MORAVIAN UNIVERSITY FALL OBSERVING LOG

Did I See It?	Object (Constellation)	Description
Moon	**Moon**	**Know the phase if it's visible or die.**
Planet	**Mercury**	**Not Visible**
Planet	**Venus**	**Very low in the WSW by mid-September**
Planet	**Mars**	**Not Visible**
Planet	**Jupiter**	**Not Visible**
Planet	**Saturn**	**Visible low in the ESE by mid-September**
Planets	**Uranus and Neptune**	**Uranus, Not Visible; Neptune, ESE mid-Sept.**
Star	**North Star/Polaris**	**Find it using the two pointer stars of the Big Dipper, Dubhe and Merak.**
Multiple Star Systems	• **Alcor/Mizar (Ursa Major) The entire system is a sextuplet** • **Epsilon (ε) Lyrae (double-double in Lyra)**	• **Mizar/Alcor: +2.3/+4 (Mizar) /+4.0 (Mizar, Alcor) mag., 86 ly distant, 11' 49" sep. separation.** • **Binocular double with a nice surprise at 200 power. Both stars split into doubles—difficult. Epsilon[1]: +4.7/+6.2 mag., 161 ly, 2.6" separation, Epsilon[2]: +5.1/+5.5 mag., 161 ly, 2.3" separation**
Double Stars **Abbreviations** **Byo: Billion years old** **Myo: Million years old** **Kyo: Thousand years old** **ly: light years** **M: Messier Object** **NGC: New General Catalog** **": seconds of arc** **': minutes of arc**	• **95 Herculis (Hercules)** • **Zeta (ζ) Lyrae (Lyra)** • **Albireo, β Cygni (Cygnus)** • **17 Cygni (Cygnus)** • **61 Cygni (Cygnus)** • **Gamma (γ) Arietis (Aries)** • **Eta (ε)Cassiopeiae** • ***Sigma (σ) Cassiopeiae*** • **Delta (δ) Cephei** • **Nu (ν)Draconis**	• **95 Hercules: +4.8/+5.2 mag., 412 ly, 6" separation** • **Zeta Lyrae: +4.36/+5? mag., 152 ly, 44" separation** • **Albireo: +3.2/+5.8 mag., 430 ly distant, 35.3" sep. Best color contrast for a double star in the heavens.** • **17 Cygni: +5.1/+9.3 mag., 69.2 ly distant, 26.3" sep.** • **61 Cygni: +5.2/+6.1 mag., 11.41 ly distant, 31" sep.** • **Gamma Arietis: +4.58/+4.64, 164 ly, 7.6" separation** • **Eta Cass.: +3.44/+7.51 mag., 19.4 ly, 10.1" sep.** • ***Sigma Cass.: +5.0/+7.1 mag., 5000 ly, 3.1" sep.*** • **Delta Cephei: +6.3/+7.5 mag., 887 ly, 40" sep.** • **Nu Draconis: +4.87/+4.89 mag., 98.9 ly, 62" sep.**
Visual/Binocular Open Clusters	• **Ursa Major Cluster** • **M45 Pleiades (Taurus) best at low magnifications**	• **UMC: Sirius/Big Dipper minus Dubhe and Alkaid. The sun is moving through it right now.** • **M45: New open cluster, 440 ly, 50-100 Myo, 1000+ stars, notice all of the blue stars.**
Open Clusters	• **M11 (Wild Duck)** • **M29 (Cooling Tower Cluster)** • **M39 (Pyramid Cluster)** • **M52** • **M103** • **NGC 457 (ET Cluster)** • **Double Cluster of Perseus also called NGC 869/884 NGC 869 NGC 884** • **NGC 752**	• **M11: Scutum, +5.8, 6,120 ly, 316 Myr, 2900 stars** • **M29: Cygnus, +7.1, 5,240 ly, 13.2 Myr** • **M39: Cygnus, +4.6, 1,010 ly, 278.6 Myr** • **M52: Cassiopeia, +7.3, 4,600 ly, 158.5 Myr** • **M103: Cassiopeia, +7.4, 9,400 ly, 12.6 Myr** • **NGC 457: Cassiopeia, +6.4, 7,900 ly, 21Myr** • **Very new double cluster. Visible with unaided eye from suburbs, more than 300 blue super giants in each. NGC 869: +3.7, 7,500 ly, 12.8 Myo, related to NGC 884 NGC 884: +3.8, 7,500 ly, 12.8 Myo, related to NGC 869** • **NGC 752: Andromeda, +5.7, 1300 ly**

Moravian University Fall Observing Log, cont.

Did I See It?	Object (Constellation)	Description
Globular Clusters	• **M13, Great Globular Cluster in Hercules.**	• **<u>M13</u>: +5.8 mag., 22,200 ly, 11.65 Byo, 300,000-500,000 stars. Like a mini galaxy, globulars may have been the "stuff" that formed galaxies. M13 is the second finest globular in the heavens. Note: The universe is estimated to be 13.8 Byr old.**
	• **M56 (Lyra)**	• **<u>M56</u>: +8.3 mag, 32,900 ly, 13.70 Byr**
	• **M92 (Hercules)**	• **<u>M92</u>: +6.4 mag, 26,700 ly, 14.2? Byr**
	• **M105 (Serpens)**	• **<u>M105</u>: +5.8 mag, 24,460 ly, 10.62 Byr**
	• **M15 (Pegasus)**	• **<u>M15</u>: +6.3 mag, 33,000 ly, 12 Byr**
	• **M2 (Aquarius)**	• **<u>M2</u>: +6.5 mag, 55,000 ly, 12.5 Byr**
Planetary Nebulae	• **M57 Ring Nebula (Lyra)**	• **<u>M57</u>: +8.8 mag., 2300 ly, 7Kyo. The most prominent planetary nebula. IT LOOKS LIKE A SMOKE RING. It was created when a dying star expelled its outer layers of gas. A white dwarf lies at its center; its UV light causing the ring to fluoresce (glow).**
	• **M27, Dumbbell Nebula, also called the Appole Core Nebula (Vulpecula)**	• **<u>M27</u>: +7.5 mag., 1360 ly, 10Kyo. One of the finest planetary nebulae in the sky. It is about 10,000 years old. The largest white dwarf star discovered (48,000 miles) lies near its center about half the diameter of Jupiter. It is visible, but very faint in bright moonlight.**
Nebula	**M17, The Swan Nebula. It is also called the Omega Nebula (Sagittarius)**	**<u>M17</u>: +6.0 mag., 5500 ly, 1Myo. It is a region of ionized (glowing) hydrogen gas. Through a telescope, it has a distinctive swan like appearance under clear, moonless conditions. Star formation is occurring here.**
Galaxy	**M31, Great Andromeda Galaxy (Andromeda)**	**<u>M31</u>: +3.44 mag., 2.5Mly, 10Byo. Largest galaxy of our local group with about 600 billion to one trillion stars. For most individuals, it is the most distance object that can be seen with the unaided eye. A major collision with another galaxy occurred about 8 Byr ago. The Andromeda and Milky Way galaxies will collide in about 3.45 Byr, forming a super galaxy.**
Satellite Galaxies	**Andromeda Galaxy Satellites**	
	• **M32**	• **<u>M32</u>: +8.1 mag., 2.5 Mly, dwarf elliptical/little gas or dust and with no current star formation happening. A supermassive black hole lies at its center.**
	• **M110**	• **<u>M110</u>: +8.9, 2.7 Mly, dwarf elliptical/NO supermassive black hole at its center**
Other		

July 30, 2024