

Fundamentals of Stargazing – Month 7 Worksheet

Project #1: Locate the star delta Cephei in the constellation Cepheus (see the Deep Sky section, page 4-5). This is the prototypical “Cepheid variable”, a type of star that astronomers use to measure the distance to other galaxies. Try to follow its change in brightness from magnitude 3.6 to 4.3 over its 5-day period. You can follow delta’s pulsations by comparing it to zeta Cephei (magnitude 3.4), and epsilon Cephei (magnitude 4.3). You can use binoculars, a telescope, or just your unaided eyes.

Project #2: If you have very dark sky, when the Moon is not present in September and early October, look for the zodiacal light 2-3 hours before sunrise in the western sky.

Project #3: Use your telescope to identify some of the major lunar mountain ranges described in the “Solar System” section this month including the Apennine, Alps, Caucasus, and Jura mountains.

Project #4: Using the simple formula on page 4 of the “Observing” section, calculate the limit of resolving power of your telescope or binoculars. If you have a telescope, see how well you can resolve the star Alpha Herculis, also called Rasalgethi (see Deep Sky, Month 4). It is spaced by 4.6”. With binoculars, see if you can resolve the star Albireo at the nose of the constellation Cygnus. It is spaced by 35”.

Project #5: Examine the Trifid Nebula (Deep Sky, Month 6) in the constellation Sagittarius. It consists of three types of nebulae: emission, dark, and reflection. Most of the light comes from the reddish-pink emission nebulae, but some comes from the blue-white reflection nebula. (You can’t see the colors visually through a telescope... the emission and reflection nebulae will look grey). But if you have a light pollution filter such as a UHC filter, examine the nebula with and without the filter with your telescope. With the filter, the contrast of the emission nebula will be enhanced while the reflection nebula will be much fainter. So the nebula should appear more contrasted, but slightly smaller, with a filter than without a filter.

Project #6: See as many deep-sky sights on this month’s tour as possible. Some of the most appealing objects on this month’s tour are:

- Star clusters NGC 457 and NGC 7789 in Cassiopeia (northern hemisphere only)
- Herschel’s “Garnet Star”, mu Cephei (northern hemisphere only)
- Globular cluster NGC 6752 in Pavo (southern hemisphere only)
- Sigma Octanis (southern hemisphere only)