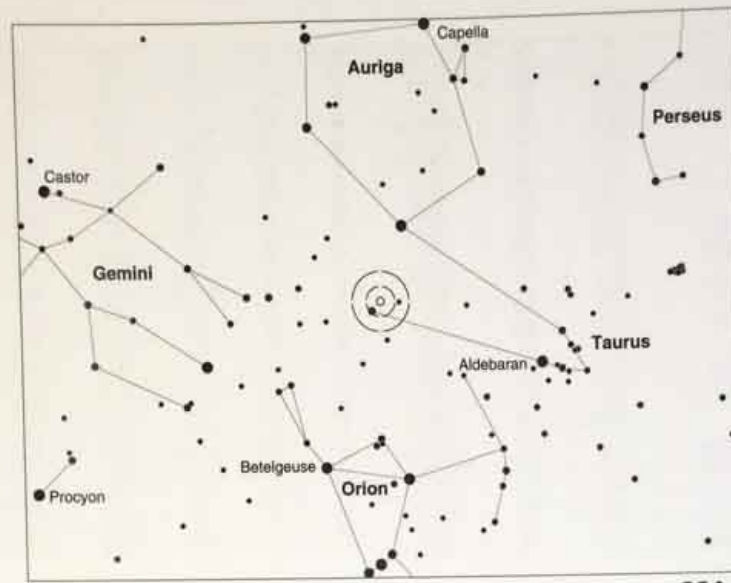
BY: ALAN MACROBERT | FEBRUARY 21, 2025

**ASTRONOMY & OBSERVING NEWS** [🔗](#)

**Euclid Discovers Einstein Ring Around Nearby Galaxy**

## Print Resources

- Messier object finder charts
- Two volume set
- Spiral bound & laminated
- sky-spot.com
- \$39.99 USD



**M1**

## M1

NGC Description: Very bright, very large, extended along position angle 135, very gradually brightening a little toward the middle, mottled.

The Crab Nebula's history is better known than that of any other planetary nebula, for it is the remnant of the supernova of 1054 AD. M1 appears in small telescopes as an elongated smudge, but in apertures of 16 inches or greater the filamentary detail begins to appear.

M1 has been intensely studied by professional astronomers. It is the sight of the discovery of the first visual pulsar.

NGC	TYPE	MAG.	DISTANCE	SIZE	DIAMETER
1952	Di	8	6,300 l.y.	6' x 4'	11 l.y.

# The Sky Live

- URL: [theskylive.com](https://theskylive.com)





## Online Planning

### Telescopius

- Registration required
- URL: [telescopius.com](https://telescopius.com)

The screenshot displays the Telescopius website, a platform for astronomy planning. The interface is dark-themed and organized into several sections:

- Header:** Includes the Telescopius logo, navigation tabs for TARGETS, TOOLBOX, and ASTROPHOTOGRAPHY, a search bar, and user account icons.
- Observatory Settings:** Located on the left, it shows the user's location (Lat. 44.3, Lon. -78.7), date (Sep 25), moon phase (Waning Gibbous Moon), and sunset/sunrise times. It also displays average weather for the night and a 7-day hourly forecast.
- Search Parameters:** A central panel with filters for visibility, over, at least, object type, apparent magnitude, apparent size, surface brightness, catalog, coordinates, and constellation. A 'Reset Filters' button is at the bottom.
- Object List:** The main section on the right, titled 'Deep Sky Objects by Magnitude for Lat. 44.3, Lon. -78.7 tonight'. It lists 9,421 objects, with the first six visible. Each object entry includes a thumbnail image, key data (name, magnitude, date, constellation), and a transit graph showing the object's path across the sky.

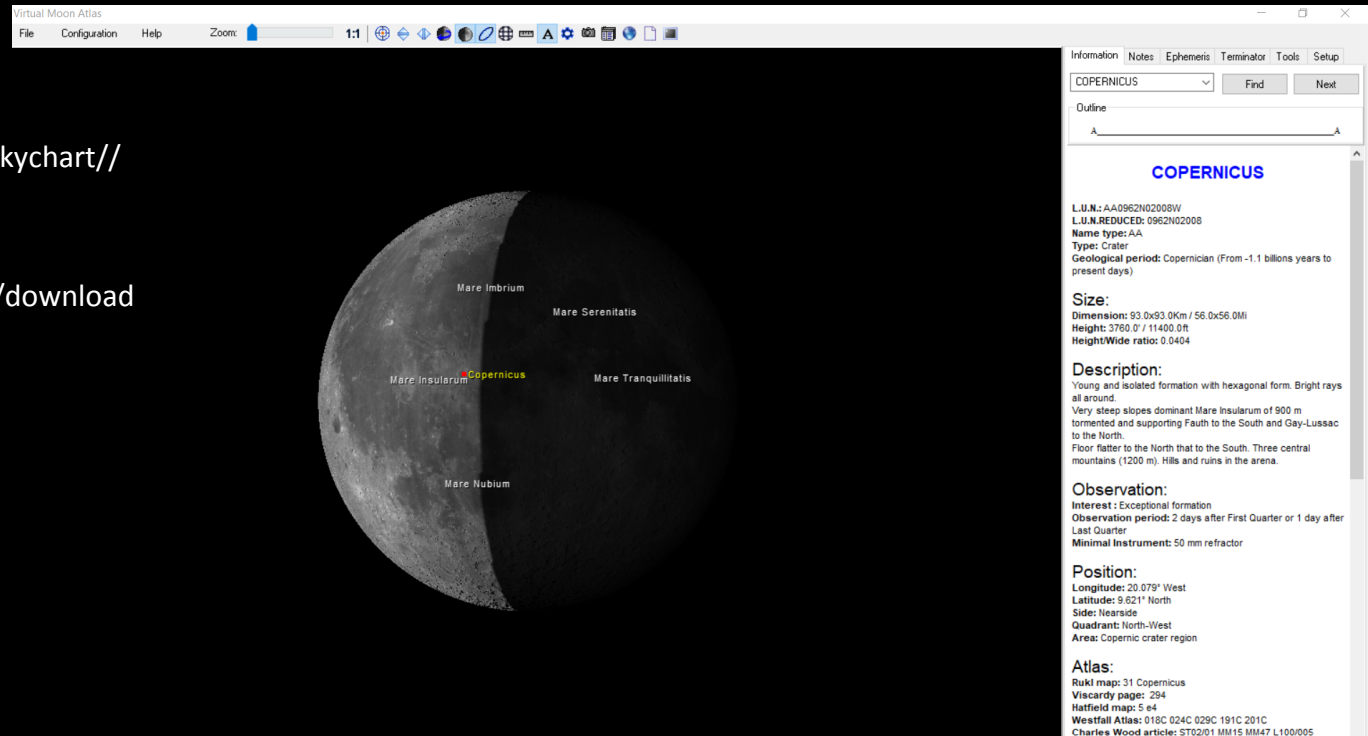
Visible objects in the list include:

- Ursa Major - Cr 285
- Open cluster Cr 70
- Hyades - Mel 25
- Alpha Persei - Mel 20
- Pleiades - M 45
- Bright nebula NGC 1980

Each object entry also features a 'Transit' graph showing the object's path across the sky, with a red line indicating the transit. The graphs are labeled with 'transit: north/south - [angle] - [time]'. For example, Ursa Major - Cr 285 has a transit at north - 76° - 12:58 pm.

## Computer Software

- Stellarium
  - [stellarium.org](http://stellarium.org)
- Cartes de Ciel
  - <https://www.ap-i.net/skychart/en/start>
- Virtual Moon Atlas
  - <https://ap-i.net/avl/en/download>



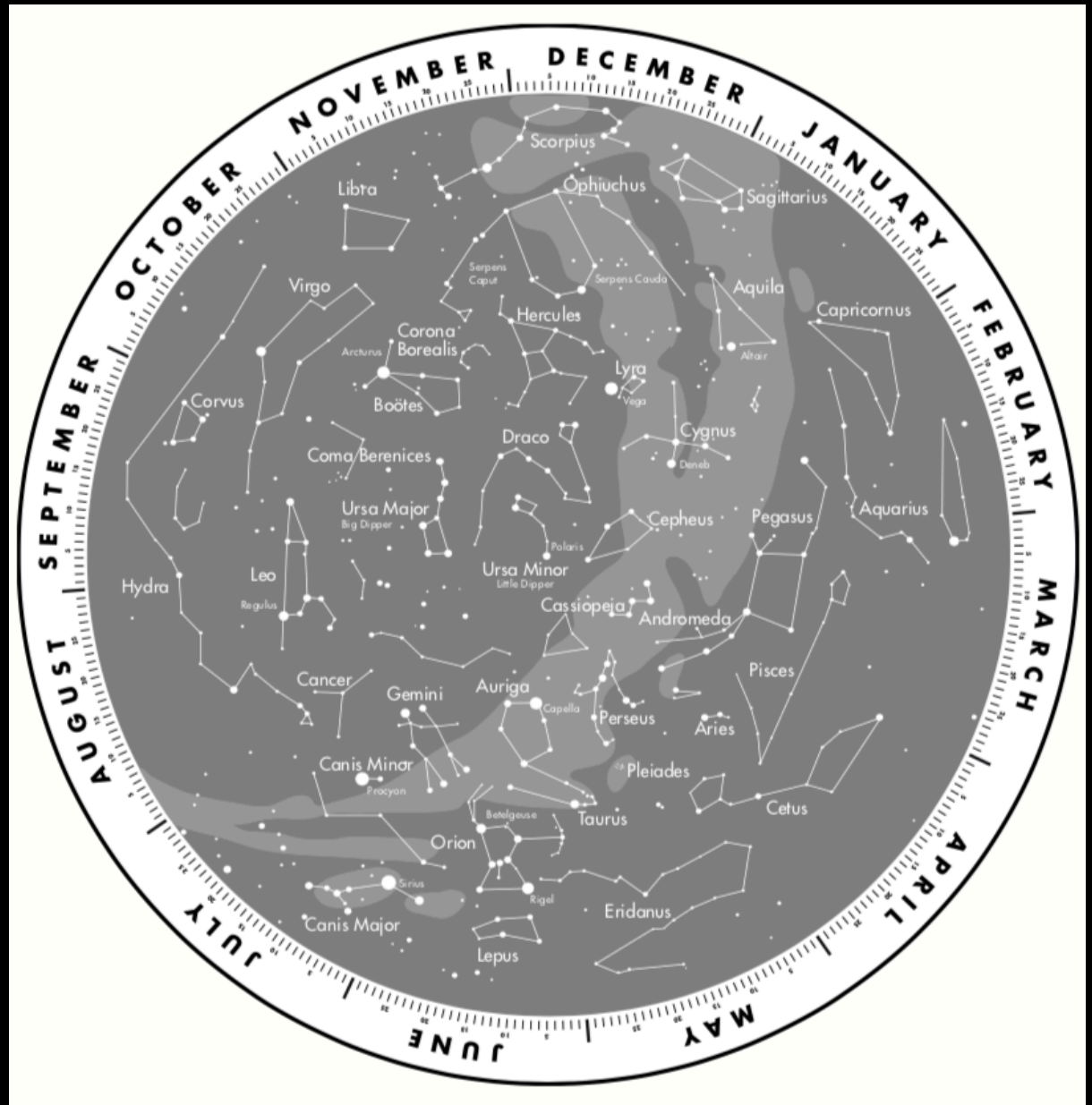
## Phone & Tablet Apps

- Many to choose from
  - Sky Safari 7
  - Night Sky 11
  - Stellarium Mobile
  - Star Walk 2





## Make Your Own Planisphere



Novice Astronomy Class  
Solar System Series: Mercury  
April 4, 2025



NASA