Mt. Helix Park Foundation Astronomy Night – July 15, 2017
San Diego Astronomy Association

TONIGHT'S SKY

A Note about Light Pollution
The atmosphere above us contains particles of moisture, dust, and tons of unnatural pollutants. Lights on the ground shine upward and are scattered by these particles in the air. The result is a bright, dull glow in the sky that hides the stars behind it. We look through this garbage when we try to see the sky. It makes the night look like a dark brown, cloudy day. It destroys not only our ability to see the sky, but it interferes with our natural circadian rhythm, and changes the chemistry of the atmosphere. And, the effect extends to all plants, animals, insects, etc. Light pollution and air pollution are very destructive, and will limit our ability to see the sky tonight. For more information, see the website for the International Dark Sky Association at http://www.darksky.org.

How to stay out of trouble - Star Party Etiquette
White light flashlights should be used for emergencies only. Red light preserves night vision.
Please do not use flash cameras or cell phone cameras without asking the astronomer first.
Please don't take food and beverages to the telescopes.
Please, no smoking around the telescopes.
Each astronomer may have a unique observing plan, so visit all of the available instruments.
Please, ask questions. We may only have a few answers, but this stimulates good conversation.
Come to the party with an open mind, and discover a few new ideas.

The Mystery of Astronomical Catalogs, NGC and Messier
Astronomers for at least the last 500 years or so, have observed and cataloged their findings. This leads to one of the most confusing aspects of modern astronomy, the catalogs. Most of the bright objects we will see tonight are listed in many catalogs with many different names. The two most common catalogs for casual observing are:

1. The Messier Catalog – This is a list of items that Charles Messier found, that were NOT comets! He was a French comet hunter in the late 18th century, and did not want to be bothered by all those nebulas, clusters, and feint fuzzies. So he cataloged them to make sure he didn't waste any more time on something that was NOT a comet.
2. The NGC list – The New General Catalog is a resurrection and large enhancement of the General Catalog created by William Herschel, in the late 18th century. The NGC is very comprehensive and is usually indexed with numbers like NGC1976, the Orion Nebula, which is also known as Messier 42 (M42).
3. Solar system objects (Sun, Moon, planets, and moons of other planets) are not listed with numbers in the Messier or NGC catalogs. They move around too much!

Suggested Computer Programs and Apps for Reference

Stellarium	Free planetarium program for all desktops. http://www.stellarium.org/
Google Sky Map	Free for Android devices on the Android App Store
Sky Safari 5	Professional planetarium and telescope control for IOS and Android

A FEW NAKED EYE OBSERVATIONS

Observation of the visible Universe is primarily accomplished with the naked eye, under clear dark skies, as it has been for thousands of years.

Constellations:

1. Tonight: Sagittarius, the “Tea Pot” will be in the South-Eastern sky marking the Southern portion of the Milky Way. You will not see the Milky Way from Mt. Helix. There is WAY TOO much light pollution to see it from any urban and most suburban areas. If you could, you would see a classic tea pot structure with a handle on the left, pointed lid on top, and a spout on the right, complete with lots of steam flowing up across the Summer sky. Yes, THAT is the Milky Way. And for an added treat, this year the planet Saturn is in the upper right portion of Sagittarius.
2. Clearing the way for Sagittarius, just to the West, is the constellation Scorpius. (Note this is NOT Scorpio, the Zodiac Sign). The head of this giant monster is marked by the bright, Orange star Antares where you would expect to see the eye. The tail and stinger curl down and to the East between Sagittarius and the southern horizon.
3. The Summer Triangle: This is not a constellation, but it is a very important figure in the Summer sky. Just East of the zenith, you will see a very bright star, Vega. The triangle is formed by the stars Vega, Deneb, and Altair. It contains the constellation Cygnus the Swan (otherwise known at the Northern Cross), and has been used for centuries to navigate in the Northern Hemisphere. You will also find the double star Albiero here.
4. Just West of Vega you will see the trapezoid shape which is the heart of the constellation Hercules, and contains the brightest globular cluster in the northern sky, M13. Ask the astronomers about these naked eye figures in the sky.

Planets:

1. Jupiter: This is the largest planet, and often the brightest when Venus is not in the sky. It will be in the constellation Virgo in the South-West sky, near another very bright star, Spica. Try to spot this before you view it in a telescope.
2. Saturn: The second largest planet in our Solar System, will be visible above and to the right of the constellation Sagittarius. Again, this will be visible with the naked eye. Note the color of the planets. Also note whether they are “twinkling” more less than the bright stars.

BINOCULAR HIGHLIGHTS

Jupiter		PL	12:57	-5° 18´	-1.96		Vir	Jupiter
Saturn		PL	17:26	-22° 06´	1.08		Oph	Saturn
NGC6656	M22	GC	18:36	-24° 06´	5.2	32.00	Sgr	
NGC6121	M4	GC	16:24	-27° 29´	5.4	36.00	Sco	
NGC5904	M5	GC	15:19	2° 05´	5.7	23.00	Ser	
NGC6205	M13	GC	16:42	36° 28´	5.8	20.00	Her	Hercules Globular Cluster

SUGGESTED TELESCOPE VISUAL OBSERVATIONS

Jupiter		PL	12:57	-5° 18´	-1.96		Vir	Jupiter
Saturn		PL	17:26	-22° 06´	1.08		Oph	Saturn
NGC6523	M8	NB	18:04	-25° 37´	5	45.00X30.0	Sgr	Hourglass, Lagoon Nebula
NGC6656	M22	GC	18:36	-24° 06´	5.2	32.00	Sgr	
NGC6121	M4	GC	16:24	-27° 29´	5.4	36.00	Sco	
NGC5904	M5	GC	15:19	2° 05´	5.7	23.00	Ser	
NGC6205	M13	GC	16:42	36° 28´	5.8	20.00	Her	Hercules Globular Cluster
NGC6618	M17	NB	18:21	-17° 50´	6	20.00X15.0	Sgr	Checkmark, Horseshoe, Lobster, Omega, Swan Nebula
NGC3031	M81	GX	9:56	69° 04´	7	24.90X11.5	Uma	Bode's Galaxy (Nebulae)
SAO87301		DS	19:30	27° 57´	3.1 5.1	35	Cyg	HD 183912 Beta Cyg; 6 Cyg; Albireo

VIDEO ASSISTED ASTRONOMY

Video assisted observing involves attaching a video camera to a telescope in place of the eyepiece. The camera is connected to a laptop and the image is highly processed, allowing us to see great details in dim objects under horribly polluted urban skies. We may have such a setup available tonight.