What’s Up, Doc? †
December 2023
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This document tells you what objects are visible this next month for many of the Astronomical League Observing Programs. If you are working on one of the more advanced observing programs, then I assume that you are also probably tracking where your objects are all the time. I concentrate on the more common and starter level programs. This information is based on 9 PM Central Time.

**Naked-Eye Observing Programs**
- **Meteors** – any night, any time, anywhere, the darker the sky the better. The major meteor showers are shown in **BOLD** (times are local time in Houston, TX):
  - **Geminids**
    - Duration: 12/7 to 12/17
    - Maximum: 12/13
    - Type: Major
  - **Ursids**
    - Duration: 12/17 to 12/26
    - Maximum: 12/22
    - Type: Moderate
  - **Coma Berenicids**
    - Duration: 12/12 to 1/23
    - Maximum: 12/20
    - Type: Minor
  - **Sigma Hydrids**
    - Duration: 12/3 to 12/15
    - Maximum: 12/11
    - Type: Minor
  - **Monocerotids**
    - Duration: 11/27 to 12/17
    - Maximum: 12/8
    - Type: Minor
  - **Dec Phoenicids**
    - Duration: 11/28 to 12/9
    - Maximum: 12/6
    - Type: Minor
  - **Puppids/Velids**
    - Duration: 12/1 to 12/15
    - Maximum: 12/6
    - Type: Minor

- **Constellations, Northern Skies** – any night, any time, anywhere, the darker the sky the better.
  - Last Chance this cycle: Hercules, Scutum, Aquila, Microscopium.
  - Transit: Cepheus, Cassiopeia, Andromeda, Pegasus, Pisces, Aquarius, Cetus, Phoenix, Sculptor.
  - New arrivals: Auriga, Taurus, Orion, Eridanus, Fornax, Phoenix.

**Binocular Observing Programs**
- **Binocular Messier** – Monthly highlights include:
  - Easy – 2, 15, 27, 29, 31, 34, 35, 36, 37, 38, 39, 42, 45, 50, 52, 103.
  - Medium – 30, 33, 78, 79, 81, 82.
  - Hard – 1, 32, 56, 71.
  - Big Binoculars – 72, 77, 110.

- **Deep Sky Binocular** – Monthly highlights include:
  1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 38, 47, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60.

**Other Observing Programs**
- **Messier**
  - In addition to those listed under Binocular Messier, check out: 43, 57, 74, 76.

- **Caldwell**
  1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 22, 23, 24, 25, 27, 28, 30, 31, 33, 34, 37, 39, 41, 42, 43, 44, 46, 47, 49, 50, 51, 55, 56, 57, 62, 63, 65, 67, 70, 72.

- **Double Star**
  2, 3, 5, 6, 7, 8, 10, 13, 16, 19, 21, 23, 24, 27, 28, 30, 31, 33, 34, 36, 38, 42, 44, 46, 47, 48, 49, 50, 53, 55, 56, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 88, 89, 90, 95.
Other Observing Programs (continued)

**Planetary** – These are the tasks that can be done this month:
- Mercury, Venus, Mars, and Ceres are not visible in the evening sky.
- Sun – Any clear day is a good time to get those sunspots. Sunset is 1723 at mid-month.
- Moon: The Maria requirement can be done any time the moon is visible. Look after 12/19 and before 12/5 for the best views.
- The Highlands requirement can be done at the same time.
- The Crater Ages requirement is best done on 12/18 and 12/19.
- The Scarps requirement is best done on 12/20.
- Occultations occur all the time, the bright ones can be found on the internet. Objects disappear on the East side of the moon.

**Asteroids** – Course Plotting and Measuring Movement requirements can be done at any time on any asteroid. See above to identify the bright ones this month.
- Jupiter is in Aries and is up all evening mid-month.
- Saturn is in Aquarius and sets at 2348 mid-month.
- Uranus is in Aries and is up all evening mid-month.
- Neptune is in Pisces and is up all evening mid-month.
- Pluto, the Dwarf Planet, is in Sagittarius and sets at 2111 mid-month.

**Lunar**
- New Moon – 12/12 at 0623 ST
- Key timings are indicated below:
  - 4 days, 12/16
  - 7 days, 12/19
  - 10 days, 12/22
  - 14 days, 12/26
- Old moon in new moons arms – before 0623 ST on 12/15, 10 % illuminated. (72 hr > New)
- New moon in old moons arms – after 0623 ST on 12/9, 10 % illuminated. (72 hr < New)
- Waxing Crescent – before 0623 ST on 12/14, 3 % illuminated. (40 hr > New)
- Waning Crescent – after 0623 ST on 12/10, 3 % illuminated. (48 hr < New)

**Other Astronomical Events this month:**
- 12/2 – Phoenicids Meteor Shower
- 12/4 – Mercury at Greatest Elongation
- 12/6 – Neptune Stationary
- 12/7 – Puppid-Velids Meteor Shower
- 12/8 – Mercury Dichotomy
- 12/9 – Sigma Hybrids Meteor Shower
- 12/9 – Monocerotids Meteor Shower
- 12/12 – Mercury Stationary
- 12/14 – Geminids Meteor Shower
- 12/16 – Coma Berenicids Meteor Shower
- 12/17 – Neptune at Eastern Quadrature
- 12/22 – Ursids Meteor Shower
- 12/31 – Jupiter Stationary

* - Although these clubs are not detailed in this “What’s Up Doc?” handout, you can get information on many of their objects by using the “What’s Up Tonight, Doc?” spreadsheet (version 4.1). To get your copy, talk to the Doc, Aaron Clevenson, by sending an email to aaron@clevenson.org. It is also available on the club website.

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