

# The Winter Constellations



Culpeper Astronomy Club Meeting  
November 25, 2019

# Overview

- Introductions
- Special Topics
- Video: The Winter Constellations
- Constellations: Orion, Canis Minor, Eridanus
- Observing Session

# Special Topic #1: Mercury Transit (11 Nov)

- Observing Session – 0730-1306
  - Morning Calm Observatory
  - 5 Members participating
  - Trees obscured early viewing
  - Scattered Clouds throughout
- Equipment:
  - Stellarvue SV110ED
  - Stellarvue SV102ED
  - Meade 12" LX200
  - All full aperture filters
- Observed most of the transit and the final egress
- Bonus: Caught a couple of airliners crossing the Sun



Venus Transit – 2012



# Special Topic #2: VIPER to the Moon

---

- NASA is sending a mobile robot to the south pole of the Moon:
  - Get a close-up view of the location and concentration of water ice in the region
  - Sample the water ice at the same pole where the first woman and next man will land in 2024 under the Artemis program
- About the size of a golf cart, the Volatiles Investigating Polar Exploration Rover, or VIPER, will roam several miles
  - Four science instruments — including a 1-meter drill — to sample various soil environments.
  - Planned for delivery in December 2022, VIPER will collect about 100 days of data that will be used to inform development of the first global water resource maps of the Moon



# Special Topic #3: Going Back to Pluto?

---

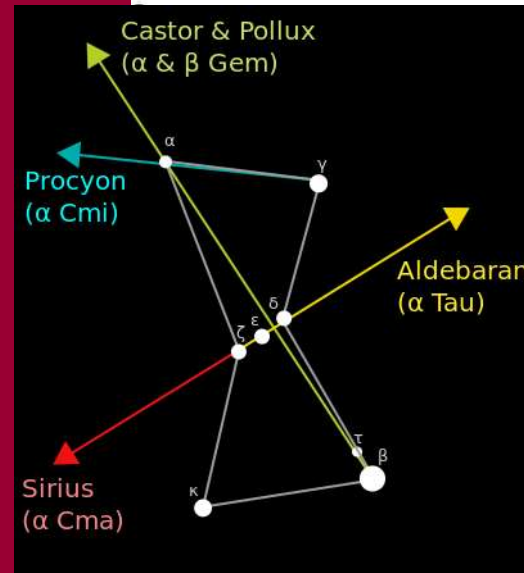
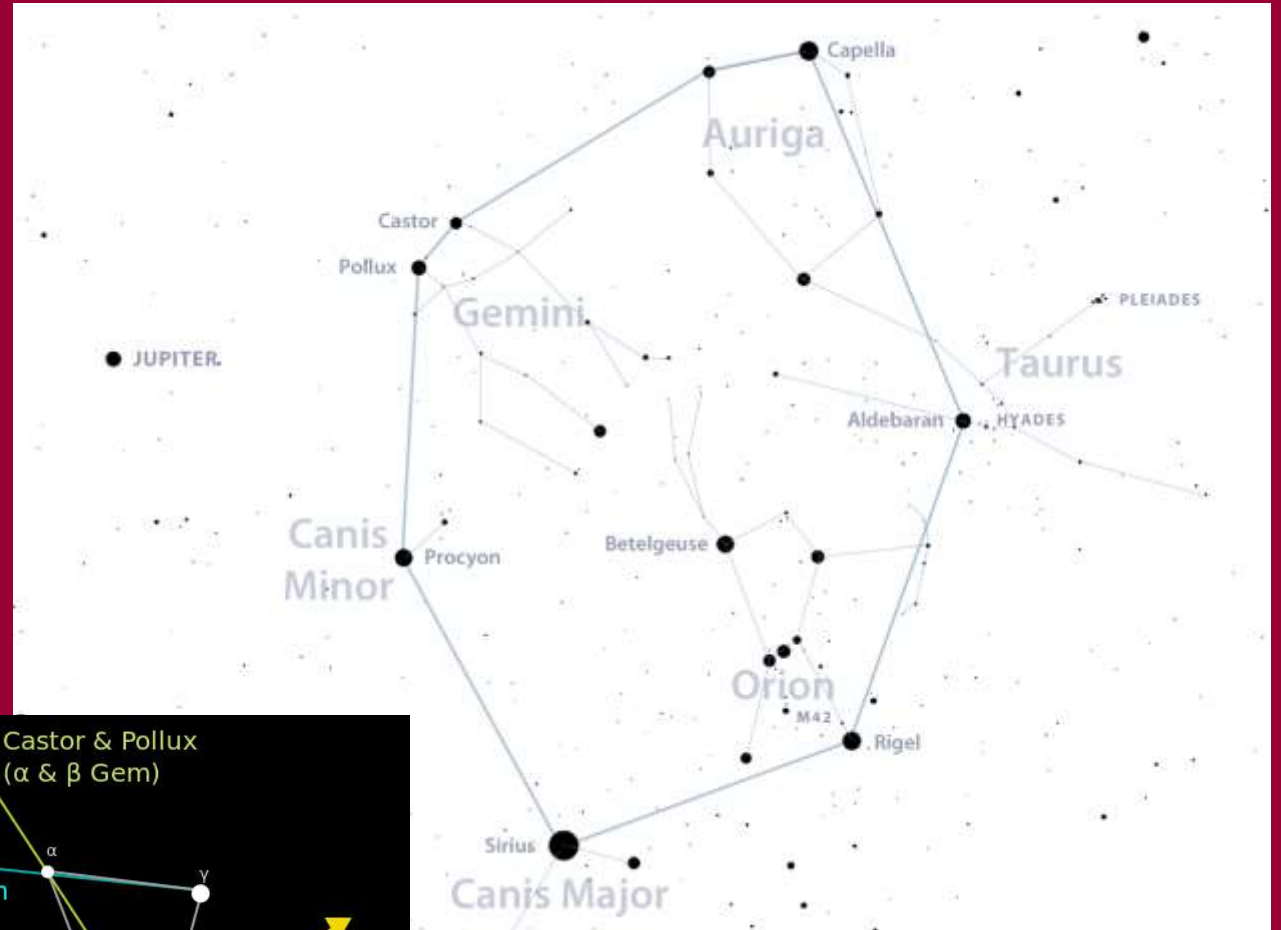
- As currently envisioned, the orbiter would cruise around the Pluto system, using gravity assists from the dwarf planet's largest moon, Charon, to slingshot it here and there
  - First, limited by fast flyby, New Horizons mapped only 40% of Pluto's geology and surface composition at good resolution
  - Second, Pluto is a dynamic world, with a roiling nitrogen glacier, avalanches, and a complex and time-variable atmosphere
  - Third, new kinds of instrumentation needed to answer the many questions that were raised
- The mission timeline:
  - Launch in December 2028
  - Jupiter gravity-assist in October 2030
  - Braking into Pluto orbit in 2046 - 2059



# Video – Winter Constellations

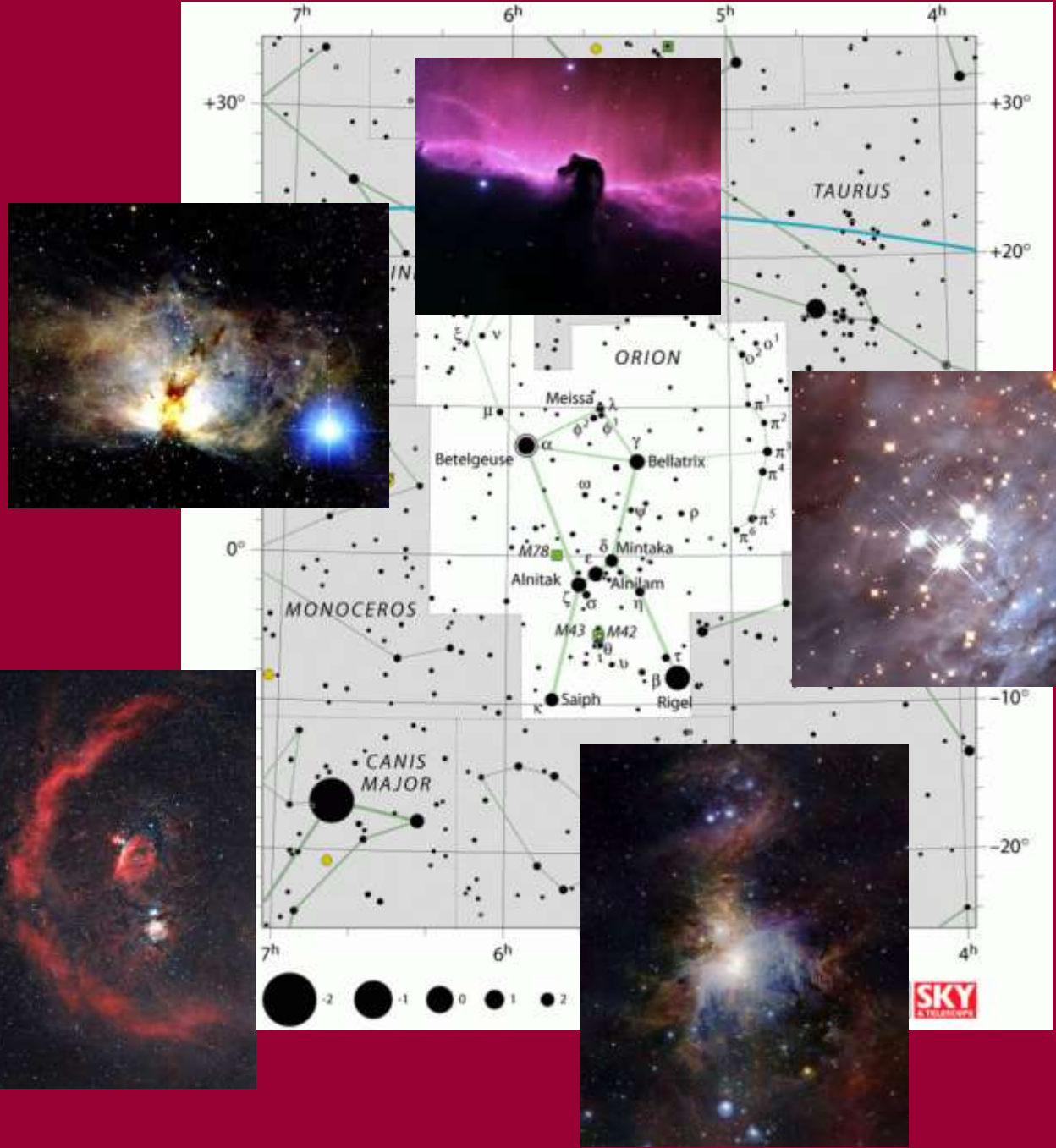
# Constellations

- The Winter Circle or Hexagon
- Orion can be used to locate several Winter constellations
- Will explore three this evening
  - Orion, Hunter
  - Canis Minor, Little Dog
  - Eridanus, River



# Orion: “The Hunter”

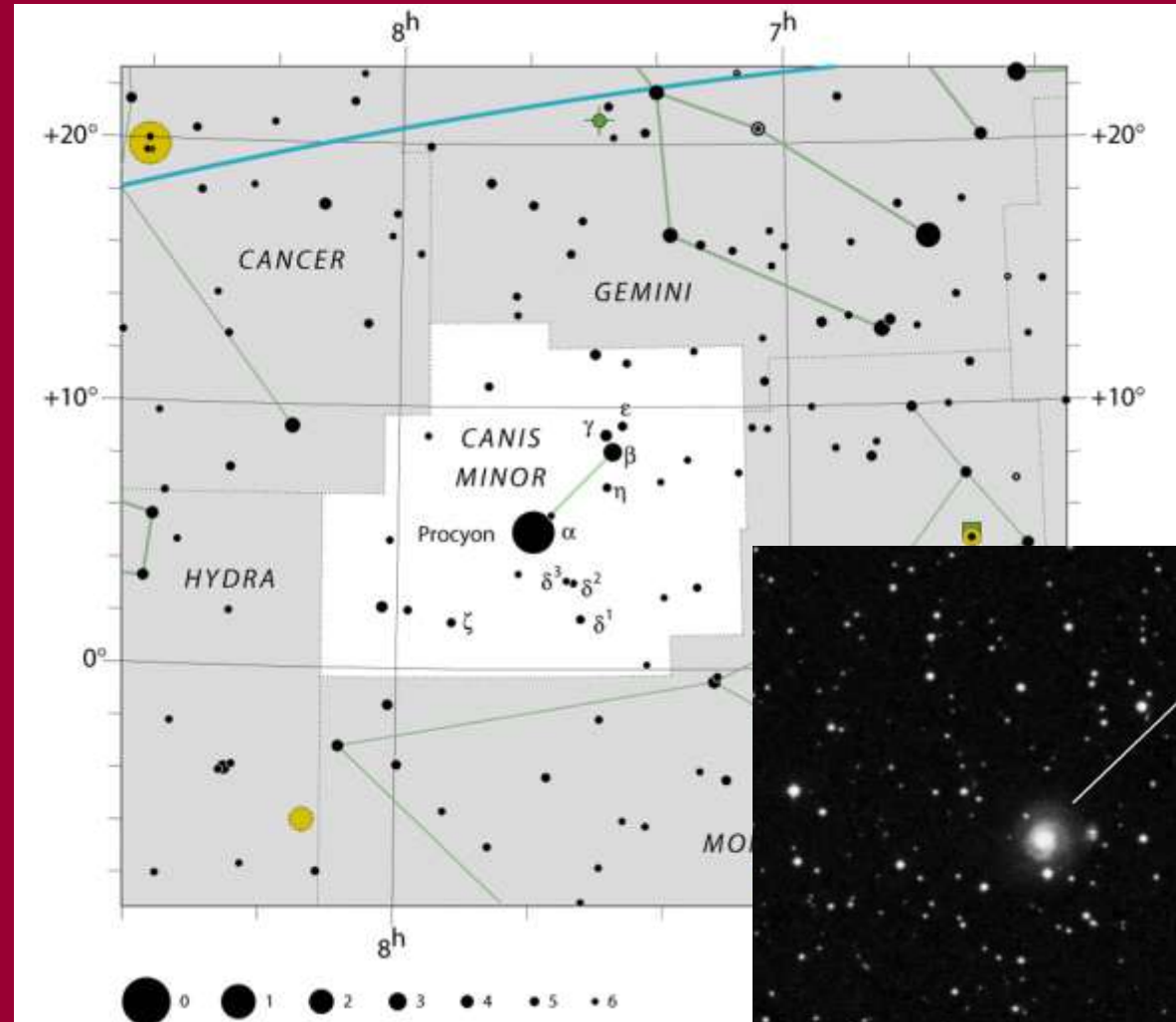
- Represents the mythical hunter Orion; a treasure chest of objects
- Lots of multiple stars:
  - Trapezium Cluster
  - Rigel
  - Iota, Eta, Sigma
- Deep Sky Objects:
  - Orion Nebula (M42)
  - The Flame (NGC 2024)
  - The Horsehead
  - Barnard’s Loop





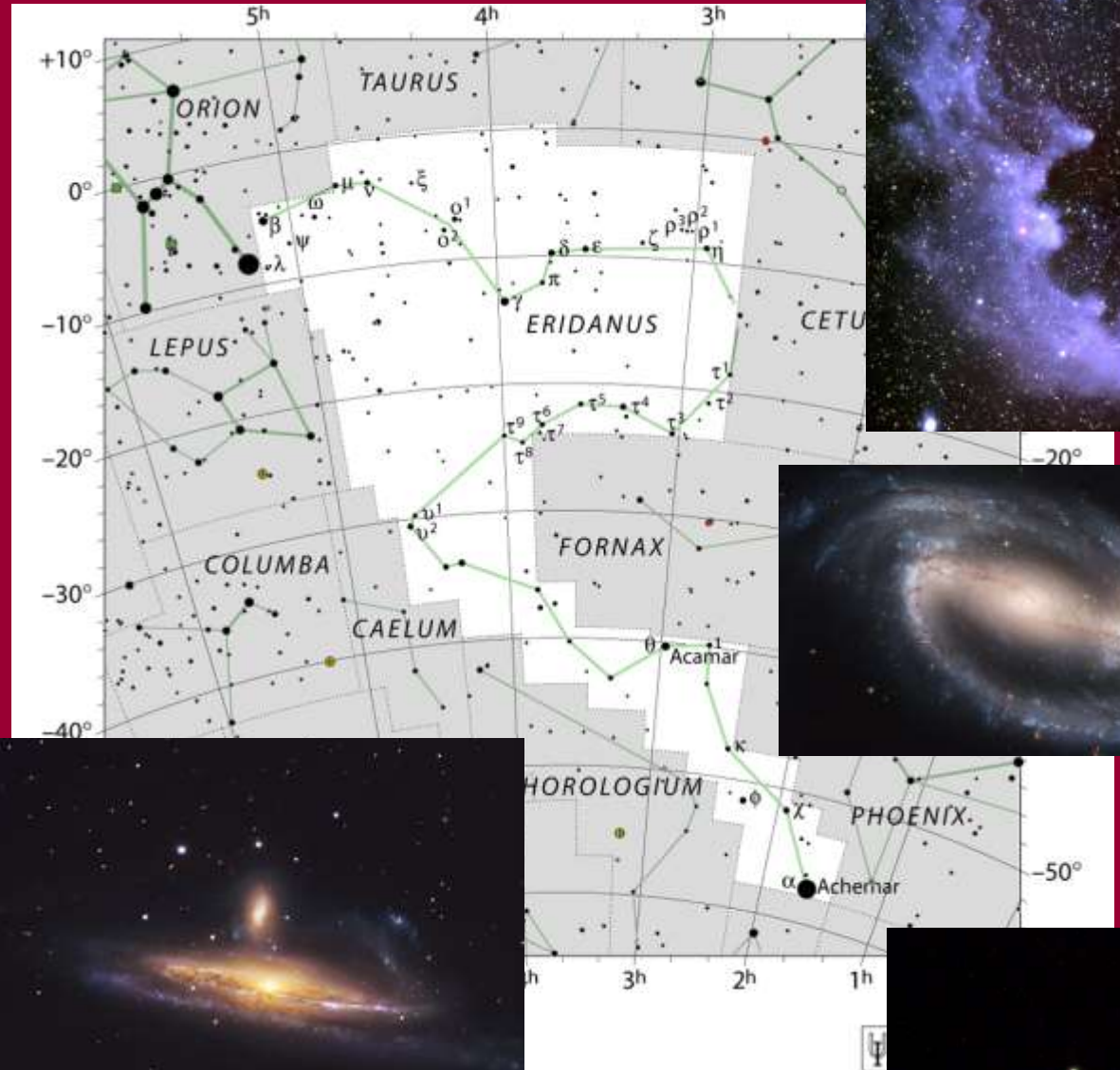
# Canis Minor: “The Little Dog”

- Canis Minor is most commonly identified as one of the dogs following Orion, the hunter in Greek myth
- Procyon is the brightest star in Canis Minor and the seventh brightest star in the sky
  - Apparent magnitude of 0.34
  - 11.41 light years away
  - 13th nearest star system
- Contains a number of deep sky objects; all very faint and difficult to observe; brightest is the spiral galaxy NGC 2485, with an apparent magnitude of 12.4



# Eridanus: “The River”

- Represents the celestial river; depicted as a river flowing from the waters poured by Aquarius
- Acamar, Theta Eridani: binary star; primary 3.2 mag; secondary 4.3; 8.3 arc sec
- IC 2118, The Witch Head Nebula is a faint reflection nebula in Eridanus
- Several interesting galaxies:
  - NGC’s 1531 and 1532; interacting
  - NGC 1300 (Barred Galaxy)



# Meteor Showers

- Some of the best are listed below along with dates when the most meteors are visible
  - Quadrantids, January 3-4 (Comet 2003 EH1)
  - Lyrids, April 22-23 (Comet Thatcher)
  - Perseids, August 12-13 (Comet Swift-Tuttle)
  - Orionids, October 20-21 (Halley's Comet)
  - Leonids, November 17-18 (Comet Tempel-Tuttle)
  - Geminids, December 13-14 (Asteroid 3200 Phaethon)
  - Ursids, December 23-24 (Comet 8P/Tuttle)
- The name of each shower refers to the constellation to which the meteors trace their apparent paths



# Upcoming Events

- Next Meeting: January 27, 2020
  - Primary Topic: TBD
- Meteor Showers:
  - Geminids