

The Newsletter of the Popular Astronomy Club ESTABLISHED 1936

President's Corner June 2020



Welcome to the June 2020 edition of the Popular Astronomy Club's Monthly Newsletter "Reflections". Things are slowly starting to open up

and get back to normal again now that the COVID19 virus pandemic is tapering off. Some restaurants and other businesses are beginning to open up. For the Popular Astronomy Club, we may have to wait until September before we can once again have face to face meetings. The Butterworth Center will not be opening up for large groups again until after our scheduled July public meeting (August is the Annual Club Picnic and Perseid Meteor Shower event). So, we will have to continue using Zoom or other videoconferencing technology for our meetings. Last month's presentation by Ian Spangenberg about Fermilab was very interesting and Byron Davies' Constellation Report was also very good. These virtual meetings have actually gone very well for us, and we may want to continue doing them simultaneously with our face to face meetings (when they resume again this Fall). This would give us a way to expand our meeting attendance as well as facilitate the involvement of speakers who may not reside in the

(Continued in next column)

local area. The June 8th PAC meeting will be a business meeting followed by the Constellation Report by Anne Bauer and a smorgasbord of short presentations on various topics. As I am writing this, I don't have a list of the speakers, but if you are interested in doing one, I encourage you to step up and volunteer. Dino Milani is organizing the smorgasbord agenda, so if you are inclined to do a talk, please contact him to get you on the docket.

So far this year, we have not been able to have any public observing sessions due to the pandemic. At the moment, I am not aware of any astronomy clubs having public observing sessions yet this year. Being cut off from doing public sessions has been a tough pill to swallow for our club, which has conducted a very active public outreach for the last 84 years. Hopefully things will open up again as the virus subsides. In the meantime, we have had some club observing sessions and of particular interest, we have begun our refurbishing of the Paul Castle Memorial Observatory. On May 22nd, an enthusiastic group of us met to disassemble the dome and remove the wall sections of the observatory. You can see pictures of the group's activities here in this newsletter. This last Tuesday (May 26th) we hauled the dome down to Jackson Autobody in Rock Island where it will be cleaned and refinished. Next

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we will make some repairs to the wall sections, remove the deck and begin the process of installing a heavy duty, concrete pier to replace the wooden one we had before. These work days have been and promise to continue to be a good way to get outside and do something good for astronomy. I encourage you to get involved with some of the refurbishing work and enjoy the warm weather. I suggest we do as we did on May 22nd, have a picnic after spending a few hours working on the observatory. So, watch your email as we will be putting out information about future work days (and picnics!). Thanks, and keep looking up!

Alan Sheidler



ANNOUNCEMENTS / INFO



NCRAL Seasonal Messier Marathon Program

NCRAL's Seasonal Messier Marathon observing program is NOT designed to qualify observers for the Astronomical League's Messier Observing program; the two programs are unrelated and observing requirements are quite different. In the NCRAL program, the main requirement is to quickly observe and essentially check off items from one of four seasonal lists of Messier objects as noted in the section to follow.

NCRAL recognition will consist a suitable printed certificate and a 3/4-inch enameled star pin (a different color for each season). There will be no direct cost to the membership for participating in the award program; the cost of the program (pins, certificates, mailers, postage) will be borne by the Region as a benefit of affiliation. Relevant program documents are linked below

NCRAL Seasonal Messier Marathon Program Rules

NCRAL WINTER Seasonal Messier List

NCRAL SPRING Seasonal Messier List

NCRAL SUMMER Seasonal Messier List

NCRAL AUTUMN Seasonal Messier List

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> Contact for Information or questions here: popularastronomyclub@gmail.com

ANNOUNCEMENTS / INFO



Birdies for Charity

Even though the John Deere Classic golf activities have been canceled, the Birdies for Charity Program is still on for 2020 but is somewhat different this year.

The easiest way to contribute is to go to <u>www.birdiesforcharity.com</u> and donate online. Click on 'Make a Donation", Select "2046: Popular Astronomy Club" from the alphabetized drop down menu, and fill in the rest of the online form. The minimum, online donation is \$20.00

If you prefer not to donate online, you can go to the web site, click on "Pledge Forms" and print out a form. Enter "Popular Astronomy Club" and Birdie Number 2046 onto the form, and complete the other information. Mail the completed pledge form to Dale Hachtel at 1617 Elm Shore Drive, Port Byron IL, 61275 to arrive by June 25. Your contribution by check may be included as stated on the pledge form.

Any Birdies contribution is still guaranteed to have an additional 5% donation from John Deere.

READY FOR MEMBERSHIP OR TO RENEW?

For PAC Documents Use "Enrollment Form"



SUBMISSIONS

If you have an article or photos to submit or items of interest, we encourage you to send them in by the 25th of the month. Links to stories are welcome also. **Thank you!**







First one (top) was from New Zealand on February 26th and the second (bottom) was the planetary conjunction with the Moon on March 17th. **Roy Gustafson**



A report of observing with the restored Paul Castle Astro Physics scope at Menke (May 15th, 2020)

My AP got setup smoothly - lots of parts to assemble - but I gave myself plenty of time to get it done before dark. It worked beautifully! The mount was plenty stable - something I was a bit worried about. The optics are amazing! Easily the best scope I've ever looked through. Pretty much textbook star test with identical diffraction rings on both sides of focus. Easily split the double-double in Lyra at 200x with clear separation. **Steve Sinksen**





Editors note: Steve is looking towards completing the AL double star list with the telescope.





From a friend of Mike Mack....

As promised, here is a first pass at the photo of the comet with the Bode's Galaxies. C2017/T2 is at the lower right, and the Bode's pair is at the upper left. This was taken with my 300mm F/L astrograph, so any larger instrument would probably not be able to capture them. Notice the "tails" on some of the brighter stars, a consequence of the corrector, which made finding the "true" comet difficult early on.

...



My functional Newtonian replica provides nice views of the moon and decent views of our stellar realm.



Eric Greene

y 🖓 Visual Storyteller - May 15 at 9:08 PM

The Bat Scope. Don't recall if it's 14 or 16 inches. The woodwork on the scope is amazing.







I'm 17 years old and just finished building this 14.7" f/2.89 Newtonian reflector telescope. Despite its stubby size it collects roughly 2500 times more light than the human eye and is bigger than the scope at my local observatory.



Mark Weber March 28 at 5:47 PM

The awkward moment when Nanna tells you "this things not working" and you don't have the heart to tell her she's doing it wrong.



😸 🙆 196

17 Comments

The Sky At Night

What to see in the night sky: June 2020

Craig Linde Marquette Amateur Astronomers 11 hrs

Here is an educational film from 60 years ago. It is surprisingly well done. It's amazing what they went through just to track a simple satellite. I wonder how ...

See More



25 1 Boost Unavailable







Terrible Luck. The Only Person Ever Killed by a Meteorite - Back in 1888



Hubble Watches Comet ATLAS Disintegrate Into More Than Two Dozen Pieces





Sky & Telescope 18 hrs · 🕥

Just because we can't hold events doesn't mean we can't livestream! We've added a new livestream category to the event calendar on our new website! See what your favorite observatories, clubs, and astronomy organizations are up to while social distancing and add an astronomy livestream of your own!

https://buff.ly/2XkCdQR



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SUMMER SOLSTICE 2020 IVE FROM STONEHENGE

Comment



SUNSET: SAT 20TH JUN 21:26 BST (20:26 GHT) | SUNRISE: SUN 21ST JUN 04:52 BST (03:52 GHT)

- Summer Solstice at Stonehenge: Live! Public - Hosted by English Heritage and Stonehenge

✓ Going * Interested

- ③ Saturday, June 20, 2020 at 8:30 PM 5:30 AM UTC+01
- Online Event

JUN

20

Hosted by English Heritage 0 Typically replies within minute

50K Going · 247K Interested

About



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Message Host

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Some You Tube videos for you to view while being home bound

Astronomy For Everyone - Episode 131 -The art of astro image processing

> ZWO ASI294MC Pro Astronomy Camera Review

100 Greatest Discoveries 1/9 Astronomy

Hubble - 15 years of discovery

Interview: searching for life in the alien oceans of icy moons

Photographing Venus & The Pleiades (Unforgettable Night)

Astrophotography: How to Determine Ideal Telescope Resolution and Image Sampling

Sketching the Moon

































THE PAUL CASTLE OBSERVATORY RENEWAL PROJECT

Observatory Progress

On May 15, 2020 Rusty Case, Al Sheidler and Terry Dufek cleaned out the observatory of remaining equipment and supplies in preparation for the break down to commence on May 22nd, 2020. It will consist of removing the observatory dome and the walls of the observatory. Once the dome is removed, it will be taken to Jackson Autobody to get

Observatory Dismantling

Below (and next few pages) are a few pictures from our work day (May 22nd, 2020) at the Paul Castle Memorial Observatory. We were able to completely remove and disassemble the dome, walls and wooden pier. In the group picture and lending a hand were Rusty Case, John Douglas, Terry Dufek, Dale Hachtel, Alex Holt, Hugh Holt, Mary Holt, Dino Mila-

repainted. Some repair of the wall sections are needed, which have had some water damage over the years. Then, with the observatory out of the way, in the next couple weeks or so we can then replace the wooden pier

with a new concrete pier and then begin the rebuilding of the observatory.





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ni, Gary Nordick, Eric Sheidler, Al Sheidler, and Steve Sinksen. Allie Nordick and Chris Nordick were also there. If the weather cooperates next week, we plan to haul the dome to Jackson Autobody where it will be refinished. Stay tuned as we continue the process of installing the new pier and reassembly. Thanks to everyone helping out. **Al Sheidler**









See more than usual in the sky! By Dino Milani

Since many of us are at home we wonder what else we can do. How about viewing what's above in the night sky? Both natural and man-made items can easily be seen with just your eyes, a binocular or a telescope.

Step out tonight, let your eyes adjust to the darkness and look up. You will see the moon and the constellations. Sky charts can help you find the constellations and Sky and Telescope has a quick page to help you can find them: https:// skyandtelescope.org/observing/interactive-skychart/

There is the Eta Aquarids meteor shower May 4^{th} and 5^{th} and you can see a dozen meteors per hour. It's close to the full moon on May 7^{th} but they will still be visible.

May 23rd and 24th will have a special show 30 minutes after sunset. You will see a "line in the sky" formed with the planets Venus and Mercury, the moon and a bright star named El Nath.

Comet Atlas, C/2019 Y4, should be visible and getting larger by the middle of the month then pass the sun at the end of May. It was at its brightest on March 17 (St. Patrick's Day) then "fell apart" as it broke into pieces. It follows the same orbit as the Great Comet of 1844 and may be a fragment of that comet.

Made-made satellites and airplanes are also visible. If you see something moving above and it flashes on and off, it's an airplane. If it moves, but the light stays the same, it's a satellite moving above the earth. You can usually see satellites two hours after sunset and two hours before sunrise. They are high enough to still be lit by the sun for those hours. After that they are in darkness and cannot be seen.

There were 2,600 active satellites visible be-

(Continued in next column)

fore 2019. Now there are many more.

On May 23rd, 2019, SpaceX launched 300 Star Link satellites and plans to launch 1,285 more this year. The FCC approved the launch of 11,000 more and SpaceX plans on 30,000 more, in future. That's a lot of satellites!



60 Star Link Satellites ready to be launched into orbit May 23rd, 2019

The satellites will be used for world-wide Internet access. As an astronomy club member said, "Now everyone can see videos on kittens!" Last month he viewed the Lyrids meteor shower and saw 6 meteors and 16 Star Link satellites before the clouds moved in. Three other companies are also launching their own Internet satellites so satellites will be very easy to see at night.

This is also a good time to see many of the Messier objects. If you are at dark location, and have good vision, you can see many of them by eye. If you are in the city where it's brighter use binoculars or a telescope on a tracking mount to find them.

What are they? When see by eye they look like small, fuzzy objects. They are actually galaxies, planetary nebula and clusters of stars. Binoculars and telescopes help you see their shapes. They

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were first mapped by Charles Messier from 1771 to 1784. Many were seen while he lived in Paris, which was much darker at that time. They include famous objects such as M31 the Andromeda Galaxy, M3 a large star cluster, M51 the Whirlpool Galaxy and total 110 objects.

The Messier objects are visible at different times of the year, so to make it easier, they are often divided into four seasons, with 27 or 28 objects per season. For spring they are M95, M96, M105, M53, M64, M85, M88, M91, M98, M99, M100, M49, M58, M59, M60, M61, M84, M86, M87, M89, M90, M104, M3, M51, M63, M94, M106 and M68.

If you use a tracking telescope, they can all be seen within a few hours. An astronomy club member did so last week and photographed all 28 objects. If you would like to try to find the Messier objects, and want the seasonal lists here is great website: http://www.messier.seds.org/xtra/similar/ dataRASC.html

Finally, if it's cloudy or raining and you want more information, try visiting our website and look at our News Letters, http://

www.popularastronomyclub.org/news-letters

There is more to see out there than you think, and keep looking up!

Dino Milani is a member of the Popular Astronomy Club which meets on the 2nd Monday of each month at 7:00 pm at Butterworth Center in Moline, Illinois. The club also has night-time public observing sessions every 3rd Saturday of the month, March through November, at Niabi Zoo in Coal Valley, Illinois. Club events in May are cancelled but may resume again in June.



Issue 76 of the Amateur Astrophotography Magazine has now been published. Read it free here https://www.amateurastrophotography.com/magazine







Kenneth Hayden > The Far Side - and beyond 10 hrs

5 Comments



May 2020

The magic Lyrids

Plenty of telescopes grace my observatory, but I still enjoy watching shooting stars, or meteors, more than anything else. This year, after a break of several months, the Earth passed through the Lyrid meteor stream on the night of April 21. The meteor shower takes place when the Earth encounters dust from Comet Thatcher, a comet that last appeared in 1861. I captured five meteors with my camera, of which one accompanies this article. As I relaxed outdoors during this time, the memories began to flood back.

My first experience with the Lyrids was on April 22, 1963. I was at the time a patient at the Jewish National Home for Asthmatic Children in Denver. I wrote it up this way in my diary: "I had a regular day today, until tonight. I went out and saw a fireball (a very bright meteor.) Then a big, fat, hunk of cloud came over. I saw no more meteors." The next night was also cloudy, and I saw no further meteors despite being outside for several hours. "I officially considered this year's meteor shower the most disappointing failure I have ever had." Not for long, however; I have been blessed with many far more spectacular failures since then.

My love of the night sky goes back many years, to around 1960, but as I grew older I also developed a strong interest in literature, and that passion stems directly from my Dad. I honestly feel that if I had not inherited his love of Shakespearen in particular, he might have taken me out of his will. And I believe he was pleased when I took up English Literature at Acadia University in the 1970s. But I recall back then, reading about Shakespeare's references to eclipses in *King Lear*, and hardly giving them a second thought.



The next Lyrid shower I was part of took place on April 23, 1976. I was engaged at the time to my "practice wife." (That marriage lasted barely two years.) That Friday evening was clear and I was part of a team organized by the Montreal Centre of the Royal Astronomical Society of Canada. The sky was clear and we saw several meteors. As I enjoyed the night, my mind roamed a little. I wondered about how many other amateur astronomers might have enjoyed this particular meteor shower in earlier times. I also

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The Magic of the Lyrids (continued)

thought of writers who might have written about the sky. I was aware that Shakespeare wrote about eclipses (specifically in *King Lear*) and about meteors and comets as well. At that very moment I decided that for my master's thesis I would write about poets who have loved the night sky. The poet I concentrated on, at Queen's University, was Gerard Manley Hopkins.

Decades later, I finally received my Ph. D. from the Hebrew University, for the dissertation on Shakespeare's many references and allusions to the night sky. Among the hundreds of allusions I found, here is one from *Richard II* that looks on meteors and a lunar eclipse:

'Tis thought the king is dead; we will not stay.

The bay-trees in our country are all wither'd And meteors fright the fixed stars of heaven; 10The pale-faced moon looks bloody on the earth. . . (2.4.1337-1340)





The Lyrid meteor shower brings me back to the hazy dawn of my life, and my passion for astronomy. May a shooting star brighten your nights as well.





Seen nearly edge-on in this Hubble image, spiral galaxy NGC 3717 sits about 60 million light-years distant from Earth, appearing in the constellation of Hydra, the Sea Serpent.

UPCOMING EVENTS



June 8th, 2020

Event: PAC business meeting Location: ZOOM at 7:00 PM. Constellation Report : Anne Bauer Program: Smorgasbord All these dates and times are Tentative due to conditions! Please check your emails for any updates as to whether the Event will Occur!

- June 6, 2020 Giant Goose Conservation Area "Youth Day", Atkinson, Illinois - 8:00 am noon. CANCELLED
- June 20th, 2020 Niabi Outreach at sunset CANCELLED
- July 13th, 2020 PAC regular meeting at Butterworth Center at 7:00 PM program: Mr. Dick Koos, "Go For Landing". Mr. Koos will discuss his NASA work with program alarm simulation and it's influence on Apollo 11.
- July 18th, 2020 Niabi Outreach at sunset
- July 25th, 2020 Woodhaven Lakes, 509 LaMoille Road, Sublette, Illinois.
- August 1st, 2020 Illiniwek Campground 8:00 -11:00 pm (rain date August 22nd)
- August 8th, 2020 PAC Annual Picnic
- August 15th, 2020 Niabi Outreach at sunset
- September 14th, 2020 PAC business meeting at Butterworth Center at 7:00 PM
- September 19th, 2020 Niabi Outreach at sunset
- October 17th, 2020 Niabi Outreach at sunset
- October 24th, 2020 PAC Annual Banquet
- November 9th, 2020 PAC regular meeting at

Butterworth Center at 7:00 PM

- November 21st, 2020 Niabi Outreach at sunset
 - **December 14th, 2020** PAC Business meeting at Butterworth Center at 7:00 PM.

Mark your calendars and watch upcoming emails for more information!



Venus approaching inferior conjunction on June 3rd, 2020

SIGN UP REPORT

MONTH	NEWSPAPER ARTICLES	CONSTELLATION REPORT	PROGRAM				
APR 2020	Jeff Struve	Frank Stonestreet	Mr. Jim Dole & Mr. Tom Dunmore, Firebaugh Observatory				
MAY 2020	Dino Milani 🖌	Byron Davies	lan Spangenberg 🖌				
JUNE 2020	Terry Dufek 🗸	Anne Bauer	SMORGASBORD (SEE BELOW)				
JULY 2020	Jeff Struve		Mr. Dick Koos, "Go For Landing"				
AUG 2020		PICNIC	PICNIC				
SEPT 2020	lan Spangenberg	lan Spangenberg	Mr. Zach Luppen, University of Iowa, Zach will discuss the upcoming JUICE and Europa Clipper Missions)				
ОСТ 2020	Paul Levesque	BANQUET	BANQUET				
NOV 2020			Ian Spangenberg				
DEC 2020	Terry Dufek						
JAN 2021			Roy Gustafson (Year n Review)				
FEB 2021							
MAR 2021			SMORGASBORD (SEE BELOW)				

Editors Note: If you are interested in contributing/ participating in the above programs, sign ups are available at the monthly meeting or please let The Vice President and Editor know what you are good to go with.. Any corrections please send to Vice President and Editor. This will be updated every issue. **Thank you**

All these dates and times are Tentative due to conditions! Please check your emails for any updates as to whether the Event will Occur!

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SMORGASBORD

ASTRONOMICAL CALENDAR OF EVENTS

(CST) adjusted for Daylight Savings Time when applicable

Jun 02 22:36 Moon at Perigee: 364366 km Jun 03 13:00 Venus at Inferior Conjunction Jun 04 08:00 Mercury at Greatest Elong: 23.6°E Jun 05 14:12 FULL MOON Jun 05 13:25 Pen. Lunar Eclipse; mag=0.568 Jun 06 13:10 Moon at Descending Node Jun 08 12:19 Jupiter 2.2°N of Moon Jun 08 21:19 Saturn 2.7°N of Moon Jun 12 18:53 Mars 2.7°N of Moon Jun 13 01:24 LAST QUARTER MOON

Jun 14 19:56 Moon at Apogee: 404597 km Jun 19 03:52 Venus 0.7°S of Moon: Occn.

Jun 20 16:43 **Summer Solstice** Jun 20 23:24 Moon at Ascending Node Jun 21 01:40 Annular Solar Eclipse; mag=0.994 June 21 01:41 **NEW MOON** Jun 22 20:53 Pollux 4.5°N of Moon

Jun 22 20:53 Poliux 4.5 N of Moon Jun 23 19:33 Beehive 1.7°S of Moon Jun 25 09:09 Regulus 4.3°S of Moon Jun 28 03:16 **FIRST QUARTER MOON** Jun 29 21:09 Moon at Perigee: 368958 km Jun 30 22:00 Mercury at Inferior Conjunction

The Sun starts of on June 1st in Taurus, moving into Gemini on the 21st. On the 20th, it crosses north of the celestial equator to begin summer in the northern hemisphere.

Mercury starts off the month in the evening ski in the constellation of Gemini (mag:.18, dia: 7.68", Illum: 43.3%). You might be able to glimpse it in the w-mw sky at 7:30pm, 8^o above the horizon. It is at greatest eastern elongation on June 4th. It then drifts lower until it gets to inferior conjunction on the 30th.

Venus is in Taurus on the 1st. It is just 3^e east of the Sun. After inferior con-



junction on the 3rd, it moves into the morning sky. By the 8th, you might glimpse it in the NE-E sky at 5:15am. It is about 2^o above the horizon (mag:4, dia: 56.83", Illum: 1.2%). On the 19th, it is at a lot better viewing at 7^oabove the NE-E horizon at 5 am. The Moon is just 7' east of the planet. By the end of the month, Venus is 14^o above the horizon.

Mars is in Aquarius on June 1^{st} (mag: -.02, 9.30", Illum: 84.7%). It is about 25° above the SE horizon at 4 am. It moves into Pieces on the 25^{th} . It passes by the 5th mag star X Aquarius on June 8^{th} (17") and by the 5^{th} mag double star, 27 Pisces (23') on the 25^{th} . On the 30^{th} , Mars has brightened to -.49 because it is nearing the Earth but mostly because it is almost 35° in altitude at the same time. On June 13^{th} , Mars and Neptune are separated by 1° 37'.

Jupiter is in Sagittarius on June 1st (mag: -2.57, dia: 44.71). It is due south at 1am and 27^o above the southern horizon. Saturn is just 5^o of Jupiter on

Mars Venus Mercury Earth

this date. The Moon is 2° 27' to the SW on June 8th. There are several transits and occultations of Callisto and Io this month (see planetary alignments section.

Saturn is in Capricornus on June 1st (mag: .40, dia: 17.82", rings 41.51"). It is in retrograde throughout the month.

Uranus is in Aries, just peaking above the horizon a 4:30 am on the first (mag:5.87, dia: 3.41"). It is 6° 28' above the eastern horizon. By the 30th, it is 26° 57' above the eastern horizon.

Neptune is in Aquarius on June 1st (mag: 7.90, dia 5.77"). It is 20^o 40' above the E-SE horizon at 4 am. On June 13th, Neptune and Mars are separated by 1^o 37'.



Venus and the Moon are separated by about 7' in the early morning sky on the 19th.





Europa emerging out of Jupiter's shadow on June 30, 2020



Jupiter and Io on June 14th, 2020



Mars and Neptune separated by less than 1 1/2 degrees on June 13th, 2020

Planetary Alignments in June 2020

Phenomenon	Date and Time	Object 1	Object 2	Separation
Occultation	2020-06-09 16:09:16	Jupiter	(IL) OI	—
Occultation	2020-06-14 08:50:23	Jupiter	Callisto (JIV)	—
Occultation	2020-06-20 06:46:09	Jupiter	(IL) ol	—
Transit	2020-06-25 16:19:07	Jupiter	Europa (JII)	—
Transit	2020-06-30 00:12:00	Jupiter	(IL) ol	—
Occultation	2020-06-30 23:24:17	Jupiter	Callisto (JIV)	—
Conjunction	2020-06-13 07:20:31	Mars	Neptune	+1°37'46.6"
Opposition	2020-06-07 10:25:25	Mercury	Moon	+179°33'09.2"
Conjunction	2020-06-03 13:50:44	Venus	Sun	+0°28'43.5"
Eclipse	2020-06-05 13:57:46	Moon	Sun	+179°04'09.0"
Conjunction	2020-06-08 13:39:29	Moon	Jupiter	+2°27'45.4"
Occultation	2020-06-19 02:56:50	Moon	Venus	—
Conjunction	2020-06-21 01:38:05	Moon	Sun	+0°43'59.0"
Conjunction	2020-06-21 16:28:14	Moon	(4) Vesta	+0°46'10.8"

From stellarium



From in the sky. org

Double Stars for June							
Index	Object	Right As- cension	Declination	Magnitude	Separation	Position Angle	Year
45	Delta Corvi	12 ^h 29 ^m .9	-16° 31'	2.9, 8.5	24.6"	213°	2012
46	24 Comae Berenices	12 ^h 35 ^m .1	+18° 23'	5.1, 6.3	20.1"	270°	2012
47	Gamma Virginis	12 ^h 41 ^m .7	-01° 27'	3.5, 3.5	1.9"	10°	2013
48	32 Camelopardalis	12 ^h 49 ^m .2	+83° 25'	5.3, 5.7	20.9"	324°	2011
49	Alpha Canum Venaticorum	12 ^h 56 ^m .0	+38° 19'	2.9, 5.5	19.2"	228°	2014
50	Zeta Ursa Majoris	13 ^h 23 ^m .9	+54° 56'	2.2, 3.9, 4.0	14.5", 706.1"	153°, 70°	2013
51	Kappa Bootis	14 ^h 13 ^m .5	+51° 47	4.5, 6.6	13.5"	234°	2014
52	lota Bootis	14 ^h 16 ^m .2	+51° 22'	4.8, 7.4	38.7"	32°	2014
53	Pi Bootis	14 ^h 40 ^m .7	+16° 25'	4.9, 5.8	5.4"	112°	2013
54	Epsilon Bootis	14 ^h 45 ^m .0	+27° 04'	2.6, 4.8	2.9"	343°	2012
55	Alpha Librae	14 ^h 50 ^m .9	-16° 02'	2.7, 5.2	231.1"	314°	2012
56	Xi Bootis	14 ^h 51 ^m .4	+19° 06'	4.8, 7.0	5.7"	306°	2013
57	Delta Bootis	15 ^h 15 ^m .5	+33° 19'	3.6, 7.9	104.6"	78°	2012
58	Mu Bootis	15 ^h 24 ^m .5	+37° 23'	4.3, 7.1	109"	171°	2013
59	Delta Serpentis	15 ^h 34 ^m .8	+10° 32'	4.2, 5.2	4.0"	172°	2013
60	Zeta Corona Borealis	15 ^h 39 ^m .4	+36° 38'	5.0, 5.9	6.4"	306°	2013
61	Xi Scorpii	16 ^h 04 ^m .4	-11° 22'	4.9, 7.3	7.6"	42°	2012
62	Struve 1999	16 ^h 04 ^m .4	-11° 27'	7.5, 8.1	11.9"	98°	2013

Comets This Month

Below is a list of the brightest few comets that are visible at present.

Comet name	Mag	Constellation	Sep	Irend	last updated
			Sun		
C/2020 F8 (SWAN)	4.5	Perseus	24°	Fading	1-May-20
	_		_	(peak at mag 3.5 on 5 May 2020)	
C/2019 U6 (Lemmon)	6.9	Lepus	53°	Brightening	1-May-20
				(peak at mag 3.7 on 22 Jun 2020)	
C/2017 T2 (PANSTARRS)	8.8	Camelopardalis	69°	Brightening	1-May-20
				(peak at mag 8.7 on 14 May 2020)	
C/2020 F3 (NEOWISE)	10.4	Lepus	52°	Brightening	1-May-20
				(peak at mag 3.2 on 5 Jul 2020)	
88P/Howell	10.9	Virgo	139°	Brightening	1-Apr-18
				(peak at mag 8.6 on 17 Sep 2020)	
C/2019 Y1 (ATLAS)	11.4	Ursa Major	76°	Fading	1-May-20
				(peak at mag 7.9 on 19 Mar 2020)	
2P/Encke	11.7	Aries	7°	Brightening	14-Mar-17
				(peak at mag 6.0 on 27 Jun 2020)	
246P/NEAT	13	Coma Berenices	126°	Brightening	1-Aug-13
210P/Christensen	13.1	Gemini	49°	Fading	28-Mar-09
				(peak at mag 12.0 on 15 Apr 2020)	
C/2018 N2 (ASASSN)	13.2	Cassiopeia	51°	Fading	1-Apr-20
84P/Giclas	13.8	Pisces	22°	Brightening	8-Feb-17
				(peak at mag 13.7 on 16 Jun 2020)	
74P/Smirnova-Chernykh	14.1	Sagittarius	122°	Brightening	29-Feb-12
				(peak at mag 14.0 on 24 Jun 2020)	
69P/Taylor	14.6	Coma Berenices	119°	Fading	Unknown
C/2016 R2 (PANSTARRS)	14.9	Hercules	141°	Fading	3-Jun-19
				(peak at mag 14.8 on 17 Mar 2020)	
110P/Hartley	15.6	Pisces	56°	Brightening	29-Feb-12
				(peak at mag 13.8 on 21 Oct 2020)	
67P/Churyumov-Gerasimenko	15.8	Sagittarius	131°	Brightening	1-Apr-18
			_	(peak at mag 15.3 on 22 Jul 2020)	
124P/Mrkos	15.9	Sextans	102°	Fading	14-Sep-17
				(peak at mag 15.0 op 21 Mar 2020)	
	47.5		0.10		
/8P/Gehrels	15.9	Cancer	84°	Fading	24-Dec-16
4P/Faye	16	Scutum	131°	Brightening	14-Sep-17
	16.7	Coma Berenices	121°	Brightening	1-Apr-18
credit In-The-Sky.org. and Domin	IC Ford				

DEEP SKY WONDERS

For June Evening Skies

Name	RA (J2000)	Dec (J2000)	Mag.	A.S., '	S.B.	Transit	Туре
NGC 225 (Sailboat Cluster)	0h43m39.1s	+61°46'30.0"	7.52	12.000	12.66	9h04m	open star cluster
NGC 3242 (Ghost of Jupiter Nebula)	10-24	10,20122 C	0.11	1.040	7 20	10h 40m	ulanatan uzahula
MCR	10h24m46.1s	-18 38 32.0	9.11	1.040	7.38	18043m	planetary nebula
	12h39m28.0s	-26 44 38.6	7.67	11.000	12.62	20n58m	globular star cluster
N 68	12h39m28.0s	-26 44 38.6	7.67	11.000	12.62	20058m	globular star cluster
N 22 (Southern Dinwhool Colovy)	13h12m55.3s	+18 10 05.4	7.84	13.000	13.15	21n32m	globular star cluster
M 83 (Southern Pinwheel Galaxy)	13h3/m00.9s	-29*51*56.7*	7.95	24.400	13.11	21h56m	galaxy
IVI 3	13h42m11.6s	+28°22'38.2"	6.33	18.000	12.35	22h01m	globular star cluster
M 101 (Pinwheel Galaxy)	14h03m12.6s	+54°20'55.5"	7.99	55.700	14.95	22h22m	galaxy
M 5 (Rose Cluster)	15h18m33.2s	+2°04'51.7"	6.83	23.000	13.38	23h38m	globular star cluster
M 4 (Crab Globular Cluster)	16h23m35.2s	-26°31'32./"	6.50	26.000	13.31	0h43m	globular star cluster
M 13 (Great Star Cluster in Hercu-	16h41m41.6s	+36°27'40.7"	5.96	27.910	11.19	1h01m	globular star cluster
M 12	16h47m14.2s	-1°56'54.7"	7.94	16.000	13.70	1h07m	globular star cluster
M 10	16h57m09.1s	-4°06'01.1"	6.69	20.000	12.94	1h17m	globular star cluster
M 92	17h17m07.4s	+43°08'09.4"	6.57	14.000	12.04	1h36m	globular star cluster
M 23	17h57m04.1s	-18°59'06.0"	6.74	25.000	13.47	2h17m	open star cluster
M 24 (Small Sagittarius Star Cloud)	18h16m48.0s	-18°33'00.0"	4.99	150.000	14.06	2h40m	star cluster
M 16 (Eagle Nebula)	18h18m48.0s	-13°48'25.2"	7.21	145.000	15.64	2h39m	cluster associated with
M 17 (Omega Nebula)	18h20m47.1s	-16°10'19.2"	7.71	70.000	15.14	2h41m	cluster associated with
NGC 6647	18h31m28.3s	-17°20'24.0"	8.40	_	_	2h55m	star cluster
M 11 (Wild Duck Cluster)	18h51m05.0s	-6°16'12.0"	7.60	14.000	13.07	3h11m	open star cluster
NGC 6709 (Flying Unicorn Cluster)	18h51m18.0s	+10°19'04.8"	7.16	12.000	12.30	3h11m	open star cluster
M 57 (Ring Nebula)	18h53m35.1s	+33°01'45.0"	9.06	6.200	11.20	3h13m	planetary nebula
NGC 6811 (Hole in a Cluster)	19h37m17.0s	+46°23'16.8"	7.06	15.000	12.68	3h57m	open star cluster
NGC 6819 (The Foxhead Cluster)	19h41m18.0s	+40°11'13.2"	7.60	6.000	11.23	4h01m	open star cluster
NGC 6826 (Blinking Planetary Neb-	10h/1m/8.2c	+20°31'30 3"	9.06	0.850	6.03	1601m	nlanetary nebula
M 71 (Angelfish Cluster)	19h53m/6 5s	+18°46'45 1"	6.82	7 200	10.95	41104111 4h14m	globular star cluster
M 27 (Dumbbell Nebula)	19h59m36.4s	+22°43'15 8"	8.03	13 600	11 90	41114111 4h19m	nlanetary nebula
NGC 6866 (Kite Cluster)	20b03m55.0s	+44°09'28 8"	7 92	6.000	11.50	41113111 4h23m	onen star cluster
NGC 6871	20h05m59.0s	+44 09 28.8 +35°46'37 2"	5.60	30,000	12 72	41125111 4h26m	open star cluster
NGC 6910 (The Inchworm Cluster)	20h23m07.9s	+40°46'30 0"	7 70	7 000	11 75	41120111 4h42m	open star cluster
M 29 (Cooling Tower)	20h23m55.9s	+40 40 30.0	7.75	10 000	11.75	41145111 4h44m	open star cluster
NGC 6940 (Mothra Cluster)	20h24m25.0c	+38 31 22.8	7.02	20,000	12 21	41144111 4h54m	open star cluster
M 48 (Beebive Cluster)	20113411123.95 8612m42.0c	F°45'00 0"	2.07	20.000	15.51	41154111 16h22m	open star cluster
M 44 (Beehive Cluster)	8h40m24.0c	±10°/0'01 2"	2 12	70.000	12.12	16h50m	open star cluster
M 67 (Golden-Eve Cluster)	0114011124.05	+19 40 01.2	5.42	70.000	12.50	101129111	open star cluster
	8h51m18.0s	+11°48'00.0"	7.26	25.000	13.99	17h09m	open star cluster
M 81 (Bode's Galaxy)	9h55m33.2s	+69°03'55.1"	7.11	41.000	13.29	18h14m	galaxy

* Data from Stellarium



A: Between Denebola and the tip of the Big Dipper's handle, lie the stars of the Coma Berenices Star Cluster.
B: Between the bright stars of Antares and Altair, hides an area containing many star clusters and nebulae.
C: 40% of the way between Altair and Vega, twinkles the "Coathanger," a group of stars outlining a coathanger.
D. Sweep along the Milky Way for an astounding number of faint glows and dark bays.



Astronomical League www.astroleague.org/outreach; duplication is allowed and encouraged for all free distribution.



Spotlight: NGC 4753—Dust Devil Galaxy

- a lenticular galaxy located about 60 million light-years away in the constellation of Virgo
- discovered by astronomer William Herschel on February 22, 1784
- notable for having distinct dust lanes that surround its nucleus
- The galaxy is a member of the Virgo II Groups, an extension of the Virgo Cluster
- The distribution of dust in NGC 4753 lies in an inclined disk wrapped several times around the nucleus
- material in the disk may have been accreted from the merger of gas rich dwarf galaxy
- Analysis of the twisted disk in NGC 4753 by Steiman-Cameron et al. revealed that most of the mass in the galaxy lies in a slightly flattened spherical halo of Dark Matter
- NGC 4753 has an estimated population of 1070 ± 120 globular clusters
- NGC 4753 has been the host to two supernovae, SN 1965I and SN 1983G
- 106.500 light years across
- Magnitude 9.95





NASA Space Place Partner Article



This article is distributed by NASA Night Sky Network The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit <u>https://nightsky.jpl.nasa.gov/</u> to find local clubs, events, and more!

Summer Triangle Corner: Vega

David Prosper and Vivian White

If you live in the Northern Hemisphere and look up during June evenings, you'll see the brilliant star **Vega** shining overhead. Did you know that Vega is one of the most studied stars in our skies? As one of the brightest summer stars, Vega has fascinated astronomers for thousands of years.



Can you spot Vega? You may need to look straight up to find it, especially if observing after midnight.

Vega is the brightest star in the small Greek constellation of Lyra, the harp. It's also one of the three points of the large "Summer Triangle" asterism, making Vega one of the easiest stars to find for novice stargazers. Ancient humans from 14,000 years ago likely knew Vega for another reason: it was the Earth's northern pole star! Compare Vega's current position with that of the current north star, Polaris, and you can see how much the Earth's tilt changes

(continued in next column)

over thousands of years. This slow movement is called precession, and in 12,000 years Vega will return to the northern pole star position. Bright Vega has been observed closely since the beginning of modern astronomy and even helped to set the standard for the current magnitude scale used to categorize the brightness of stars. Polaris and Vega have something else in common, besides being once and future pole stars: their brightness varies over time, making them variable stars. Variable stars' light can change for many different reasons. Dust, smaller stars, or even planets may block the light we see from the star. Or the star itself might be unstable with active sunspots, expansions, or eruptions changing its brightness. Most stars are so far away that we only



Vega possesses two debris fields, similar to our own solar system's asteroid and Kuiper belts. Astronomers continue to hunt for planets orbiting Vega, but as of May 2020 none have been confirmed. More info: <u>bit.ly/VegaSystem</u> Credit: NASA/ JPL-Caltech

(continued on next page)

NASA Space Place Partner Article



Summer Triangle Corner: Vega David Prosper and Vivian White

(continued from previous page)

record the change in light, and can't see their surface.

NASA's TESS satellite has ultra-sensitive light sensors primed to look for the tiny dimming of starlight caused by transits of extrasolar planets. Their sensitivity also allowed TESS to observe much smaller pulsations in a certain type of variable star's light than previously observed. These observations of Delta Scuti variable stars will help astronomers model their complex interiors and make sense of their distinct, seemingly chaotic, pulsations. This is a major contribution towards the field of asteroseismology: the study of stellar interiors via observations of how sound waves "sing" as they travel through stars. The findings may help settle the debate over what kind of variable star Vega is. Find more details on this research, including a sonification demo that lets you "hear" the heartbeat of one of these stars, at: bit.ly/DeltaScutiTESS

Interested in learning more about variable stars? Want to observe their changing brightness? Check out the website for the American Association of Variable Star Observers (AAVSO) at <u>aavso.org</u>. You can also find the latest news about Vega and other fascinating stars at <u>nasa.gov</u>.





Seriously funny memes and beautiful pics April 26 at 5:30 PM · 🚱



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NASA's Wide Field Infrared Survey Telescope (WFIRST) is now named the Nancy Grace Roman Space Telescope, after NASA's first Chief of Astronomy.

NASA Telescope Named For 'Mother of Hubble' Nancy Grace Roman





Our sun is a weirdly 'quiet' star — and that's lucky for all of us

April 30th, 2020



April 30th, 2020



May 4th, 2020





Astronomers find the closest (known) black hole to Earth

May 6th, 2020









In the far future, the universe will be mostly invisible

May 7th, 2020



The Sun is less active magnetically

than other stars

May 6th, 2020

Astronomers are changing the way we think of 'potentially habitable' planets

May 5th, 2020





New Nebula Discovered in Taurus





May 11th, 2020



Astronomers Spot Enormous Bridge of Hot Gas between Two Galaxy Clusters

May 11th, 2020

May 1st, 2020

May 12th, 2020

Closed for months, historic space observatory once again has a bright future after U. of C. donation

place for explorers to live on Mars

These lava tubes could be the safest

Telescopes and spacecraft join forces to probe deep into Jupiter's atmosphere

NEWS&LINKS

May 7th, 2020













Astronomers spot evidence of a baby planet in a young star system

May 20th, 2020



The Tunguska Explosion Could Have Been Caused By An Asteroid That Still Orbits The Sun

May 19th, 2020



TESS is Also Helping Astronomers Study Bizarre Pulsating Stars

May 19th, 2020



Hundreds of New Gravitational Lenses Discovered to Help Study the Distant Universe

May 20th, 2020



MEMBER OBSERVATIONS



First stab at auto guiding. Canon T3i ISO 1600 180 second exposers. Shot theses last night after the meeting. *(May 11th, 2020)* **Byron Davies**





MEMBER OBSERVATIONS

First stab at auto guiding. Canon T3i ISO 1600 180 second exposers. Shot theses last night after the meeting. *(May 13th, 2020)* **Byron Davies**

Photos from upper left clockwise: M81, M82, M102, and M97

MEMBER OBSERVATIONS



Changing phases of Venus from April 1st through May3rd, 2020. Taken with a Celestron 8 inch, a polarizing filter and a ZWO ASI120mc camera. 90 sec exposure. Photos taken by Terry Dufek

The Moon on April 30th, 2020.

Used Celestron 8, ZWO ASI20 mc with a polarizing filter to neutralize the glare.

Photo taken by Terry Dufek



Paul Castle Observing Sessions

Paul Castle Outreach May 3rd, 2020

Despite having some thin clouds, conditions were pretty good for observing the moon last night. Attached is a snapshot I took of the group that "social distanced" last evening to take advantage of the rare relatively clear

sky opportunity. In attendance were Rusty Case, Terry Dufek, Dino Milani, The Holt Family (Tim, Mary, Alex & Hugh), and Al Sheidler





Photo settings: For the moon --> 10" Meade LX200 telescope with 0.63 focal reducer, FL = 1575mm, ISO 1600, 1/1600 second exposure using a Nikon D7500 camera

For double star Cor Caroli (left) --> 10" Meade LX200 telescope, FL = 2500mm, ISO 12800, 5 second exposure using a Nikon D7500

Paul Castle Observing Sessions

Here are 2 of the pics I took the night of 5/3. I thought I wrote down the camera settings but I can't find them, I think for M3 the ISO was 2000 and 25 seconds with the 2X barlow, Venus I can't remember. There was an 86% waxing gibbous moon. **Rusty Case**

05.03.2020 20:48

05.03.2020 21:37



President Alan Sheidler arranged the May 2020 meeting of the Popular Astronomy Club to be conducted via (Zoom) at 7:00 p.m. local time, on May 11, 2020. We had 25 members and 0 guests attending.

- Next month will feature a smorgasbord of mini presentations – Contact Dino Milani if interested
- Dale Hachtel show photo of face mask made for him by his neighbors

Observations and Photos:

- Dale showed photo of Venus and the Moon taken on April 26th by a friend of his in the hiking club.
- Dino stated that on May 23rd, The Moon, Venus, Mercury and the star El Nath with be in a almost straight alignment
- Al showed photos of new telescope, The Moon, M3, M51, M99, and M104.

Constellation Report:

 Byron Davies did a presentation on the constellation Sagitta

Program:

- Ian Spangenberg did a presentation of Fermilab and particle physics (link to presentation below)
- There was some discussion afterword's.

The meeting was then adjourned



Robert Rathbun Wilson Hall at the Fermi



Fermilab's accelerator rings. The main injector is in the foreground, and the antiproton ring and



Group Shot of the Meetings Attendees

Link To Ian Spangenberg's Presentation:

