

# Regulus

2021 August

Newsletter of The Royal Astronomical Society of Canada - Kingston Centre  
Celebrating our 60<sup>th</sup> anniversary 1961-2021 [kingston.rasc.ca](http://kingston.rasc.ca)



## MEETINGS



**The Serenity II  
mini-observatory at  
SCGO – Kevin Kell &  
Kim Hay**

**Detailed story in the  
next issue of  
Regulus**

**RASC-KC Wednesday Weekly  
Social** videoconference. 7pm  
Eastern all weeks except the 2<sup>nd</sup>  
Wednesday of the month. For  
members and their guests. Email  
list subscribers receive the link  
weekly 1 or 2 days beforehand.  
**\*\*Note\*\*** it is the same link for  
2021 Jan-June!  
Next Social:: Wed 2021 Aug 11

### **RASC-KC Regular Monthly Meeting -**

We do not hold Meetings in July  
and August. We will start back  
on Wed September 8<sup>th</sup> with a  
virtual Zoom meeting at 19:00

### **2021 Fall'n'Stars Fri-Sun September 10-12**

Susan Gagnon, Kingston Centre FNS Contact

Johnson's RV Park : 3235 County Road 13, RR#3  
Picton (South Bay), On K0K 2T0 (43 degrees 56'  
20" N and 77 degrees 00' 56" W)

With any luck we will be able to meet for our starparty this  
fall. Belleville Centre has the lead this year and planning  
continues under the assumption that Covid-19 measures will  
remain at the Stage 3 level reopening plan. In case you have  
been on Mars, here is the basic run down.

Take attendance and keep the records for a month  
Screen folks as they enter the park

Indoor meetings are OK with 50% of the posted capacity,  
maintain 2 meter spacing, wear face masks (except  
when eating and drinking).

Outdoor gatherings at 75% of posted capacity, 2 meter  
spacing or face masks (except eating and drinking)

Common indoor areas (e.g. washrooms) need to be  
regularly cleaned

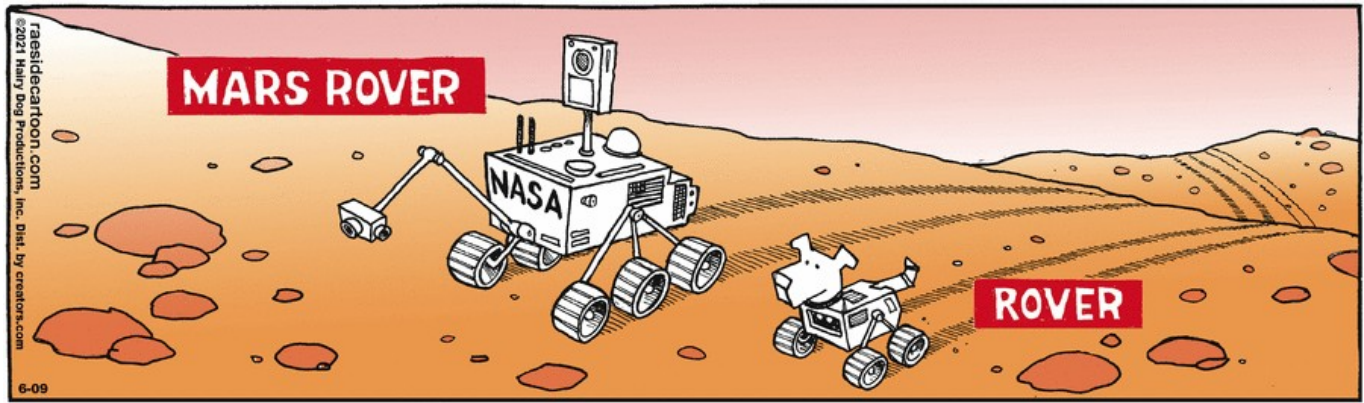
Of course there are issues that we must deal with regarding  
potential equipment sharing, meal logistics etc. Our Saturday  
pizza dinner is on the table as is the offer of a Saturday winery  
tour within walking distance for a fee, and a possible pot luck  
style chile dinner Friday pm. If you can register before the  
date that would be great. New planning challenges will be  
easier to work around if we have numbers ahead of time.

For updates and registration see the website at...

<http://rascbelleville.ca/fallnstars/>

## **In This Issue**

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## ***President's Tidbits for August 2021- Kim Hay***

The Dog days of summer are here, not just talking the warm days and dew filled nights, but the star SIRIUS is rising in the morning along with Orion. Yes that means another season will be approaching, but we still have lots of time in our summer 2021 to enjoy.

The days are getting shorter, so our nights are getting longer and sunset is sooner. Pull up a lounge chair and enjoy the summer constellations with some binoculars and the Perseids meteor shower is peaking on August 12th.

We will be holding our September to December Centre meetings online via ZOOM, even though schools will be in at the University, there still has not been any direction on renting of rooms. Our ZOOM Centre Social gatherings have been held all summer on Wednesday nights a 7:00 pm and will continue on through the end of the year.

Just to mention that 2021 Fall N Stars is going forward on September 10-12th. Susan Gagnon is the RASC KC contact, so make sure to read her note on this event. Stay safe , and be well and we will see you virtually in September.

From: <https://brazosvalleyastronomyclub.org/>



## In the August Sky- Rick Wagner

02 Aug – Saturn at opposition (mag 0.2)

07 Aug – very thin crescent Moon (about 28.5h before new) rising in the ENE a half hour before sunrise; 05:30EDT

08 Aug – New Moon 09:50EDT extremely challenging extremely thin crescent Moon (only ~10h past new!) setting in the NW just after sunset; Mercury (mag -1.2) just to its left; 20:30EDT

11 Aug – Jupiter with only one Galilean moon visible starting 22:42EDT for ~2.3 hours

11 & 12 Aug – lovely juxtaposition of bright Venus and the crescent Moon in the WNW shortly after sunset

12 Aug – Perseid meteor shower maximum; best before dawn today and after midnight tonight

15 Aug – First Quarter Moon; We can't see it but at 11:40EDT no Galilean moons will be visible around Jupiter – Io will be behind Jupiter while Europa (and shadow), Ganymede (and shadow), and Callisto will on be superimposed on Jupiter's disk. While the two shadows would be easy to see, spotting the moons against the disk is quite difficult and require excellent conditions. Most critically – not daylight. Oh, to be in the south Pacific!

18 Aug – Mars and Mercury only  $0.1^\circ$  apart in the western sky just after sunset.

19 Aug – Jupiter with only one Galilean moon visible starting 00:43EDT for about 2 hours

Minor planet 43 Ariadne at opposition (mag 9.5)

20 Aug – Jupiter at opposition (mag -2.9)

22 Aug – Full Moon 08:02EDT

24 Aug – Minor planet 89 Julia at opposition (mag 8.9)

### Notes from Members

**Malcolm Park:** I just watched a thoroughly enjoyable single episode program on Apple TV+

I apologize if you are not a subscriber!

But this documentary (release date in 2020, an Apple original film) covers so much ground and visually is just so stunning I would be tempted to recommend subscribing just to watch it or perhaps there's a free trial option. I don't know.

But this program must be seen :)

"Fireball: Visitors from Darker Worlds"

**Malcolm Park:** it had been such a long time since I tried to solve any equation, that I made stupid mistake after mistake and grew frustrated. And so I turned to Google.

And I thought this was a cool find 😊

In this case, I was trying to solve for my "actual" focal length by having Astrometry.net plate solve a sample image and using the pixel scale provided by Astrometry.net.

I wanted to compare my actual vs expected focal length. This handy site not only solved my equation but showed me step by step the solution. Here's the calculator link:

<https://www.symbolab.com/solver/equation-calculator>

## 2021 Observatory Upgrades for a Visual Observer - Susan Gagnon



Over the 2020-2021 winter I noticed some heaving of the observatory floor. I had experimented with several configurations over the years and they were all there under a nice layer of rolled linoleum. I decided that the experimentation stage was over as the original build was in 2006. I ordered new  $\frac{3}{4}$  inch flooring plywood and began removing the old layers (linoleum, plywood, indoor/outdoor carpet) and finally the sub-floor was visible. A well patched section from the removal of an earlier pier was replaced and down went the new  $\frac{3}{4}$  inch. I then decided to paint the inside of the observatory a dark

colour. I settled for a lovely blue that is dark enough to make the walls virtually disappear in my suburban setting, and overall it is quite a bit darker when observing. On the advice of Centre members I put a slip resistant bead additive into the paint for the floor.

Another upgrade was to make a sturdier observing cart. I had a wheeled table for observing but it lacked storage capacity, stability and organization. I added a new box to hold my eyepieces and managed it all from scrap lumber as it was constructed before the end of the spring lock down.

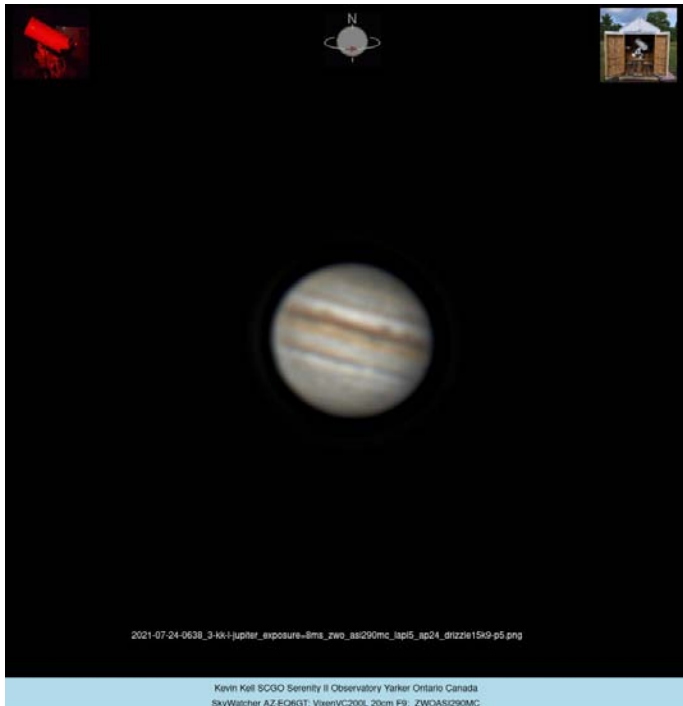
The layers of the cart are a top big enough for charts and recording notes, the second shelf holds the eyepiece box, the bottom holds a tote for charts and my set of Lunar observing aids. The file holders on the sides hold folders for variable charts by constellation. The cart is on casters so easily rolls to any position convenient to the eyepiece. The cart is tall with the writing surface at 36 inches. It can be used standing as well as sitting...for someone who is short like me! I have also benefited from removing some things that were just being 'stored'.

I thought were not taking up much space but in reality were creeping into my scope maneuvering area. Your observatory is a very personal space and must reflect your needs. My space is geared for visual observing with a 10inch Dob that I wheel about to make the most of a limited horizon. There is space outside to the south suitable for photography requiring tracking, as an option.

## Jupiter 2021 July 24 - Kevin Kell

From:

<https://starlightcascade.ca/blog/2021/07/jupiter-2021july24/>



"It's been a long time.. gettin from there to here" – Star Trek Enterprise

More specifically related to astronomy... my first substantial mount and telescope are here installed and working. The SCGO Serenity Observatory was renovated to allow them to be used, and the first light was this morning, Saturday (2021 July 24), between 03:00 and 05:00 EDT.

The Mount is a newtome used Skywatch AZ-EQ6GT in equatorial mode, sitting on a brand new concrete pier, and a newtome used Vixen VC200L, a 200mm f9 cassegrain telescope.

The ZWO ASI290MC camera I have had for a few years now, but was only using it on a small 102mm Schmidt Cass telescope.

This is the first light image, a 30 second run with Firecapture (no autoalign) on the mount which has not yet been polar aligned or three star aligned, just roughly polar

aligned by eye in the daytime and manually driven to Jupiter. It had 2975 frames and stacked with Autostakkert! 3.1.4 and the best 5% of the frames were used. (about 150).

Regitax wavelet processing was next where the rgb colour was balanced as well.

Annotation of the 25 image runs that resulted, followed, and then they were combine into an animated .gif image, seen below (on the web page link above- too large for this email).

All in all, a great first light. Seeing was good, transparency was poor (the Full Moon was nearby), focus was rough (using an electric remote focuser hand controller for the first time, at some distance from the display).

Tracking was excellent for a mount that had not yet been really setup. The next run will be even better from lessons learned Saturday morning.

Image exposure increased over the 95 minute session, probably due to brightening twilight sky.

Near the end, at an 11ms exposure, a Jovian moon makes an appearance.

This was the baseline imaging session, with the native F9 focal ratio. Barlows will come next in the progression.

Interestingly, the asi290mc camera does not come to focus with the telescope.

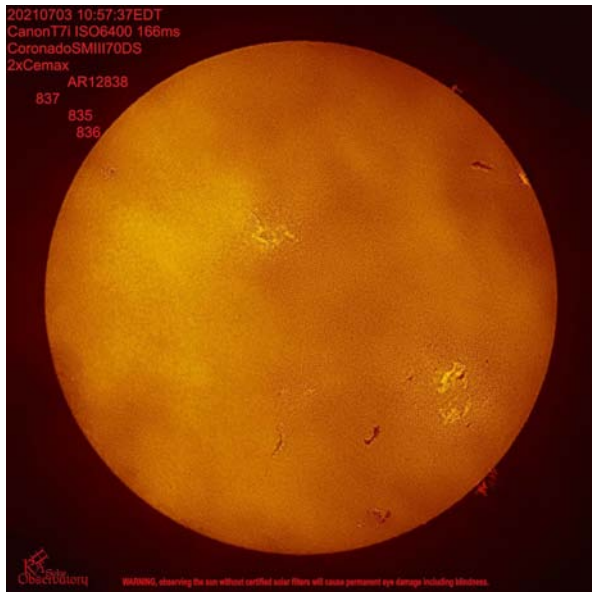
A 90 deg diagonal was used to bring the focusing point further out, as will a barlow in the future, allowing the removal of the 90deg.

This will gain one less optical translation and maybe a 10% light increase by removing the 90 deg diagonal.

# RASC-KC Solar Cycle 25 Monthly Review – Hank Bartlett

A review of solar activity and images during the past month by RASC-KC solar observers.

Here are a few highlights of the month for solar observers. July started off very well on the 3<sup>rd</sup> when newly appearing AR12838 erupted with an **X1.5** flare as well as 3 M flares. Sadly the X flare erupted just 28 minutes prior to the cloud thinning enough for this capture which shows residual brilliance from the eruption.



Such is the luck, a quick check on Gong H alpha showed none of their cameras caught the event on the NW limb either. On the 4<sup>th</sup> this region rotated out of view.

For more info check these two articles on the July 4<sup>th</sup> [spaceweather.com](http://spaceweather.com) -

## **FLARING SUNSPOT VANISHES:**

Yesterday, sunspot AR2838 burst through the surface...

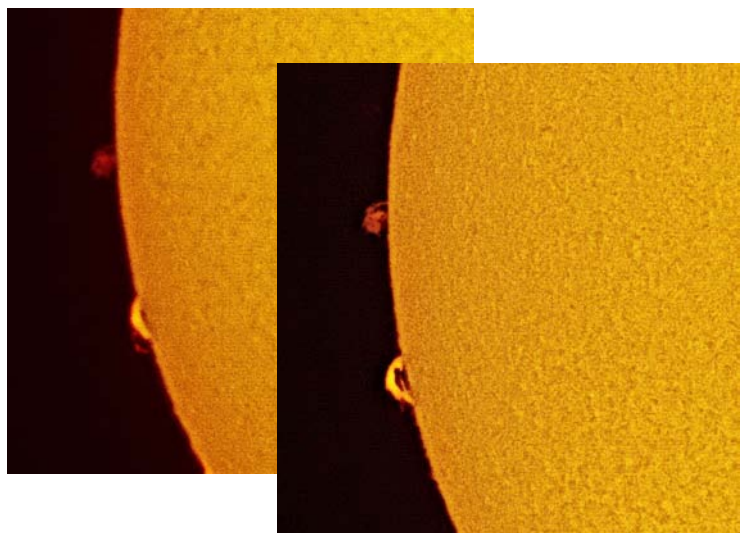
**FIRST X-FLARE IN 4 YEARS:** Now,

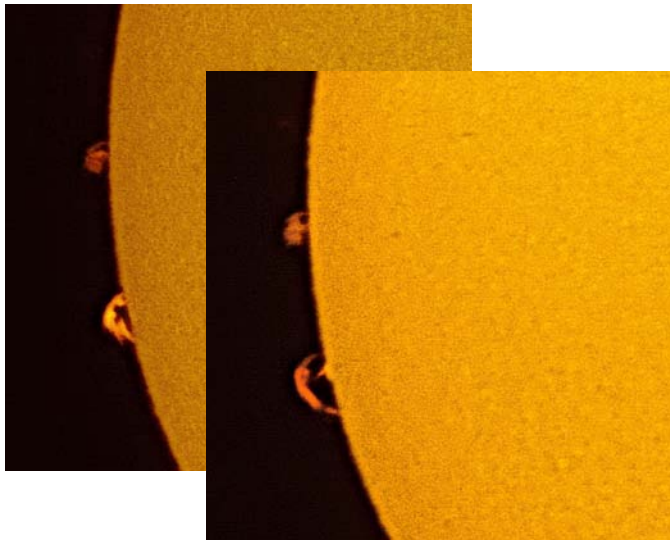
Solar Cycle 25 has *really* begun...

Also on the 4<sup>th</sup> this largest sunspot of the month, AR12835, was nearing the southwestern limb and rotated away 3 days later...



This month you also could have been fortunate enough to again catch an erupting prominence, on July 17<sup>th</sup>, much smaller than my previous catch and unfortunately shortened by cloudy weather rolling in as shown by the diminished detail in the 4<sup>th</sup> image. These images were taken over a span of 18 minutes, the sun, always in motion.





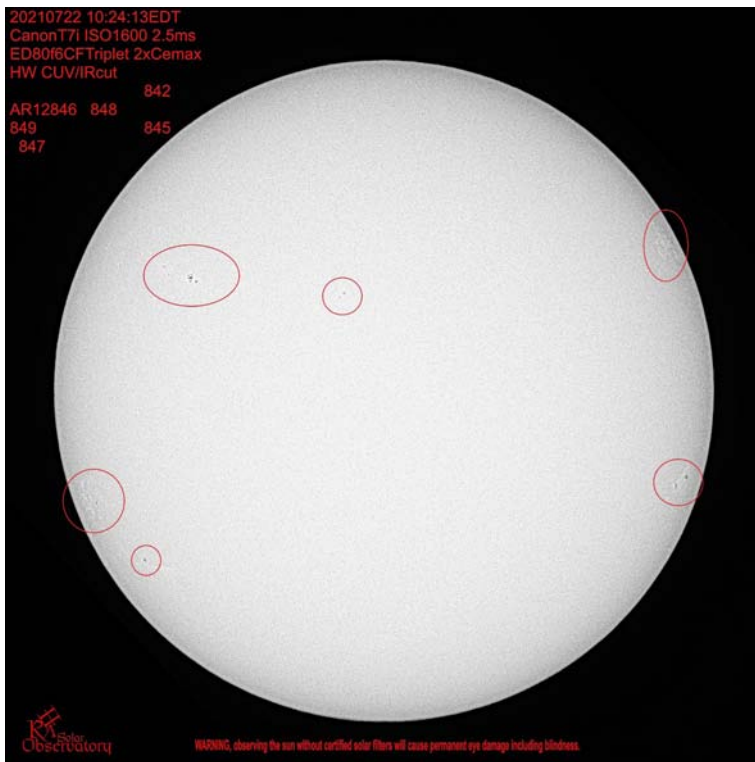
849. The x-ray baseline which reached a maximum level of  $\sim 10^{-3.8}$  is currently low and running back down at  $\sim 10^{-7.4}$ . As another month of cycle 25 closes I am happy to have had 20 observing/imaging sessions out of 31 days, even if I did whine every cloudy day.

Member images...

Image AR12835



Lastly on July 22 & 23 solar observers had the opportunity to observe SIX solar active regions in the same day!



"Okay Hank, I done seen it. The Big Spot. It was a very frustrating session, but I figured I'd better get out there and try before it rotates off." Rose-Marie.



"Hank, check out the sun through the haze." (cloud and forest fire smoke) Mark D.

To recap July the sun produced **1 X class solar flare**, 3 M class solar flares and 23 C class solar flares, these were mostly produced by the 15 sunspot active regions numbered AR12835 -

If you have any solar images during the month to contribute to RASC-KC Solar Cycle 25 Monthly Review forward it to rhaobs (at) gmail (dot) com along with exif and any other documentation about your observing session. Note that images may be cropped to specific content or for spacing.

## Steve Craig Galaxy of the Day for July

1788 by William Herschel.

Day 097 NGC2719 is an interacting galaxy about 142 million light years away in the constellation Lynx. It's companion galaxy is PGC25284. It was discovered on March 28, 1786 by William Herschel. Catalogued as #202 in the Arp Atlas of Peculiar Galaxies, it is noted as a galaxy with material ejected from the nucleus.

Day 098 NGC2770 is a spiral galaxy about 80 million light years away in the constellation Lynx near the border with Cancer. It is a barred spiral with moderately wound arms. NGC2770 was discovered on December 7, 1785 by William Herschel.

Day 099 NGC2775 is a spiral galaxy about 67 million light years away in the constellation of Cancer. It is an unbarred spiral with a prominent ring structure and tightly wound flocculent arms. It has a large nuclear bulge which is relatively gas free. NGC2775 was discovered in 1783 by William Herschel.

Day 100 NGC2776 is a spiral galaxy between 90 and 130 million light years away in the constellation Lynx. It has a bright nucleus and two faint, drawn out spiral arms. It was discovered on March 19, 1828 by John Herschel

Day 101 NGC2782 is a peculiar spiral galaxy about 75 million light years away in the constellation Lynx. NGC2782 has an active nucleus and is a starburst galaxy. It is probably the result of a galactic merger. It was discovered on March 18, 1787 by William Herschel. Catalogued as #215 in the Arp Atlas of Peculiar Galaxies, it is noted as being a galaxy with adjacent loops.

Day 102 NGC2798 (lower) and NGC2799 (upper) are an interacting pair of galaxies about 90 million light years away in the constellation Lynx. They were discovered on January 14, 1788 by William Herschel. Catalogued as #283 in the Arp Atlas of Peculiar Galaxies, they are noted as being an interacting galaxy pair.

Day 103 NGC2805 is a very faint spiral galaxy about 90 million light years away in the constellation Ursa Major. It is so faint that I'm lucky to have even managed to get this image. NGC2805 was discovered in 1791 by William Herschel.

Day 104 NGC2820 (lower) and 2814 (middle) are a pair of interacting galaxies about 83 million light years away in the constellation Ursa Major. Just off the top edge of 2820 you can see a little companion, IC2458. Up in the top right corner is yesterday's galaxy NGC2805. All three galaxies were discovered in 1792 by William Herschel.

Day 105 NGC2841 is a beautiful spiral galaxy about 46 million light years away in the constellation Ursa Major. It has a bright central bulge and tightly wound, flocculent spiral arms. It was discovered on March 9,

Day 106 NGC2857 is a face on spiral galaxy about 225 million light years away in the constellation Ursa Major. Also in this image are NGC2856 an edge on spiral 120 million light years away and NGC2854 a barred spiral 125 million light years away.

They were discovered on January 8, 1856 by R. J. Mitchel Catalogued as #1 in the Arp Atlas of Peculiar Galaxies, NGC2857 is noted as being a galaxy with low surface brightness. I don't know how it rated this as I have imaged many galaxies with a lower surface brightness.

Day 107 NGC2872, NGC2873 and NGC2874 form an interesting group of galaxies in the constellation of Leo. Though closely grouped in this image they are at vastly different distances. NGC2872 (top) is at 206 million light years. NGC2873 (lower left) is at 148 million light years. And NGC2874 (lower right) is at 178 million light years. The group was discovered on March 15, 1784 by William Herschel.

Day 108 NGC2903 is a barred spiral galaxy about 30 million light years away in the constellation of Leo. It was discovered on November 16, 1784 by William Herschel. He mistook it as a double nebula, as did subsequent observers. It wasn't until the nineteenth century that the Third Earl of Rosse resolved it into a spiral form.

Day 109 NGC2944 is a very faint and small group of interacting galaxies. It lies 310 million light years away in the constellation of Leo. It is comprised of PGC27533 (the centre mass), PGC27534 (the bottom knot) and PGC1998710 (the faint knot, top left). Catalogued as #63 in the Arp Atlas of Peculiar Galaxies, it is noted as "small, with a high surface brightness companion on it's arm." NGC2944 was discovered in 1866 by Johann Palisa

Day 110 NGC2976 is a dwarf galaxy about 11.6 million light years away in the constellation Ursa Major. It is part of the M81 group of galaxies. The size and luminosity of NGC2976 is mid way between the large and small Magellanic clouds. It was discovered on November 8, 1801 by William Herschel.

Day 111 NGC3003 is a nearly edge on spiral galaxy about 63 million light years away in the constellation of Leo Minor. It was discovered on December 7, 1785 by William Herschel.

Day 112 NGC3041 is an intermediate barred spiral galaxy about 77 million light years away in the constellation Leo. It was discovered on March 23, 1784 by William Herschel.

Day 113 NGC3077 is a small disrupted elliptical galaxy about 13 million light years away in the constellation Ursa Major. It shows wispy edges and scattered dust clouds that are probably the result of interactions with

its larger neighbors in the M81 group. NGC3077 was discovered on November 8, 1801 by William Herschel.

Day 114 NGC3079 is a barred spiral galaxy about 50 million light years away in the constellation Ursa Major. It is noted for having a large bubble forming in its center, being about 3000 light years wide and rising more than 3500 light years above the disc of the galaxy. It is thought to have been formed by a large burst of star formation.

Day 115 NGC3147 is a spiral galaxy about 130 million light years away in the constellation Draco. It was discovered on April 3, 1785 by William Herschel. This image was taken two days after the discovery of Supernova SN2021hpr. I managed to get it while the supernova was still brightening.

Day 116 NGC3162 is a nice little spiral galaxy about 60 million light years away in the constellation Leo. It was discovered on March 12, 1784 by William Herschel.

Day 117 NGC3184 is a beautiful face on spiral galaxy about 40 million light years away in the constellation of Ursa Major. I think it looks like a small version of Messier 101. It has a compact nucleus and fine winding spiral arms. NGC3184 was discovered on March 18, 1787 by William Herschel.

Day 118 This is an interesting group of galaxies in Leo known as Hickson Compact Group #44. NGC3185 (lower left) is a barred spiral galaxy 65 million light years away. NGC3187 (lower middle) is a spiral galaxy 79 million light years away. NGC3190 (upper middle) is a disturbed spiral galaxy also 79 million light years away. NGC3193 (top right) is an elliptical galaxy also 79 million light years away. They were discovered in 1784 by William Herschel. The group is catalogued as #316 in The Arp Atlas of Peculiar Galaxies.

Day 119 NGC3198 is a barred spiral galaxy about 47 million light years away in Ursa Major. It is located in the Leo spur which is part of the Virgo Supercluster. It was discovered before 1850 by William Parsons, the 3rd earl of Rosse.

Day 120 NGC3206 is a barred spiral galaxy about 52 million light years away in Ursa Major. It was discovered on April 8, 1793 by William Herschel.

Day 121 NGC3212 (upper) is a barred spiral galaxy about 442 million light years away in Draco. NGC3215 (lower) is also a barred spiral galaxy about 431 million light years away. They were discovered in 1802 by William Herschel. Together they are catalogued as #181 in the Arp Atlas of Peculiar Galaxies as galaxies with filaments.

Day 122 NGC3221 is a barred spiral galaxy about 187 million light years away in the constellation Leo. It was discovered on January 1, 1862 by Heinrich d'Arrest.

Day 123 NGC3226 (left) and NGC3227 (right) are a pair of interacting galaxies about 77 million light years away in the constellation Leo. NGC3226 is a dwarf elliptical galaxy and NGC3227 is a spiral. They were discovered on February 15, 1784 by William Herschel. Together they are catalogued as #94 in the Arp Atlas of Peculiar Galaxies.

Day 124 NGC3239 is an irregular galaxy about 86 million light years away in the constellation Leo. Its irregular form is probably the result of a galactic merger. It was discovered on March 21, 1789 by William Herschel. It is catalogued as #263 in the Arp Atlas of Peculiar Galaxies.

Day 125 NGC3254 is a fine spiral galaxy about 63 million light years away in the constellation of Leo Minor. It was discovered on March 13, 1785 by William Herschel.

Day 126 NGC3270 is a spiral galaxy about 285 million light years away in the constellation Leo. It was discovered on April 10, 1785 by William Herschel.

Day 127 NGC3294 is a spiral galaxy about 29 million light years away in the constellation Leo Minor. It was discovered on March 17, 1787 by William Herschel.

Day 128 NGC3319 is a barred spiral galaxy about 49 million light years away in Ursa Major. It was discovered on February 3, 1788 by William Herschel.

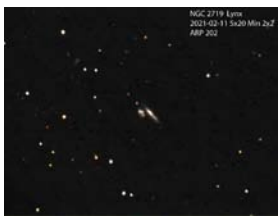
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NGC2719



NGC2770



NGC2775



NGC2776



NGC2782



NGC2798



NGC2805



NGC2820



NGC2841



NGC2857



NGC2872



NGC2903



NGC2944



NGC2976



NGC3003



NGC3041



NGC3077



NGC3079



NGC3147SN



NGC3162



NGC3184Px



NGC3187



NGC3198



NGC3206



NGC3212



NGC3221



NGC3226



NGC3239



NGC3254



NGC3270



NGC3294



NGC3319