

# MMGM ASTRONOMY MAY 2020



This monthly newsletter provides information concerning what will be visible in the night skies over Maine. Someday, when things return to the new normal, we plan to have future observing sessions at the museum and hopefully at dark sky sites. For now, I will list things that you can try observing on your own, mostly unaided eye and binoculars, but also a few objects that require a telescope, for those who may have one.

01 May

Sun

31 May

| Event                         | Time  | Altitude | Azimuth |
|-------------------------------|-------|----------|---------|
| Minimum altitude:             | 00:39 | -30.5°   | 360°    |
| Astronomical twilight begins: | 03:37 | -18.0°   | 45°     |
| Nautical twilight begins:     | 04:21 | -12.0°   | 54°     |
| Civil twilight begins:        | 05:01 | -6.0°    | 62°     |
| Sunrise:                      | 05:33 | -0.8°    | 68°     |
| Maximum altitude:             | 12:40 | 61.1°    | 180°    |
| Sunset:                       | 19:47 | -0.8°    | 293°    |
| Civil twilight ends:          | 20:19 | -6.0°    | 298°    |
| Nautical twilight ends:       | 20:59 | -12.0°   | 306°    |
| Astronomical twilight ends:   | 21:43 | -18.0°   | 315°    |

| Event                         | Time  | Altitude | Azimuth |
|-------------------------------|-------|----------|---------|
| Minimum altitude:             | 00:40 | -23.7°   | 360°    |
| Astronomical twilight begins: | 02:43 | -18.0°   | 30°     |
| Nautical twilight begins:     | 03:40 | -12.0°   | 42°     |
| Civil twilight begins:        | 04:26 | -6.0°    | 51°     |
| Sunrise:                      | 05:02 | -0.8°    | 57°     |
| Maximum altitude:             | 12:40 | 67.8°    | 180°    |
| Sunset:                       | 20:19 | -0.8°    | 303°    |
| Civil twilight ends:          | 20:55 | -6.0°    | 309°    |
| Nautical twilight ends:       | 21:41 | -12.0°   | 318°    |
| Astronomical twilight ends:   | 22:38 | -18.0°   | 330°    |

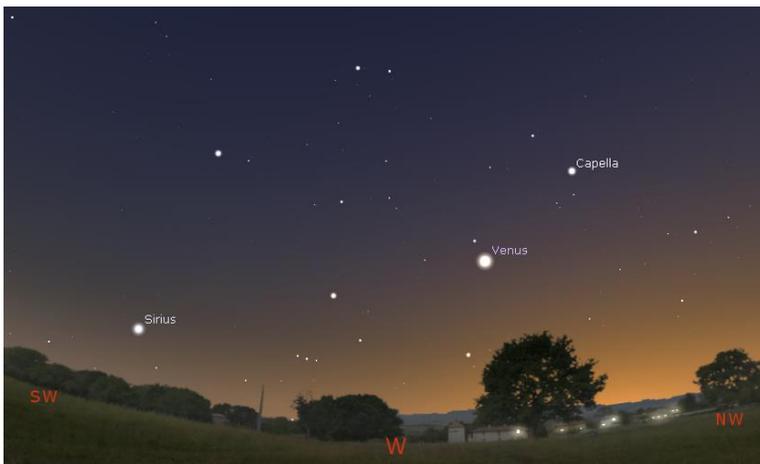
Moon



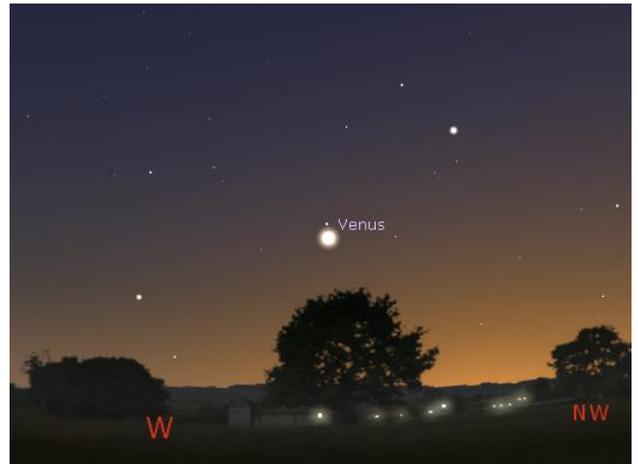
***Full Moon***      ***Last Quarter***      ***New Moon***      ***First Quarter***  
***5/7***            ***5/14***            ***5/22***            ***5/29***

UNAIDED EYE

Solar System:



May 1<sup>st</sup> 8:30 PM



May 8<sup>th</sup> 8:30 PM



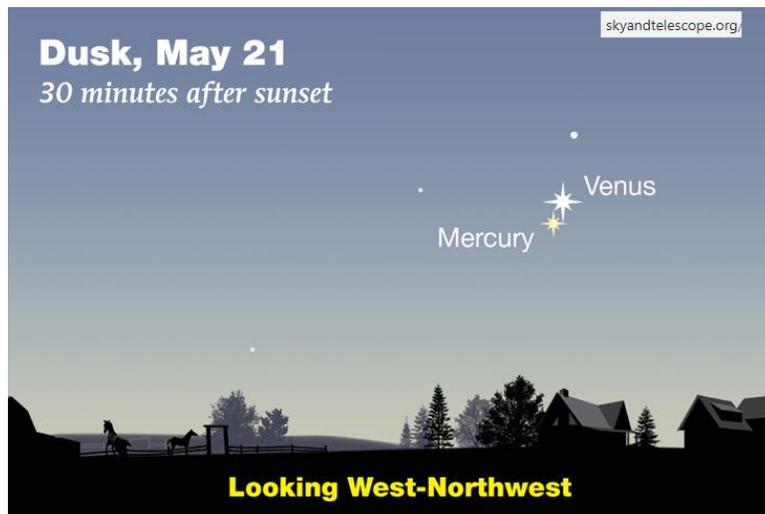
May 12<sup>th</sup> 4:45 AM



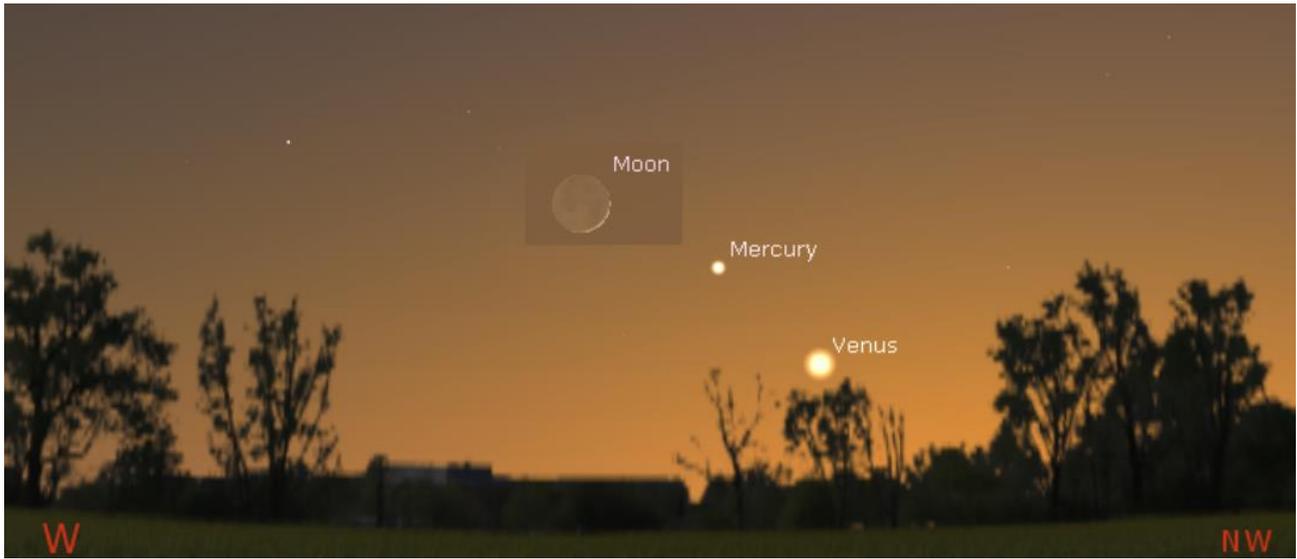
May 13<sup>th</sup> 4:45 AM



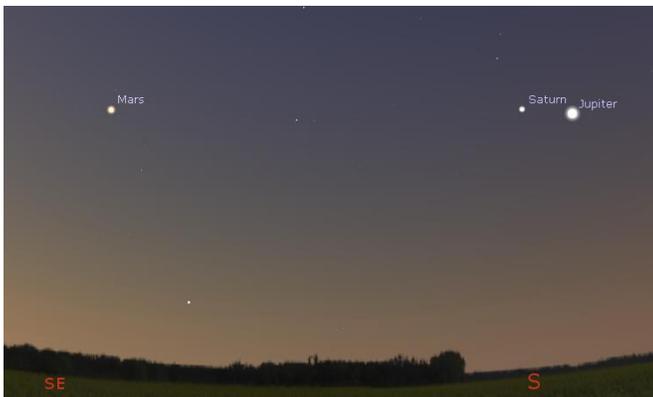
May 15<sup>th</sup> 8:45 PM



On the 22<sup>nd</sup> Mercury will be to the left of Venus; both days the separation will be the same as the diameter of the moon. You may need binoculars to see Mercury.



May 24<sup>th</sup> 8:45 PM



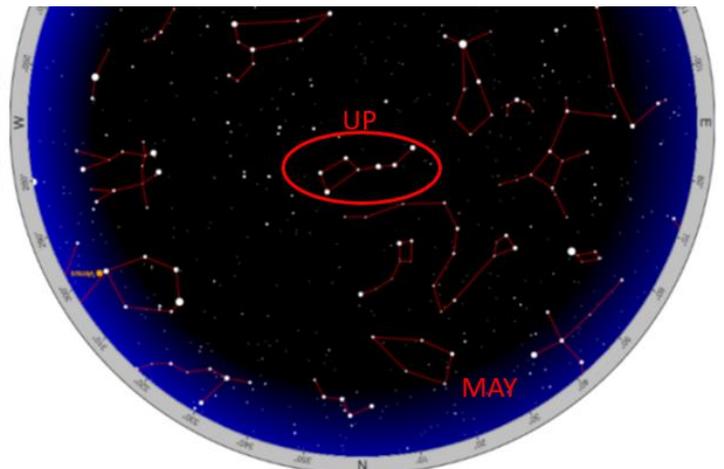
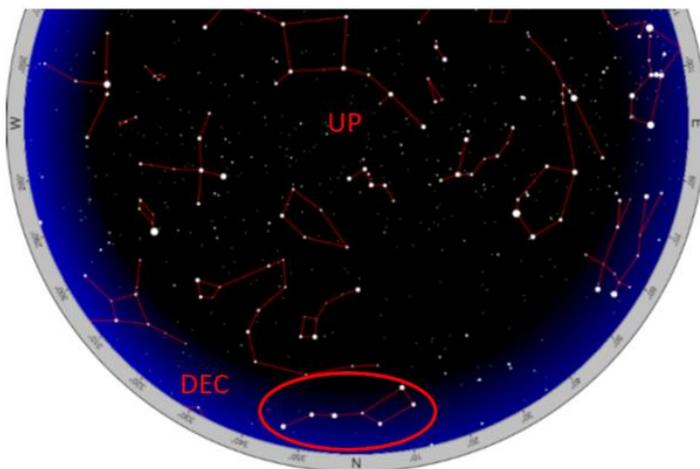
May 31<sup>st</sup> 4:30 AM



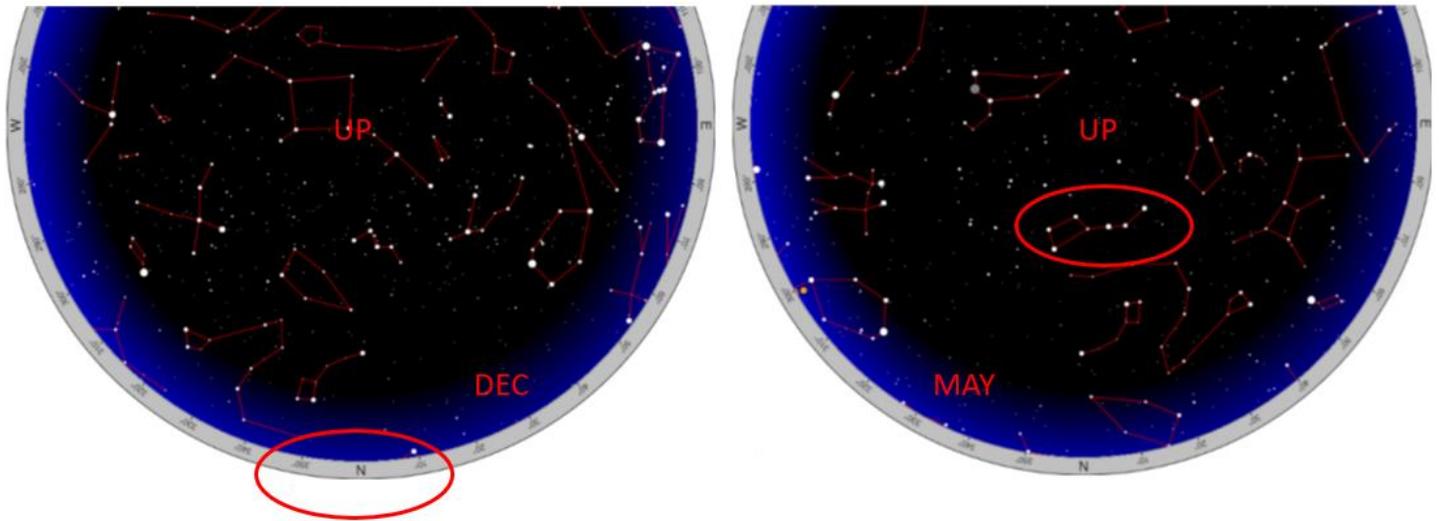
May 31<sup>st</sup> 9:00 PM

**Constellation of the Month: URSA MAJOR (The Big Dipper)**

No matter where you are, May is Big Dipper month! Here in Maine, and the northern US, the Big Dipper is visible all year, known as circumpolar because it never sets, but highest in the sky this month. The two star charts below show it at its lowest and highest for Maine. Hint: the way to use a star chart is to place the direction you are facing at the bottom.



This comparison of the views in central Florida shows how it is not circumpolar there.

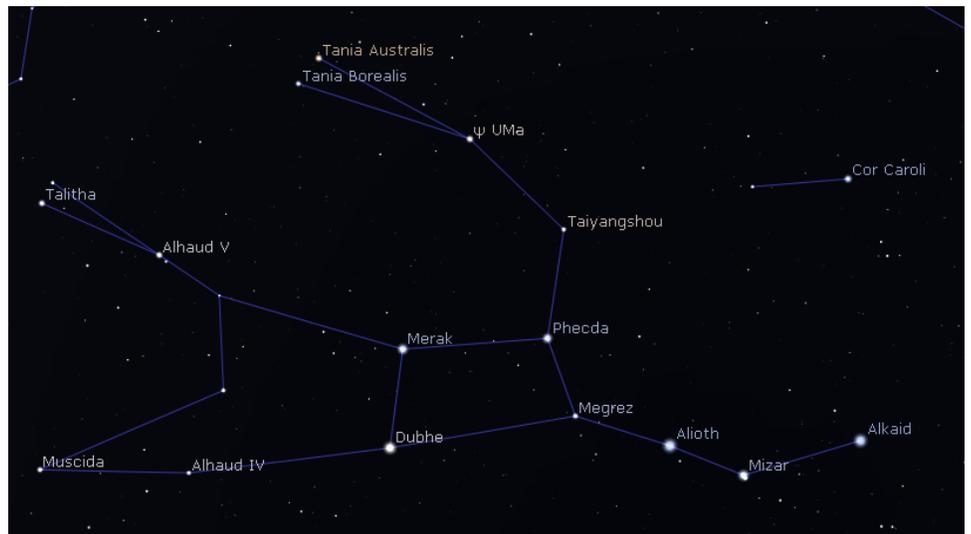


This is proof that the earth is round north to south. East to west is easier; if the earth was flat, the sun would rise for the whole world at the same time and there would be no need for time zones. Actually, that would be rather convenient.

The Big Dipper can be used to easily locate some important stars, including perhaps the most important, Polaris, the North Star, which when you see for the first time, you may be surprised how bright it isn't. Many people have the idea that it is one of the brightest stars in the sky, however it is pretty far down the list at number 49!



As indicated at the beginning of this rather long section, the Big Dipper is not a constellation; it is what is known as an asterism and is part of the constellation Ursa Major, the Big Bear.



How many of the stars in the Big Bear can you find. Can you see Alcor. Mizar and Alcor are known as the Horse and Rider. Alcor is sometimes considered an eye test, but it is more a test of the darkness of your night sky.



## TELESCOPES

### Solar System:

Venus, because it is between us and the Sun, goes through phases similar to the moon. Currently the brightest planet shines brilliantly in the west soon after sunset. Since it is now moving closer to us and the Sun, it is growing larger in diameter and becoming even more of a crescent, but rapidly moving toward the horizon and will be difficult to see before the month ends. If you can get a view in a scope, you will be amazed!



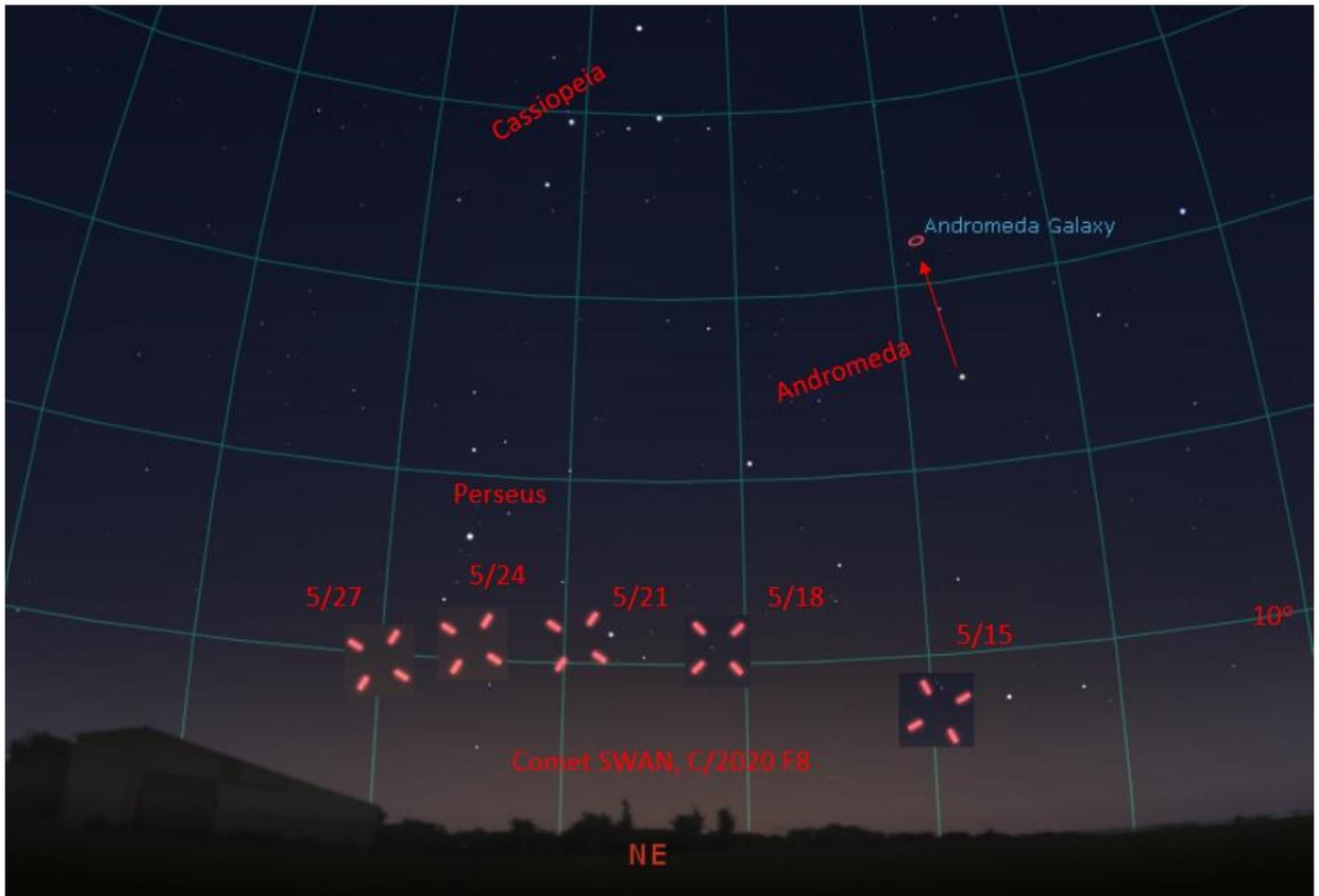
5/1/20



5/22/20

### A (Possible) Naked Eye Comet!

Maybe! Predicting the brightness of comets is more difficult than predicting Maine weather, and that is impossible! Nevertheless, this comet MAY attain unaided eye brightness, and surely will make binocular visibility, even though it will be low in the northeast before dawn. Hale-Bopp was the last bright naked eye comet, which is why my photo of it is included at the beginning of this newsletter. The photo includes the comet, only a few light minutes away, stars which are light years away and the Andromeda Galaxy (the fuzzy elongated spot below and a little to the left of the comet's head), which is 2.5 million light years away. That is why the location of the Andromeda Galaxy is included in the chart below. If you do see the comet in binocs, Andromeda can also easily be seen in them, so you can do the light distance difference thing for yourself. If you do, don't get dizzy thinking about it!

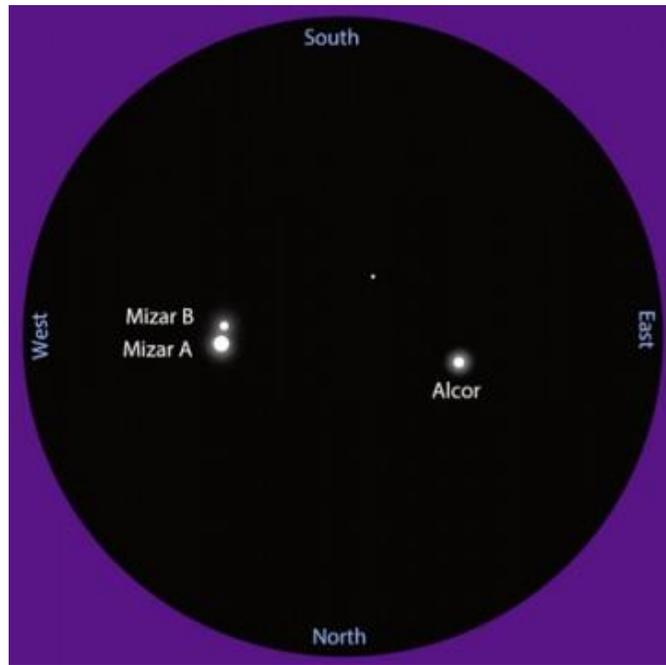


Comet SWAN, looking northeast, 4 AM, on dates noted.

**In Our Galaxy:**

Staying in the Big Dipper, Mizar is a well-known double star. Mizar and Alcor are a naked eye double and Mizar is a telescopic binary, each of which are spectroscopic binaries, while Alcor was recently also found to be a binary; therefore, this is a system of six gravitationally locked stars, and any possible planets would have a very interesting sky.





Mizar and Alcor, 50 power in a small scope

### **The Owl Nebula, M97, a planetary nebula**

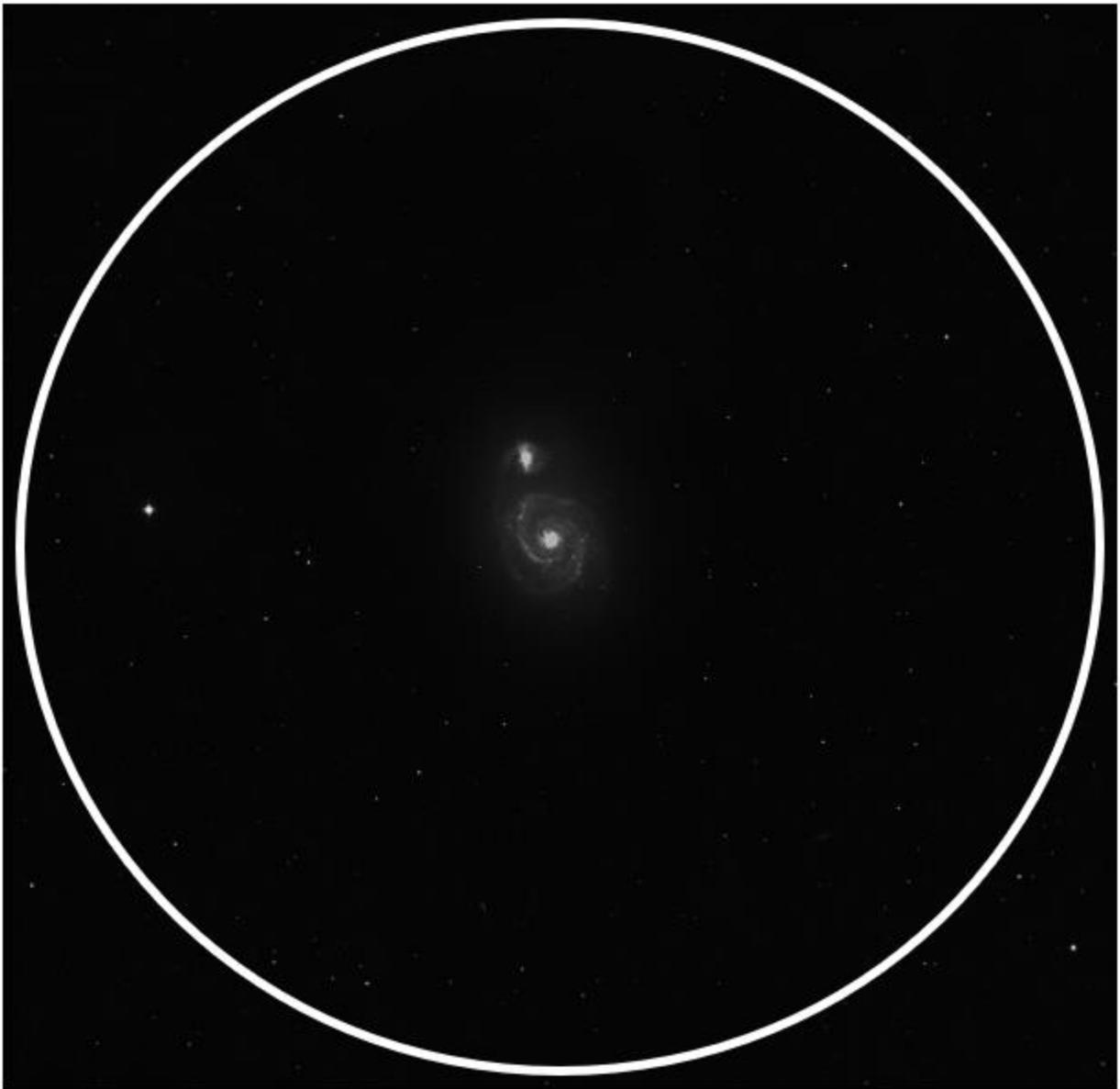
There are two types of nebulae, diffuse and planetary. Diffuse nebulae are very large clouds of gas and dust which are the birthplace of stars. Planetary nebulas however are the result of a single sun-sized star that is dying. When such a star runs out of hydrogen, it starts fusing helium which causes the star to bloat into a red giant. When the helium is exhausted, the star is not massive enough to fuse heavier elements and it collapses to a white dwarf, leaving the outer shell of the star behind which glows due to the gases being ionized by the extreme temperature of this central star. Planetary nebulas have nothing to do with planets, except that they are mostly round and usually featureless in small scopes. The Owl has two round dark areas, thus the name; it is approximately 2000 light years away. Nearby, visible in a one-degree field of view, lies M108, an edge-on galaxy 22,500 more distant.



## Beyond the Milky Way:

### The Whirlpool Galaxy, M51

M51 is a face-on spiral galaxy, the only one in which the spiral structure may be glimpsed in moderate sized scopes. Its interacting companion galaxy, NGC 5195, can be seen just to the north; the light we see from the pair has been travelling through space for 23 million years. M51's diameter is approximately 75,000 light years and it contains 160 billion solar masses, one tenth that of our Milky Way Galaxy.



## **SOURCES:**

<https://skyandtelescope.org/>

<https://spaceweather.com/>

<https://www.amsmeteors.org/>

<https://earthsky.org/>

<https://services.swpc.noaa.gov/images/aurora-forecast-northern-hemisphere.jpg>

<https://www.heavens-above.com/>

<https://stellarium.org/>

## **QUESTIONS:**

If you have any questions (there is no such thing as a dumb one!), please send me an email or a Facebook private message <https://www.facebook.com/rocksnstars>.

If you would like keep updated on current astronomical events, please request to be added to <https://www.facebook.com/groups/236166159862560/>.

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