nightwatch

Newsletter of the Pomona Valley Amateur Astronomers

One never notices what has been done;
one can only see what remains to be done...

Marie Curie

CHECK OUT PVAAs YOUTUBE CHANNEL

Volume 44 Number 9 ***nightwatch*** **September 2024**

Club Events Calendar

Sep 20	**General Meeting - Dave Nakamoto "The comet that refused to die, Comet Biela" - 7:30 PM**
Sept 28	**Star Party – GMARS**
Oct 9	**Board Meeting 6:15 PM**
Oct 12	**Star Party – Cahuilla Park**
Oct 18	**General Meeting 7:30 PM**
Nov 2	**Star Party – GMARS**
Nov 6	**Board Meeting 6:15 PM**
Nov 15	**General Meeting 7:30 PM**
Nov 27	**Board Meeting 6:15 PM**
Dec 7	**Holiday Party**

PVAA Officers and Board

Officers

President ….....	Mathew Wedel	909-767-9851
Vice President ..	Joe Hillberg	909-949-3650
Secretary	position is currently open	
Treasurer	Gary Thompson	909-935-5509

Board

Jim Bridgewater (2026).....	909-599-7123
Richard Wismer(2026)	
Ron Hoekwater (2025).....	909-706-7453
Howard Maculsay (2025)……	909-913-1195

Directors

Membership / Publicity....	Gary Thompson .	909-935-5509
Outreach	Jeff Schroeder	909-758-1840
Programs	Ron Hoekwater	909-391-1943

PVAA General Meeting 08/16/24

Alex McConahay was our guest speaker for PVAA's August General Meeting. The title of his presentation was "Through Rose Colored Glasses …how filters change what we see." If you missed the meeting, you can see his presentation on the Pomona Valley Amateur Astronomers' YouTube channel.

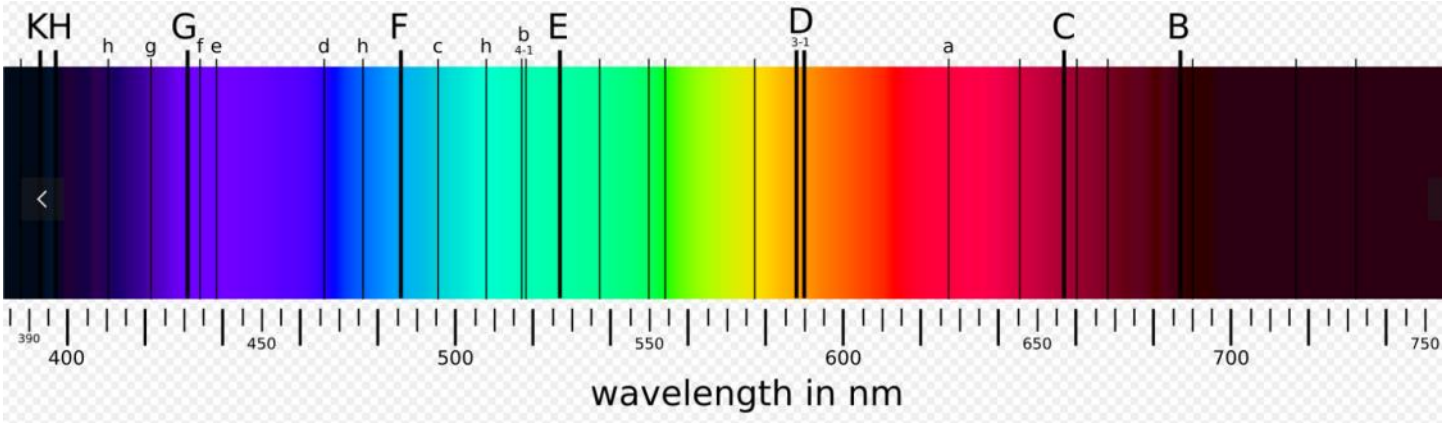
We were using the new screen setup they recently installed in the room, and we did not have the usual 2-screen setup that we always had before. The presentation was run from my laptop to the big screen and Zoom, while Alex used his laptop for the presentation notes.

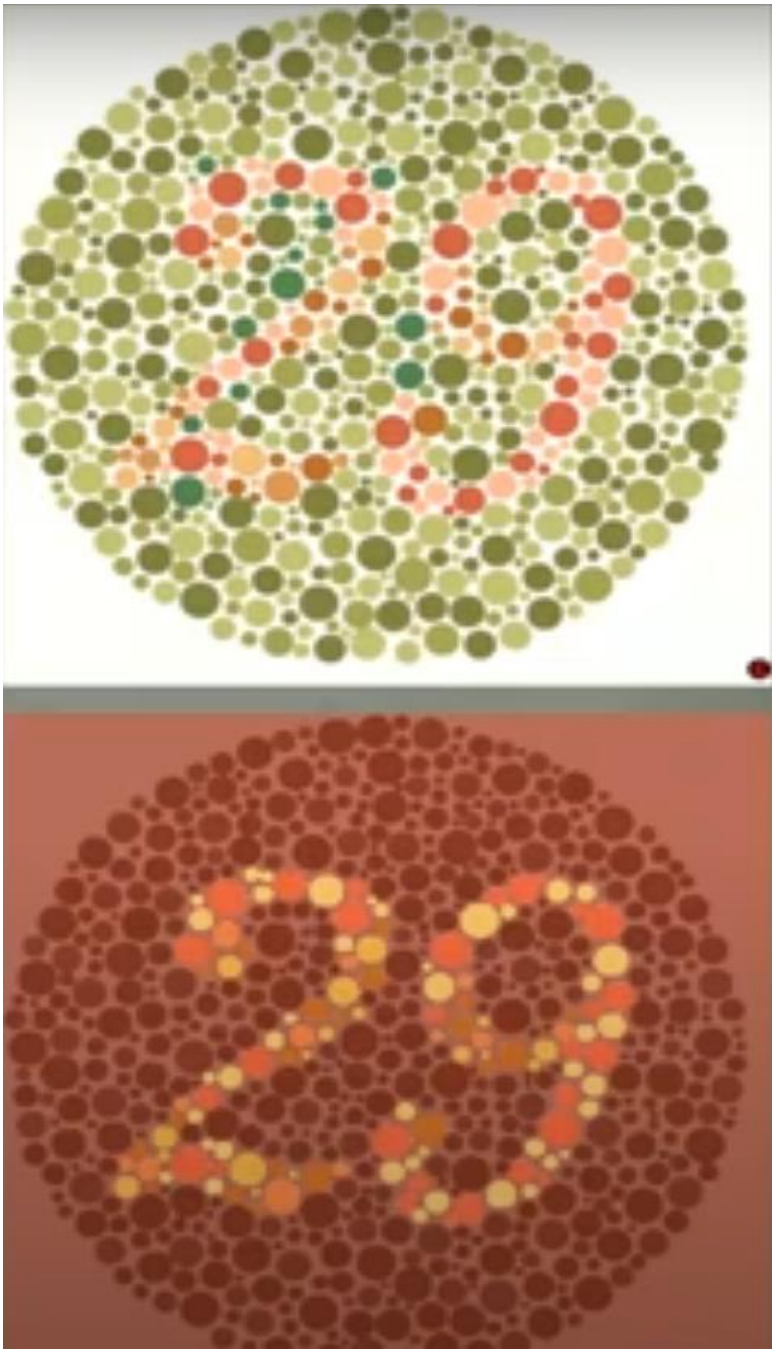
Taking a wide field picture of the Orion Nebula, the Running Man Nebula was also in the picture. Using a narrowband filter in the red wavelength, the Running Man was not visible, as it is visible in the blue wavelengths.

Isaac Newton discovered that if you use a prism to create a rainbow, a second prism placed in the rainbow would recombine the colors back into white light. Our eyes can fool us when trying to determine what color something is, as the surrounding colors can make us think we are seeing a different color. Also, different elements leave unique absorption lines. Looking at the spectrum of an element like hydrogen you can identify it in the sun from its absorption lines. Neutral density filters just reduce the amount of light passing through in all wavelengths. This is used to look at something bright like the moon.

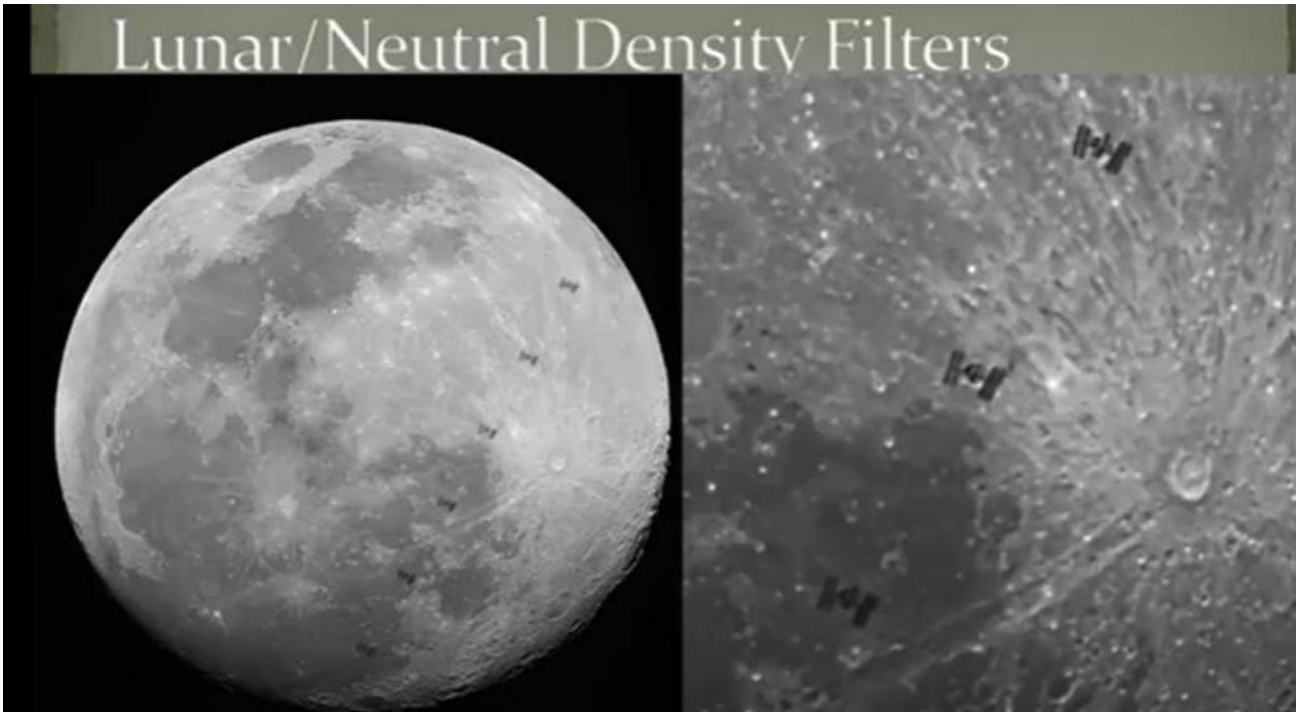
All filters cut down on light. All filters create a color cast. Alex then talked about the 'Hawthorne Effect' (Change is good): There was a study in the industrial workplace to see what a change in lighting would do. They increased the brightness of the lights, and they found that efficiency increased. They decreased the lighting and efficiency increased. They found that just making change increased efficiency for a while.

Upper-left: Narrowband red filter, upper-right: color picture, lower-left: Running Man blow-up of color picture, lower-right: The color picture in black & white. This shows you need to get the blue light to see the Running Man.





Two pictures of the same thing, the bottom using a red filter.



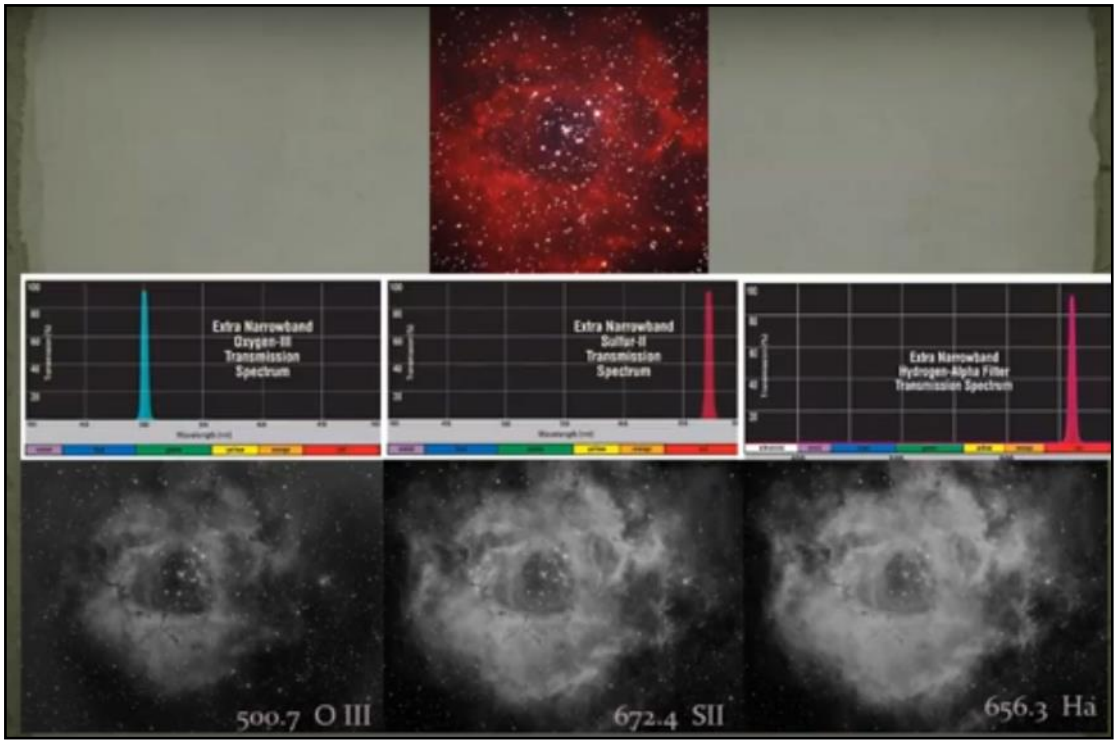
Pic by Alex McConahay

There are filters designed to block out the main light bands from city lights. These are 'light pollution reduction filters.' Many use these filters during their backyard observing. The new LED streetlights send out light using the entire white light spectrum, making it harder to eliminate the city light pollution.

Alex ended his talk describing the three main types of filters: broadband, narrowband, and line filters. Broadband lets in a 'broad band' of light. Narrowband only lets in light from a very narrow frequency like Hydrogen Alpha. Line filters let in light from multiple bands like Hydrogen Alpha, Hydrogen Beta and Oxygen III.

Try using different color filters when observing Jupiter, Saturn, and Mars and see if you notice any different details.

Gary Thompson



Rosette Nebula taken with different filters.

A Squid in September

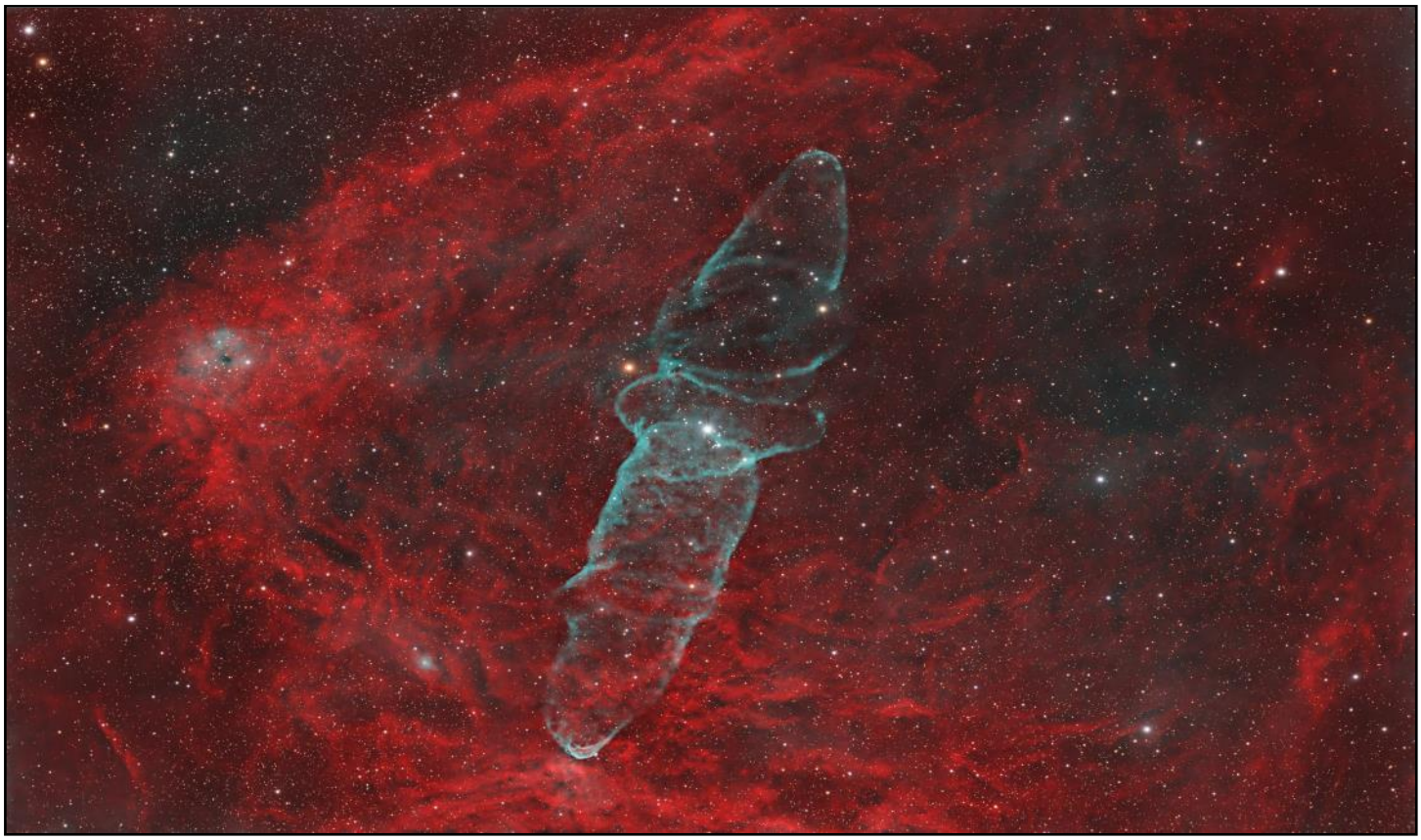
This month our camping trip was over the long Labor Day weekend from August 30 to September 2. Our usual site had been booked very early, so we used our alternate site, across the street from where we normally set up. Saturday night was fully booked, so we were surrounded by non-astronomers. Even worse, I think everyone bought their lights from 'Middle of the Sun Lighting Company'! I've never seen lights so unnecessarily bright. The lights literally blinded you when shining toward you. We had to repeatedly ask people to not shine into our site. I don't understand why people go out to enjoy nature, then ruin the night sky with excessive lighting. Fortunately, I was shooting narrowband, so the effect of lighting the night sky was mitigated, but still annoying.

I've attached two images this time, both of the same target. The first was taken from home under Bortle 7 skies and the second from the campsite under what is "supposed to be" Bortle 4 skies. It's interesting to see the difference between the two. Processing the dark site image was much easier, although still difficult.

The target is SH2-129 and OU4, the Flying Bat Nebula and Squid Nebula, respectively, in Cepheus. The Flying Bat is a large, faint, emission nebula estimated to be about 1,300 light years away. The Bat covers an area of more than 2.5 degrees of the sky (about 5 times the size of the moon) based on the region covered by the image. It's hard to say what is illuminating the Bat, but I suspect at least part is illuminated by stars embedded on the left side of the image. The Squid is the green-blue planetary nebula in the center of the image, estimated to be at the same distance as the Bat. It's one of the most extensive planetaries known, spanning about 50 light years. It's also a very recent discovery, having been found in May 2011, by a French amateur astronomer, Nicolas Outters. Looking for a target, he noticed that not too many Sharpless objects had been photographed and he settled on the Flying Bat. He shot in narrowband and was able to see the Bat in H-alpha and S-II, although faintly. When he looked at the O-III image, there was a very faint, odd, rectangular object in the middle that was not visible in the other colors. He took more photos using an even narrower bandpass filter and found the never-before-seen Squid, which he named.

My first image of the month is the one shot from home. It's an HOO image where the H-alpha frames are mapped to the red channel and the O-III frames are mapped to the green and blue channels. The shot is a combination of 38

frames shot through the H-alpha filter and 74 frames through the O-III filter, all frames being 15-minute exposures, for a total of 28 hours. Since I hadn't taken 15-minute exposures with this camera before, I took 8 dark frames during the day for calibration along with 15 flat and dark flat frames. I then followed my typical processing workflow. After stacking each set of frames, I removed a gradient in the O-III stack and applied deconvolution to both stacks. After separating the stars from the background and nebulae, the stars were stretched to the point where they would stand out in the image but not overwhelm the nebulae. I then reduced the noise in the nebula-containing frames and stretched each so they had about the same brightness and background levels. I put the stars back into the respective background frames, then combined the composited frames to produce the HOO image. I used an HDR tool to bring out some additional detail, followed by a final contrast adjustment.



The second image is also an HOO image, but this time with RGB stars, and shot from the dark site. I took 5 shots of 3-minutes through each of the RGB filters for the stars, 29 15-minute shots through the H-alpha filter, and 54 15-minute shots through the O-III filter, for a total of 21 hours, 30 minutes of exposure time. The narrowband frames were treated as above except, I discarded the stars that were removed. The RGB stacks were combined, and deconvolution was applied. After removing the stars, the background was discarded, leaving me with the narrowband backgrounds and the RGB stars. As above, the stars were stretched to the point that I thought would look nice in the final image. The narrowband frames were stretched as before, combined, and the HDR tool was used as before to enhance some detail. The RGB stars were screened into the background and the final contrast adjustments were applied.

I hope you enjoy seeing the Bat and the Squid. I'm already looking at targets for next month and may settle on a set of galaxies. Clear skies until next time.

Ron Ugolick

https://www.astrobin.com/users/ruccdu/

John Dobson 9/14/24

Today is the 109th birthday for legendary amateur astronomer, chemist & philosopher John Dobson [1915-2014], founder of the loose-knit national Sidewalk Astronomers organizations.

Dobson earned a master's degree in chemistry from the University of California at Berkeley in 1943, but it's not evident that he ever actually worked as a chemist. In 1944 he became a monk in the Ramakrishna Order of the Vedanta Society, until he was expelled under unclear circumstances in 1967 (Vedanta is a collection of Indian philosophies probably most closely related to Hinduism but difficult to pin down, at least for me).

After that, Dobson concentrated on sharing the night sky with anyone & everyone, which seems to have been his true calling. To this end he invented the simple, and now ubiquitous, Dobsonian mount for amateur telescopes, a variation on the alt-azimuth mount. With the advantage of being light & easily portable, his mount makes it possible to set up & look through even relatively large amateur class telescopes quickly & easily.

His may be the single most widely recognized name & face in amateur astronomy today, and his invention is at least partially responsible for the survival of amateur telescope making.

Despite having been expelled from the Vedanta Society in San Francisco, Dobson was a regular guest at the Vedanta Society in Los Angeles for many years, up to the end of his life.

https://en.wikipedia.org/.../John_Dobson_(amateur... (Wikipedia)

https://skyandtelescope.org/astrono.../john-dobson-19152014/ (Obituary - Sky & Telescope, 16 January 2014)

https://www.aavso.org/sidewalk-astronomy-evangelist-john... (Obituary - AAVSO)

https://www.sidewalkastronomers.us/id31.html (Profile & bio - Sidewalk Astronomers)

https://www.planetary.org/profiles/john-dobson (profile & bio - Planetary Society)

https://en.wikipedia.org/wiki/Dobsonian_telescope (Dobsonian telescope - Wikipedia)

https://en.wikipedia.org/wiki/Sidewalk_astronomy (Sidewalk Astronomy - Wikipedia)

https://en.wikipedia.org/wiki/Vedanta_Society (Vedanta Society - Wikipedia)

http://www.otastro.org/ (Old Town Sidewalk Astronomers of Pasadena & Monrovia)

https://www.gettyimages.com/.../american.../153425135 (Photo Source - Getty Images)

How to build a Dobsonian mount & telescope:

https://10minuteastronomy.wordpress.com/.../how-to-build.../ ("How to build a Dobsonian mount for a 5-inch telescope" - 10 Minute Astronomy, 2 November 2010)

https://www.skyatnightmagazine.com/.../how-to-build-a.../ (How to Build a Dobsonian Mount" - Sky at Night Magazine, 25 September 2015)

https://stellafane.org/tm/dob/index.html#master (Build a Dobsonian telescope, master index - Stellafane)

The photograph here comes from Getty Images. The caption reads: "American astronomer John Dobson (left) steadies his telescope as mirror-makers Carl Zambuto (in red) and Chuck Smith (of the Zambuto Optical Company) install and seal a 12.5-inch quartz mirror, Monmouth, Oregon, July 31, 2007. The Dobsonian telescope, a type of Newtonian telescope on a cannon mount, helped to revolutionize amateur astronomy, making it possible for large-aperture telescopes to be home-made with readily-available materials. (Photo by Garth Eliassen/Getty Images)".

Tim Thompson - Facebook Post 9/14/24

This article is distributed by NASA's Night Sky Network (NSN).
The NSN program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

October's Night Sky Notes: Catch Andromeda Rising!

By Dave Prosper
Updated by Kat Troche

If you're thinking of a galaxy, the image in your head is probably the Andromeda Galaxy! Studies of this massive neighboring galaxy, also called M31, have played an incredibly important role in shaping modern astronomy. As a bonus for stargazers, the Andromeda Galaxy is also a beautiful sight.

Spot the Andromeda Galaxy! M31's more common name comes from its parent constellation, which becomes prominent as autumn arrives in the Northern Hemisphere. Surprising amounts of detail can be observed with unaided eyes when seen from dark sky sites. Hints of it can even be made out from light polluted areas. Use the Great Square of Pegasus or the Cassiopeia constellation as guides to find it. Credit: Stellarium Web

NASA Night Sky Notes October 2024

Have you heard that all the stars you see at night are part of our Milky Way galaxy? While that is mostly true, one star-like object located near the border between the constellations of Andromeda and Cassiopeia appears fuzzy to unaided eyes. That's because it's not a star, but the Andromeda Galaxy, its trillion stars appearing to our eyes as a 3.4 magnitude patch of haze. Why so dim? Distance! It's outside our galaxy, around 2.5 million light years distant - so far away that the light you see left M31's stars when our earliest ancestors figured out stone tools. Binoculars show more detail: M31's bright core stands out, along with a bit of its wispy, saucer-shaped disc. Telescopes bring out greater detail but often can't view the entire galaxy at once. Depending on the quality of your skies and your magnification, you may be able to make out individual globular clusters, structure, and at least two of its orbiting dwarf galaxies: M110 and M32. Light pollution and thin clouds, smoke, or haze will severely hamper observing fainter detail, as they will for any "faint fuzzy." Surprisingly, persistent stargazers can still spot M31's core from areas of moderate light pollution as long as skies are otherwise clear.

Generated version of the Andromeda Galaxy and its companion galaxies M32 and M110. Credit: Stellarium Web

NASA Night Sky Notes October 2024

Modern astronomy was greatly shaped by studies of the Andromeda Galaxy. A hundred years ago, the idea that there were other galaxies beside our own was not widely accepted, and so M31 was called the "Andromeda Nebula." Increasingly detailed observations of M31 caused astronomers to question its place in our universe – was M31 its own "island universe," and not part of our Milky Way? Harlow Shapley and Heber Curtis engaged in the "Great Debate" of 1920 over its nature. Curtis argued forcefully from his observations of dimmer than expected nova, dust lanes, and other oddities that the "nebula" was in fact an entirely different galaxy from our own. A few years later, Edwin Hubble, building on Henrietta Leavitt's work on Cepheid variable stars as a "standard candle" for distance measurement, concluded that M31 was indeed another galaxy after he observed Cepheids in photos of Andromeda, and estimated M31's distance as far outside our galaxy's boundaries. And so, the Andromeda Nebula became known as the Andromeda Galaxy.

While M31's disc appears larger than you might expect (about 3 Moon widths wide), its "galactic halo" of scattered stars and gas is much, much larger – as you can see here. In fact, it is suspected that its halo is so huge that it may already mingle with our Milky Way's own halo, which makes sense since our galaxies are expected to merge sometime in the next few billion years! The dots are quasars, objects located behind the halo, which are the very energetic cores of distant

galaxies powered by black holes at their center. The Hubble team studied the composition of M31's halo by measuring how the quasars' light was absorbed by the halo's material. Credits: NASA, ESA, and E. Wheatley (STScI)

These discoveries inspire astronomers to this day, who continue to observe M31 and many other galaxies for hints about the nature of our universe. One of the Hubble Space Telescope's longest-running observing campaigns was a study of M31: the Panchromatic Hubble Andromeda Treasury (PHAT). Dig into NASA's latest discoveries about the Andromeda Galaxy, on their Messier 31 page.

Originally posted by Dave Prosper: September 2021
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