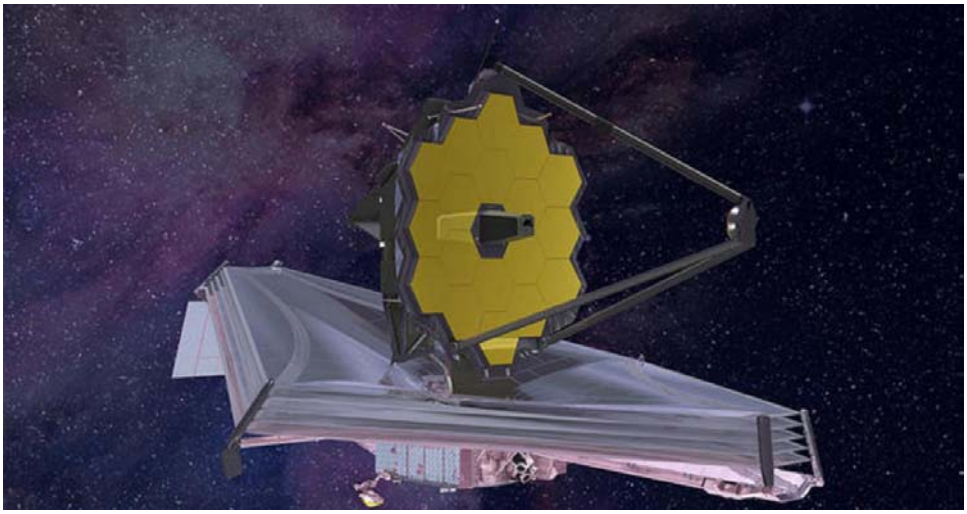
# Regulus 2022 January

***Newsletter of The Royal Astronomical Society of Canada - Kingston Centre***
***kingston.rasc.ca***



The James Webb Space Telescope (JWST) is a space telescope developed by NASA with the European Space Agency (ESA), and the Canadian Space Agency (CSA). It is intended to succeed the Hubble Space Telescope as NASA's flagship mission in astrophysics. JWST was launched on 25 December 2021 on Ariane flight VA256. It is designed to provide improved infrared resolution and sensitivity over Hubble, and will enable a broad range of investigations across the fields of astronomy and cosmology, including observations of some of the most distant events and objects in the Universe such as the formation of the first galaxies, and allowing detailed atmospheric characterization of potentially habitable exoplanets.

The primary mirror of JWST, the Optical Telescope Element, consists of 18 hexagonal mirror segments made of gold-plated beryllium, which combine to create a 6.5 m (21 ft)-diameter mirror – considerably larger than Hubble's 2.4 m (7.9 ft) mirror. Unlike the Hubble telescope, which observes in the near ultraviolet, visible, and near infrared (0.1–1.0 μm) spectra, JWST will do so in a lower frequency range, from long-wavelength visible light (red) through mid-infrared (0.6–28.3 μm). This will enable it to observe high-redshift objects that are too old and too distant for Hubble. The telescope must be kept very cold to observe in the infrared without interference, so it will be deployed in space near the Sun–Earth L2 Lagrange point, about 1.5 million kilometers (930,000 mi) from Earth (0.01 au – 3.9 times the average distance to the Moon). A large sunshield made of silicon- and aluminum-coated Kapton will keep its mirror and instruments below 50 K (−223 °C; −370 °F).
From
https://en.wikipedia.org/wiki/James_Webb_Space_Telescope

## *MEETINGS*

**RASC-KC Wednesday Weekly Social** videoconference. 7pm Eastern all weeks except the 2nd Wednesday of the month. For members and their guests. Email list subscribers receive the link weekly 1 or 2 days beforehand. Next Social: Wed 2022 January 5

**RASC-KC Regular Monthly Meeting** - Wednesday 2022 January 12 a virtual Zoom meeting at 19:00 EST the Regular Meeting.
**Andrew Godefroy (RASC-KC) "Upper Atmospheric Research and the Origins of Canada's Space Program'**

Members will be emailed a zoom registration link, others may watch on our youtube channel.

## *In the January Issue*



**Editor: Kevin Kell**

# The President's Nook - Kim Hay

Happy New Year! 2022 came in on a cloudy night, which means it can only get better and clear! We are heading into a cold spell, so that generally will confirm the clear skies.

We have an exciting next six months with speakers lined up for our Regular meetings, which are held the second Wednesday of each month. Our Social nights are still on  the other Wednesday nights the rest of the month.

We were able to see Comet Leonard C/2021 A1 in the morning hours in Decembers and then again briefly in the twilight hours in mid December with it slipping to the Southern Hemisphere. It has been giving quite the show and with a tail at 60 degree lengths the images have been breathtaking. Malcolm Park imaged the comet from his Telescope in Chile.

The Geminid Meteor Shower produced a very nice display this year, as the moon was out of the sky.

On December 25th, 2021 the much anticipated launch of the James Webb Space Telescope happened around 7:20 am aboard an Ariane 5 Rocket from Europe's Spaceport near Kaurou French Guiana (https://webb.nasa.gov/content/about/launch.html ). It is currently on its way to the L2 (Lagrange point) with the Solar shield unfolding. An image of the JWST was caught by Malcolm Park again from Chilli and this image was the Picture of the Day on December 31,2021  (apod.nasa.gov) . We have more fun events happening in 2022 so come to the January meeting (ZOOM meeting) to find out more from Rick Wagner.

The National Office has now moved, and is busily un-packing and setting up the new office and the Dorner Telescope Museum.
New address is RASC 203-489 College St, Toronto, ON M6G1A5
Phone 1-888-924-7272.

Bruce Elliott - one of two AV Douglas Awardees for 2020

Please check out the RASC Kingston Webpage for meeting notes and topics at
https://kingston.rasc.ca

**Upcoming Meetings**

Wednesday, January 12, 2022 – 19:00 Regular Monthly Meeting-ZOOM videoconference
Guest Speaker: Andrew Godefroy (RASC-KC) "Upper Atmospheric Research and the Origins of Canada's Space Program'

Wednesday, February 9, 2022 – 19:00  Regular Monthly Meeting-ZOOM videoconference
Guest Speaker: Dr. Jennifer West  (Dunpal Institute) Topic: TBA

Wednesday, March 9, 2022 – 19:00  Regular Monthly Meeting-ZOOM videoconference
Guest Speaker: Marcus Leech (RASC Ottawa) "Hunting FRBs on a budget: The SIFT telescope"

Wednesday, April  13, 2022 – 19:00  Regular Monthly Meeting-ZOOM videoconference
Guest Speaker: TBA

Wednesday, May  11, 2022 – 19:00  Regular Monthly Meeting-ZOOM videoconference
Guest Speaker: TBA

Wednesday, June 08, 2022 – 19:00  Regular Monthly Meeting-ZOOM videoconference
Guest Speaker: TBA

July, August – summer hiatus – no regular monthly meetings

**Skyward January 2022**
**By David H. Levy**

*Imagination and the Astronomical League.*

*"A Dragon Lives forever, but not so girls and boys."*

Three quarters of a century ago, during the Second World War, the famous Harvard astronomer Harlow Shapley, along with Charles Federer, founding editor of Sky and Telescope Magazine, launched an association of astronomy clubs across the United States. It is called the Astronomical League, and it thrives to this day with more than 100 astronomy clubs. Unlike the national Royal Astronomical Society of Canada, the League is designed to be a more loosely structured organization. According to Carroll Iorg, its current president, one of its most critical and central goals is to inspire the next generation to enjoy the night sky. If that goal should fail. The possibility exists that there may be no Astronomy for future generations.

As part of this vital goal, the Junior Astronomical League, a new subset of the Astronomical League, is now meeting every second Sunday over zoom. But there is something more. My next book will be devoted to those young stargazers. It actually began as a typewritten saga I wrote in 1958 when I was ten years old, and of all the 40 plus books I have written, this is Wendee's favorite. I am now completing a second edition of this book, in which a small group of children go on a stargazing adventure with Clipper, a magic beagle, and with Eureka, an enchanted reflector telescope. They go past the Moon and planets, the stars, the distant superclusters of galaxies, and even the great voids in distant empty space.

In its final chapter, this book explores the theme articulated in the last verse of Peter, Paul, and Mary's eminent song "Puff." "A dragon lives forever, but not so girls and boys." The children, now grown, go to university. When they complete their college education, the young woman, adept at math and physics, becomes an astronomer, but the young man goes on to become a lawyer. He marries, has children who are now grown themselves, and unhappily gets a divorce. To recover he decides to take a vacation trip to Arizona., Driving his rented car one evening, he pulls off the road, gets out of his car, and looks at the stars. As childhood memories flood back, a second car pulls off. The young woman astronomer gets out of her car. The two cannot believe they are reuniting, and they catch up for hours. Then there is a break in their conversation. As the couple looks up silently at the stars, the magic beagle, and the telescope, appear and take shape. In that one ultimate celestial adventure, the magic of the night has returned.

## The Sky This Month 2022 January- By Rick Wagner

January Skies
01 Jan - celebrate the New Year by observing Jupiter, Saturn, Mercury and Venus in a line above the southwestern horizon soon after sunset. By month's end they all move into the dawn sky!
02 Jan - New Moon 13:33EST
02 Jan - Algol at minimum for ~2hrs around 19:42EST - watch it rise from minimum through the evening.
03 Jan - the very brief Quadrantid meteor shower peaks 16:00EST - best seen morning of 3rd or 4th
03 Jan - Mercury 3º north of thin crescent Moon in the southwest shortly after sunset - try using binoculars
04 Jan - Earth at perihelion, closest distance to the Sun ( 147 105 052km)
07 Jan - Mercury at greatest elongation east (19º) (mag -0.6)
09 Jan - Venus at inferior conjunction and closest to Earth in more than a century (39 763 000km); moves into the morning sky
09 Jan - First Quarter Moon
12 Jan - Moon very close to dwarf planet (1) Ceres - the only dwarf planet visible with binoculars or small telescopes
17 Jan - Full Moon - the smallest full moon this year 18:48EST
23 Jan - Mercury at inferior conjunction and moves into the morning sky
25 Jan - Last Quarter Moon
25 Jan - Algol at minimum for ~2hrs around 18:15EST - watch it rise from minimum through the evening.
29&30 Jan - Moon, Venus & Mars form an attractive grouping in the southeast before sunrise.

## BONUS 2022 Skylights

Here are some observing highlights for the coming year: the year of the solar system! Unfortunately for late risers most of the events take place before sunrise but that is the most beautiful time of the night. All these events are well worth getting out of bed for!

8/9 Jan – Venus is in inferior conjunction – 5º north of the sun. If you are well equipped this might be a good time for seeing the extremely narrow crescent. **Venus will be very close to the sun so viewing it could be very dangerous - don't do this unless you're a very experienced observer, probably with a solar filter to align your scope on the Sun. My process is to put the solar filter on, align the scope on the Sun, move the scope to Venus, look through the eyepiece to ensure that there is no Sun visible. Only then do I remove the solar filter. Any time I move the scope the solar filter goes back on first.**

28 Mar – Mars, Venus, Saturn, and Moon in a tight grouping before sunrise.

5 Apr – Mars-Saturn are tight in the dawn twilight with bright Venus nearby to help find them. As with most of the planetary appulses this year the closest approach is when the planets are below our horizon so we never see them at their closest but it means that we can see them about equally close the morning before and the morning after closest approach so we have two chances to see the event.

27 Apr – Another very pretty grouping of the earth-lit crescent Moon near Jupiter and Venus. This leads up to, a few days later...

30 Apr/1 May – Venus-Jupiter conjunction, very close, very bright, in the dawn twilight.

15 May – We will be treated to a nearly ideal total lunar eclipse. Though low in the south, the whole eclipse will be visible in the southeastern sky. Totality comes to an end just before the Moon is crossing the meridian near midnight. Bright Antares and Scorpius are nearby making a great opportunity for some dramatic views; and in the middle of totality the Moon occults a 6.25mag star - if you've never watched an occultation this is your perfect chance.

29 May – Jupiter and Mars have a close encounter Notice that Jupiter is much brighter than Mars but in a telescope Mars has the brighter surface brightness as it is much closer to us and the Sun.

18-25 Jun – you will have a chance to see all the major planets at once. In morning twilight Mercury will rising as Saturn is about to cross the meridian, in between from west to east are Neptune, Jupiter, Mars, Uranus, and Venus. Through the week the Moon will be scooting along under the line of planets becoming a thinner and thinner crescent as it goes. For the real keeners, Pluto is visible with a 10" or larger telescope in the southwest, and Vesta is just left of Saturn at mag 7.

26 Sep – we get a super opposition of Jupiter, not only is it about twice as high in the sky than last year but this is its closest approach in 70 years.

24 Oct – A daytime occultation of Mercury by the Moon. Counterintuitively the thin crescent Moon will probably be invisible but Mercury at mag -1 should be visible in a telescope and we can watch it gradually disappear as the limb of the Moon creeps over it. **Again - being a daytime observation be careful to keep the scope pointed away from the Sun. Do not sweep for Mercury - only use accurately aligned go-to scopes, see the recommendations for the 8/9 Jan conjunction of Venus.**

8 Nov – total lunar eclipse – the moon sets in bright dawn twilight just minutes after the end of totality.

**8 Dec – Mars reaches opposition - not as close as two years ago but much higher in the sky so seeing should be better. And at nearly the moment of opposition Mars get occulted by the Moon in a dark late evening sky - amazing!**

## RASCKC Annual Report - Year in Review Member Gallery 2021

Thank you to all who submitted their single best image of the calendar year (2021) for inclusion into an annual Year in Review compilation.

The idea is to record in history some of the activity and talent of our members into a permanent history. So far the idea is to put this into an electronic document (PDF) and make it available on our website. Layout will be one image per page with a couple of paragraphs of text.

You can see the 2021 publication here after 2022 January 6th: https://kingston.rasc.ca/kc-gallery-2021

Walter MacDonald has been doing some history work.
"It has been a couple of years now since the folks at Corel got greedy and went to a subscription model for their software. Having used CorelDRAW for almost 30 years (over half my life!), finding a replacement was not easy. Now I've settled on the Affinity suite (Publisher/Photo/Designer) and it does much of what Corel did and for a very reasonable (non-subscription) price. Even better, the entire workflow is now done on my MacBook. The learning curve has not been easy (when is it ever?), but I'm getting there.

A project I decided to tackle this winter is to extend the compilation of a Centre observing log, as used to appear in Regulus. A 2.5 year backlog was a bit daunting. One roadblock was that I simply haven't saved every email I've ever received. However, I discovered that gmail *has* saved everything (isn't that just like them, and yet I'm still nowhere near my storage limit!). But then I discovered there was about a 6-month gap where I was not subscribed to the KC Chat list when they switched to Google (I think that was during the 2019 federal election). That was solved when I discovered the Chat list archive is accessible when you log in to Google! (Though I think you have to be a list subscriber to do this.)"

A collection of 5 publications chronicling the history of the Kingston and Area Astronomy email chat.
You can find them on the RASC Kingston Centre website under "library, periodicals, skyletters":

https://kingston.rasc.ca/skyletter/2020-04
https://kingston.rasc.ca/skyletter/2020-03
https://kingston.rasc.ca/skyletter/2020-01
https://kingston.rasc.ca/skyletter/2019-09
https://kingston.rasc.ca/skyletter/2019-06

## December 8, 2021 Regular Meeting Minutes

## Prepared by Elena Zanetti

Kim Hay started the meeting at 7:00 p.m and welcomed everyone.
Announcements by Kim Hay –
Reminder – site for Membership renewal is https://secure.rasc.ca. On this site, also sign up for any RASC forums, if interested, link is on the right hand side under Member tab.
RASC Awards deadline for submission is Dec. 31, 2021. Definitions of the Chant Medal, Ken Chilton Prize, Service Award, Simon Newcomb Award, Qilak Award and Fellow of the RASC are at https://www.rasc.ca/rasc-awards. Send nominations to Chris Gainor cgainor@shaw.ca
The RASC Kingston Centre is looking for another volunteer to assist with the Total Solar Eclipse 2024 with Queen's Astronomy. Current planning is underway. Will involve meetings and also assist Bruce Elliott with outreach. Please contact kingston@rasc.ca
Kim Hay introduced Al Ward, President of the RASC Sudbury Centre and President of Moonward Vacuum Coatings, specialist in metal and dielectric thin films for optical systems. Al Ward was a speaker at our centre on April 6, 2001, and gave a live demonstration at Starfest in 2003 of a vacuum coating. Al's presentation was the Testing of Astronomical Optics in the Computer Age.
For over 100 years, the Foucault Tester was used by amateur astonomers to accurately reveal minute imperfections but the user needed to be highly skilled to interpret shadows and grey scales and were prone to misinterpretation. In 2003, Al Ward and Bob Odaiskey started to

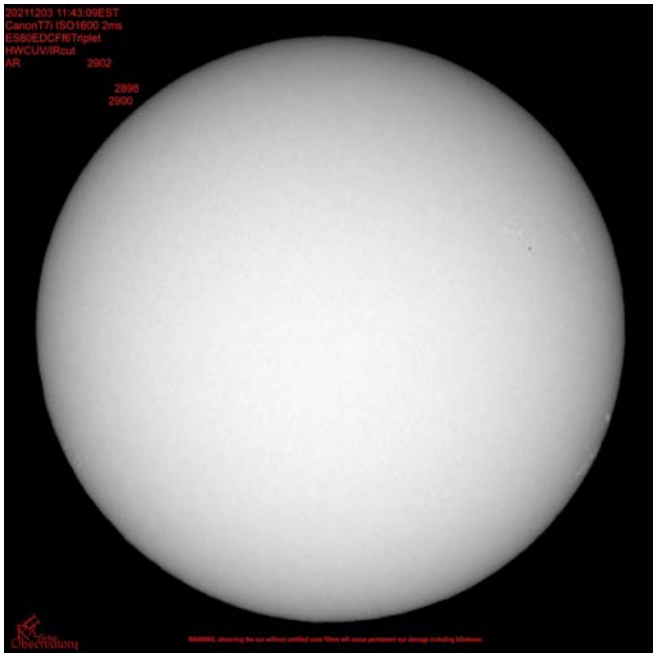
question how to produce consistent readings and Al gave a lively talk on the use of video and computer interfacing to achieve consistent measurements with greater accuracy in a very user-friendly manner.
David Levy thanked our speaker and read a poem by C.A. Olson, "A Piece of Glass", from the book Amateur Telescope Making Advanced (Book Two).
John Hurley, our National Council rep, reported on the Dec. 5th meeting and one of the main topics of discussion was the national office which is currently in the middle of a move and also trying to hire two more staff to help with renewals, etc. If having issues renewing, log in to https://secure.rasc.ca. Password may have to be changed if you have not logged in since the spring or summer. If still a problem, try calling the National office and leave a message. Handbooks are in the mail. A GA taskforce will look into the future of General Assemblies and a survey will be reposted.
Hank Bartlett reported on a quieter month than expected for sun spots Nov. 11 – Dec. 8, 2021 attributed to low activity and cloudy weather. Produced by 12 active regions AR12893 – AR12904. There have been 0 X class flares, 1 M class flare (behind limb), 19 C class flares and 10 observing sessions. A photo of sun spot AR12894 by Kim Hay was shown. White light and H-alpha images were shown. On the 4th -5th, there was almost 30 hours of C-M eruptions after heading around the limb. From spaceweather.com an image was shown of the solar eclipse on Dec. 4th from the Antarctic.
Rick Wagner presented What's Up in the Sky in December 2021 and January 2022
-Queen's University Observatory – Fast Radio Burst Podcasts
- Dangerous Universe: Galaxy Guillotine (part 3)
- Makings of a Universe
- hyyp://observatory.phy.queensu.ca/
-BAA Events
- 10 Dec – RASC Xmas Webinar – Jodrell Bank, the cold war and the space race
- 16 Dec – Webinar – Exoplanets present and future (1400EST)
- 12 Jan – Webinar – Observing the satellites of the giant planets (1400EST)
-AAVSO Webinars
-11 Dec – Arne Henden – Science with the AAVSOnet Faint Star Monitors
In the sky -
- 9 Dec – Moon left of Jupiter in the SSW after sunset
- 10 Dec – double shadow transit on Jupiter 17:15EST
- 10 Dec – Algol at minimun for about 2 hours around 21:10EST
- 14 Dec – Geminid meteor shower peaks in the early morning – best observing will be after the Moon sets at about 3 AM
- 15 Dec – Comet Leonard reappears in the evening sky shortly after sunset but it will stay low for the rest of the month, setting in twilight
- 18 Dec – Full Moon 23:35EST
- 21 Dec – Equinox 10:59EST
- 22 Dec – Ursid meteor shower peaks
- 27 Dec – Last Quarter Moon
- 29 Dec – Mercury 4.5° lower left of Venus
- 30 Dec – Mercury 5.3° left of Venus
- 31 Dec – Mars, thin crescent Moon, Antares form a triangle in southeast morning sky
- 2 Jan – New Moon
- 2 Jan – Algol at minimum 19:40EST
- 3 Jan – Quadrantid meteor shower peaks
- 4 Jan – Earth at perihelion (147 105 052km)
- 7 Jan – Mercury at greatest elongation east (19°)(mag -0.6)
- 7 Jan – Jocelyn Bell discovers first pulsar 1967
- 9 Jan – Venus at inferior conjunction
- 9 Jan – First Quarter Moon
Asteroids This Month
- 10 Dec – (44) Nysa at opposition (mag 9.1)
Rick Wagner then gave a presentation on Siril - used for stacking images.
Malcolm Park presented images of Comet Leonard using a 14mm lens on a Nikon D800 and tracking on a Star Adventurer, a 200mm and 50mm lens on an EQ6 and a Nikon D810A on a EQ6 untracked (30 sec) with a 200mm lens with the camera on DX mode.
Al Ward and Dave Pianosi shared a picture of a poster of Peter Quaife, bass guitarist of the Kinks, standing in front of an astronomy poster. Taken in 1967.
Rick Wagner presented a photo of Comet Leonard with the RASC remote telescope.
Kim Hay closed with announcements: our Member Social is on Zoom every Wednesday night and the link will be sent out to the local chat list. If you would like to be added to the list, please send an email to kingston@rasc.ca Our next regular meeting is January 12, 2022 and our speaker will be Andrew Godefroy – Upper Atmospheric Research and the Origins of the Canada Space Program.
Kim thanked all and the meeting adjourned at 9:09 p.m.

## RASC-KC Solar Cycle 25
## Monthly Review

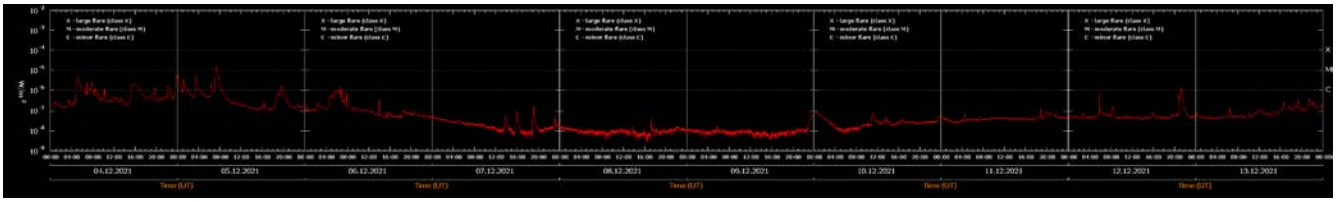
A review of solar activity and images during the past month

by RASC-KC solar observers for December 2021

Dec 1 – there were 4 sunspots on deck to start the month and cloudy weather. On the 3rd I managed to image 3 of these spots, 2 of which were already rolling around the west limb in these images. The next day when 2898 & 2900 were completely around the corner 2898 burst with activity, numerous prominences were launched off the surface by the 1 M and 16 C class flares of AR2898. Unfortunately it was cloudy from the 4th to the 11th inclusive so no images were captured by this imager.

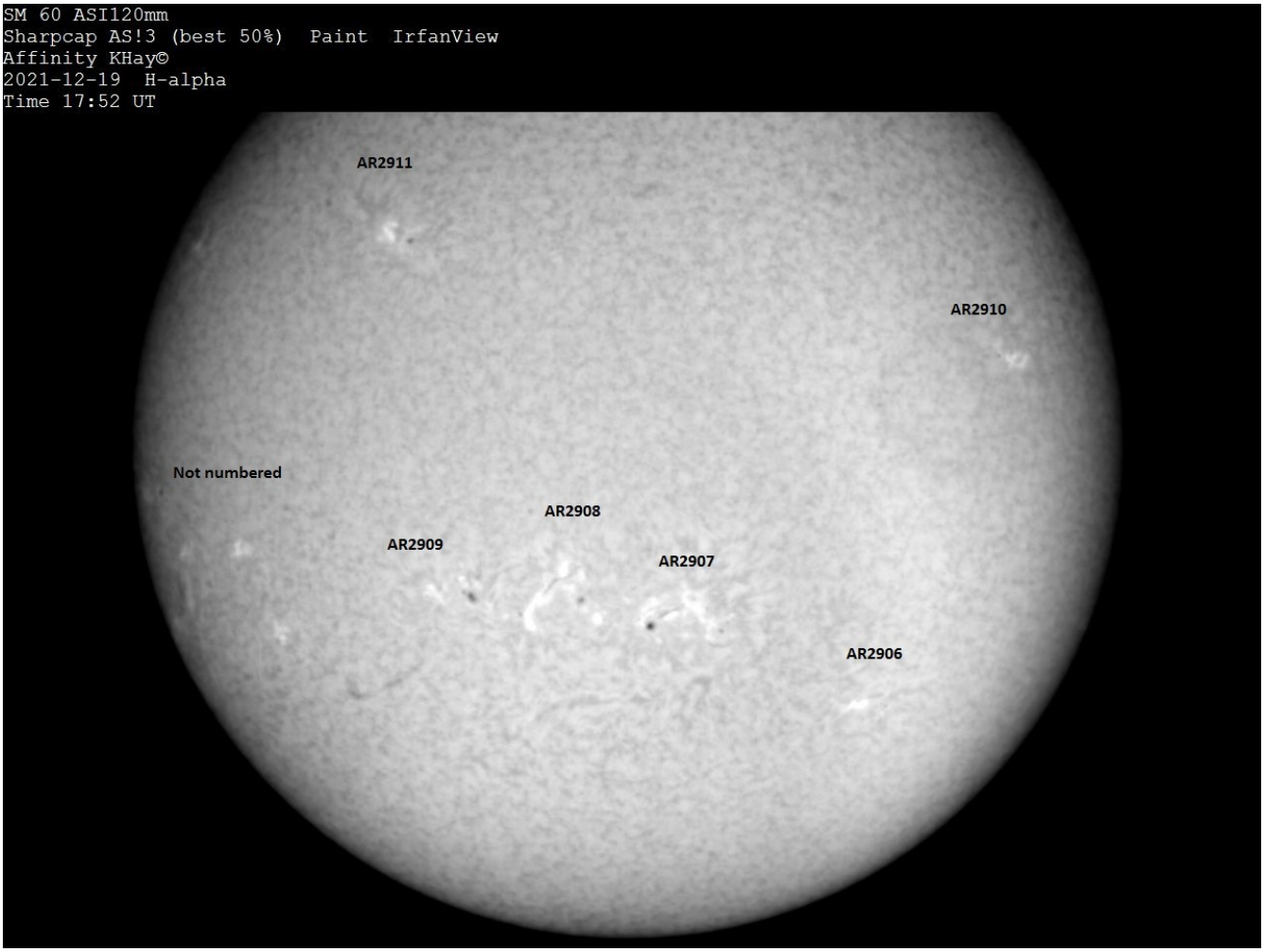




On the morning of the 5th activity began to wane and over the next few days the x-ray level slumped and at one point almost reached 10-9! Notice the graph is brighter and more condensed during this slump as waves of activity became less in amplitude but more frequent until midnight UT on the 9th when it began to ramp up again.



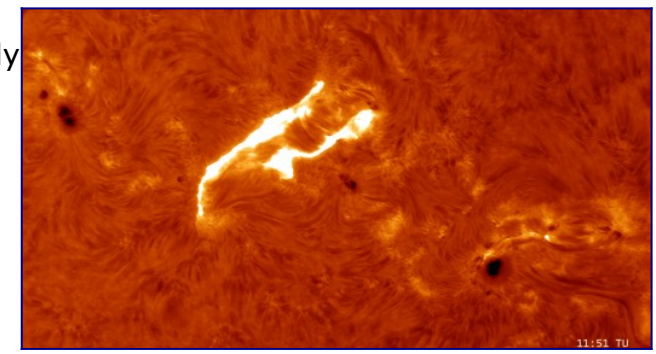
On Dec. 11 a huge wind storm came and blew all the cloud to Labrador (along with many of my shingles). Life is back on track, no more watching Hallmark Christmas movies due to lack of images to process. Hank was happy! There had been some decent h-alpha activity during the past 8 cloudy days, nothing

significant but the month was improving. This last half of the month started with AR12905 and by the 14th C class flares had become common again with 8 occurring that day and all but one originating in AR2907. This active region was the first of a trio string of spots that developed across the solar southern hemisphere as shown below in this December 19th h-alpha image by RASC Kingston President Kim Hay...



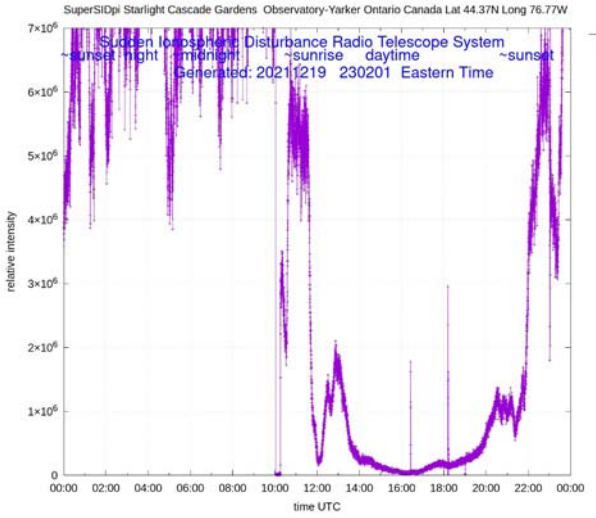

All of this activity has brought the x-ray baseline back up to a decent 10-6 range and C flares have been quite common. We had M flares on Dec 17 M1.2 & Dec 20 M1.8, the 1.2 delivered a light northern aurora display so perhaps this one will reach our latitude.

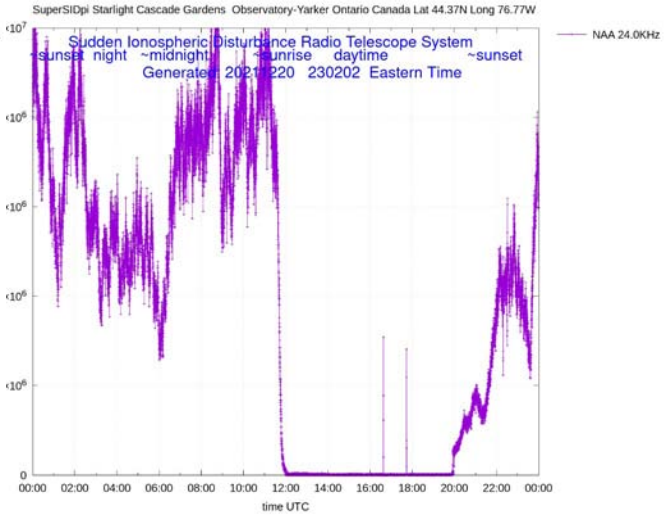
From spaceweather.com ...
**EARTH-DIRECTED SOLAR FLARE:** Directly facing Earth, sunspot AR2908 produced an M1.9-class solar flare today (Dec. 20 @ 1136 UT).
A pulse of X-rays ionized the top of Earth's atmosphere, causing a minor shortwave radio blackout over the south Atlantic Ocean.Stay tuned for updates about a possible CME emerging from the blast site.



No aurora appeared for us.
Image Pepe Manteca of Barcelona, Spain.

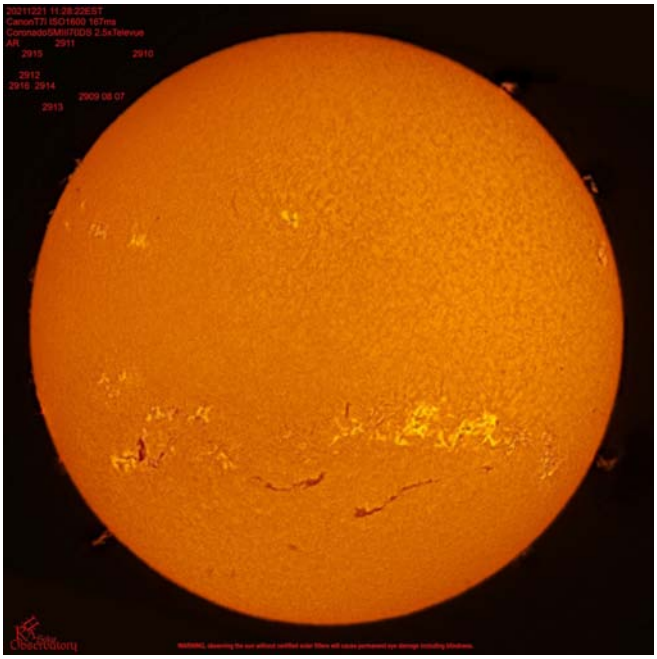
Dec 21, from Kevin Kell...
"I am wondering if we are in fact already in an era of higher solar activity. Our SuperSid https://starlightcascade.ca/supersid/ radio observatory system has been running stable under a raspberry pi data logging system for almost a year now. The Y axis scale is manually set to 7*10^6 units and occasionally in the past went beyond this threshold. For the last week or so It has been continuously reading past that level. We switched it to 8*10^ and then to 10*10^6 = 1*10^7 and it is still occasionally going off scale."

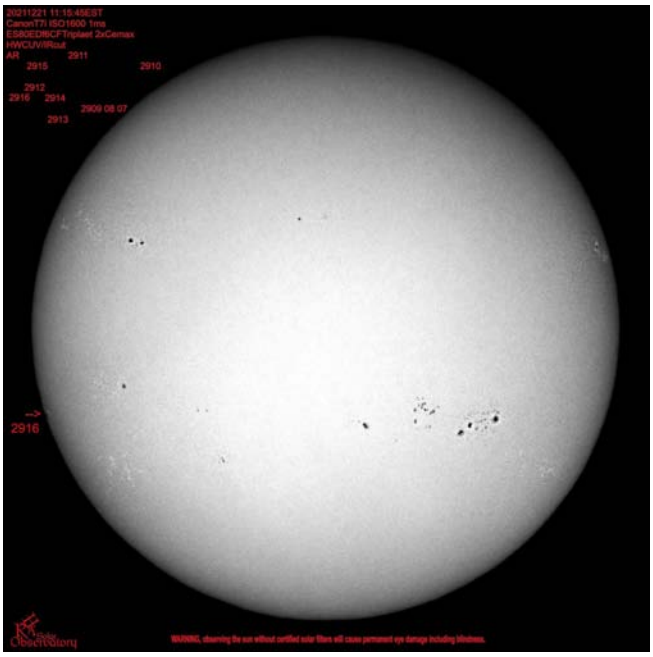


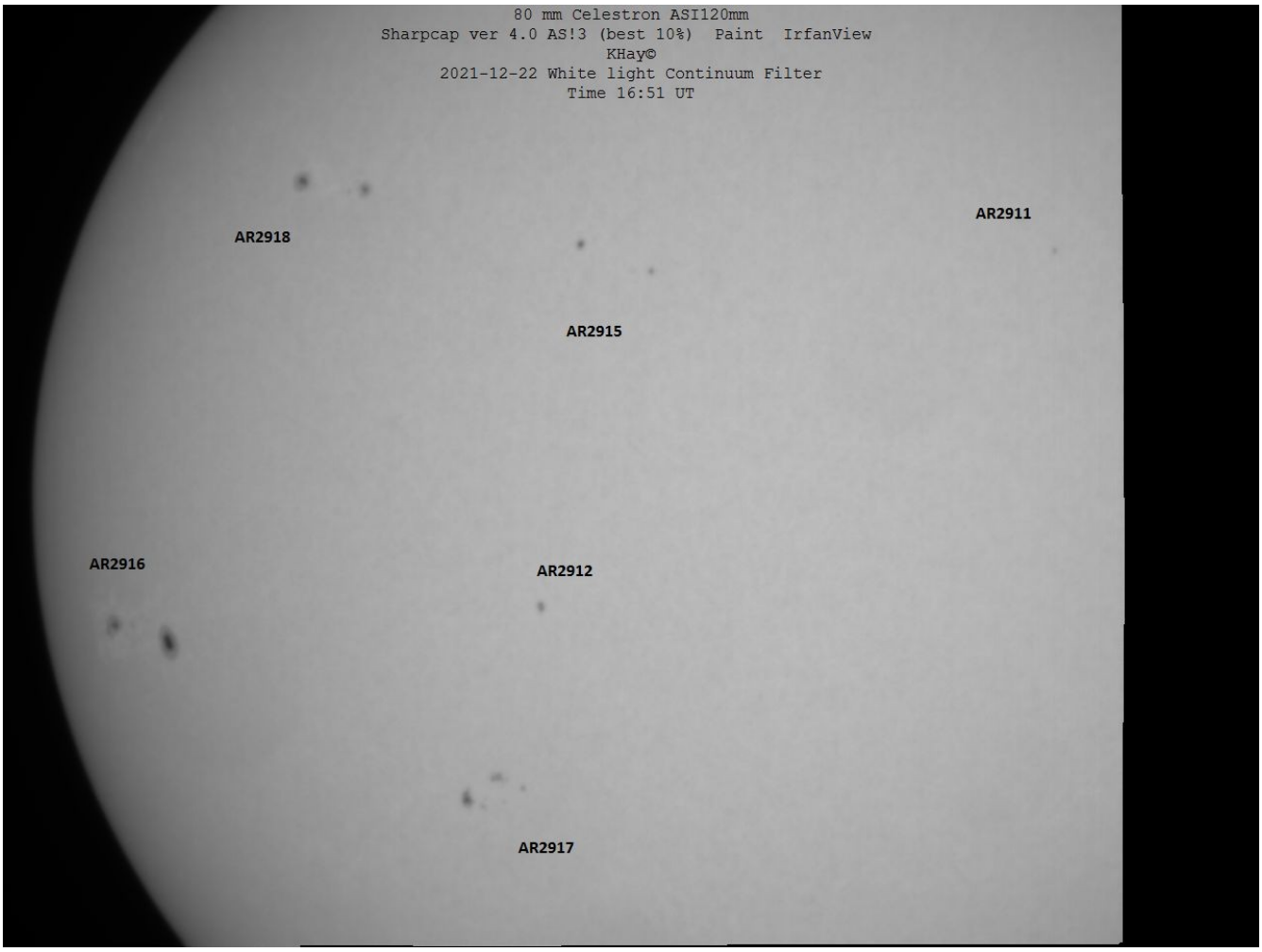




Dec20 Dec 21

Below is what Kevin was talking about, 10 sunspot groups!...







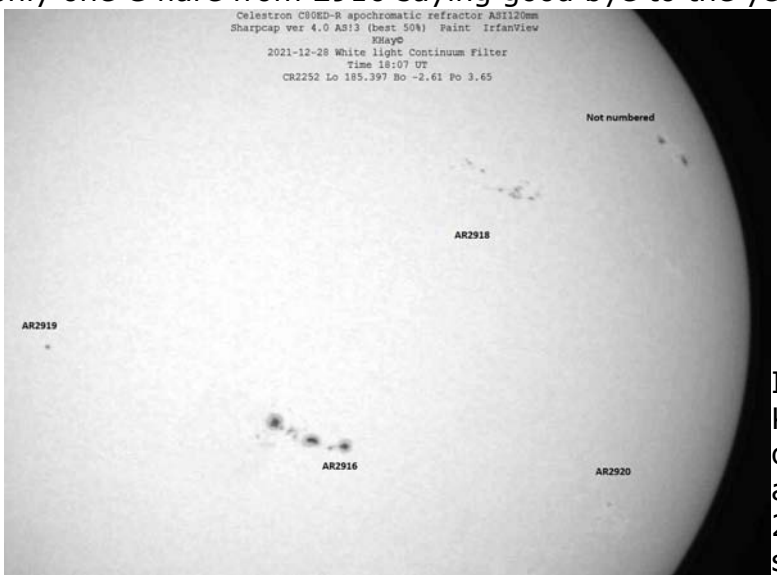

Even though there was Sun the sky was Soupy, and high cloud interfered. This is the best picture using 10% of frames. The ASI120mm only gets a portion of the Sun in the frame. It is a White Light with a Continuum filter. The Western side of the Sun images have too much cloud to process. The H-alpha was very bad seeing today. Kim

As a gift to the spouses and families of astro-imaging enthusiasts the sky continued to deteriorate after Kim's image and by the 24th we were socked in leaving us to pay holiday attention to our families. That of course did not stop the activity from the 23rd-26th with a baseline of about 10-6 on the x-ray graph there were 47 C class eruptions during those cloudy days.

From the Dec 26 : spaceweather.com **BIG SUNSPOT TURNS TOWARD EARTH:** This weekend, sunspot AR2916 has quadruped in size, turning into one of the largest spots of Solar Cycle 25. This 48-hour movie from NASA's Solar Dynamics Observatory shows the active region growing and turning toward Earth:

AR2916 has an unstable 'delta-class' magnetic field that harbours energy for powerful X-class solar flares. If such an explosion occurs today, it would be Earth-directed, potentially causing shortwave radio blackouts and radiation storms. **Solar flare alerts:** SMS Text. spaceweather.com

Such looks were deceiving, although 2916 released 2 M class flares while coming around the SE limb and 3 C flares in passing it failed to produce an X flare and was out performed by 2918 in the northern hemisphere. 2918 produced 2 M flares on the 28th and 17 C flares throughout its passing. Those M1.8 & M1.6 flares led the sun into another rest period for the final days of December and 2021 with there being only one C flare from 2916 saying good bye to the year.




Imaged again by Kim on the 28th one can see that although quieter 2916 held its spot size in comparison to 2918 which had the double M blow out that same day. On the 31st 2918 re-awakened with two low and two high level C flares but nothing of consequence.

For the month flares were X= 0, M= 8 and C= 170 (62 0f which came from AR2907). I have no summation for the year but I am certain you can find that somewhere on-line. As well the last day of the year was solid cloud at the RHA Obs., no images.

## The RASC Kingston Centre Storage Shed – Kevin Kell

The RASC-KC Storage Shed, located inside our (SCGO) fenced yard, had a fall cleanup a few months back. Everything was taken out, inspected, triaged and some put back again. These are some images of the stuff:





This includes educational outreach items, corporated records cabinet, storage shelves and the Center's library.

It amassed two large piles in the yard (below). Some items were discarded, others recycled, and the remainder put back inside, in a slightly better organized fashion.


## Steve Craig's Galaxy of the Day for December 2021

[apologies from your Editor… last months issue has some bugs… the text did not match the images. So we have backtracked a bit and restarted the sequence (ie turned it off and on again, from Day 245)

Day 245 NGC5297 Is a spiral galaxy about 112 million light years away in Canes Venatici. It is interacting with NGC5296, a dwarf Lenticular Galaxy, just above in this image. They were discovered on April 9, 1787 by William Herschel.

Day 246 NGC5300 is a very faint spiral galaxy about 59 million light years away in Virgo. It was discovered on May 13, 1793 by William Herschel.

Day 247 NGC5301 is an almost edge on spiral galaxy about 70 million light years away in Canes Venatici. It was discovered on May 11, 1787 by William Herschel.

Day 248 NGC5308 is an edge on lenticular galaxy about 85 million light years away in Ursa Major. It was discovered on March 19, 1790 by William Herschel.

Day 249 NGC5320 is a spiral galaxy about 119 million light years away in Canes Venatici. It was discovered on April , 1787 by William Herschel.

Day 250 NGC5350 is a spiral galaxy, part of a group of 5, about 110 million light years away in Canes Venatici. In this image, top edge is NGC5355, top middle is NGC5358, middle left is NGC5353, middle centre is NGC5354 and middle right is NGC5350. They were discovered on January 14, 1788 by William Herschel.

Day 251 NGC5351 is a barred spiral galaxy about 100 million light years away in Canes Venatici. Just above in this image is NGC5349 a lenticular galaxy about 105 million light years away. NGC5351 was discovered on May 16, 1787 by William Herschel.

Day 252 NGC5356 is a barred spiral galaxy about 62 million light years away in Virgo. It was discovered on February 2, 1786 by William Herschel.

Day 253 NGC5364 is a spiral galaxy about 55 million light years away in Virgo. It has an incomplete ring structure in the inner part of the galaxy with loosely wound arms. It was discovered on February 2, 1786 by William Herschel.

Day 254 NGC5371 is a barred spiral galaxy about 100 million light years away in Canes Venatici. It was discovered on January 14, 1788 by William Herschel.

Day 255 NGC5377 is an inclined spiral galaxy about 85 million light years away in Canes Venatici. It was discovered on May 12, 1787 by William Herschel.

Day 256 NGC5383 is a prime example of a barred spiral galaxy with ring arms. It lies about 104 million light years away in Canes Venatici. It was discovered on April 9, 1787 by William Herschel.

Day 257 NGC5389 (upper) is a lenticular galaxy about 82 million light years away in Ursa Major.
NGC5379 (lower) is a lenticular galaxy about 81 million light years away.
They were discovered on April 24, 1789 by William Herschel.

Day 258 NGC5403 is an edge on spiral galaxy about 125 million light years away in Canes Venatici. You may see that it's disk is warped much the same as our own galaxy. It was discovered on May 16, 1787 by William Herschel.

Day 259 NGC5421 is a pair of interacting galaxies about 360 million light years away in Canes Venatici. They are catalogued as #111 in the Arp Atlas of Peculiar Galaxies. They were discovered on June 9, 1880 by Edouard Stephan.

Day 260 NGC5422 is an edge on lenticular galaxy about 100 million light years away in Ursa Major. It was discovered on April 14, 1789 by William Herschel.

Day 261 NGC5440 is a spiral galaxy about 168 million light years away in Canes Venatici. It was discovered on May 1, 1785 by William Herschel.

Day 262 NGC5448 is a barred spiral galaxy about 100 million light years away in Ursa Major. It was discovered on May 15, 1787 by William Herschel.

Day 263 NGC5529 is an edge on spiral galaxy about 144 million light years away in Bootes. It was discovered on May 1, 1785 by William Herschel.

Day 264 NGC5533 is a spiral galaxy about 117 million light years away in Bootes. It was discovered on May 1, 1785 by William Herschel.

Day 265 NGC5444 (upper) and NGC5445 (lower) are a pair of interacting galaxies about 140 million light years away in Bootes. They are catalogued as #199 in the Arp Atlas of Peculiar Galaxies. They were discovered on May 1, 1785 by William Herschel.

Day 266 NGC5560 (upper), NGC5566 (middle) and NGC5569 (lower) are cluster of interacting galaxies about 70 million light years away in Virgo. They were discovered on April 30, 1786 by William Herschel.

Day 267 NGC5577 (left), NGC5576 (middle) and NGC5574 (right) are a group of galaxies about 70 million light years away in Virgo. 5577 and 5576 were discovered on April 30, 1786 by William Herschel. 5574 was discovered on April 26, 1849 by George Stoney.

Day 268 NGC5579 is a distorted spiral galaxy about 169 million light years away in Bootes. It is catalogued as #69 in the Arp Atlas of Peculiar Galaxies. It was discovered on May 1, 1785 by William Herschel.

Day 269 NGC5584 is a spiral galaxy about 75 million light years away in Virgo. It was discovered on July 27, 1881 by Edward Barnard.

Day 270 NGC5585 is a spiral galaxy about 28 million light years away in Ursa Major. It was discovered on April 17, 1789 by William Herschel.

Day 271 NGC5614 is a spiral galaxy about 195 million light years away in Bootes. It has a bright core and faint tightly wound spiral arms. It was discovered on May 1, 1785 by William Herschel.

Day 272 NGC5618 is a spiral galaxy about 326 million light years away in Virgo. It was discovered on March 23, 1789 by William Herschel.

Day 273 NGC5665 is a distorted spiral galaxy about 59 million light years away in Bootes. It is catalogued as #49 in the Arp Atlas of Peculiar Galaxies. It was discovered on January 30, 1784 by William Herschel.

Day 274 NGC5668 is a spiral galaxy about 81 million light years away in Virgo. It was discovered on April 29, 1786 by William Herschel.

Day 275 NGC5669 is a spiral galaxy about 62 million light years away in Bootes. It was discovered on March 19, 1784 by William Herschel.

Day 276 NGC5676 is a spiral galaxy about 100 million light years away in Bootes. It was discovered on May 15, 1787 by William Herschel.

# Stephen Craig's Galaxy Image of the Day


NGC5297


NGC5300


NGC5301


NGC5308


NGC5320


NGC5350


NGC5351


NGC5356


NGC5364


NGC5371


NGC5377


NGC5383


NGC5389


NGC5403


NGC5421


NGC5422


NGC5440


NGC5448


NGC5529


NGC5533


NGC5544


NGC5560


NGC5577


NGC5579


NGC5584


NGC5585


NGC5614


NGC5618


NGC5665


NGC5668


NGC5669


NGC5676