



# Reflections

The Newsletter of the Popular Astronomy Club

ESTABLISHED 1936



May 2020

## President's Corner MAY 2020



Alan Sheidler

Welcome to May 2020 edition of the Popular Astronomy Club's Monthly News Letter "Reflections". I'm sure you will all agree with me that the last couple of

months have been a real challenge compliments of the COVID19 virus pandemic. All of us are tiring of sheltering at home and are ready to get back to work, go out to restaurants, attend sports events and indulge in our hobby of astronomy. Some parts of the country are starting to return to normal, but it appears we will have to endure another month of quarantine before we can have physical meetings again. Our May 13<sup>th</sup> PAC meeting will, like the April meeting, be conducted virtually using a Zoom video conference. Actually, I thought the April Zoom meeting went pretty well. We had a presentation by Jim Dole from Firebaugh Observatory and a Constellation report by Frank Stonestreet. My compliments to these informative talks and well-crafted presentations, which were flawlessly televised via the internet to 21 attendees. For the May PAC meeting, the main program and constellation report will be provided by Ian Spangenberg and Byron Davies respectively. Watch

(Continued in next column)

your email for the link to this meeting which promises to be a good one.



*M51, The Whirlpool Galaxy, taken with the new CPC1100 telescope and D7500 camera. This is a stack of three 20sec time exposures shot at ISO 12,600. More information in this article and Paul Castle Renewal page)*

While we have been unable to have any public events this year, and no large gatherings since the last observing session we had at the Paul Castle Observatory on February 29th, there still have been opportunities to observe. My son Eric and I did a father-son observing session with the goal of observing all 28 of the Messier objects in the NCRAL Spring Seasonal Messier List, which we accomplished on the evening of April 19th. I had hoped the pandemic would have dissipated by now so we could have done the Spring List as a club activity like we did for the Fall and Winter lists. This does not appear to be in the cards this year. But if you have a goto scope, the NCRAL Seasonal Messier Lists are easily doable in one evening. Group observing sessions

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are more fun, but you can practice social distancing while bagging all 28 of the objects in the Spring list.

In the meantime, our observatory director, Rusty Case, ordered a brand new Celestron CPC1100 HD telescope for the club which we will install in the Paul Castle Observatory. You can read more about it here in this newsletter. I am happy to report the new scope works fantastic. So you can judge for yourself, I am including some images taken through the scope of the moon, M3, M51, and M104 from the evening of April 26th. I am confident this scope will be a nice upgrade for our observatory and provide you all with many years of excellent service. Now all we need is for the pandemic to dissipate so we can dispense with the face masks! 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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# ANNOUNCEMENTS / INFO

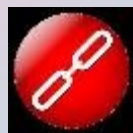
**LOOKING FOR  
OLDER ISSUES OF  
REFLECTIONS  
NEWSLETTER?**



**HISTORY OF PAC?**



**Popular Astronomy Club  
on Facebook?**



**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!**

## Astronomical League Observing Programs

The Astronomical League provides many different Observing Programs. These Observing Programs are designed to provide a direction for your observations and to provide a goal. The Observing Programs have certificates and pins to recognize the observers' accomplishments and for demonstrating their observing skills with a variety of instruments and objects



Check out the Astronomical  
League **ONLINE!**



**ALCON 2020** has  
been cancelled  
due to the pandemic,  
ALCON for 2020 is  
being resched-

uled tentatively for the 1st week of  
August, 2021. Still to be held in  
Albuquerque, New Mexico

Check out  
the North  
Central  
Region  
of the  
Astronomical  
League  
(NCRAL)  
online





# ANNOUNCEMENTS / INFO



## North Central Region of the Astronomical League - NCRAL

### QUESTIONS & ANSWERS

NCRAL Members,

How are you weathering the pandemic? Are you getting out to observe?

If you are homebound for safety's sake like me, I hope you are at least getting out into your yard during the morning and evening twilight and observing the moon and planets. They have been performing beautifully of late.

Anyone who has completed the AL's Urban Observing Program knows that much still can be seen with a telescope even from within light-pollute cities. I hope that you are taking advantage of what free time you have to get out and at least take a glimpse.

Observing with the unaided eye has become an obsession with me recently as I look for things to do during the morning and evening twilight hours. I'm often on my front porch at 5AM watching the trio of Jupiter, Saturn, and Mars. The evening sky at 9PM has featured Venus and the Pleiades. I'm always on the lookout for passes of the International Space Station too.

Another thing that I'm doing is making posts 2, 3, or 4 times a day on my astronomy club's Facebook page to retain members' and increase public interest in skywatching. I'm also continuing to write articles for our club's newsletter. Is there a better time than now?

It would be nice to hear what YOU individually are doing - astronomically speaking - during this time of "social distancing" to pass your time in quarantine. Please let us all know! Feel free to post here by responding to this request.

**Carl J. Wenning**

NCRAL Chair (2017-2021)

Twin City Amateur Astronomers



Follow this link to  
the AL's Urban Ob-  
serving Program



## North Central Region of the Astronomical League - NCRAL

### Northern Lights

Follow link to The Spring 2020  
edition of NCRAL's newsletter  
Northern Lights



**NORTHERN LIGHTS**

NORTH CENTRAL REGION OF THE ASTRONOMICAL LEAGUE

Spring 2020 - Series II, Volume 4, Number 4

**INSIDE THIS ISSUE of Northern Lights**

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requests to the membership. This will allow Northern Cross to take advantage of all the hard work they had already put in to develop NCRAL VISION 2020.

2. We need to appoint a Region member to serve as Representative to the Astronomical League as I failed to include this election last year during the business meeting. Vice-Chair Bill Davidson was appointed then to fill the position temporarily. We will not be holding a Regional business meeting this year. *As Regional Chair I have made the decision to reappoint Vice Chair Bill Davidson to continue in the job of Regional Representative to the Astronomical League to complete the remainder of the original three-year term.* He has agreed to this appointment.

3. Because I don't want the Coronavirus to completely disrupt the activities of our North Central Region, following consultation with our elected leaders *I have as Regional Chair decided that we will continue with the 2020 awards programs.* Award nomination and grant



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!

**SKY & TELESCOPE**

You and 130 others

1 Comment 15 Shares

Like Comment Share

# ANNOUNCEMENTS / INFO



## North Central Region of the Astronomical League - NCRAL

### **NCRAL Members,**

Please carefully read the following important message about the Coronavirus pandemic from the AL national office. At the Regional level, we are in compliance with the following directive. I urge all affiliates to do likewise.

**Carl J. Wenning**  
**NCRAL Chair (2017-2021)**

-----

### **To our Regional Chairs and Representatives --**

I hope his communication finds each of you doing well in this difficult time for all of us.

League president, Ron Kramer, has asked me to communicate to each of you an Executive Committee decision regarding scheduled or anticipated group activities at the regional level.

Due to the ongoing COVID-19 crisis, the Executive Committee has decided to suspend all League national and regional conventions and group activities until such time as competent medical and government authority determines that large public gatherings and public transportation and travel are safe. Until that time, no region or other entity acting under the League's aegis may conduct conventions, star parties, or other large public gatherings or group activities. Please understand that any person(s) violating this determination could be held personally liable to the League for any loss sustained by the League as a result.

Consistent with this determination regarding regional activities, the League has postponed its national convention for one year, until August 4-7, 2021. Our ALCon '20 hosts at The Albuquerque Astronomical Society have generously agreed to host ALCon '21 in Albuquerque at the same Embassy Suites venue. Steps are being taken to refund registrations received for this year's event.

Most League services will continue during this crisis.

All 2020 League awards programs will move forward on schedule with winners announced and recognized in Reflector, but the public presentation of 2020 awards (including League-sponsored youth award convention trips) will be deferred until ALCon '21. We encourage all regions to continue with their awards programs as well in that these can be conducted and announced without public gatherings.

All League observing programs will continue as well, but we encourage individuals pursuing our observing programs to abide by national and local government orders relating to lock-downs, travel, transportation, and use of public lands and facilities.

Obviously, we are most distressed to have to take these actions, but this is a unique crisis with unique risks to millions and the postponement of conventions and star parties will not harm our mission or our organization. Failure to take these actions, however, could compromise the lives and health of our members and, in so doing, expose the League, the League Council, and Regional officers to legal liability.

If you have any questions about whether a specific regional activity is permitted (i.e. those not involving large gatherings), or if this decision poses unique problems in your region due to existing commitments, please contact a League officer.

Thank you for your understanding. Best wishes for the health and well-being of you and your family and friends.

-- For Ron Kramer, President, Astronomical League, and the Executive Committee,

Chuck Allen  
Secretary and past-President, Astronomical League  
4005 St. Germaine Ct.  
Louisville, KY 40207  
(502) 693-5504

# ANNOUNCEMENTS / INFO



## North Central Region of the Astronomical League - NCRAL

### NCRAL MESSIER MINI MARATHONS

I'm delighted to report that a number of our NCRAL affiliate members have been out observing over the past few days. What has motivated them is the NCRAL Messier Mini Marathon for spring.



In the accompanying image, you'll see Alan Sheidler and his son Eric both of whom set up their telescopes last night in the parking lot of Black Hawk College which is just two blocks from their house. Both Alan and Eric are members of Popular Astronomy Club in the Quad Cities.

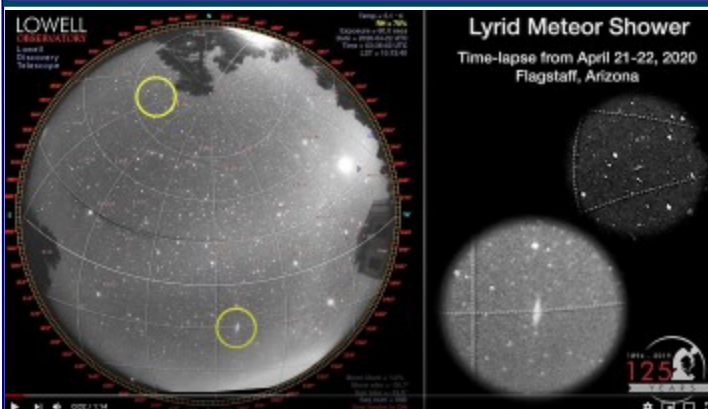
They and several others have completed observations for their Spring Mini-Marathon certificates and pins. This also includes Rusty Case from PAC, and Lisa Wentzel and myself from the Twin City Amateur Astronomers.

I hope that all these examples will propel our NCRAL membership to get out there and observe. Remember, the NCRAL Messier Mini Marathon was not designed to prove observing prowess; rather, it was designed to get people out under the stars. It appears to be having its desired effect.

Congratulations to all who have succeeded in completing this observing program. [

**Carl Wenning**

# CONTRIBUTIONS



### All Night Video from Lowell Observatory of the Lyrids



### Necroplanetology: The Strangest Field of Astronomy You've Never Heard Of



### Astronomy Day Cancelled

The Astronomical League is sorry to announce that due to the global pandemic of COVID-19 virus, Astronomy Day originally scheduled for May 2, 2020, has been canceled. Any assistance you can offer in "spreading the word" would be appreciated.

**John Goss**

Past President, Astronomical League



# CONTRIBUTIONS



## Star Link Satellites Observed

Here are 2 iPhone pics of Star Link satellites going over about 9:08 pm Sunday night 4/26/2020.

Wayland Bauer



**BBC's  
The Sky At  
Night**

**What to see  
in the night  
sky: May 2020**



**Ray's Astrophotography**

March 27 at 6:37 PM

YouTube Video link: <https://youtu.be/7-MHJtmstRM>

Comet C/2019 Y4 (ATLAS) Captured with Celestron RASA 11"

Here are the acquisition details:... See More



👍👎 30

1 Comment 4 Shares

👍 Like

💬 Comment

➦ Share

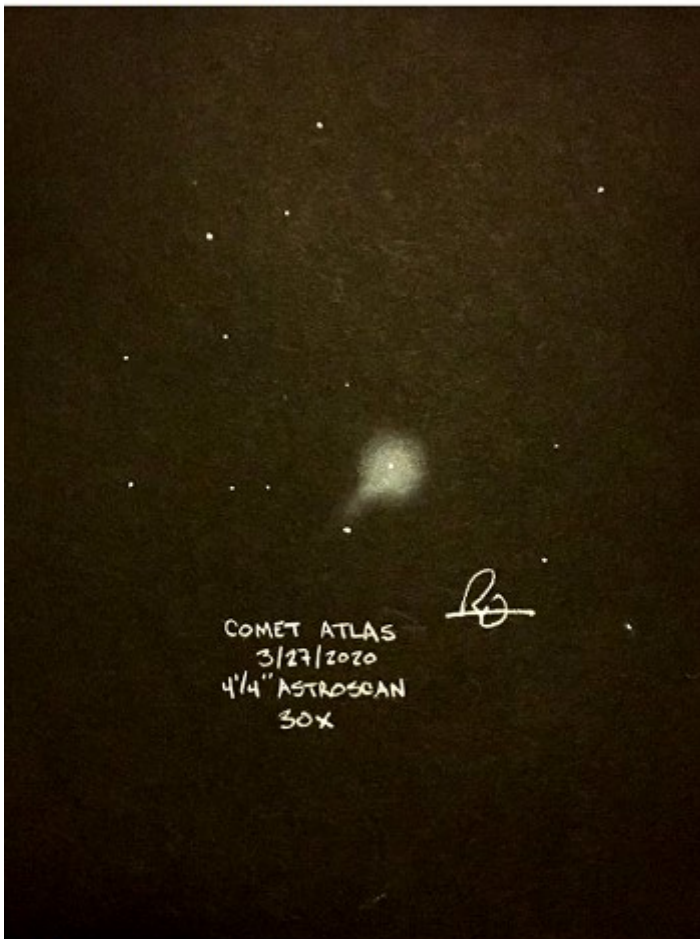
# CONTRIBUTIONS



**Ronald Easley**

March 28 at 12:38 AM

My first crack at Comet ATLAS tonight.



You and 69 others

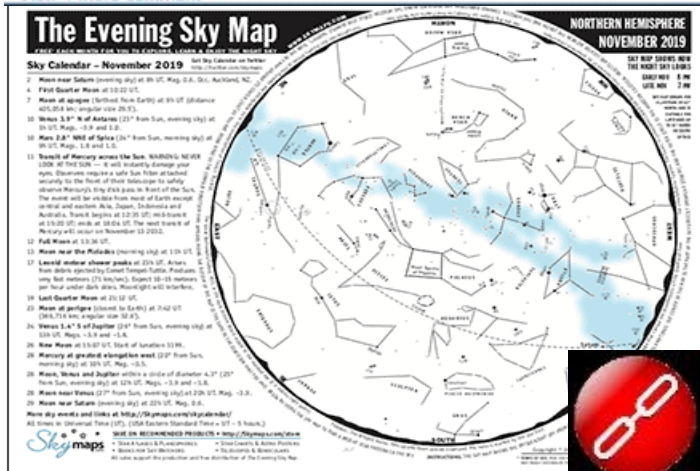
8 Comments 4 Shares

Like

Comment

Share

View 1 more comment



**Rich Addis** AAP - Moon observing and imaging group

15 hrs · 🌐

So this happened!

Tonight's 24% Crescent Moon with Transiting ISS!!

I have set up and failed to shoot this shot so many times and I'm so excited I finally managed it!

Celestron 6SE, ZWO ASI120MC (detail), Nikon D5100 (colour)  
9 panel mosaic, each panel 400 frames captured in Firecapture, stacked in Autostakkert and stitched in Photoshop



You and 100 others

14 Comments 14 Shares

Like

Comment

Share





# CONTRIBUTIONS



I recently went out to try and find Comet Atlas which has been all the buzz on social media. Unfortunately I was not able to find even a faint smudge on any of my images. So as consolation, I went through my inventory of photos and found a few images from the Spring of 1997 showing Comet Hale-Bopp. I've seen many comets, but this was my favorite. The photos were taken with a 35mm film camera set on a tripod from my back yard in Moline. If you have comet images of your own, why not send them out so we can all enjoy them while we wait for Hale-Bopp to return (due to return in the year 4530)?

**Al Sheidler**

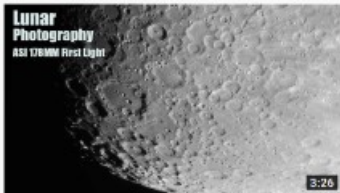


Contribution by Elizabeth Robinson and Brad Smith

# CONTRIBUTIONS



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



## **Product Review:**

Lunar Photography: ZWO ASI 178MM First Light

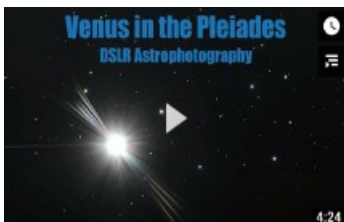


## **First Light**

RASA 11-inch telescope by Celestron



## **Astronomy Picture of the Day Compilation 2020 March**



## **Astrophotography: Venus in the Pleiades**



## **DSLR Astrophotography -**

Get the Best Results from your Camera!



## **Which Astrophotography Camera Should You Buy?**

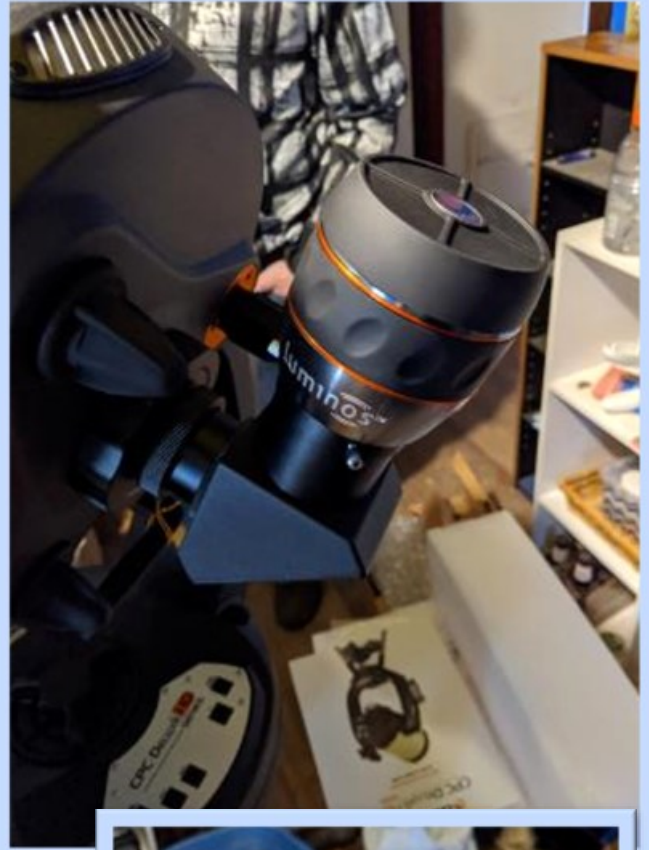


# THE PAUL CASTLE OBSERVATORY RENEWAL PROJECT

## New Paul Castle Telescope Arrived!

Here are a couple pictures of the new Celestron CPC1100 HD telescope which Rusty received yesterday. Once the COVID19 situation abates, hopefully we can try this out and begin working on refurbishing/remodeling Paul's observatory. I can't wait to gaze at objects through that massive 2" eyepiece! Wow, that's a lot of glass! Happy Easter!

**Alan Sheidler**





# THE PAUL CASTLE OBSERVATORY RENEWAL PROJECT

## Testing out the new Paul Castle telescope!

On April 26th, 2020, the new Paul Castle telescope was checked out to make sure it was functional (after all the warranty is ticking). Al took some photos with the telescope and the views, you will agree, are amazing.



M51, The Whirlpool Galaxy, taken with the CPC1100 telescope and D7500 camera. This is a stack of three 20sec time



Globular Cluster M3, captured with the CPC1100 scope using a Nikon D7500 camera, 15sec time



M104, the Sombrero Galaxy, stack of three 20 sec exposures at ISO 12,600.



April  
2020

## The Great Comet of 1844, and the Great Comet of 2020?

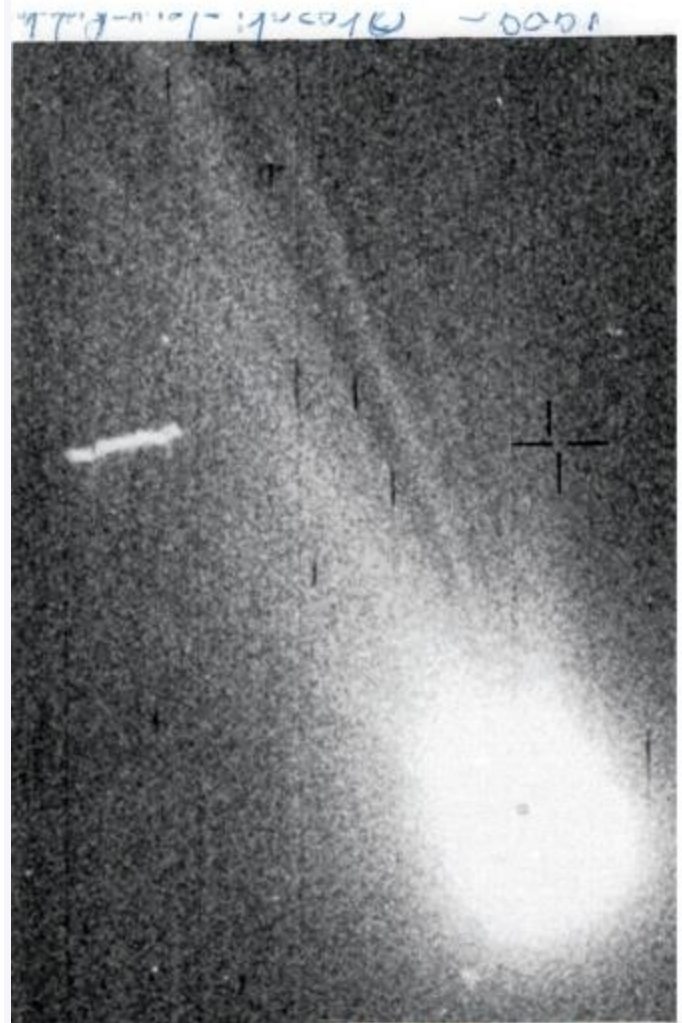
Just a week before Christmas 1844 (December 19, 1844) a sea captain named Wilmot discovered a bright comet without using a telescope. The comet was easily bright enough to be seen with the unaided eye, and remained so throughout January, and then, with a telescope, it could be followed through the end of March. The comet was as bright as Halley's comet was, earlier, at its appearance in 1835. At the time there was some speculation as to whether this comet might have been on a similar orbit to that of the Great Comet of 1556, but George Bond, after having investigated that possibility, ruled it out by concluding the orbits were not similar enough.

What cannot be ruled out is that the comet of 1844 might have been a large fragment of a much larger, and earlier, comet. On December 28, 2019, last year, the ATLAS project discovered a very faint comet (ATLAS is an acronym for Asteroid Terrestrial-impact Last Alert System.) The comet was magnitude 19.6 at the time of its discovery, too faint even for large amateur telescopes. ATLAS used a 0.5-meter (20-inch) diameter telescope near the top of Mauna Loa in Hawaii.

Early in 2020 the ATLAS comet rapidly brightened. On March 15 I looked at the irregular cigar-shaped galaxy Messier 82. Just beneath it in the field of view was Messier 81, a large galaxy that is gravitationally interacting with M82. By themselves, these two galaxies are lovely. But when I moved the telescope just a little lower, the comet appeared. It was easy to see but I was not aware at the time that this was the comet that was brightening so quickly.

If all goes well, the comet will pass by the Earth on May 23, and then pass perihelion—its closest

*(Continued in next column)*



*The picture is of Halley's comet, January 6, 1986, taken by Steve Larson and me using the 61-inch (now named Kuiper) telescope at Mount Bigelow, to the northeast of Tucson. You can see considerable detail near the nucleus of the comet, including a "tailward jet" of dust going into the comet's tail.*

est point to the Sun, about a week later. If it rivals its earlier cousin, the Comet of 1844, it could be as bright as Jupiter, or maybe even as bright as Venus, being easily visible without any telescope or binoculars. Or it could fizzle. There have been several comets that were supposed to become bright, like Kohoutek in 1973, Austin in 1990, and ISON in 2012, but either they failed to live up to expectations, or they simply broke apart and vanished.

Comets do their own thing, as if they have minds of their own. I am fond of saying that comets are like cats; they both have tails, and they both do

*(Continued on next page)*





# UPCOMING EVENTS



**May 11th 2020**

**Event:** PAC regular meeting  
**Location:** ZOOM at 7:00 PM.  
**Constellation Report :** Byron Davies  
**Program:** Ian Spangenberg

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

- **May 9th, 2020** Illiniwek Campground 6:00 pm (rain date May 23rd) **CANCELLED**
- **May 16th, 2020** Niabi Outreach at sunset **CANCELLED**
- **June 6, 2020** Giant Goose Conservation Area "Youth Day", Atkinson, Illinois - 8:00 am - noon, canceled if raining. Informational Tables and Solar Observing
- **June 8th, 2020** PAC business meeting at Butterworth Center at 7:00 PM
- **June 20th, 2020** Niabi Outreach at sunset
- **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 e-mails for more information!**

*Venus phases  
 changes from the  
 end of March  
 through to the end  
 of April*

*Photos by  
 Terry Dufek*



# 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  | Ian 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 | Ian Spangenberg    | Ian Spangenberg   | Mr. Zach Luppen, University of Iowa, Zach will discuss the upcoming JUICE and Europa Clipper Missions )                                   |
| OCT 2020  | Paul Levesque      | BANQUET   | BANQUET   |
| NOV 2020  |                    |   |   |
| 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!**

## SMORGASBORD

### MARCH

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|-------|-------|
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### JUNE

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### SEPTEMBER

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# ASTRONOMICAL CALENDAR OF EVENTS



# THE PLANETS May 2020

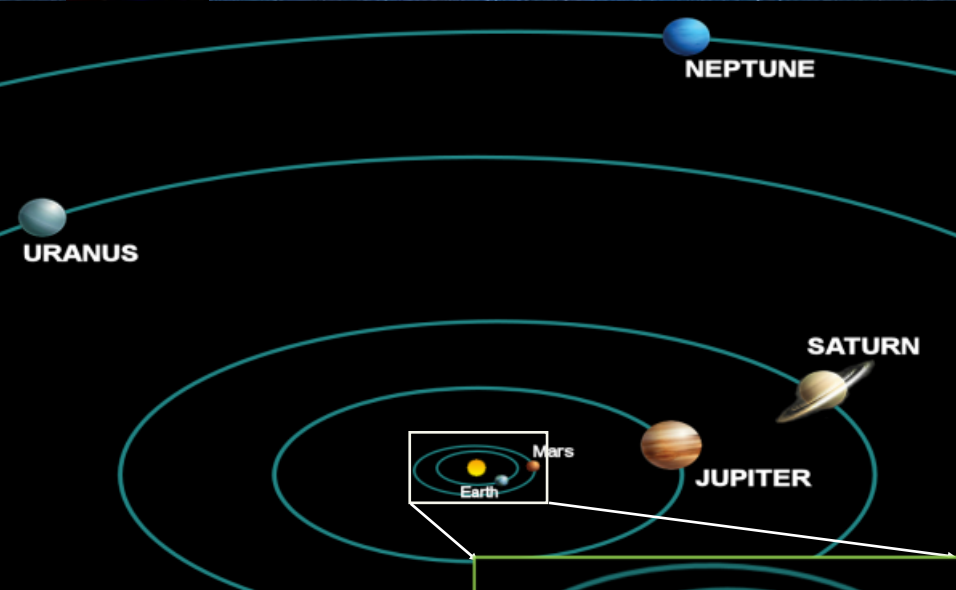


(CST) adjusted for Daylight Savings Time when applicable

May 01 21:49 Regulus 4.2°S of Moon  
May 04 14:00 **Eta-Aquarid Meteor Shower**  
May 04 16:00 Mercury at Superior Conjunction  
May 05 22:03 Moon at Perigee: 359656 km  
May 07 05:45 **FULL MOON**  
May 08 16:40 Antares 6.5°S of Moon  
May 09 23:00 Mercury at Perihelion  
May 10 04:01 Moon at Descending Node  
May 12 04:40 Jupiter 2.3°N of Moon  
May 12 13:18 Saturn 2.7°N of Moon  
May 14 09:03 **LAST QUARTER MOON**  
May 14 21:00 Mars 2.8°N of Moon  
May 18 02:45 Moon at Apogee: 405584 km  
May 22 05:00 **Mercury 0.9° of Venus**  
May 22 12:39 **NEW MOON**  
May 23 21:40 Venus 3.7°N of Moon  
May 24 05:53 Mercury 2.8°N of Moon  
May 24 16:34 Moon at Ascending Node  
May 26 14:43 Pollux 4.6°N of Moon  
May 27 13:44 Beehive 1.7°S of Moon  
May 29 03:44 Regulus 4.3°S of Moon  
May 29 22:30 **FIRST QUARTER MOON**

**Sun** is in Aries on May 1<sup>st</sup>. On the 14<sup>th</sup>, it moves into Taurus

**Mercury** is in Aries on May 1<sup>st</sup>. It is 3° 39' west of the Sun (mag: -1.88, dia: 5.07", Illum: 99%). It is inferior conjunction on the 4<sup>th</sup>. It moves into the evening sky and the planet is about 1° east of Venus on the 22<sup>nd</sup> (see skyview) The best time to catch the planet is around 8:30 pm (mag: -.65, dia: 6.15", Illum: 69.2%). By the 31<sup>st</sup>, Mercury is 22° 30' east of the Sun in the evening sky.



**Venus** is in Taurus on May 1<sup>st</sup> in the evening sky (mag: -4.73, dia: 40.16", Illum: 23.1%). Good time to see its crescent shape! It is 37° 36' east of Sun. Last chance to get a good look at the planet before it begins to move back towards the Sun and a conjunction on June 3<sup>rd</sup>.

**Mars** is in Capricorn on May 1<sup>st</sup> (mag: .41, Dia: 7.64"). It is 19° 15' above the southeast horizon. Mars moves into Aquarius on the 8<sup>th</sup>. The Moon passes Mars on the 15<sup>th</sup> by 3° 15' (see skyview). By the 31<sup>st</sup>, the planet grows to 9.18".

**Jupiter** is in Sagittarius on May 1<sup>st</sup> (mag: -2.35, dia: 40.75"). It is 23° 10' above the SE horizon at 4:30 am. Saturn is just 4° 28' east of Jupiter. On May 12<sup>th</sup>, the Moon passes 2° south of the planet. By the 31<sup>st</sup> the planet has brightened to -2.56.



**Saturn** is in Capricorn on May 1<sup>st</sup> (mag: .57, dia: 16.95"; rings 39.49"). The planet is 22° above the SE horizon at 4:30 am. Saturn continues to draw closer to Jupiter by 4' this month.

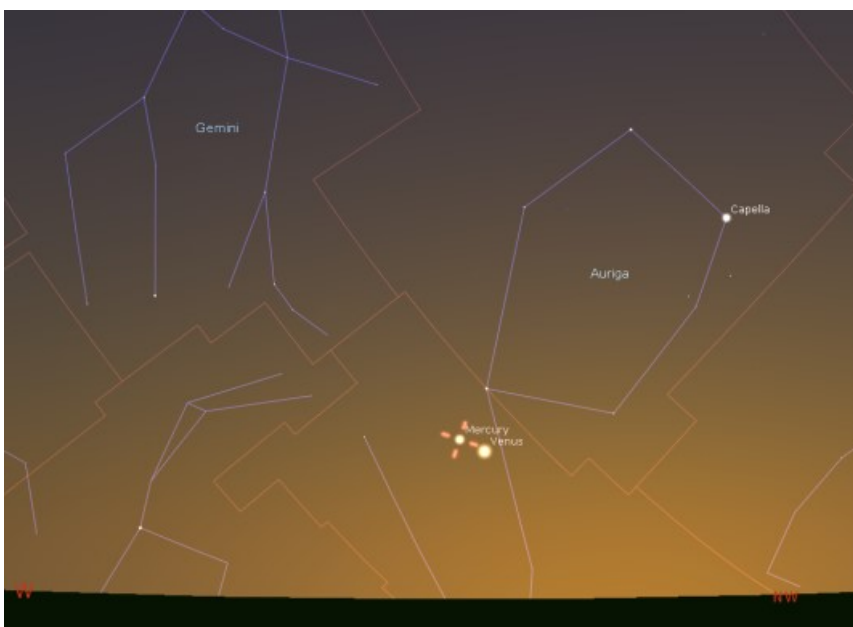
**Uranus** is in Aries on May 1<sup>st</sup>. The planet is 4° 20' from the Sun in the morning sky. By the end of the month it is 26° further from the Sun into the early morning sky. By the 31<sup>st</sup>, Uranus is about 7° above the eastern horizon at 4:30 am (mag: 5.87, dia: 3.41").

**Neptune** is in Aquarius on May 1<sup>st</sup> (mag: 7.94; dia: 2.24"). It is 10° 24' above E-SE horizon at 5:00 am.





*The Moon in conjunction with Jupiter on May 12th. Saturn is quite nearby.*



*Mercury is about  $1^\circ$  east of Venus on May 22<sup>nd</sup> at about 9:00 pm.*



*The Moon passes Mars on May 15<sup>th</sup> by  $3^\circ 15'$*

# Planetary Alignments in May 2020

| Phenomenon  | Date and Time       | Object 1 | Object 2       | Separation    |
|-------------|---------------------|----------|----------------|---------------|
| Conjunction | 2020-05-22 04:43:05 | Mercury  | Venus          | +0°52'31.0"   |
| Transit     | 2020-05-03 15:16:24 | Jupiter  | Callisto (JIV) | —             |
| Occultation | 2020-05-10 14:32:30 | Jupiter  | Io (JI)        | —             |
| Occultation | 2020-05-12 01:26:21 | Jupiter  | Callisto (JIV) | —             |
| Transit     | 2020-05-14 02:23:02 | Jupiter  | Europa (JII)   | —             |
| Occultation | 2020-05-15 20:56:00 | Jupiter  | Europa (JII)   | —             |
| Occultation | 2020-05-21 05:16:11 | Jupiter  | Io (JI)        | —             |
| Transit     | 2020-05-30 22:43:24 | Jupiter  | Io (JI)        | —             |
| Conjunction | 2020-05-12 15:08:05 | Saturn   | Moon           | +2°56'35.0"   |
| Opposition  | 2020-05-07 06:41:50 | Moon     | Sun            | +177°24'34.6" |
| Conjunction | 2020-05-11 23:20:16 | Moon     | Pluto          | +1°58'33.6"   |
| Conjunction | 2020-05-22 14:18:52 | Moon     | Sun            | +2°41'05.7"   |
| Occultation | 2020-05-24 08:42:46 | Moon     | (4) Vesta      | —             |

From stellarium



From in the sky. org

## DOUBLE STARS FOR MAY

| Object                  | Right Ascension                    | Declination | Magnitude     | Separation    | Position Angle | Year |
|-------------------------|------------------------------------|-------------|---------------|---------------|----------------|------|
| Alpha Leonis            | 10 <sup>h</sup> 08 <sup>m</sup> .4 | +11° 58'    | 1.4, 8.2      | 175.2"        | 307°           | 2012 |
| Gamma Leonis            | 10 <sup>h</sup> 20 <sup>m</sup> .0 | +19° 51'    | 2.4, 3.6      | 4.6"          | 126°           | 2013 |
| 54 Leonis               | 10 <sup>h</sup> 55 <sup>m</sup> .6 | +24° 45'    | 4.5, 6.3      | 6.4"          | 113°           | 2013 |
| N Hydrae (17 Crateris)  | 11 <sup>h</sup> 32 <sup>m</sup> .3 | -29° 16'    | 5.6, 5.7      | 9.4"          | 210°           | 2007 |
| Delta Corvi             | 12 <sup>h</sup> 29 <sup>m</sup> .9 | -16° 31'    | 2.9, 8.5      | 24.6"         | 213°           | 2012 |
| 24 Comae Berenices      | 12 <sup>h</sup> 35 <sup>m</sup> .1 | +18° 23'    | 5.1, 6.3      | 20.1"         | 270°           | 2012 |
| Gamma Virginis          | 12 <sup>h</sup> 41 <sup>m</sup> .7 | -01° 27'    | 3.5, 3.5      | 1.9"          | 10°            | 2013 |
| 32 Camelopardalis       | 12 <sup>h</sup> 49 <sup>m</sup> .2 | +83° 25'    | 5.3, 5.7      | 20.9"         | 324°           | 2011 |
| Alpha Canum Venaticorum | 12 <sup>h</sup> 56 <sup>m</sup> .0 | +38° 19'    | 2.9, 5.5      | 19.2"         | 228°           | 2014 |
| Zeta Ursa Majoris       | 13 <sup>h</sup> 23 <sup>m</sup> .9 | +54° 56'    | 2.2, 3.9, 4.0 | 14.5", 706.1" | 153°, 70°      | 2013 |
| Kappa Bootis            | 14 <sup>h</sup> 13 <sup>m</sup> .5 | +51° 47'    | 4.5, 6.6      | 13.5"         | 234°           | 2014 |
| Iota Bootis             | 14 <sup>h</sup> 16 <sup>m</sup> .2 | +51° 22'    | 4.8, 7.4      | 38.7"         | 32°            | 2014 |
| Pi Bootis               | 14 <sup>h</sup> 40 <sup>m</sup> .7 | +16° 25'    | 4.9, 5.8      | 5.4"          | 112°           | 2013 |
| Epsilon Bootis          | 14 <sup>h</sup> 45 <sup>m</sup> .0 | +27° 04'    | 2.6, 4.8      | 2.9"          | 343°           | 2012 |
| Alpha Librae            | 14 <sup>h</sup> 50 <sup>m</sup> .9 | -16° 02'    | 2.7, 5.2      | 231.1"        | 314°           | 2012 |
| Xi Bootis               | 14 <sup>h</sup> 51 <sup>m</sup> .4 | +19° 06'    | 4.8, 7.0      | 5.7"          | 306°           | 2013 |
| Delta Bootis            | 15 <sup>h</sup> 15 <sup>m</sup> .5 | +33° 19'    | 3.6, 7.9      | 104.6"        | 78°            | 2012 |
| Mu Bootis               | 15 <sup>h</sup> 24 <sup>m</sup> .5 | +37° 23'    | 4.3, 7.1      | 109"          | 171°           | 2013 |
| Delta Serpentis         | 15 <sup>h</sup> 34 <sup>m</sup> .8 | +10° 32'    | 4.2, 5.2      | 4.0"          | 172°           | 2013 |

# DEEP SKY WONDERS

For May  
Evening Skies

| Name                                   | Mag.  | Rise   | Transit | Set    | Ang. Size    |
|--|-------|--------|---------|--------|--------------|
| M 3                                    | 6.38  | 16h05m | 0h04m   | 8h03m  | +0°09'00.00" |
| M 101 (Pinwheel Galaxy)                | 8.03  | —      | 0h25m   | —      | +0°27'51.00" |
| NGC 5466 (Snowglobe Cluster)           | 9.90  | 16h27m | 0h27m   | 8h27m  | +0°04'00.00" |
| M 46                                   | 6.41  | 12h53m | 18h03m  | 23h12m | +0°10'00.00" |
| Calabash Nebula                        | 9.78  | 12h53m | 18h03m  | 23h13m | +0°00'30.00" |
| M 93 (Butterfly Cluster)               | 6.65  | 13h34m | 18h05m  | 22h37m | +0°05'00.00" |
| NGC 2477 (Electric Guitar Cluster)     | 7.34  | 15h07m | 18h13m  | 21h18m | +0°13'30.00" |
| NGC 2467 (Skull and Crossbones Nebula) | 7.59  | 13h53m | 18h13m  | 22h33m | +0°07'30.00" |
| NGC 2539 (The Dish Cluster)            | 6.77  | 13h14m | 18h31m  | 23h49m | +0°10'30.00" |
| NGC 2546 (Heart and Dagger Cluster)    | 7.36  | 15h20m | 18h33m  | 21h46m | +0°20'00.00" |
| M 48 (Beehive Cluster)                 | 6.02  | 12h51m | 18h35m  | 0h18m  | +0°15'00.00" |
| M 44 (Beehive Cluster)                 | 3.25  | 11h43m | 19h02m  | 2h20m  | +0°35'00.00" |
| M 67 (Golden-Eye Cluster)              | 7.06  | 12h26m | 19h12m  | 1h59m  | +0°12'30.00" |
| NGC 2841 (Tiger's Eye Galaxy)          | 9.35  | —      | 19h44m  | —      | +0°04'35.22" |
| M 81 (Bode's Galaxy)                   | 7.09  | —      | 20h17m  | —      | +0°20'30.00" |
| M 82 (Cigar Galaxy)                    | 8.56  | —      | 20h18m  | —      | +0°07'45.00" |
| NGC 3242 (Ghost of Jupiter Nebula)     | 8.86  | 15h52m | 20h46m  | 1h40m  | +0°00'31.20" |
| M 95                                   | 9.88  | 14h19m | 21h05m  | 3h52m  | +0°03'00.00" |
| NGC 3344 (Sliced Onion Galaxy)         | 10.00 | 13h23m | 21h05m  | 4h47m  | +0°04'31.05" |
| M 96                                   | 9.40  | 14h22m | 21h08m  | 3h55m  | +0°06'24.00" |
| M 105                                  | 9.91  | 14h20m | 21h09m  | 3h59m  | +0°05'06.00" |
| M 66 (Leo Triplet)                     | 9.07  | 14h51m | 21h42m  | 4h33m  | +0°06'39.00" |
| NGC 3628 (Hamburger Galaxy)            | 9.63  | 14h48m | 21h42m  | 4h35m  | +0°06'33.45" |
| M 106                                  | 8.55  | 11h28m | 22h41m  | 9h53m  | +0°12'54.00" |
| Coma Berenices Cluster                 | 1.95  | 14h58m | 22h44m  | 6h30m  | +4°35'00.00" |
| M 61 (Swelling Spiral Galaxy)          | 9.84  | 16h24m | 22h44m  | 5h03m  | +0°06'09.00" |
| M 100 (Blowdryer Galaxy)               | 9.52  | 15h42m | 22h45m  | 5h47m  | +0°06'51.00" |
| M 86 (Faust V051)                      | 9.07  | 15h57m | 22h48m  | 5h39m  | +0°07'21.00" |
| M 49                                   | 8.49  | 16h19m | 22h51m  | 5h24m  | +0°09'15.00" |
| M 87 (Virgo Galaxy)                    | 8.81  | 16h04m | 22h52m  | 5h41m  | +0°07'00.00" |
| NGC 4490 (Cocoon Galaxy)               | 9.94  | 13h17m | 22h52m  | 8h28m  | +0°03'48.36" |
| NGC 4535 (The Lost Galaxy of Copeland) | 9.92  | 16h23m | 22h56m  | 5h29m  | +0°04'22.80" |
| M 89                                   | 9.93  | 16h08m | 22h57m  | 5h47m  | +0°04'54.00" |
| M 90                                   | 9.72  | 16h07m | 22h59m  | 5h50m  | +0°06'57.00" |
| M 58                                   | 9.84  | 16h13m | 22h59m  | 5h46m  | +0°05'18.00" |

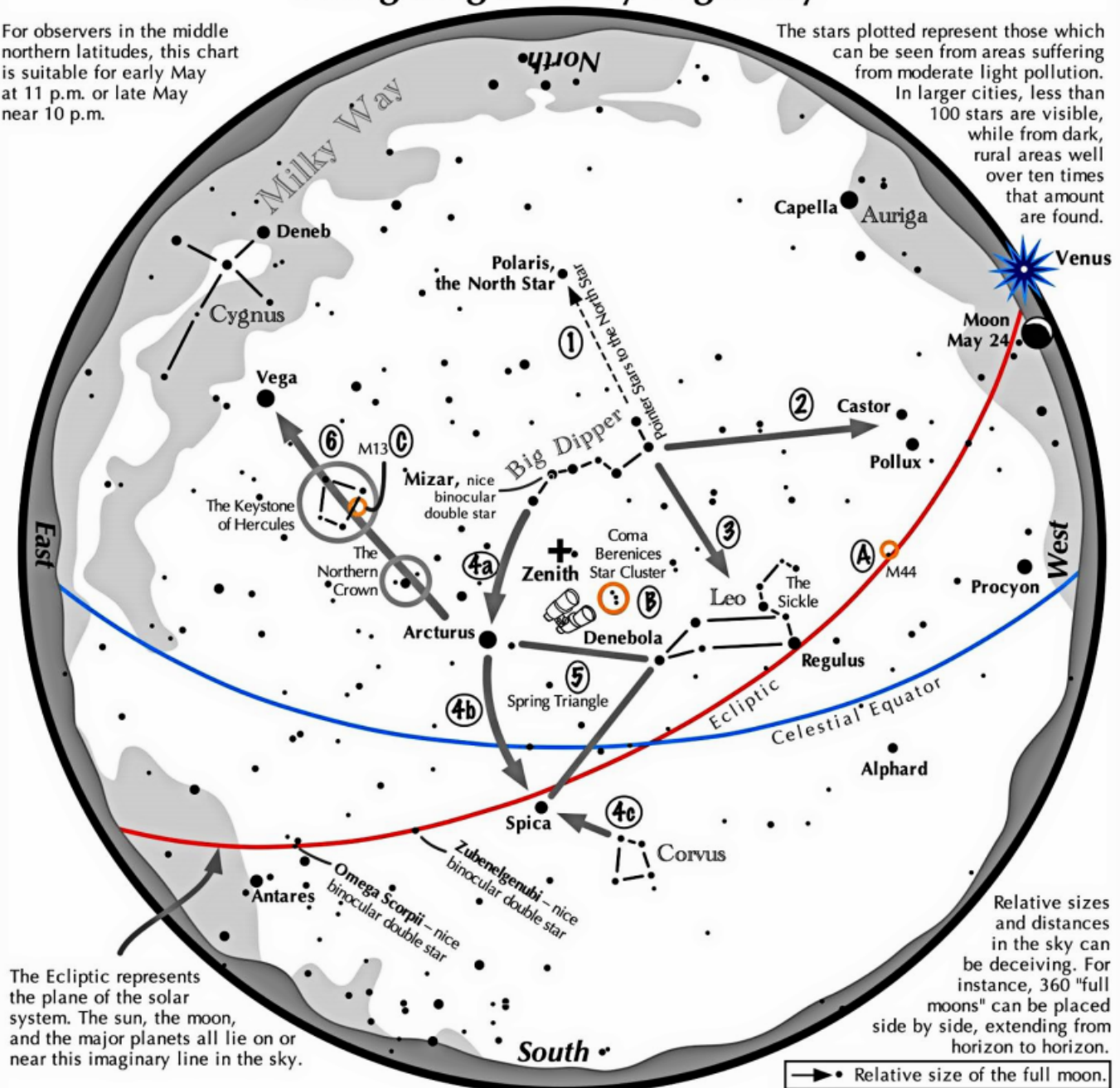
\* Data from Stellarium



# Navigating the May Night Sky

For observers in the middle northern latitudes, this chart is suitable for early May at 11 p.m. or late May near 10 p.m.

The stars plotted represent those which can be seen from areas suffering from moderate light pollution. In larger cities, less than 100 stars are visible, while from dark, rural areas well over ten times that amount are found.



## Navigating the May night sky: Simply start with what you know or with what you can easily find.

- 1 Extend a line northward from the two stars at the tip of the Big Dipper's bowl. It passes by Polaris, the North Star.
- 2 Through the two diagonal stars of the Dipper's bowl, draw a line pointing to the twin stars of Castor and Pollux in Gemini.
- 3 Directly below the Dipper's bowl reclines the constellation Leo with its primary star, Regulus.
- 4 Follow the arc of the Dipper's handle. It first intersects Arcturus, then continues to Spica. Confirm Spica by noting that two moderately bright stars just to its southwest form a straight line with it.
- 5 Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.
- 6 Draw a line from Arcturus to Vega. One-third of the way sits "The Northern Crown." Two-thirds of the way hides the "Keystone of Hercules." A dark sky is needed to see these two dim stellar configurations.

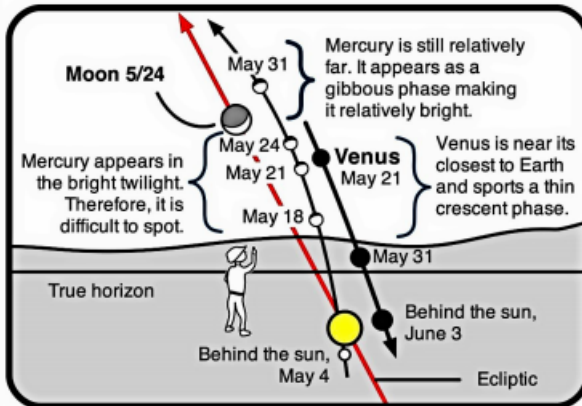
### Binocular Highlights

A: M44, a star cluster barely visible to the naked eye, lies to the southeast of Pollux. B: Look near the zenith for the loose star cluster of Coma Berenices. C: M13, a round glow from a cluster of over 500,000 stars.

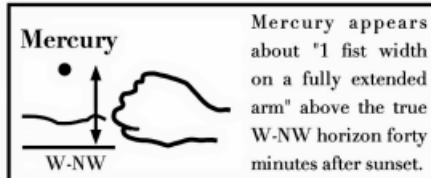
Astronomical League [www.astroleague.org/outreach](http://www.astroleague.org/outreach); duplication is allowed and encouraged for all free distribution.



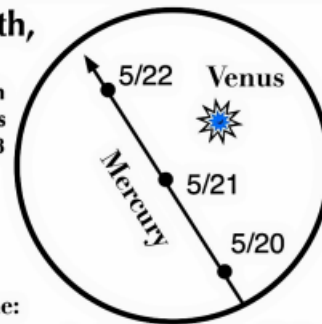
If you can observe only one celestial event this month,  
see this one:



### May 2020: Mercury & Venus forty minutes after sunset in the west-northwest



View through  
10x50 binoculars  
on March 18



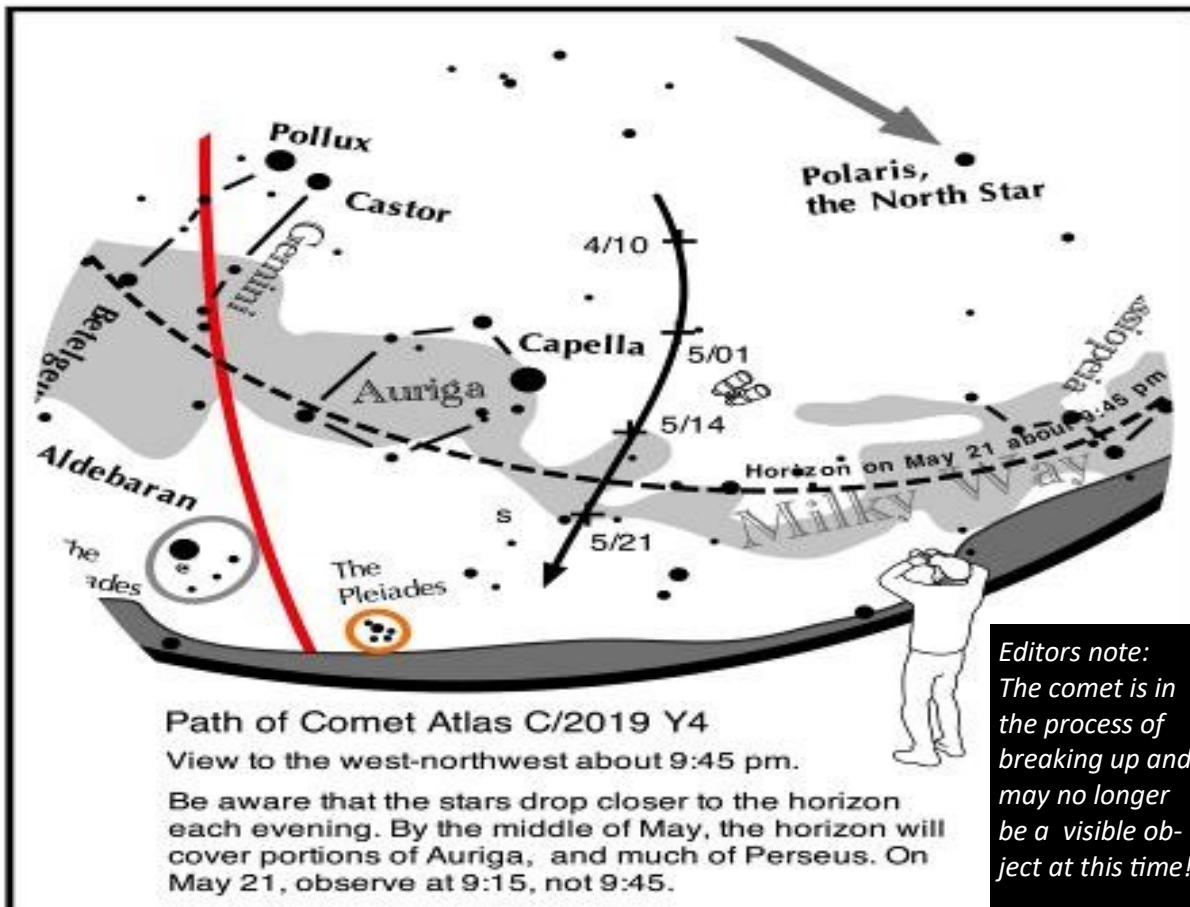
### The Scene:

#### Mercury and Venus in the evening twilight

Have you ever spotted Mercury? Many stargazers have not. The third week of May presents a good opportunity to catch the elusive little planet as it moves in the same part of the sky as bright Venus. Look low into the west-northwestern twilight forty minutes after sunset.

Mercury rises above the w-nw horizon after May 18, then climbs higher each evening, becoming easier to spot. Simultaneously, easily-seen Venus drops closer to the horizon all month, eventually passing the sun on June 3.

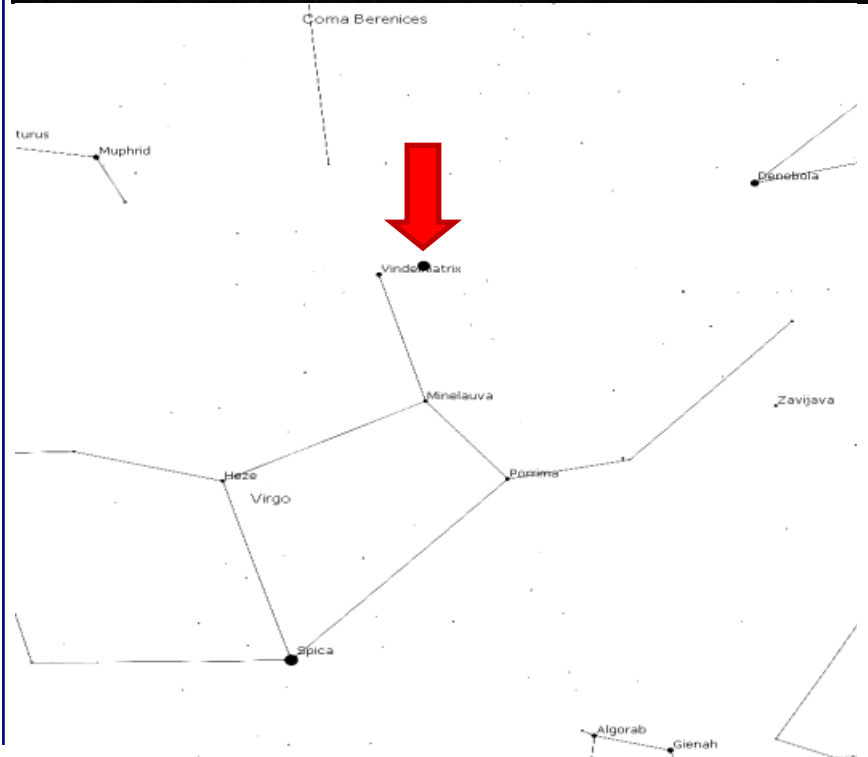
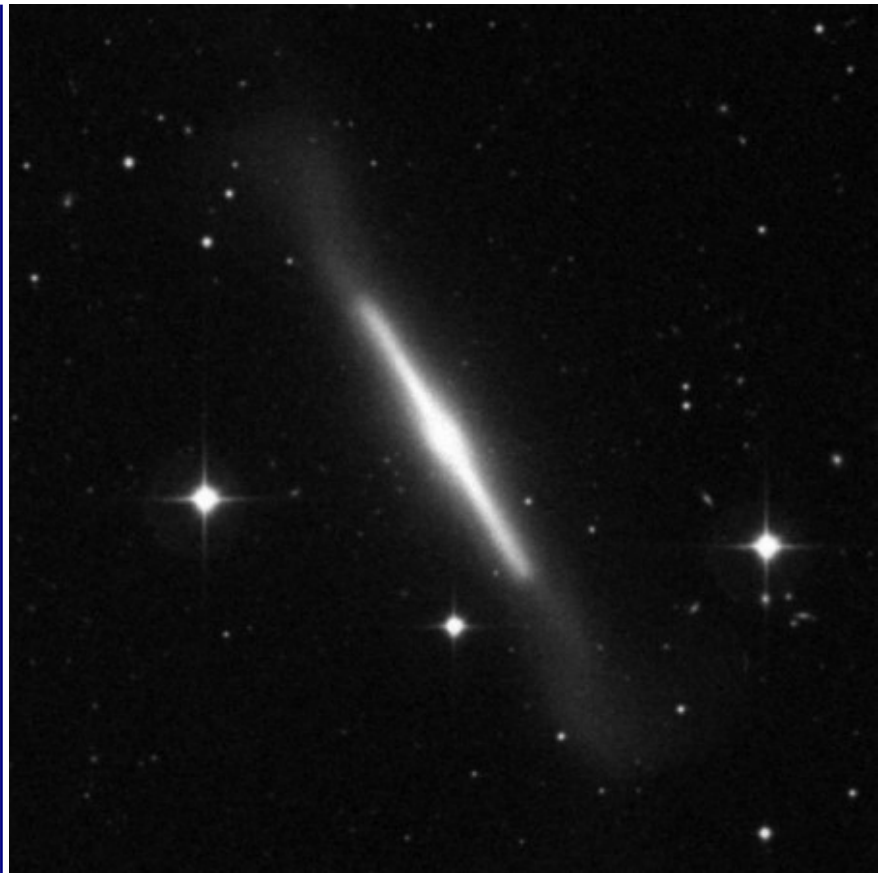
- As Venus drops closer to the horizon, it becomes difficult to see after May 24.
- Using binoculars, look on May 20-22 for little Mercury passing the much brighter Venus. Can you see it with the unaided eye?
- With steadily held binoculars, can you see the tiny, thin crescent of Venus? You may need to wear sunglasses to cut through the glare of the planet.



*Editors note:  
The comet is in  
the process of  
breaking up and  
may no longer  
be a visible ob-  
ject at this time!*

# Spotlight: NGC 4762 Paper– Kite Galaxy

- an edge-on lenticular galaxy in the constellation Virgo
- William Herschel discovered NGC 4762 with an 18.7-inch f/13 speculum telescope
- Stephen James O'Meara tagged NGC 4762 with the name Paper-Kite
- Most peculiar is that images fail to reveal any dust along the galaxy's razor-sharp edge
- large aperture telescopes note the existence of faint plumes at each end of the galaxy
- a lenticular galaxy is a kind of intermediate step between an elliptical and a spiral
- Magnitude 10.20
- a distance of 58 million light years
- a member of the Virgo Cluster
- The edge-on view of this particular galaxy, originally considered to be a barred spiral galaxy, makes it difficult to determine its true shape, but it is considered that the galaxy consists of four main components — a central bulge, a bar, a thick disc and an outer ring
- The galaxy's disc is asymmetric and warped, which could be explained by NGC 4762 merging with a smaller galaxy in the past.
- contains a Liner-type active galactic nucleus, a highly energetic central region.





**This article is distributed by NASA Night Sky Network**

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**Become a Citizen Scientist with NASA!**

David Prosper

Ever want to mix in some science with your stargazing, but not sure where to start? NASA hosts a galaxy of citizen science programs that you can join! You'll find programs perfect for dedicated astronomers and novices alike, from reporting aurora, creating amazing images from real NASA data, searching for asteroids, and scouring data from NASA missions from the comfort of your home. If you can't get to your favorite stargazing spot, then NASA's suite of citizen science pro-

*(continued in next column)*

grams may be just the thing for you. Jupiter shines brightly in the morning sky this spring. If you'd rather catch up on sleep, or if your local weather isn't cooperating, all you need is a space telescope - preferably one in orbit around Jupiter! Download raw images straight from the Juno mission, and even process and submit your favorites, on the **JunoCam** website! You may have seen some incredible images from Juno in the news, but did you know that these images were created by enthusiasts like yourself? Go to their

website and download some sample images to start your image processing journey. Who knows where it will take you? Get started at [bit.ly/nasajunocam](http://bit.ly/nasajunocam)

Interested in hunting for asteroids? Want to collaborate with a team to find them?? The **International Astronomical Search Collaboration** program matches potential asteroid hunters together into teams throughout the year to help each other dig into astronomical data in order to spot dim objects moving in between photos. If your team discovers a potential asteroid that is later confirmed, you may even get a chance to name it! Join or build a team and search for asteroids at [iasc.cosmosearch.org](http://iasc.cosmosearch.org)

Want to help discover planets around other star systems? NASA's TESS mission is orbiting the Earth right now and scanning the sky for planets around other stars. It's accumulating a giant horde of

*(continued on next page)*



*GREAT SOUTHERN JUPITER: Incredible image of Jupiter, submitted to the JunoCam site by Kevin M. Gill. Full Credits : NASA/JPL-Caltech/SwRI/MSSS/Kevin M. Gill*



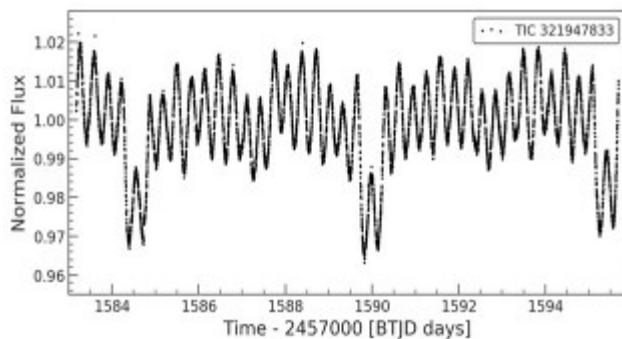
## Become a Citizen Scientist with NASA!

David Prosper

(continued from previous page)

data, and NASA scientists need your help to sift through it all to find other worlds! You can join **Planet Hunters TESS** at: [planethunters.org](http://planethunters.org)

Intrigued by these opportunities? These are just a few of the many ways to participate in NASA citizen science, including observing your local environment with the GLOBE program, reporting aurora with Aurorasaurus, measuring snowpack levels, training software for Mars missions – even counting penguins! Discover more opportunities at [science.nasa.gov/citizenscience](http://science.nasa.gov/citizenscience) and join the NASA citizen science Facebook group at [facebook.com/groups/Sciencing/](https://www.facebook.com/groups/Sciencing/) And of course, visit [nasa.gov](http://nasa.gov) to find the latest discoveries from all the research teams at NASA!



*Light curve of a binary star system containing a pulsating (variable) star, as spotted on Planet Hunters TESS by user mhuten and featured by project scientist Nora Eisner as a "Light Curve of the Week." Credit: Planet Hunters TESS/NASA/mhuten/Nora Eisner*



## **Hubble finds the best evidence yet for elusive midsize black holes**

April 2nd, 2020



## **A Martian mash up: Meteorites tell story of Mars' water history**

March 30th, 2020



## **NASA has selected a unique mission to study the Sun, targeting a 2023 launch date**

April 3rd, 2020



## **Five Snapshots of how the Earth Looked at Key Points in its History Could Help us Find Habitable Exoplanets**

April 1st, 2020





## **New Find Shows Uranus Loses Atmosphere to its Magnetic Field**

April 3rd, 2020



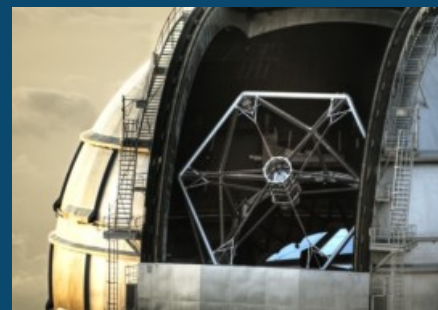
## **Are the Gaps in These Disks Caused by Planets?**

March 27th, 2020



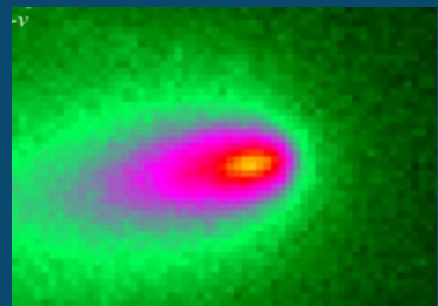
## **COVID-19 forces Earth's largest telescopes to close**

April 7th, 2020



## **Oh No! Comet ATLAS Is Fragmenting**

April 7th, 2020



## Starlink and the Astronomers: An Update

April 7th, 2020



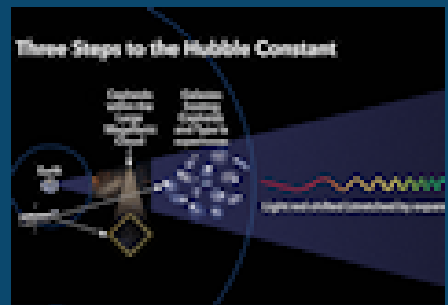
## How Did the TRAPPIST-1 Planets Get Their Water?

April 9th, 2020



## New observations show that the Universe might not be expanding at the same rate in all directions

April 9th, 2020



## WFIRST Will Use Relativity to Find More Exoplanets!

April 7th, 2020



## **Earth-size, habitable-zone planet found hidden in early NASA Kepler data**

April 16th, 2020



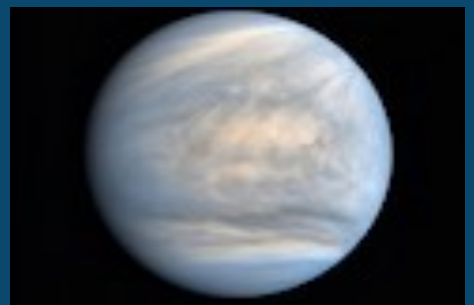
## **ESO telescope sees star dance around supermassive black hole, proves Einstein right**

April 16th, 2020



## **Why are Venus' clouds so weird?**

April 24th, 2020



## **The U.S. Geological Survey (USGS) has released a new 1:5,000,000 map of the Moon that provides a wealth of information**

April 24th, 2020





# MEMBER OBSERVATIONS

## Spring NCRAL Messier List Hunt

Last evening (April 19th), Eric and I set up our scopes in the parking lot of Black Hawk College which is just two blocks from our house. The parking lot lights were bright, but did not put a damper on our observing session. Our goal was to observe all 28 of the objects in the NCRAL Spring Messier Marathon. We were able to do this without any problem. I took snapshots of each of the objects using a 10" LX200 with a 0.63 Focal Reducer and Nikon D7500 camera. All photos (except Venus) were taken at ISO 6400 and 15 second time exposure, FL = 1575mm. The image of Venus was taken with a barlow lens yielding a FL = 5000mm.

**Alan Sheidler**



Messier 94



Messier 104



*Editors note: These are a few of Al and Eric's photos. Will have more in next issue!*



Venus

## April Lyrids

Roy and Jan Gustafson got up early on the morning of April 22 to observe this year's Lyrid meteor shower. They reported that between 4:10 and 4:51 am, they saw 6 Lyrids and 16 StarLink satellites! Clouds got in the way then.

# MEMBER OBSERVATIONS

These are two pics I took of Comet Atlas (C/2019 Y4) on the evening of March 28<sup>th</sup> at 9:49 and 10:16 pm from my house in Rock Island. You can see the movement of the comet if you compare the comet relative to a line of four stars to its upper right. The conditions were not very good for this. The moon was up, being about 4.5 days old, there was a very thin cloud cover, and it was fairly breezy that night.

When you looked for the comet, did you make sure that your data was for Comet Atlas C/2019 Y4? There are in fact two Comet Atlas's out there right now according to The Sky Live.

**Ken Boquist**



*(above) enlargement of center section  
of photo on the right*



# MEMBER OBSERVATIONS



*Photos by Byron Davies. Taken on April 1st, 2020 "Some deep space imaging in our back yard under half moon and city lights"*



*(continued on next page)*



# MEMBER OBSERVATIONS



*1st quarter Moon photos taken on April 1st, 2020 . A C8 was used with a ZWO ASI120MC camera and 30 sec exposures. A polarizing filter was used to reduce the glare. Photos by Terry Dufek*



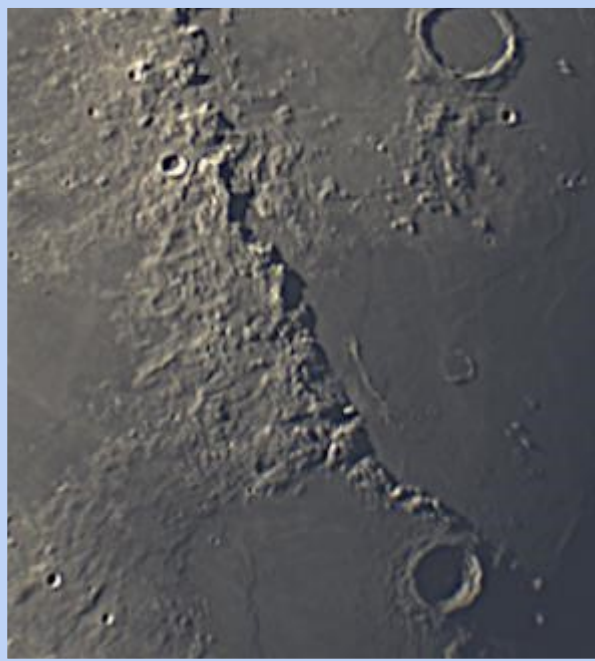
*Venus approaching the Pleiades on April 1st, 2020. Photo from my house. Used ZWO ASI120 mc camera with fish eye lens. Could barely bring out the stars (see inset) photo by Terry Dufek*



*(continued on next page)*



# MEMBER OBSERVATIONS



*Montes Apenninus Mountains. Eratosthenes crater towards the bottom and Archimedes crater at the top. The Archimedes mountains are just below the crater.*



*Eudoxus crater located at the top. Montes Caucasus mountains along the right and Mare Serenitatis along the bottom of the photo*



*Montes Apenninus Mountains along the mid right. Archimedes crater at the top right. Mare Vaporum towards the bottom with the crater Manilius. The Monte Haemus mountain range lower left. Menelaus crater in the lower left leads off the chain. Mare Serenitatis is far left.*



*Clavius at the bottom with Tycho almost in the*

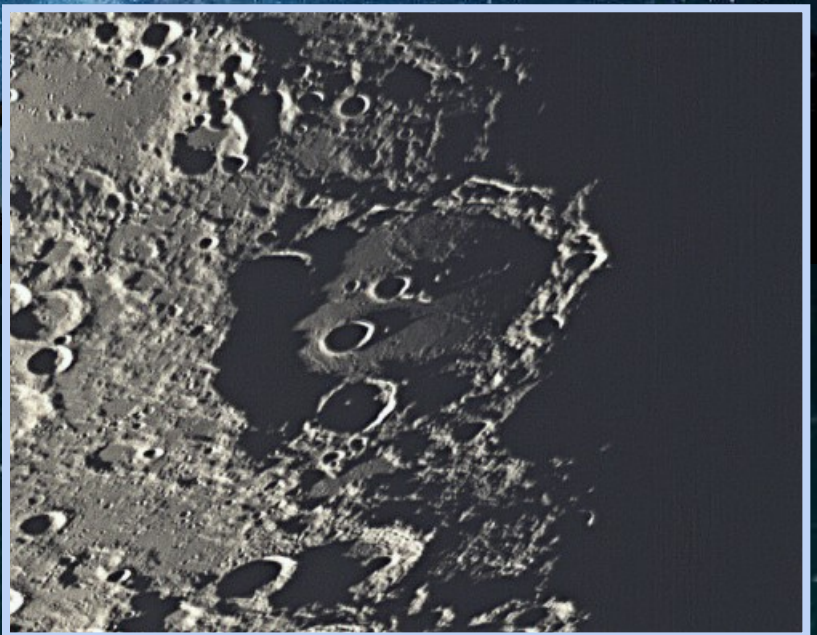
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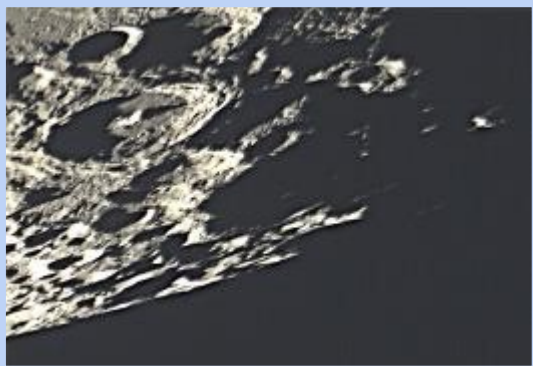
# MEMBER OBSERVATIONS



*Close up of Tycho crater*



*Close up of Clavius*



*Crater in upper left (with peak in center) Moretus*



*Ptolemaeus (large prominent crater—upper center), Alphonsus (right and down from Ptolemaeus). Below that is the crater, Arzachel. Albategnius (left and down from Ptolemaeus) has inset crater, Klein. Mare Nubium is to the lower right*





# PAC MONTHLY MEETING

President Alan Sheidler arranged the April 2020 meeting of the Popular Astronomy Club to be conducted via (Zoom) at 7:00 p.m. local time, on April 13th, 2020. We had 21 members and 3 guests (from the Firebaugh Observatory) attending.

Jim Dole (along with Tom Dunmore) from the Firebaugh Observatory at Freeport Illinois gave a talk about their observatory. He covered the history of and recent upgrades (such as adding an equatorial wedge) to their observatory telescope. He covered ideas and activities to generate public such as making planispheres, smart phone adapters for telescopes, telescope basics, simple imaging and telescopes for the public to play and explore with. Jim Dole asked for additional ideas (input) from the members of PAC present this evening to bring astronomy to the public. Jim also showed photos of the observatory and its construction.

Al then showed photos of the new Celestron telescope received for the Paul Castle Observatory (see Paul Castle renewal page) and photos of deep sky objects taken by Byron Davies (see Member Observation Pages).

Frank Stonestreet did a presentation of the Constellation of Draco.



*Jim Dole and Tom Dunmore stand next to the telescope in the Firebaugh Observatory*

