Catching the Serpent by the tail

Michael L Allen
mlfa.astro@gmail.com

Palouse Divide Lodge Star Party 2018
Outline

1. Serpens Cauda in the sky
2. Mythological Serpens
3. Stars in the tail of Serpens
4. Star clusters
5. A colorful (!) planetary nebula
Serpens in the sky (from constellation-guide.com)
Albrecht Dürer (1515); first printed star chart
Johann Bayer (1603); first atlas-style charts
Johannes Hevelius (1690)
John Flamsteed (1776)
Alexander Jamieson (1821)
History of Serpens

- An old constellation; one of Ptolemy’s 48 (ca. 150 CE)
- Serpens is intertwined with Ophiuchus, the Serpent-tamer
- Few historical astro-cartographers, like Bayer, showed Serpens as separate from Ophiuchus
- Most considered Serpens and Ophiuchus as one constellation
- The “official” constellation boundaries were set in the 1920s by Eugène Delporte; he divided Serpens into two parts, Serpens Caput (head) and Serpens Cauda (tail)
- Head and tail are separated by Ophiuchus
- Ranks 23rd by size of the 88 constellations
Mythological Serpens

- In the Greek & Roman tradition, the serpent is the symbol of rebirth (because it sheds its skin)
- The Romans identified the serpent variously with many different figures, e.g., Aesculapius the healer; Phorbas who rid the island of Rhodes of snakes; Cadmus, founder of Thebes and slayer of Draco, who transformed into a snake at the end of his life
- The ancient Arabs: the Pasture; the stars of Hercules’s club were the sheep
- The ancient Hebrews: the Serpent
- In China, star charts made during the Han Dynasty (206 BCE - 220 CE) identified the stars of Serpens as forming a wall enclosing the celestial marketplace, Tianshi
Stellar Serpens (from Stellarium)
I will speak only of Serpens Cauda (the tail)

Guide star: the tip of the Serpent’s tail (Bayer’s star $\theta$ Serpentis) has the proper name Alya, from the Arabic for the tail of a sheep

Double stars:

<table>
<thead>
<tr>
<th>Name</th>
<th>Magnitudes</th>
<th>Separation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alya ($\theta$ Ser)</td>
<td>4.6 / 4.9</td>
<td>22 arcsec</td>
</tr>
<tr>
<td>HIP 92027 (Struve 2375)</td>
<td>6.3 / 7.9</td>
<td>2.5 arcsec</td>
</tr>
<tr>
<td>FR Ser (Struve 2342)</td>
<td>6.5 / 9.6</td>
<td>33 arcsec</td>
</tr>
</tbody>
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Star clusters

- A pair of open clusters: IC 4756, and NGC 6633
- Tweedledee
  - Appeared in 1908 as Index Catalog # 4756
  - Visible to the unaided eye
  - aka Graff’s Cluster - presumably (?) named for Kasimir Graff (1878-1950), who accurately measured steller brightnesses and colors
  - aka Secret Garden Cluster
  - About 1° diameter - about a half-dozen stars brighter than 7\(mag\) - 50-100 stars brighter than 10th magnitude
  - 1300-1500 light years distant
Star clusters

- **Tweedledum**
  - Appeared in 1888 as NGC # 6633
  - aka Captain Hook Cluster, aka Wasp-Waist Cluster, both names by Stephen James O’Meara
  - About $1^\circ$ diameter - perhaps a dozen stars brighter than 10th magnitude - perhaps 50 stars fainter than 10th
  - 1000 light years distant

- **Flying unicorn cluster**
  - Appeared in 1888 as NGC # 6709
  - About $1/4^\circ$ diameter - a few dozen stars at about 10th mag
  - 3900 light years distant
Tweedledee (IC 4756; FOV = 3°; DSS2/blue)
Tweedledum (NGC 6633; FOV = 2°; DSS2/blue)
Flying unicorn (NGC 6709; FOV=1°; DSS2/blue)
Blue Racquetball Nebula, aka NGC 6572, Emerald Nebula, Turquoise Orb Nebula, Planet Krypton Nebula

Magnitude 10.8 (Simbad), blue to the eye with large aperture and dark sky

Discovered in 1825 by Friedrich von Struve

Young, compact (∼10 arcsec diameter), isolated, hence relatively high surface brightness

Roughly 4900 light years distant (b/w 1000 and 6000)
Blue Racquetball (Hubble Space Telescope)
A little west of Theta (θ), in the tail of Serpens, is a beautiful swarm of little stars, upon which a field-glass may be used with advantage. The star θ itself is a charming double, just within the separating power of a very powerful field-glass under favorable circumstances, the component stars being only about one third of a minute apart.

Do not fail to notice the remarkable subdivisions of the Milky-Way in this neighborhood. Its current seems divided into numerous channels and bays, interspersed with gaps that might be likened to islands, and the θ star appears to be situated upon one of these islands of the galaxy.

- Garrett P. Serviss, “Astronomy with an opera-glass” (1910)
List of sources

Aladin Lite (aladin.u-strasbg.fr/aladin.gml)

Richard Hinckley Allen, Star lore - their names and meanings (1899; reprinted by Dover 1963)

Constellation Guide (constellation-guide.com)

Deep Sky Forum (deepskyforum.com)

Ian Ridpath’s Star Tales (ianridpath.com)

Linda Hall Library (http://lhldigital.lindahall.org/cdm/ref/collection/astro_atlas/id/37)

Simbad database (simbad.harvard.edu)

Stellarium desktop planetarium software (stellarium.org)

Wikimedia Commons (commons.wikimedia.org)